



amateur radio

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JANUARY
1967

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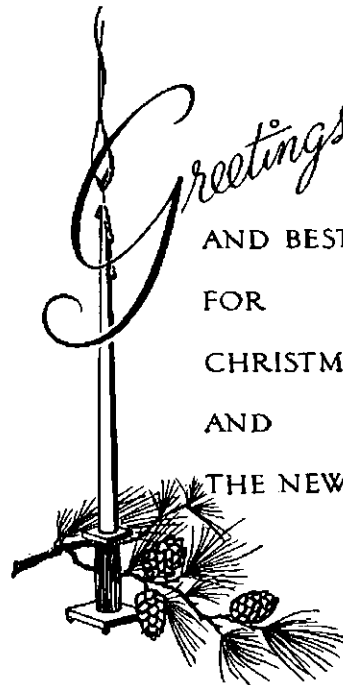
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THE NEW YEAR

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Propagation of Amateur Signals Allied With Ionospheric Predictions

F. T. HINE,* VK2QL

BY listening to many Amateurs, both v.h.f. and h.f., I am convinced that they miss one of the most interesting facets of Amateur Radio—the study of propagation of the signals they transmit. They are quite content to follow the pattern of those who pick a racehorse by the use of a pin.

How many have proudly displayed their station to visitors, received the usual question, "Who can you talk to?" and this type of thing follows: "The whole world." "Well, let us hear Timbuctoo." The receiver is promptly tuned back and forth looking for the station from Timbuctoo, when in general, to use a typical Aussie phrase, "They have Buckley's chance of finding one."

I hear Amateurs on the band saying it won't be long before 10 metres is wide open for DX again. I won't go so far as to refer to Mr. Buckley here, but from information I have received from the Prediction Service, and which you can study in Sept. "A.R.," it does not look like 10 metres will be a good DX band in the coming cycle.

SUNSPOT ACTIVITY

Prior to the last sunspot minimum, there were two schools of thought, one with the theory that the next cycle would exceed 1958 in sunspot activity, the other that we would not again reach high sunspot activity in the present century. Neither of these two camps were guessing, but trying to make a forecast from records available over many years.

Now that we are well past the minimum, it looks as though the second group will be right as far as the present cycle is concerned.

The subject of propagation, allied with predictions, is an enormous subject and I must assume that readers have some knowledge of what goes on in the ionosphere and its effect on Amateur communications. I do not profess to be a "back room boy" on this subject and can only pass on what I have learned by reading and on-the-air experience. I have to change my thinking from time to time, and will need continually to do so as information from satellites is generally available. If you have access to, and Divisional libraries should have copies, read the "Sun Spot Story" in "CQ" for April, May and June, 1961. This was produced, due to demand, into one publication and made available for interested people by "CQ". I find myself referring to my copy from time to time.

It is interesting to note that some of the points made in the "Sun Spot Story" in regard to the expected minimum period were not borne out. One of these was the minimum period would probably occur in May 1965. If you refer to the tables mentioned above, you will see the lowest smoothed sunspot number occurred in Oct. 1964 and the lowest mean in July 1964. Further reading is available from your Division

by borrowing the copy of the handbook issued by the Ionospheric Prediction Service (I.P.S.).

I for one expected very good DX conditions on 3.5 Mc. during the last minimum period and when this did not eventuate, discussed the matter with a member of the I.P.S. in Sydney to learn that the absorption was not a great deal less on that band during varying periods of the cycle. I learned that if we were able to have a frequency within the region of the 10 Mc. band, we would have a good all round working band. This makes sense when one considers how reliable the 9-10 Mc. s.w. broadcast band is.

Just reverting back to sunspots briefly, we find the peak for all time was just over 200 in 1958. The next highest was the previous cycle in 1947 with a sunspot number of 155, and in 1778 the number was also 155; these were the highest over a period of 169 years. In 1804 and 1816, the peak number reached only 45 and in 1906 approximately 75. The forecast from Zurich for the present cycle maximum is 100 and due to occur in the latter part of 1968. This forecast is similar to that actually occurring in 1917, and approximately half of the last peak.

The graphs I have (see "CQ" May 1961) commence from the year 1750 and show the rise and fall of each cycle. No two cycles, although known as 11-year cycles, are the same—the shortest being 9 years and the longest 14 years. The ascending period of a cycle varies between 2.6 and 6.9 years, the last cycle rising in 3.9 years. The descending period varies between 4 and

10.2 years. This may sound a little "Irish," but it is possible at the minimum period to have spots on the sun from the old and the new cycle at the same time and this occurred at the last minimum period.

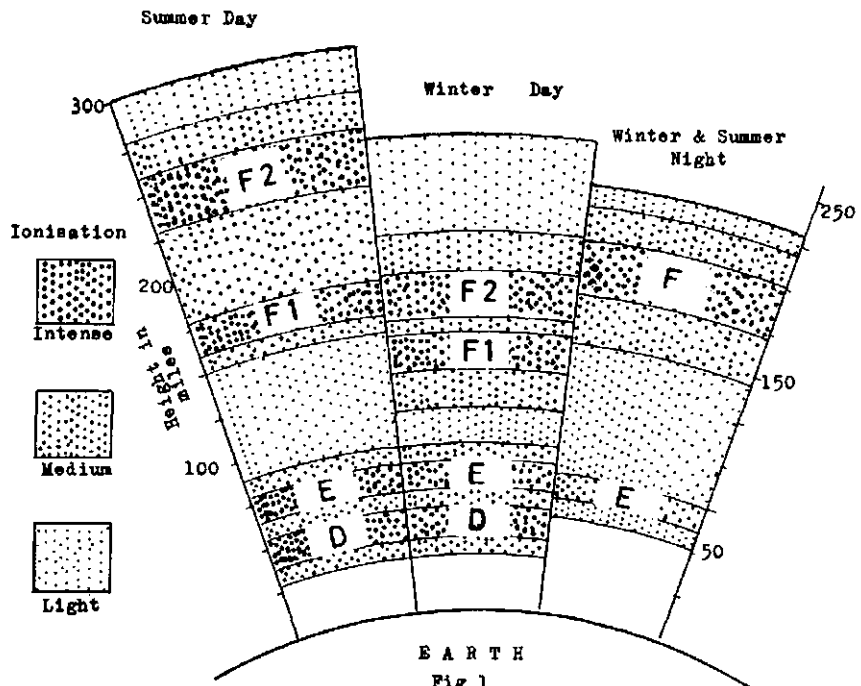
PREDICTIONS

Predictions are concerned with the propagation of radio signals by reflection from the ionised layers and this method is used for communication over long distances.

There is always a day-to-day variation and it must be remembered that the same set of circumstances do not occur from day to day and of course this is more pronounced from month to month and each year of what is known as the 11-year cycle. Coupled with all this is a geographical variation. See Fig. 1 for an indication of seasonal variation.

Prediction charts are prepared for estimated propagation at the middle of each month, and are never the same for two successive months. You only need to take a transparent piece of paper and plot the same chart for different months on it to verify this.

Propagation may involve one or more reflections from the ionosphere. There is, however, a limit to the length of a single hop set by the height of the reflecting layer. It is generally assumed when predicting the Maximum Usable Frequency (m.u.f.) that the signal will travel by the minimum number of hops, preferably by the F2 layer. For circuits longer than 3,000 km., it is considered that only the state of the ionosphere at the points of reflection nearest each



* 30 Abbotsford Road, Homebush, N.S.W.

terminal will affect the m.u.f. for the circuit, and for circuits under 3,000 Km. the state of the ionosphere at the mid-point of the circuit will determine the m.u.f.

MAXIMUM USABLE FREQUENCY

In order that signals transmitted from one place should be received at another, it is necessary for the frequency of the signal to be below the maximum usable frequency for that path. The m.u.f. depends on the state of the ionosphere at the point of reflection and the angle at which the signal strikes the layer—plus other factors to be discussed later. As mentioned earlier, circumstances change daily, so therefore the m.u.f. will vary. When your frequency exceeds the m.u.f., ionisation at the point of reflection is not strong enough to bend your signal back again.

One often hears the comment "I was talking to so and so. He had a beautiful signal and next time I went over he was gone." The answer is simple. You were operating right below the m.u.f. existing at the time and whilst you were transmitting, the m.u.f. dropped slightly and the band closed between you. You can also get mixed up in an ionospheric disturbance and this will be discussed later. Remember you get "beautiful" signals right on the m.u.f., but they may not be heard for long. Frequencies just above the m.u.f. will not be received in normal propagation, whilst those below are received, and it is therefore possible for one end of our bands to be open and the other closed to the same DX.

The m.u.f. for a circuit does not depend on the type of equipment or antenna used, but on the ionosphere. All the r.f. and gain from your antenna you can muster will not enable you to communicate by F2 layer reflection above the m.u.f.

ABSORPTION LIMITING FREQUENCY

In addition to the m.u.f., there is a lower limit to the frequencies which can be used for communication between two points. This is due to absorption of the signal in the D region of the ionosphere (see Fig. 1) which is the lowest region of pronounced ionisation and extends 30 to 50 miles above the earth and exists mainly in the daylight hours. This is known as the Absorption Limiting Frequency (a.l.f.). Whilst there are large variations in the m.u.f. during a sunspot cycle, there is not a great deal of change in the a.l.f., and for this reason it has not been worth showing the a.l.f. in the various charts which will follow in this discussion.

When say 28 and 14 Mc. are open at the same time, it will take considerably more power on 14 Mc. to equal the strength of the 28 Mc. signal. Since the m.u.f. is the highest frequency that can be used for F2 layer reflection, absorption is at its maximum at this point. The level of absorption varies greatly throughout the days, seasons of the year and geographically. Absorption is more intense in equatorial regions where the sun is more directly overhead than in temperate latitudes and is generally greater during summer than winter. The a.l.f. can also cause opposite ends of a band to be open or

closed, but as signals are not as strong and noise level is much higher, it is more difficult to detect than the m.u.f.

OPTIMUM WORKING FREQUENCY

It has been observed that the F2 layer is normally within 15% of its calculated height. To enable commercial circuits to maintain good continuous communication they keep away from the m.u.f. and so keep out of strife. They normally use what is known as the Optimum Working Frequency (o.w.f.) and this is assessed as 10% below the m.u.f.

Take a look at the charts in general in recent issues of "A.R." and you will see that in nearly every case the a.l.f. at some time of the day exceeds 14 Mc. The chart to Rio de Janeiro often is an interesting one from an Amateur point of view. When the a.l.f. exceeds 14 Mc., frequencies of 14 Mc. and below are completely absorbed and reference again to the charts will show a number of instances where the a.l.f. exceeds the m.u.f. When we have this situation, no communication is possible by F layer reflection.

Entrants in R.D. Contests well remember how 14 and 21 Mc. open unexpectedly and erratically for short or long periods to an adjoining State. This is not caused by F layer reflection, but some kind of anomalous propagation, e.g. E layer or Sporadic E. This type of thing cannot be predicted, not at the present state of the art.

SOLAR RADIATION

In dealing with radio propagation, it is probably not fully realised just what an important part the earth's magnetic field and the sun play. There is evidence that the earth's magnetic field exerts considerable influence on the degree of ionisation of the F2 layer. The electrical intensity of the ionosphere depends on the ultra violet radiation from the sun. The greater the amount of radiation from the sun, the more electrified the ionosphere becomes and the better h.f. propagation exists. If radiation is low, then propagation is poor. This radiation from the sun produces ionisation of the various layers shown in Fig. 1.

For short and even medium circuits, it may be possible to have propagation from the E and F1 layers during the day, but at night and for longer distances, only the F2 layer is satisfactory and consequently this is the layer influencing our DX working.

Intense ultra violet radiation from the sun causes an increase in ionisation of the D region and can cause a complete absorption of radio waves in the sunlit hemisphere of the earth. Absorption decreases as the frequencies increase but it also increases as the path of the signal nears the point immediately below the sun and this effect controls the a.l.f.

During daylight, radio signals may be propagated from place to place by several methods. Frequencies transmitted by ionospheric reflection usually lie in the h.f. band, but under certain conditions the m.f. and v.h.f. bands can be affected.

The greater the intensity of the reflecting layer ionisation, the more signal is reflected. The D layer is only

slightly ionised and reaches its maximum at noon. The frequencies of 1.8 Mc. and 3.5 Mc. are completely absorbed by this layer. Only high angle radiation is reflected by the E layer except during low sunspot activity. The smaller or lower the angle of radiation, the less bending is required to bring the signal back to earth and also the lower the angle, the greater the distance between the point where the wave leaves and returns to earth. The less bending required, the less the absorption.

The aim of all Amateurs should be to get the strongest signal to its intended destination and therefore every available means, within the regulations of course, should be used to achieve that end. The greatest barrier to this is absorption, disregarding of course the point made previously, of keeping below the m.u.f.

One aspect some Amateurs are faced with is a poor location, and for this, predictions cannot be blamed, because they can hear their next neighbour working the DX according to prediction. The prediction charts can do little for the Amateur in a poor location other than make him frustrated.

For short range work, it is important that the angle of radiation is high.

The lowest useful layer for distances up to 750 miles is the E layer. It is mainly a daytime layer and practically disappears at night, therefore DX for v.h.f. operators is very poor at night. This layer is not considered satisfactory for multiple hop working. Bear in mind the angle of radiation for the E layer must always be higher than for the F layer. The height of the E layer remains practically constant throughout the day.

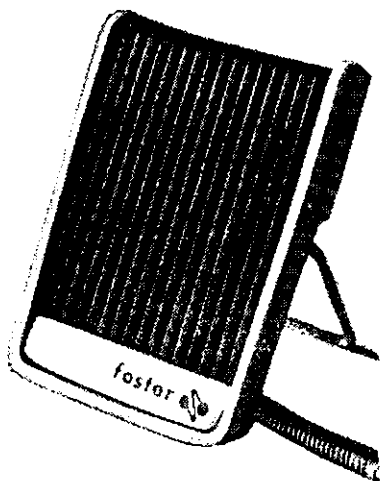
PREDICTION CHARTS

The prediction charts you see in "A.R." are prepared on the basis of an angle of radiation of 5°, and a distance of 2,000 miles, so if your radiation angle is high, you should not expect your DX working to be in accord with the predictions. The higher your angle of radiation, the further away from the predicted DX you will find your working. The charts are for a terminal located between Canberra and Sydney, so Amateurs in other States will find them not completely true for their own activities as latitude and longitude each combine to change the o.w.f. The charts are reasonably accurate for a QTH within 3° of latitude and longitude of the terminals listed.

There is probably criticism of the Magazine Committee for printing only charts centred on Canberra.

I.P.S. do not produce DX charts for terminals other than Canberra, Melbourne and Perth. I have checked the charts to the same DX point from these three terminals and in some instances there is very little difference in the m.u.f. I will give a couple of charts on this aspect later on and much as I would wish, I am unable to help the VK4 boys here because I have not the material available to make any comparison.

Even the beam boys have not the ultimate in radiation patterns. As well as being able to switch your fixed beam or turn the rotary, there is a need to be able to move it vertically to "zero"



DF-2

FOSTER DYNAMIC MICROPHONES FOR HAND-DESK USE

SPECIFICATIONS:

Output Impedance 50 ohms or 50K ohms
 Effective output level -55 db. [0 db. = (one) IV. Microbar]
 Frequency response 200 to 10,000 c.p.s.

OMNI-DIRECTIONAL DYNAMIC:

SIZE: 3" x 2-1/8" x 1".
 Cable: 12 ft. of P.V.C.
 Switch: on-off.
 Desk Stand. Clip folds for hand use.
 Colour: WHITE.
 Plastic Diaphragm.

Retail Price
 50K ohms
£2/14/0
 + Sales Tax 4/9

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in on the angle the signal is arriving. My own observations have been, with disturbed propagation, a dipole can receive just as well as a beam, because the signals do not come from the same angle as under normal propagation.

V.H.F. DX-ING

Tropospheric propagation does not affect h.f. very much, but its effect can be noticed at times on 28 Mc., but more generally on 50 and 144 Mc. The best bet for v.h.f. DXers to know when this type of propagation is a possibility is to have a contact at the Met. Bureau as it is influenced by changes in temperature and humidity.

There was extreme consternation during the war on a number of radar stations located in the tropical areas when pictures, completely strange to what were expected, suddenly appeared on the screen. All sorts of major enemy activity was expected, but it was eventually traced to anomalous propagation and signals were being reflected back from land hundreds of miles outside the normal range of the radar station. This is tropical only, but v.h.f. DX.

During last sunspot maximum, predictions by F2 layer reflection reached 45 Mc. in some directions in VK, but generally v.h.f. DX is hit or miss because so many factors influence these bands. 144 Mc. is not generally affected by ionospheric reflection but is more pronounced than on 50 Mc. and range is reduced. Ionospheric bending is more prevalent on 220 Mc. and higher, but range is further reduced.

Sporadic E often assists in obtaining longer v.h.f. DX working up to 144 Mc., but it normally only occurs in summer.

V.h.f. DX working is also possible during ionospheric disturbances, the signals being affected by the intense ionisation that occurs, so you v.h.f. operators, if you know there is an ionospheric disturbance on, keep a close watch on your bands for DX.

During 1947, Radio Amateurs using 50 Mc. discovered what is now known as **Transequatorial Scatter**. By working across the magnetic equator, it was discovered this band opened up between North/South when propagation by normal means was considered impossible. JA/VK QSOs were possible by this method. This type of propagation normally occurs early in the evening.

THE CRITICAL FREQUENCY

What is the critical frequency? It is obtained by transmitting short bursts or pulses of radio energy directly upwards and having an echo returned. The I.P.S. has a special type of antenna to do this. From the result we learn two things—the height of the reflecting layer and the frequency at which there is no reflection, that is, the signal passes right through and there is no reflection. This frequency is known as the "critical" frequency and is obtained by varying the transmitted signal across a band of frequencies until one is no longer returned. Critical frequencies are highest during sunspot maximum and lowest during sunspot minimum. Except in winter, the F1 critical frequency varies much the same as the E layer. In summer a heating effect takes place in the F2 layer and F2 critical frequencies at night are much higher than in winter,

hence the reason for better night DX in summer than in winter. F2 critical frequencies are generally higher in the Asiatic and Australian regions than in Europe and the Western Hemisphere.

IONISATION

During daylight hours, when the ultra violet radiation is strongest, the ionosphere is strongly ionised. During the hours of darkness, very little radiation reaches the ionosphere from the sun. Ionisation of the D, E and F1 layers therefore increases from a very low level at sunrise—reaches maximum at noon—then decreases towards sunset. Ionisation of the F2 layer rises steeply at sunrise. This can be observed in many charts where you see the rapid rise in the m.u.f. curve round 2000 g.m.t. Maximum ionisation occurs after the sun has reached overhead and then decreases at a slower rate. After dark, F1 and F2 layers combine.

During winter daylight hours the sun is 3 million miles closer to the earth and causes a high critical frequency. During winter hours of darkness, the critical frequency falls to a low value. There is a nutshell is why 14 Mc. and above are dead, or at any rate poor, for DX at night during winter, dependent on the state of the sunspot cycle.

The intensity of ionisation varies with latitude, being considerably greater in the equatorial regions where the sun is more directly overhead. At high latitudes, the changes in the structure of the ionised layers is quite rapid when compared with the behaviour at lower latitudes. This is particularly noticeable near the Auroral Zone.

There is direct relationship between what is called the "smoothed" sunspot number and the increases in ultra violet energy.

During low sunspot activity, reflection is confined to 14 Mc. or even lower. Ionisation not only bends a wave, it causes energy to be absorbed and each bending causes more absorption of the r.f. energy. The higher the frequency, the less absorption. Whilst absorption takes place in each layer, it occurs greatest in the D layer. As sunspot activity falls, so the absorption becomes less.

Sporadic ionisation may affect the propagation of signals either favourably or unfavourably but in any case it produces the predictability of circuits and therefore the reliability of circuits.

It may reflect frequencies which would not normally be so (14 and 21 Mc. in R.D. Contest). However, it also may blanket transmissions. Its characteristics change quickly and from day to day.

Remember in multiple hop working, your signals have also to be reflected at ground level and salt water, fresh water and varying types of ground all have different effects on bending back your signal in the direction of the ionosphere. The best spot to have your antenna installed is over salt water. Confirmation of this is the results obtained by W1BB in his 1.75 Mc. work.

Ionospheric propagation is not possible on frequencies below the a.l.f. You can use the ground wave for a certain distance depending on the frequency you are using, but in general the higher the frequency, the less the

ground wave coverage. It is in this type of work power can be of great assistance.

DISRUPTION OF COMMUNICATIONS

Let us have a look at some of the things that can upset our planning to operate a certain band into a particular DX spot on a regular sked, even though the charts give the "green light".

Propagation can be disrupted by a number of causes. One is **Daylight Fadeouts** which in the polar region become polar blackouts. These daylight fadeouts cannot as yet be accurately forecast but are most likely to occur when suitable conditions, which may or may not include sunspot activity, are present on the sun. During a daylight fadeout, the higher frequencies are less affected—v.h.f. not at all. Your signal can be affected if it passes through daylight during any part of its journey to your DX station, even though both are in darkness.

A regular DXer can often observe the commencement of a daylight fadeout because of a hissing sound which commences on the band and slowly rises in intensity and then slowly dissipates. One of the most severe I ever heard occurred early in 1966 whilst listening on 7 Mc. and it was interesting to hear the comments of various stations interstate who were operating on the band at the time whose QSOs were interrupted.

These effects do not always show up on I.P.S. scientific data which is received from various observing stations throughout the world, and this occurred with this one.

Magnetic storms are another source of trouble. These set up intense current systems in the auroral zone by the arrival of particles from the sun. The drifts of ionisation caused by the interaction of the earth's magnetic field with these currents are observed as the ionospheric disturbance. These disturbances disrupt our bands by causing drastic increases in absorption and a severe decrease in the ionosphere's ability to reflect signals.

In the weekly ionospheric broadcast over VK2WI, mention is often made of solar flares. These are tremendous explosions which take place on the surface of the sun. They occur suddenly and emit vast quantities of ultra-violet energy, xrays and cosmic radiation. Much of this abnormally high radiation reaches the D band of the ionosphere where it forms a blanket of intense absorption resulting in a fade-out and at times a complete radio blackout.

If the bombardment of the ionosphere is intense enough, its effect on both the magnetic fields of the earth and the stability of the ionosphere result in magnetic storms. During ionospheric storms, the critical frequency may be reduced by as much as 50% below normal.

Although primarily affecting the F layer, the severe storms can affect the E layer, so v.h.f. propagation is not free from this problem. A severe magnetic storm has been known to disrupt cable communications. There is much less trouble from ionospheric storms during low sunspot periods.

It has been pointed out that the disturbance is usually more severe in higher latitudes with maximum in the auroral zone, and these as a rule are the first areas affected. From Eastern Australia, the main circuit paths near these zones are to South Africa, South America and the long path to London. It is also found that paths to Eastern U.S.A., Canada and the short path to London are affected to a greater extent and at an earlier stage in the disturbance than other paths in lower latitudes or across the equator.

One interesting phenomenon which active VK DXers have observed is that DX conditions become excellent just before an ionospheric disturbance commences. By this I mean that signals are much stronger than they have been days prior to this and there have been a great deal more signals coming through than we have been hearing. The following day to this observation, the bands are worse than for many days. I have discussed this with a member of I.P.S. but no reason can be advanced why this should occur. It happens too many times to be just coincidental and I am convinced it does occur.

Too much reliance should not be placed in the WWV/WWVH broadcasts in respect of propagation advice. The information they broadcast is for conditions in the North Atlantic-North Pacific area and do not necessarily apply to VK unless there is a major upset in the ionosphere. The information obtained by I.P.S. is generally by scientific instrumentation and very often happenings which are observed by actual "on the air" operation do not show up in the information they receive from world observation reports.

Radio Amateurs can be of assistance to I.P.S. by supplying any information on abnormal behaviour of our bands, but it is essential the information be supplied as soon as practicable after the occurrence. Delay of some days defeats the object of the exercise.

PRESENTATION OF PREDICTIONS

There are probably different thoughts amongst Amateurs on how they would prefer the predictions to be presented in "A.R."

I have seen different methods of presentation in overseas magazines and, in my humble opinion, the present method used in "A.R." is the easier to read and allow you to do any transposition you may wish. One can readily see how close the m.u.f. and a.l.f. curves are to the Amateur bands and arrange his operating accordingly, and of course the S.w.l. who wishes to listen to overseas broadcasts can pick the most suitable frequency for his station.

READING THE CHARTS

In compiling the prediction charts, a distance of 3,000 Km. is used as this is considered to be the maximum distance for single hop transmission using the F2 layer. As mentioned previously, we have the day-to-day variation in the F2 layer, but the day-to-day variation in other layers is small and usually ignored in predictions. At the present time, I.P.S. produce 44 charts based on Canberra, 33 on Melbourne and 19 on

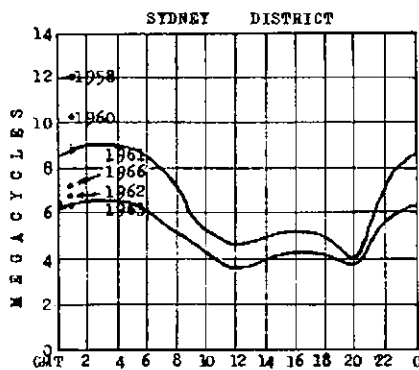


Fig 2

Perth, amongst many others, and these are being readily added to. Some of the Canberra charts have been provided at my request, the most important being the long and short paths to West Africa which have been included in the VK2 Bulletin for some years.

Do not get the idea that only long range communication is affected by the varying periods of the sunspot cycle. Fig. 2 shows a chart for the Sydney district for June and pin points the m.u.f. for six different years, not successively, but covers the last part of the old cycle and up to 1966. Two complete curves are shown but the pin point is for 0100 GMT, which is the time of the VK2WI broadcast. The minimum can be clearly seen as occurring in 1963. Much against my better judgment, the chart is prepared in E.S.T., but the point can be stressed better that way.

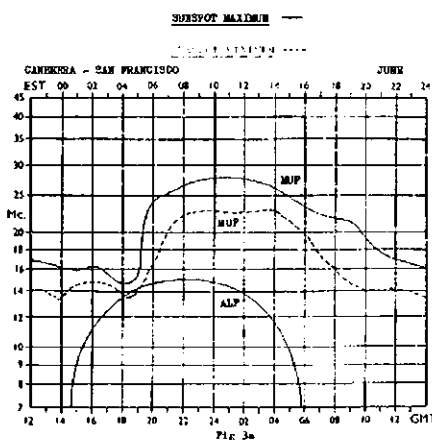


Fig 3a

inaudible in the Sydney area and many places beyond, but excellent signals were received on 3.5 Mc. In 1958 the reverse was the case except that 3.5 Mc. was audible but a poor signal and down in the noise level. One point to note is how the variation in the m.u.f. curves shown is much less during the hours of darkness, and very pronounced round sunrise.

Having earlier discussed propagation and all the things that can upset your operating, don't lose heart, because those conditions are not frequent, but they must always be considered. So let us now proceed with how to interpret the different DX charts under normal conditions.

Figs. 3a and 3b give the varying situation for Canberra to San Francisco for June and December during sunspot maximum and minimum, the dotted curve being the minimum part of the cycle. Notice that in June the curve during daytime is reasonably flat but in December this is not the case. Note also the curve does not peak at the same time of the day.

In December, the highest m.u.f. for the minimum sunspot period (dotted line) reaches 26 Mc. round 2345 GMT, whilst the peak m.u.f. for the maximum period reaches 32 Mc. round 0200 GMT. The a.l.f. exceeds 14 Mc. from 1830-0200 GMT in June and in December it happens 2130-0400 GMT.

Figs. 4a and 4b are charts for Canberra to London via long path for the same period and you will see an enormous difference in the curves for June and December both in the m.u.f. peaks and their times and the big difference in the a.l.f. curve for the different parts

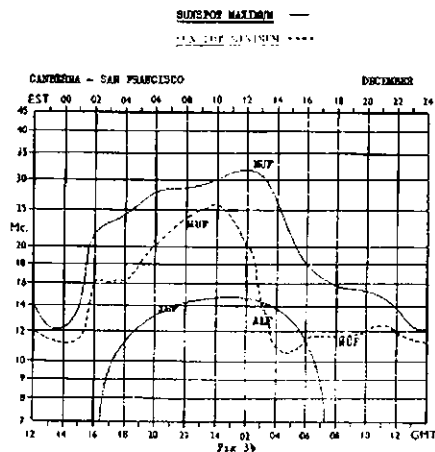


Fig 3b

At 11 a.m. in 1958 during the period of maximum sunspot activity, the m.u.f. for the Sydney district was 12 Mc., in 1960 10.5 Mc., and then in the 1963 minimum period it dropped to 6.2 Mc.

An examination of this chart will, in my opinion, very conclusively show we are in for a low sunspot maximum this cycle. How do I arrive at this conclusion you ask? From 1961 to 1963—a 2-year period—we dropped 2.6 Mc. in m.u.f. From 1963 to 1966—a 3-year period—we have only increased by 0.8 Mc. and you must remember the rise of a cycle is always faster than the fall.

This propagation of course meant during the period of low sunspot activity VK2WI broadcasts from Dural were

of the year for maximum sunspot cycle period. The a.l.f. for the December maximum period exceeds 14 Mc. from 1400-0330 GMT.

The December chart for the minimum cycle period (dotted line) is well worth a fuller examination. I will start off by saying that 21 Mc. would be open from 0900 to 1200 GMT; 14 Mc. 0900 to 1400 GMT, and 7 Mc. 0800 to 0920 GMT. How do I arrive at this?

Well I have previously said the a.l.f. exceeded 14 Mc. between 1400 and 0330 GMT. If you recall, it was previously pointed out that where the a.l.f. exceeds a particular frequency, no communication is possible on that frequency or below it by F layer reflec-

tion. You may say, "But the m.u.f. exceeds 14 Mc. with a peak at 1800 GMT." You are correct, but as the a.f. exceeds 14 Mc. at that time, the m.u.f. is useless—but, you could use 15 Mc. at 1800 GMT for 2 hours and 16 Mc. for probably 15 minutes whilst the curve is round 16 Mc. The a.f. falls below 14 Mc. at 0330 GMT so you may think that 14 Mc. would then become open as the absorption is down. This is not so as the m.u.f. at 0330 GMT is only just above 12 Mc. and therefore 14 Mc. is still unusable and the m.u.f. curve does not reach 14 Mc. until

the maximum period the m.u.f. reached 36 Mc. Another interesting point is that at the period 1900 to almost 0400 GMT, the m.u.f. curve for sunspot minimum is higher than the m.u.f. for the sunspot maximum. During minimum period we get a variation of m.u.f. in the 24 hours of 9.5 Mc. at 1700 GMT to 21 Mc. at 0700 GMT—11.5 Mc., whilst for the maximum period for the 24 hours we have a variation from 9.5 Mc. at 2000 GMT to 36 Mc. at 0700 GMT—26.5 Mc. which is almost two and a half times as much as the minimum.

Due to ionospheric variations, let us use a hypothetical set of circumstances in which the a.f. does not reach 14 Mc. but remains just below. This now makes a difference to our 14 Mc. opening during the minimum (dotted line) period. 14 Mc. now will be open from 0900 GMT to 2000 with a doubtful period at 1630 GMT caused by that dip in the m.u.f. to 14 Mc.

For the sunspot maximum (full line) period, the drop below 14 Mc. in the a.f. makes an enormous difference to 14 Mc., which now becomes open from 0715-0415 GMT, the period from 0415-0715 when the band is out is when the m.u.f. drops below 14 Mc. Let us carry the make believe a little further and assume the m.u.f. is above predictions and exceeds 14 Mc. from 0415 to 0715 GMT. So we have the a.f. sitting below 14 Mc. and the m.u.f. above for a full 24-hour period, and this means of course a continuous long path opening on 14 Mc. to London. But for part of that 24 hours, high power and high gain beaming would be necessary due to the a.f. being close to 14 Mc.

EFFECT OF LATITUDE AND LONGITUDE

With the use of Fig. 6, I hope to make the point clearer where I said that the m.u.f. varies greatly for varying latitude and longitude. Four different locations or terminals are shown, one each to North, South, East and West of Canberra. They are for the same period, and for the purpose of the exercise, they are being treated as the same distance from the Canberra terminal.

The period is for December 1965 and the four terminals are Lae, Macquarie Island, Auckland, and Perth.

Looking at the North/South chart, the a.f. rises above 7 Mc. at the same time, 0600 EST, and closes at 1800 EST but notice how the absorption is much greater on the Northern path than on the Southern. Why? Because the sun is more overhead in the North. You could work 14 Mc. to Macquarie Island (dotted line) for almost 24 hours a day because the a.f. does not reach 14 Mc. and the m.u.f. only falls below 14 Mc. between 0200-0430 EST. The path to Lae is an entirely different story. The a.f. exceeds 14 Mc. (no opening) between 0930-1400 EST. Whilst the absorption is at its peak on this circuit,

almost 0900 GMT and it rises rapidly to reach 22 Mc. at 1000 GMT, so you now have 14 and 21 Mc. open up rapidly, and the m.u.f. then slowly falls to 21 Mc. at 1200 GMT. It reaches just above 14 Mc. at 1630 GMT but the a.f. exceeds 14 Mc. from 1400 GMT. The a.f. continues to fall to below 7 Mc. at 0800 GMT and returns to 7 Mc. at 0930 GMT, allowing a long path opening on 7 Mc. between 0800-0930 GMT.

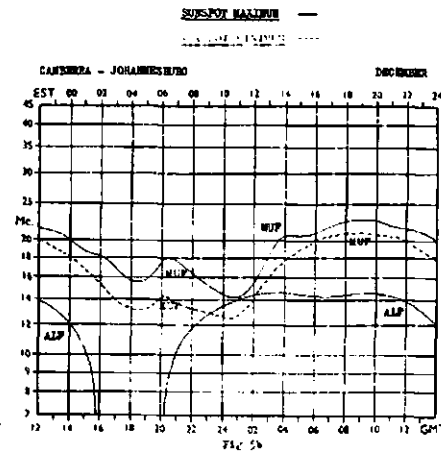
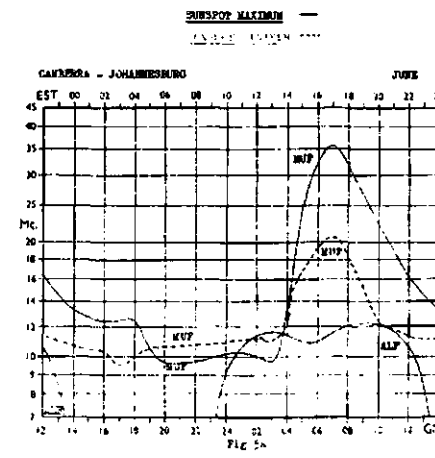
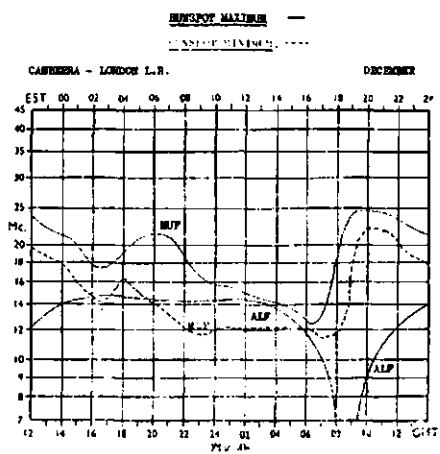
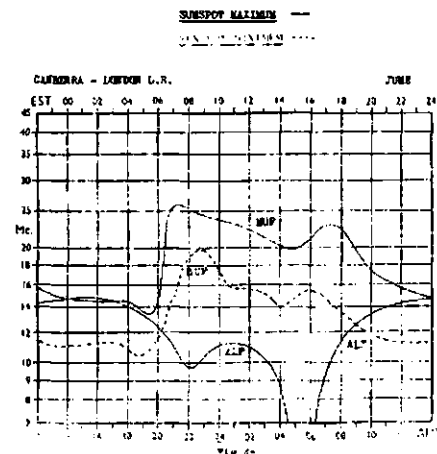
By looking closely at the chart, still Fig. 4b, you should be able to readily see that at 0900 GMT it is possible to use 7, 14 and 21 Mc. (use the dotted m.u.f. curve), but for only a brief period of 15 minutes. The reason for the very brief 3-band opening is that 21 Mc. does not open until just after 0900 GMT and 7 Mc. closes at 0915. 14 Mc. will close at 1400 GMT.

On the June chart, Fig. 4a, and using the sunspot minimum (dotted curve), 7 Mc. will be open 0430-0615 GMT because the a.f. falls below 7 Mc. for that period and this is when the phone boys, disregarding the gentlemen's agreement, are most unpopular with the c.w. boys, because these openings do occur whilst many think 7 Mc. DX does not appear until towards sundown. 14 Mc. opens 2045-0730 GMT with a doubtful period round 0400 GMT when the m.u.f. drops to 14 Mc. and then rises again. The closest we get to a 21 Mc. opening is at 2230 GMT when the m.u.f. is just below 20 Mc.

A further indication of June and December variation is shown in Figs. 5a and 5b. Note the enormous difference in m.u.f. at 0700 GMT in June (Fig. 5a) for sunspot maximum and minimum periods. The m.u.f. for the minimum period (dotted line) is 21 Mc. whilst

Looking at the chart for 7 Mc. working, we find the minimum (dotted line) period gives a 7 Mc. opening from 1330-2315 GMT and believe it or not, this is longer than 14 Mc. will be open. 14 Mc. is only open from 0400-0900 GMT. 21 Mc. may or may not open as the peak only just reaches 21 Mc. at 0700 GMT. Whether we get an opening and for how long will depend on the behaviour of the critical frequency. At no time in June does the a.f. reach 14 Mc. yet in December, Fig. 5b, it exceeds 14 Mc. from 0100-1145 GMT.

If you like to take a piece of transparent paper and lay it over the various charts, Figs. 3, 4 and 5, you will get some idea of what variations occur in direction, part of the cycle and time of the year. All right, let us now return to Fig. 4b.



the m.u.f. reaches 31 Mc., which is 12 Mc. higher than the m.u.f. to Macquarie Island. So you can readily see the enormous variation in daytime working for your North/South path.

Now what is taking place on the East/West path? The first thing that should be apparent is the time zone difference between the two terminals, which reading from the chart is 3 hours approximately. One could probably be excused for expecting the a.l.f. curve, allowing for the time difference, to be the same for these two terminals, but as you can see, the a.l.f. for Auckland (dotted line) does not exceed 11 Mc.,

the m.u.f. approximately 1 Mc. higher. With this chart you will see the a.l.f. does not drop below 10 Mc. at any time, therefore there will be no 7 Mc. opening. 14 Mc. would be open for 24 hours except for a brief period 1600-1700 GMT, when the a.l.f. and m.u.f. sit around 14 Mc. There would be two brief openings on 21 Mc. from 0001 GMT to 0400 GMT and a touch and go at 1100 GMT.

Look at the enormous transformation that has occurred for six months either side of December 1964. Here we will be very lucky if we get a 14 Mc. opening at all, because the m.u.f. just

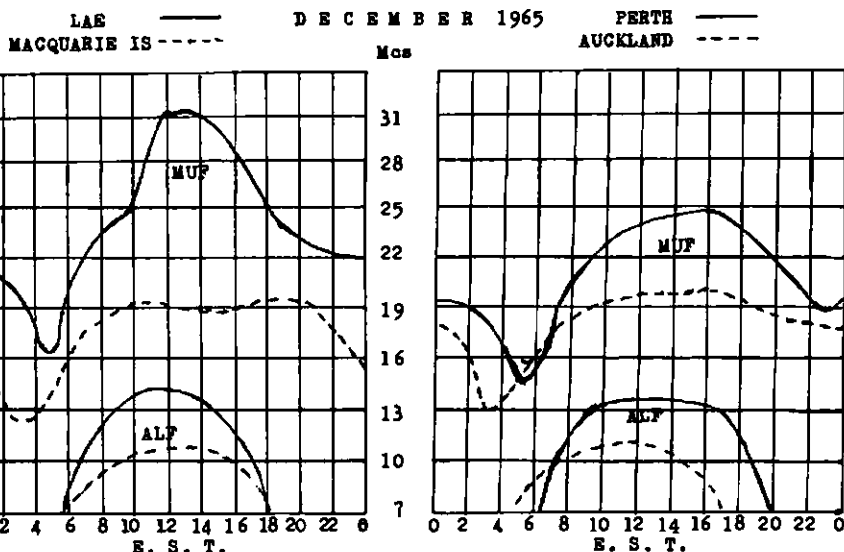


Fig. 6

whereas the one for Perth reaches 14 Mc. and of course closes 14 Mc. to Perth during that period. The m.u.f. follows a similar pattern to the a.l.f., that for Perth peaking at almost 25 Mc., whilst Auckland (dotted line) reaches 20 Mc. Another interesting point to observe is that the m.u.f. curve for Auckland is reasonably flat during the day but the one for Perth is not.

It should be fairly obvious by now that to maintain a circuit to each of these points from Canberra on the same frequency at the same time would be extremely difficult. Remember that for a satisfactory five-way QSO each must be able to hear the other and this would be almost impossible when you consider that Lae is twice as far from Macquarie Island as from Canberra and skip will be altogether different. You can give yourself an exercise and work out a time for working the other four from Canberra. My choice would be 14 Mc. at 0600 EST, hoping that the m.u.f. to Perth would not be below predictions.

RIO DE JANEIRO

Earlier I mentioned that the charts to Rio de Janeiro were often interesting and Fig. 7 shows three charts for different periods and they can be applied to other years as will be mentioned shortly.

Fig. 7a gives the chart for December 1964 and checking the charts for the same time of 1963 and 1965, I find the curve follows a similar pattern with

reached 14 Mc. at 2200 GMT. In reverse we have two 7 Mc. openings, one from 0600-1100 GMT and also 1500-1730 GMT. The a.l.f. falls below 7 Mc. at these times.

For the same period in June 1963 and 1966, the only variation is that the peak exceeds 14 Mc. and reaches 17 Mc. for three hours and we get a little longer opening on 7 Mc.

In Fig. 7c you see how variable the curve becomes in the Equinox. We lose the smooth flowing curve of the December and June period and for September 1966, there is a brief 21 Mc. opening at 2200-2300 GMT and only one 7 Mc. opening which occurs at 0700-1000 GMT. No band is open between 1200-2100 GMT.

For September 1965, the m.u.f. was 4 Mc. lower and in September 1964, 5 Mc. lower, so you see in the Equinox you get more m.u.f. variation for this circuit.

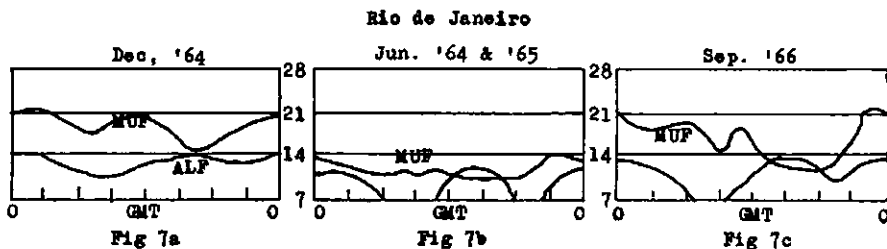


Fig 7a

Fig 7b

Fig 7c

PREDICTIONS FOR OTHER PARTS OF AUSTRALIA

Although it is not very successful to show in a small scale drawing, with Fig. 8, I have attempted to show the variations that do occur in propagation for Canberra and Perth to the same terminal, and have used Johannesburg, short route to London, and San Francisco for which there is only one chart.

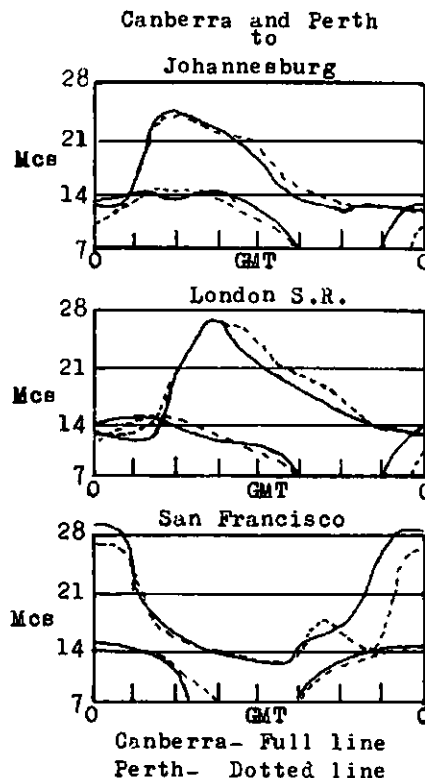


Fig. 8

As I mentioned earlier, there is not such an enormous difference between the terminals each side of the Australian continent. To fully show this aspect, it would take many diagrams covering circuits to various DX points and different times of the year, cycle, etc. But I think you should be able to see that the VK6 boys can use the charts shown in "A.R." with some degree of certainty. The diagrams shown are all for October 1966, Canberra being the full line and Perth the dotted.

Whilst predictions for Melbourne show a very similar pattern to those for Canberra, in practice I find at times there is quite a difference in the DX working between Sydney and Melbourne.

(Continued on Page 12)

5 WATTS S.S.B.—HOME-BREW WITHOUT HANGOVER

GREG JOHNSTON, B.Sc.

HAVING somewhat of an oversupply of twin triodes, five only crystals on 5327 Kc. and in anticipation of the day when I am able to convince the powers that be that I am fit to take out a call sign of my own, the "idle" (?) hands were bent towards a first rig which as the caption shows turned out to be "the thing." PanSy won't refer to me in any shape or form now!

However, levity aside, this exciter, which was first air-tested by local sidebender VK7KC, was so simple to get going with a minimum of complications in the around the filter circuitry especially, that pen was put to paper.

It is emphasised that my test equipment set-up comprises only a g.d.o., and for this project a vintage general coverage receiver capable of tuning the desired v.f.o. ranges. On air comments heard from time to time tend to indicate that many an OM has not "got with the strength" because he doubts his own ability to home-brew s.s.b. equipment and lacks the db's to buy commercial gear. Let's face it, if an s.w.l. like me can build, anyone with a ticket can.

THE FILTER

As can be seen, the filter consists of four crystals in a cascaded half lattice arrangement with a bifilar wound toroid in parallel across the two sections. Cathode follower audio input to the filter removes the need for the complications of impedance matching input inductances and makes a most worthwhile saving in terms of time

and trouble while no great circuit losses are introduced. The high impedance coupling into the 6BA6 grid after the filter, although theoretically wrong, produces the desired results.

The filter was constructed on two pieces of matrix board, approximately 2" x 2" and the crystal sockets fabricated by sandwiching pins from an ancient p.t.f.e. octal socket between the two pieces of matrix. The holes already in the matrix board are very close to the spacing necessary for FT243 crystals. Normal FT243 crystal sockets were not used due to the complications they often introduce through stray capacitance, which is minimised in the suggested arrangement.

The next step was to find something to support the toroid and trimmer—an i.f. transformer (ex BC453) was used here. These i.f.t.'s have a very nice trimmer of about 25 pF. built into them as well as a set of four pillars of just the right height supporting them. The pillars and trimmer were retained and the rest of the i.f. scrapped. The pillars fit very neatly down the outside of the filter crystals when they are mounted on the matrix board, leaving adequate clearance over the top of the crystals to mount the toroid and trimmer.

As mentioned earlier, a set of five crystals nominally on 5327 Kc. were obtained ex surplus. Two of these were on the same frequency exactly, two others were within a couple of hundred cycles of each other about 1 Kc. higher, while the fifth was somewhere between. This last one was retained for use as a carrier crystal while the two higher ones were etched by Lee VK7KC to 2 Kc. exactly above the low frequency pair. Lee provided the gear to measure the frequency exactly and also did the measuring.

After resonating the toroid roughly to frequency (filter) with a link off the g.d.o., the filter pass band was adjusted by feeding the output from a converter through the filter into a BC454 i.f. and adjusting the filter trimmer for best sounding passband on an 80 metre s.s.b. signal. This point also coincided with best passband for s.s.b. transmission. Note, no sweep generators and such used!

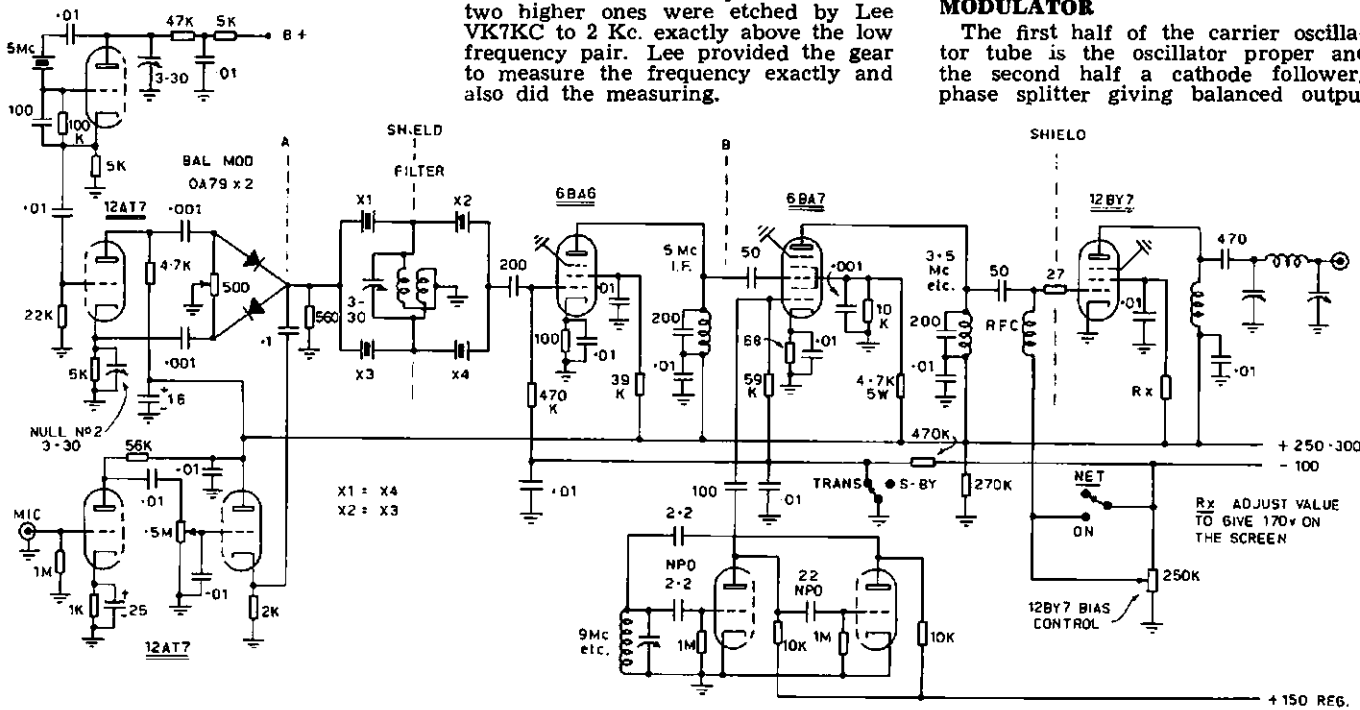
Adjustment of the carrier crystal was made by trial and error loading of the carrier crystal with pencil lead to a point just below the low frequency filter crystals. The appropriate point will be noted by monitoring the balanced modulator output in the general coverage receiver for best audio quality. I took the carrier crystal frequency too low twice before striking the correct position, but it is no trouble to scrub the pencil lead off the crystal with an old toothbrush.

SHIELDING

Under chassis shields were used in two places on the 6 x 4 inch exciter sub-chassis. One shield runs across the centre of the filter and shields the audio and carrier oscillator sections from the 6BA6, 6BA7 and filter output, while the other shield runs between the 12BY7 and the remainder of the circuit. Carrier suppression was not degraded by leaving the filter unshielded above chassis and no other peculiar effects were noted.

CARRIER OSCILLATOR, BALANCED MODULATOR

The first half of the carrier oscillator tube is the oscillator proper and the second half a cathode follower/phase splitter giving balanced output



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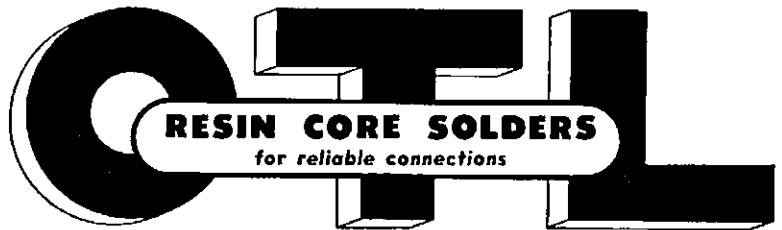
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into the balanced modulator. C1 in the plate circuit of the oscillator section can be a 3-30 pF. Philips trimmer which will allow some small adjustment of carrier crystal frequency to get it right "on the nose". The Philips trimmer in the cathode circuit of the phase splitter section is adjusted for correct phase relation which will show as a distinct extra null in carrier after the balanced modulator.

The carrier balance pot. should be around 500 ohms w.w., else the carrier null adjust will be too critical. The diodes used here were OA79s matched with the multimeter for approximately equal forward and back resistance. In practice, any similar low-signal diodes will be quite adequate.

AUDIO SECTION

Three types of tube having identical base connections have been tried here and all give good results. The types tried were 12AU7, 12AV7 (E180CC) and 12AT7. With the high output microphone used the 12AU7 gave adequate drive and the 12AT7 more than adequate. The 12AV7 gave slightly less drive than the 12AT7.

12BY7 P.A.

As shown in the circuit the design is as simple as possible. In this arrangement the tube is adjusted to run in Class AB1 with a resting plate current of 5 mA. with the bias pot. In my own exciter, —4 volts bias limits the plate current to this value when the carrier is nulled out and no audio drive applied. With tone input the plate current runs to 15 mA. with 170 volts on the screen and 300 on the plate.

With these voltages the average plate dissipation of the 12BY7 is just exceeded at 15 mA. plate current—this value is not reached on voice peaks.

The pi-network output enables the exciter to be used barefoot as a QRP rig or an exciter for a high power final.

V.F.O.

As shown, the v.f.o. is a Franklin which produces quite adequate conversion voltage from a 150 volt regulated supply with a very high order of stability and it possesses an added advantage in that a two-terminal coil is used. All condensers shown are NPO ceramic types. Once again 12AU7, 12AV7 and 12AT7 may be used interchangeably with virtually identical results.

T/R SWITCHING AND KEYING

This is very simply accomplished by grid block biasing of the 6BA6 i.f. and 6BA7 mixer, the —4 volts bias on the 12BY7 being sufficient to cut the tube off when drive is absent. A separate netting switch which applies —100 volts to the 12BY7 will prevent this tube from conducting when the main function switch is in the transmit position—the signal from the 6BA7 being at an adequate level for netting purposes. C.w. operation is possible by inserting carrier and grid block keying the exciter—the keying circuit being placed in parallel with the T/R function switch.

TRANSCIVER OPERATION

This has not yet been attempted, but is contemplated. The low noise front end described in an earlier article could be fed into the transmitter at point A and 5 Mc. output taken off at point B and fed into a further 5 Mc. i.f. stage. With small modification the carrier oscillator could be used as the b.f.o. for the receiver section and the v.f.o. for the conversion oscillator.

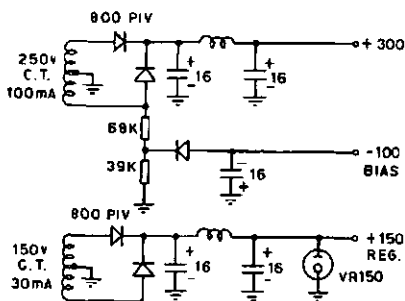
GENERAL

With the carrier crystal on the low frequency side of the filter the correct sideband is automatically selected if the v.f.o. is on the following frequencies:—

	V.f.o.	Sideband
80 Metres	8.8 Mc.	Lower
40 "	12.2 Mc.	Lower
20 "	8.8 Mc.	Upper
15 "	15.8 Mc.	Upper
10 "	22.8 Mc.	Upper

The r.f. chokes shown are 2.5 mH. receiver types and they are quite adequate in the positions shown—none of those distressing clouds of smoke having appeared as yet.

It was found very helpful to test each section of the exciter as it was wired. In my own case all wiring up to the balanced modulator output was completed and the quality, carrier null, etc., checked out on the receiver at 5 Mc. before proceeding. Successive test points thereafter were after the filter, 6BA6 plate, etc. It will be found that the single 5 Mc. i.f. winding in the 6BA6 plate is very sharp with output dropping very sharply either side of resonance—a slug tuned former (I used 24 turns on $\frac{1}{4}$ inch) is a must here.



"5 WATTS SSB" POWER SUPPLY

Alignment of the completed unit is quite simple with a dummy load such as a standard torch globe connected to the 12BY7 tank, insert carrier and tune the 6BA7 and 12BY7 plate coils for maximum plate current on the 12BY7. With the voltages mentioned and with the grid bias to the 12BY7 set at approximately —4 volts, the plate current at 3.5 Mc. should be around 12 mA. The peak should be sharp and at this stage the dummy load lamp almost burning out.

On nulling the carrier, the dummy load will extinguish before the maximum plate current null is observed so the carrier balance is set to a point where minimum plate current (about 5 mA.) is flowing without audio drive. Having reached this point, final carrier nulling is best performed by switching to the net position and monitoring the

precise point of best carrier suppression on the receiver as it will be found that the plate current meter lacks adequate sensitivity for final adjustment.

At this stage things should be ready for final testing. Switch to transmit, make a noise like "one, two, three" or similar with the stage before the mike and see if the plate meter kicks and the p-lamp dummy load lights up on modulation. If this happens OK, then zero beat what carrier remains (with r.f. and i.f. gains backed off) on the receiver set to s.s.b. receive condition—you should be able to resolve the duck talk easily. If you can't, and the speech sounds distorted, then increase the 12BY7 operating bias gradually until a point of clear intelligibility and easy resolution is reached. Note the standing plate current at this stage as this is the appropriate value.

One note of warning, if you run the v.f.o. and 12BY7 screen off the same regulated supply, make sure it is a very stiff one, as even slight v.f.o. pulling on modulation will reduce the modulation to unintelligibility.

So far reports from on-air tests conducted by Lee VK7KC have been quite favourable, although the 2 Kc. filter bandpass may be too narrow for the hi-fi enthusiasts. However, it is hoped that my novice efforts will demonstrate the results which can be achieved with some assistance, a g.d.o., multimeter, five crystals, limited brain bandpass and a bit of spare time as well as provide the small push needed to get some of the a.m. thinkers started on s.s.b. Meanwhile VK7KC gets a spare exciter and I get back to the c.w. tapes.



MORE YO AWARDS

YO-25M—WORKED MERIDIAN 25

There are needed contacts with Amateur stations of the countries located on the 25th meridian:
Europe: LA, OH, UP2, UQ2, UR2, UC2, UB5, YO, LZ, SV.
Africa: 5A, SU, TT8, ST, TL8, 9Q5, 9J2 (VQ2), ZE, ZS1, 2, 4, 5, 6.

Class III., 6 contacts with 6 countries; Class II., 12 with 12; Class I., 18 with 18. One contact with each country. A YO contact is obligatory in all cases. Valid contacts after 1/1/60.

YO-40 BY 40—WORKED 40 YO ON 40 MX

There are needed 40 two-way contacts with 40 YO stations on 40 mx band (7 Mc.) after 1/1/60. A YO station may be worked but once.

YO-46P—WORKED PARALLEL 45

There are needed contacts with Amateur stations of the countries located on the 45th parallel:
N.A.: W7, W0, W9, W8, VE3, W1, VE1, FP8.
E.: F, I, YU, YO, UB5, UA1, 3, 4, 6.
A.: UL7, U18, JT1, BY-BV, UA0, JA.
Class III., 6 contacts with 6 countries; Class II., 12 with 12; Class I., 18 with 18. One contact with each country. A YO contact is obligatory in all cases. Valid contacts after 1/1/60.

YO-80 BY 80—WORKED 80 YO ON 80 MX

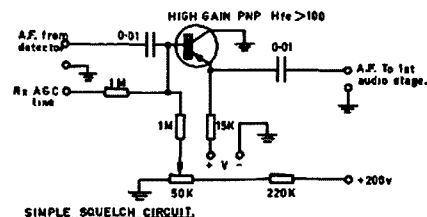
There are needed 80 two-way contacts with 80 YO stations on 80 mx band (3.5 Mc.) after 1/1/58. A YO station may be worked but once.

YO-100—WORKED 100 YO ON ALL BANDS

There are needed 100 two-way contacts with 100 different YO stations made on one, or several Ham bands, after 1/1/60. A YO station may be worked but once. DX stations may work the same YO station, but on different bands.

SIMPLE SQUELCH CIRCUIT

This circuit should be of interest to those who want to listen on a net frequency without the annoyance of a continuous background hiss. Only one transistor and a few resistors and capacitors are used, enabling this circuit to be fitted to an existing receiver without occupying too much space.



As it stands, the circuit is most suitable for incorporating in a valve receiver. The voltage V can be obtained from the cathode of the audio output tube, or from a voltage divider off the h.t. line supplying between 5 and 15 volts.

Under no signal conditions, there is little or no voltage on the a.g.c. line and a reverse bias is obtained from the 50K potentiometer to just cut the transistor off. When a signal is present, the voltage on the a.g.c. line provides forward bias to switch the transistor on and allow the signal through the transistor. The common collector configuration provides approximately unity voltage gain and a high input impedance. Some distortion is introduced by the circuit, but this can be minimised by a very high gain transistor and a voltage V of 12 to 15v. (or higher, depending on the voltage rating of the transistor). This will allow the transistor to switch on at a low signal strength and allow a wide excursion of the transistor operating point without bottoming at high signal strength.

—Reprinted from West Australian V.h.f. Group News Bulletin, August 1966.

★

Propagation of Amateur Signals

(Continued from Page 8)

SUMMARY

Those who have shown any great interest in what has been written will probably say, "But what about this, that or something else?" I can only reiterate what I said in the beginning, that this is an enormous subject, about which there is still much to be learned, and which I have left unsaid.

If there is something any Amateur would like dealt with or amplified further, let the Magazine Committee know and I am sure they would pass the request on and I will see what can be done. If it is beyond my limited knowledge, I know that the Ionospheric Prediction Service in Sydney would help where possible.

ACKNOWLEDGMENTS

The Sunspot Story printed in "CQ".
The Ionospheric Prediction Service, Sydney.

AMATEUR FREQUENCIES:

USE THEM OR LOSE THEM!

DO YOU QSL?

Or are you one of those who like to receive better than to give? A QSL, in our opinion, is a Statute of Ham Radio. It stands for a contact you have made with a new or old friend, who may live near or far. A QSL may represent a contact that you may make just once and never make again because of death, sickness or just QRM and band conditions. Some may have their QSLs on a wall of their shack, while others prefer to keep them in files, or in a scrap book. It is something to look at in the years to come, as perhaps a remembrance of some message you have handled to make a few hearts beat nearer to each other, or a contact you have spent many hours at trying to make points, or a QSO perhaps in the wee hours of the morn when you could not sleep. QSLs represent a hobby that gives young and old, all races and creeds, many hours of enjoyment. A hobby that is not just for the able bodied, but the blind and crippled as well.

Remember the new Hams just getting on the air for the first time are as pleased to receive those cards now as you were. A promise that you will have one in the next mail just to receive one yourself is a flaw in your character.

Let us all try to live up to the proverb, "Do unto others as you would have them do unto you."

Don't send your cards down just in a parcel all mixed up, and say to yourself someone else can do the sorting. Just think before you parcel them up by doing the following: Put your QSL sticker on the back of the card, then the Call Sign to whom you are sending it too, then the most important part is to put your cards in "alphabetical order". By doing this you will be helping those people who do the work for you. Also another most important point is to print the Call Sign as some hand writing is hard to decipher.

Points to remember are:—

- (1) Put your sticker on the card.
- (2) Put the Call Sign on the back to whom it has to be sent to.
- (3) Sort into country order.
- (4) Alphabetical order.
- (5) Print or write clearly.

(With acknowledgment to S.A.R.L. (Durban) "CQ News Letter".)

W.I.A. D.X.C.C.

Listed below are the highest twelve members in each section. Position in the list is determined by the first number shown. The first number represents the participant's total countries less any credits given for deleted countries. The second number shown represents the total D.X.C.C. credits given, including deleted countries. Where totals are the same, listings will be alphabetical by call sign.

Credits for new members and those whose totals have been amended are also shown.

PHONE	
VK3AHO 310/322	VK4HR 261/277
VK5MS 309/330	VK2JZ 259/288
VK5AB 300/314	VK3TL 241/245
VK6MK 288/315	VK2ADE 223/237
VK6RU 286/318	VK2AAK 221/225
VK4FJ 273/290	VK2APK 217/220
New Members:	
VK6GX 101/101	VK6XX 110/110
VK4FX 108/109	
Amendments:	
VK3SM 117/119	VK2AGH 108/118
C.W.	
VK3KB 317/340	VK2AGH 276/289
VK2ADE 291/313	VK3AHQ 276/288
VK3CX 281/312	VK3NC 266/286
VK3QL 288/308	VK3ARX 261/269
VK4FJ 286/308	VK6RU 251/272
VK2EO 279/300	VK3XB 248/261
Amendments:	
VK3YL 239/256	VK3KS 203/209
VK3RJ 231/244	
OPEN	
VK2ADE 305/328	VK4HR 279/301
VK2AGH 305/323	VK2ACX 276/300
VK6RU 301/324	VK3ARX 270/278
VK6MK 300/317	VK3NC 287/287
VK4FJ 282/314	VK3JA 285/283
VK2VN 285/300	VK3TL 280/284
New Member:	
VK4CK 103/104	
Amendments:	
VK2SG 161/165	VK4PX 143/148

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AUSTRALIAN DX CENTURY CLUB AWARD

OBJECTS

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

REQUIREMENTS

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

OPERATION

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

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

VERIFICATIONS

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

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

APPLICATIONS

- 5.1 Applications for membership shall be addressed to the Federal Awards Manager, Box 2611W, G.P.O., Melbourne, Vic., accompanied by the verifications and the check list with sufficient postage enclosed for their return to the applicant, registration being included if desired.
- 5.2 A nominal charge of 2/6, which shall also be forwarded with the application, will be made for the issue of the certificate to successful applicants who are non-members of the Wireless Institute of Australia.
- 5.3 Successful applicants will be listed periodically in "Amateur Radio". Members of the D.X.C.C. wishing to have their verified country totals, over and above the one hundred necessary for membership, listed will notify these totals to the Federal Awards Manager.
- 5.4 In all cases of dispute, the decision of the Federal Awards Manager and two officers of the Federal Executive of the W.I.A. in the interpretation and application of these Rules shall be final and binding.
- 5.5 Notwithstanding anything to the contrary in these Rules, the Federal Council of the W.I.A. reserves the right to amend them when necessary.

AUSTRALIAN V.H.F. CENTURY CLUB AWARD

OBJECTS

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

REQUIREMENTS

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

OPERATION

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

VERIFICATIONS

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

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

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

APPLICATIONS

- 5.1 Applications for membership shall be addressed to the Federal Awards Manager, Box 2611W, G.P.O., Melbourne, Vic., accompanied by the verifications and the check list with sufficient postage enclosed for their return to the applicant, registration being included if desired.
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- 5.5 Notwithstanding anything to the contrary in these Rules, the Federal Council of the W.I.A. reserves the right to amend them when necessary.

AUSTRALIAN D.X.C.C. COUNTRIES LIST

	Phone	C.W.		Phone	C.W.
AC3	Sikkim		FR7	Tromelin Is.	
AC4	Tibet		FS7	Saint Martin	
AC5	Bhutan		FU8, YJ1, 8	New Hebrides	
AP	East Pakistan		FW8	Wallis & Futuna Is.	
AP	West Pakistan		FY7	Fr. Guiana & Inini	
BV (C3)	Formosa		G	England	
BY (C)	China		GC	Guernsey and Deps.	
CE	Chile		GC	Jersey I.	
CE9, KC4, LU-Z, VK0, VP8, ZL5	etc., Antarctica		GD	Isle of Man	
CE0A	Easter I.		GI	Northern Ireland	
CE0X	St. Felix I.		GM	Scotland	
CE0Z	J. Fernandez Arch.		GW	Wales	
CM, CO	Cuba		HA	Hungary	
CN2, 8, 9	Morocco		HB	Switzerland	
CP	Bolivia		HC	Ecuador	
CR3	Portuguese Guinea		HC8G	Galapagos Is.	
CR4	Cape Verde Is.		HB0 (HE)	Liechtenstein	
CR5	Principe, Sao Thome		HH	Haiti	
CR6	Angola		HI	Dominican Rep.	
CR7	Mozambique		HK, 5J	Colombia	
CR8, 10	Port. Timor		HK0	Arch. of San Andres and Providencia	
CR9	Macao		HK0	Bajo Nuevo	
CT1	Portugal		HK0	Malpelo Is.	
CT2	Azores		HL, HM	Korea	
CT3	Madeira Is.		HP	Panama	
CX	Uruguay		HR	Honduras	
DJ, DL, DM	Germany		HS	Thailand	
DU	Philippine Is.		HV	Vatican	
EA	Spain		I1, IT1	Italy	
EA6	Balearic Is.		IS1	Sardinia	
EA8	Canary Is.		JA, KA	Japan	
EA9	Ifni		JT1	Mongolia	
EA9	Rio de Oro		JY	Jordan	
EA9	Spanish Morocco		K, W	U.S.A.	
EA0	Spanish Guinea		KA0, KG61	Bonin & Volcano Is.	
EI	Rep. of Ireland		KB6	Baker, Howland and Am. Phoenix I. (inc. Canton I.)	
EL	Liberia		KC4	Navassa I.	
EP, EQ	Iran		KC6	Eastern Caroline Is.	
ET2, 3, 9E	Ethiopia		KC6	Western Caroline Is.	
F	France		KG4	Guantanamo Bay	
FB8	A'dam & St. Paul Is.		KG6	Guam	
FB8	Crozet Is.		KG6	Marcus I.	
FB8	Kerguelen Is.		KG6 (Rota, Tinian, Saipan, etc.)	Mariana Is.	
FC	Corsica		KH6	Hawaiian Is.	
FG7	Guadeloupe		KH6	Kure I.	
FH8	Comoro Is.		KJ6	Johnston I.	
FK8	New Caledonia		KL7	Alaska	
FL8	Fr. Somaliland		KM6	Midway Is.	
FM7	Martinique		KP4	Puerto Rico	
FO8	Clipperton I.		KP6	Palmyra Group, Jarvis I.	
FO8	Fr. Oceania		KR6	Ryukyu Is.	
FO8	Maria Theresa		KS4B	Ser'na Bank & Roncad Cay	
FP8	St. Pierre & Miq. Is.		KS4	Swan Is.	
FR7 (from 25/6/60)	Glorioso I.		KS6	American Samoa	
FR7 (from 25/6/60)	Juan de Nova and Europa Is.		KV4	Virgin Is.	
FR7	Reunion I.				

	Phone	C.W.		Phone	C.W.
KW6	Wake I.		UG6	Armenia	
KX6	Marshall Is.		UH8	Turkoman	
KZ5	Canal Zone		UI8	Uzbek	
LA	Bouvet I.		UJ8	Tadzhik	
LA, JX	Jan Mayen		UL7	Kazakh	
LA	Norway		UM8	Kirghiz	
LA, JW	Svalbard		UO5	Moldavia	
LU	Argentina		UP2	Lithuania	
LX	Luxembourg		UQ2	Latvia	
LZ	Bulgaria		UR2	Estonia	
MP4B	Bahrein		VE, VO	Canada	
MP4Q	Qatar		VK	Australia	
MP4D, T	Trucial Oman		VK2	Lord Howe Is.	
OA	Peru		VK4	Willis Is.	
OD5	Lebanon		VK9	Christmas I.	
OE	Austria		VK9, ZC3	Cocos Is.	
OH	Finland		VK9	Nauru I.	
OH0	Aland Is.		VK9	Norfolk I.	
OK	Czechoslovakia		VK9	Papua Terr.	
ON4	Belgium		VK9	Terr. of New Guinea	
OX, KG1, XP	Greenland		VK0	Heard I.	
OY	Faeroes		VK0	Macquarie I.	
OZ	Denmark		VP1	British Honduras	
PA0, P11	Netherlands		VP2	Anguilla	
PJ	Neth. West Indies		VP2	Antigua, Barbuda	
PJ2M	Sint Maarten		VP2	Br. Virgin Is.	
PX	Andorra		VP2	Dominica	
PY	Brazil		VP2	Grenada & Deps.	
PY0	Fernando de Noronha		VP2	Montserrat	
PY0	St. Peter & Paul Rocks		VP2	St. Kitts, Nevis	
PY0	Trindade & Martin Vaz Is.		VP2	St. Lucia	
PZ1	Netherlands Guiana		VP2	St. Vincent & Deps.	
SL, SM	Sweden		VP3	(see 8R)	
SP	Poland		VP4	Trinidad & Tobago	
ST2	Sudan		VP5	Turks & Caicos Is.	
SU	Egypt		VP6	Barbados	
SV	Crete		VP7	Bahama Is.	
SV	Dodecanese		VP8	Falkland Is.	
SV	Greece		VP8, LU-Z	South Georgia	
TA	Turkey		VP8, LU-Z	South Orkney Is.	
TF	Iceland		VP8, LU-Z	South Sandwich Is.	
TG	Guatemala		VP8, LU-Z, CE9	Sth. Shet. Is.	
TI	Costa Rica		VP9	Bermuda Is.	
TI9	Cocos I.		VQ8	Agalega & St. Brandon	
TJ (FE8)	Cameroon Rep.		VQ8	Chagos Is.	
TL8 (from 13/8/60)	Cen. Afric. R.		VQ8	Mauritius	
TN8 (from 15/8/60)	Congo Rep.		VQ8	Rodriguez I.	
TR8 (from 17/8/60)	Gabon Rep.		VQ9	Aldabra Is.	
TS (3V8)	Tunisia		VQ9D (from 10/11/65)	Desroches	
TT8 (from 11/8/60)	Chad Rep.		VQ9F (fr. 10/11/65)	Farquhar Is.	
TU2 (fr. 7/8/60)	Ivory Coast Rep.		VQ9	Seychelles	
TY2 (fr. 1/8/60)	Dahomey Rep.		VR1 (includ. Canton Is.)	British Phoenix Is.	
TZ2 (from 20/6/60)	Mali Rep.		VR1	Gilbert & Ellice Is., Ocean Is.	
UA, UV, UW1-6, UN1	Eur. R.S.F.S.R.		VR2	Fiji Is.	
UA1	Franz Josef Land		VR3	Fanning & Christmas Is.	
UA2	Kaliningrad Region		VR4	Solomon Is.	
UA, UW9, 0	Asiatic R.S.F.S.R.		VR5	Tonga Is.	
UB5, UT5, UY5	Ukraine		VR6	Pitcairn I.	
UC2	White Russian S.S.R.		VS5	Brunei	
UD6	Azerbaijan		VS6	Hong Kong	
UF6	Georgia				

	Phone	C.W.
VS9A, P, S	Aden and Socotra	
VS9H	Kuria Muria	
VS9K	Kamaran Is.	
VS9M	Maldive Is.	
VS9O, MP4M	Sultanate of Oman	
VU2	India	
VU	Laccadive Is.	
VU	Andaman & Nicobar Is.	
XE, XF	Mexico	
XF4	Revilla Gigedo	
XT2 (from 5/8/60)	Voltaic Rep.	
XU	Cambodia	
XW8	Laos	
XZ2	Burma	
YA	Afghanistan	
YI	Iraq	
YK	Syria	
YN, YN0	Nicaragua	
YO	Roumania	
YS	Salvador	
YU	Yugoslavia	
YV	Venezuela	
YV0	Aves I.	
ZA	Albania	
ZB2	Gibraltar	
ZC6	Palestine	
ZD3	The Gambia	
ZD6 (ZS7)	Swaziland	
ZD7	St. Helena	
ZD8	Ascension Is.	
ZD9	T. da Cunha and Gough Is.	
ZE	Southern Rhodesia	
ZF (VP5)	Cayman Is.	
ZK1	Cook Is.	
ZK1	Manihiki Is.	
ZK2	Niue	
ZL	Chatham Is.	
ZL	New Zealand	
ZL1	Kermadec Is.	
ZL4	Auckland and Campbell Is.	
ZM7	Tokelaus	
ZP	Paraguay	
ZS1, 2, 4, 5, 6	Rep. of S. Africa	
ZS2	Prince Ed. and Marion I.	
ZS3	South-West Africa	
ZS8 (Basutoland)	Lesotho	
ZS9 (Bechuanal'd)	Botswana Rep.	
1M	Minerva Reef	
1S	Spratly Is.	
3A	Monaco	
3W8, XV5	Vietnam	
4S7 (VS7)	Ceylon	
4U1	I.T.U. Geneva	
4W1	Yemen	
4X4 (from 14/5/48)	Israel	
5A	Libya	
5B4 (ZC4)	Cyprus	
5H1 (VQ1)	Zanzibar	
5H3 (VQ3)	Tanganyika	
5N2 (ZD2)	Nigeria	
5R8 (FB8 Madagascar)	Malagasy	

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

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

"DELETED" COUNTRIES LIST

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

SIDEBAND

Sub-Editor: PHIL WILLIAMS, VK5NN

This month I was to have launched into a discussion on input circuits for grounded-grid linear amplifiers, but the Magazine Committee has been overworking and underpaying its drawing-office staff so another topic has to be found for the holiday issue of the magazine. This same staff, we are told, has been doing a wonderful job on other single sideband articles, so we must be grateful for the work they have been doing towards furthering the art.

There is a question I am asked very frequently by the a.m. operators who feel they are missing out on contacts and would like to wet their feet gradually on sideband:

WHY NOT DOUBLE SIDEBAND?

It certainly looks a lot easier than single sideband. Yes, it does look easier to get going than single sideband, but there are still quite a lot of tricks to the trade, and one must not forget that the high-level double sideband transmitter must be very carefully adjusted and operated if it is not to emit unwanted products of modulation, which can be emitted at quite a high level when modulation of a high-level stage is carried out.

With screen modulated high-level balanced modulators such as, for example, a pair of 6DQ6 valves—a popular final—care must be taken to limit the modulation so that the output is linear and does not spread the width of the signal. The signal width is already double the audio frequency, as with a.m., and it is undesirable to make it any broader.

For this reason it is recommended that the double sideband should be generated at low level in a conservatively operated balanced modulator and then amplified by linear amplifiers in the same manner as in a single sideband transmitter. The best d.s.b. transmitters I have heard on the air have been of this type, without doubt, and of course, the linear amplifier section of the transmitter is already there and waiting to form part of the s.s.b. transmitter when you finally get around to doing the job properly.

Precautions which must be observed with all d.s.b. or s.s.b. transmitters are, the shielding to prevent feedback from the high power stages to the audio input and oscillator/doubler stages, careful arrangement of power supplies and regulation thereof, to prevent oscillator pulling. Of course oscillator stability is even more important, I consider, with d.s.b. than with s.s.b., as you will be operating oftener than not, in single sideband nets. Many d.s.b. stations "slide" into contacts with s.s.b. nets without being noticed in the net, especially if all members of the net are using selective s.s.b. receivers.

If the signal is stable and there is no pulling or feedback, and the modulation level is not pushed—and the audio frequency response is limited, especially the low frequency response—then most s.s.b. receivers will not know the difference and nobody in the net will even comment. But so often the d.s.b. man has not paid attention to all of these matters, since his transmitter has been rushed up in an attempt to get on "sideband" quickly, and he then gets bad reports and goes around saying rude things about those holier-than-thou sidebanders who couldn't build anything anyway, and have more money than ability, and won't talk to an honest experimenter who hasn't got pots of money. He is going straight back to a.m. or even c.w. and will never join that mob of stuck-up "vox-keteers" who never knew how to rag-chew or brass pound as in the good old days—and so on. We have all heard the story over and over again. Just one more Amateur is not giving himself a chance to enjoy sideband operating properly, by not being prepared to do the job properly from the start.

The main advantages of d.s.b. are the elimination of the carrier, elimination of high-powered modulators and the heating of the shack which these cause. In mobile work the elimination of these and their drain on the battery may be well worth while. The simplicity of a mobile d.s.b. rig is quite a point, too.

There are relatively few operators, however, who stay with d.s.b. for long, and I consider that the receiving situation is partly responsible for this. A single sideband receiver is relatively tolerant of single sideband signals, as far as frequency of the inserted carrier is concerned. The signal is still intelligible from about -100 c.p.s. to +300 c.p.s., even though the person may not be recognisable since the pitch of all voice frequencies will be changed by that amount and will not, therefore, be in correct harmonic relationship to reproduce the voice with fidelity. Music sounds horrible under such conditions—ever tried it?

For a d.s.b. signal, with both sidebands being received, the inserted carrier must be set precisely between the two sidebands and remain in place if the signal is to be satisfactorily demodulated. Synchronous detectors may be used for demodulation of d.s.b. transmissions and excellent quality reception is possible—much better than a.m., in fact. If all our broadcast stations used this method of transmission, though, everybody would need to purchase synchronous receivers and this would add to the cost of millions of receivers—so the b.c. station transmits the carrier for a very good reason.

A count of the number of synchronous detectors in Amateur receivers in the world would probably not exceed the fingers on one hand, so most of our d.s.b. men must work in s.s.b. nets in the sections of the bands frequented by s.s.b. stations, but should he be like our friend above, who gets the cold shoulder for poor transmissions, he then seeks refuge with the a.m. boys. These chaps do not have very stable receivers with stable v.f.o.'s or b.f.o.'s—nor do they have single sideband selectivity, so they will not be bothered receiving these funny "double duck-talk" men whose signals are so hard to resolve. Why, the s.s.b. fellows are hard enough!—by the time you've cut back the r.f. gain or pulled off the antenna, advanced the a.f. gain, cut out the noise limiter, waited for the b.f.o. to stop drifting, and then tried to zero beat the old a.m. transmitter to the b.f.o.—the game's not worth the trouble. So our poor d.s.b. man goes back to c.w. or the potting shed.

And then there was that "beaut" QSO he was in last week with several good mannered s.s.b. men, when a very ill mannered "oaf" broke in and told him that he may be OK on the present net, but would he please remove that other up-side-down sideband which he had deposited on top of their net 4 kc. away which had been going happily for two hours before he came along with that heap of double sideband junk.

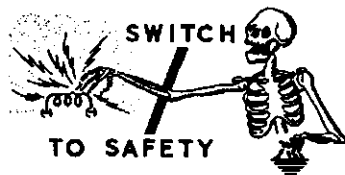
Thus go the trials and tribulations of the double sidebander, who is operating a perfectly clean and legitimate transmitter within his bands and in accordance with the terms of his licence (except that his input might even be 151 watts peak on the odd occasion).

So if you are thinking of going d.s.b. just because it looks easy and as a prelude to going s.s.b., just to get the feel of operating without a carrier, please don't let me discourage you, but be warned by the things I have just told you. Don't let rude comments deter or upset you. You'll need a hide like the rhino, to blast your way through the comments and remain on the bands whatever they say about you. These have been the experiences of a number of ex-double sidebanders, who decided to go s.s.b. and leave this batch of troubles behind them, only to have to battle through a new lot of s.s.b. troubles.

Don't forget though, that life is one long series of battles, but take my tip and remember that since life is short, avoid as many unnecessary battles as possible and go "single sideband" while you are young—so that you may enjoy it in your old age.

Finally, I trust all our sidebanders are enjoying their summer holidays, that the DX is good for 1967, and may your sunspots increase as the new year rolls along.

73 for now, Phil VK5NN.





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Pulse Transformer **\$1.20** plus S.T. 12½%

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IN3194: 750 mA. at 400 p.i.v. **55c** " " "

IN3195: 750 mA. at 600 p.i.v. **75c** " " "

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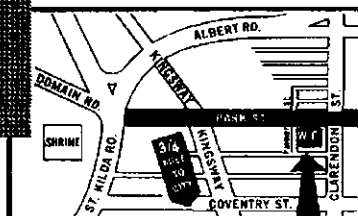
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SERIES PHASED ARRAY FOR 14 Mc.

Editor "A.R.," Dear Sir,

In the October 1966 issue of "A.R." there appears on page 4 an article by Wal Salmon, VK2SA, entitled "Series Phased Array for 14 Mc." Whilst I am delighted to see that at least one fellow Ham has managed to devise an antenna with which he seems pleased, as a result of reading my article in "A.R." in February 1959, I would like to point out that the title given to his article is obviously incorrect and misleading.

Sure VK2SA's antenna is a phased array possessing end fire properties, but is by no means a series phased array.

The series phased array as described in "A.R." (Feb. '59) and by other sources has folded half wave elements, spaced quarter wave, connected in series with the feed line and one another.

The gain obtainable from say a 2, 4, or more element series phased array would be practically the same as for any other 2, 4, or more plain dipole, end fire array with the same element spacing and phase relationships. But the big advantage of the series phased array is its less critical tuning and feeding, and its wider band property. It is usually only necessary to calculate the necessary dimensions, make it up, then poke it up in the air.

From remarks passed by VK2SA, I quote, "One unknown question raised in VK3ACM's article centres around the detuning effects when the antenna is pieced together and raised." I would suggest he re-reads said article, as this question was never raised.

The question I did raise, and in practice is not really relevant, was regarding the detuning effects brought about by the spacing of the two conductors comprising each folded element. Not the detuning effects between individual folded elements with various spacings. These, of course, are fixed at quarter wave. The reason for the query was that in the series phased array, as in the case of a folded dipole, we are told that the spacing between the two conductors comprising the folded element, should be negligible or small.

Naturally one assumes this means small as compared with wavelength at which they operate, but here I shall ask a silly question. How small is small?

VK2SA also stated in his article that the series phased array had not been successfully adapted for Amateur work, due to feed and phasing difficulties. This, as I have already pointed out, is not so. Feeding and phasing is so easy. The only point to remember is that the array radiates toward the feed point, not away from it.

Perhaps one reason why it has not gained much popularity, especially with the city dweller, is its small gain. A four-element array having about 6 db. gain over a dipole, whilst for a 10 db. gain an array of about three wavelengths is necessary.

Gains higher than these can be obtained with 3 or 4 element yagis but of course at a price—matching difficulties, critical tuning and narrow band width.

One point that may be worth mentioning is that for a maximum back to front ratio, an even number of elements, i.e. 2, 4, 6, 8, etc., should be used, as in a backward direction the radiation between pairs is cancelled.

—Col. A. MacKenzie, VK3ACM.

[Suggest readers interested also read an article by Len Jackson.—Ed.]

PADT50 TRANSISTORS

Equipment Exchange Bulletin, P.O. Box 177, Sandy Bay, Tas.

Editor "A.R.," Dear Sir,

We have received several requests for information about the supply and characteristics of the PADT50 transistor used in the transmitter described in the September 1966 issue of "A.R." (with important note of corrections in the October issue). I have done some research on this subject and your readers may be interested.

The characteristics of the PADT50 (made by Amperex) are given in the 1967 edition of the Techpress Transistor Specifications and Substitution Handbook, namely, germanium, PNP, power type, $BV_{cbo} = 70v.$, $P_c = 16.5w.$ (25°C. case temperature), $I_c = 0.75a.$ (abs. max.), $f_T = 60$ (corresponding to $h_{re} = 6$ at 10 Mc.).

A reasonable replacement or substitute might be the 2N2991, whose characteristics have been measured as follows: NPN, silicon, power type, $BV_{cbo} = 100v.$ (at 100 $\mu A.$), $P_c = 15w.$ (at 100°C. case temperature), 200°C. max.), $I_c = 1a.$ (abs. max.), $h_{FE} = 20-40$ (at 500 mA., d.c.), $h_{re} = 4-6$ (at 10 Mc.). These characteristics are not significantly different from those listed in the abovementioned Handbook.

It is a relatively minor matter to arrange connections for the NPN configuration of the 2N2991 (compared to the PNP PADT50), but some note should be taken that the 2N2991 is silicon, not germanium. The reverse characteristic of the silicon junction is appreciably more sensitive to voltage overload than is that of germanium. Consequently, silicon transistors will be less tolerant of transient overvoltages. Therefore they should have a higher voltage breakdown rating as margin of safety. And the amplifiers in which they are installed should be well designed to avoid overloads—and this includes parasitic oscillations! (Avoid parasitic r.f.c. combinations, keep all leads short, keep output circuits separated from input ones, etc.)

Maximum safe voltage rating is also reduced when collector current is increased and one should not overlook the fact that a collector-modulated stage will need to endure at least double the collector supply voltage. This subject is discussed in the October 1966 issue of the "Equipment Exchange Bulletin," in the Motorola Power Transistor Manual, and in the new Motorola Semiconductor Handbook. In addition, a wide range of articles on the design or construction of transistorised amat-

eur transmitters can be found in the Amateur literature. Some of the more notable recent examples are as follows:

"Break-In" (ZL): Sept., Oct., 1966.

"CQ" (W): Jan. (April), June, 1966.

"CQ's" "Electronics Circuits Handbook" (No. 121), section 3.

Motorola Semiconductor Products Inc.: Technical Application Notes AN-107, AN-112, AN-114, AN-124.

(Probably relevant notes by Fairchild too).

"QST" (W): April 1966.

R.S.G.B. Bulletin (G): March, 1965; March, July, Sept., Oct., Nov., 1966.

"73" (W): April, July, Aug., Sept., 1965; Feb., July, Aug., 1966.

If you are interested in transistorised transmitters, you should make every effort to see this literature, through your library, through your local branch of the W.I.A., or through friends who subscribe. If none of these alternatives are possible, I shall offer here to provide Xerox copies of relevant articles, at cost; if interested, please send a stamped self-addressed envelope for a list of titles, etc.

In 1967 the Equipment Exchange Bulletin will publish a series of constructional articles on this subject as well as some on frequency response characteristics of transistors—if I can find the time and strength to put the articles together.

To return to my original subject, if suitable care is taken to avoid voltage transients, the 2N2991 should prove an adequate substitute for the PADT50, and by January 1967 should be available at a very much lower price from:

The Wireless Institute of Australia, Tasmanian Division, P.O. Box 851J, Hobart, Tasmania.

The 2N697 (NPN, Si, 2W, 30V, 100 Mc.) and other similar lower power h.f. transistors should be easy to substitute by the (relatively) inexpensive Fairchild or Anodeon lines available in Australia.

—R. L. Gunther (VK7RG), Editor.

S.S.B. GENERATOR KIT

Yaesu Type F S.S.B. Generator

is a printed board 6½" x 2½", completely assembled with valves, five crystal lattice filter, 5172.4 Kc. carrier crystal, 6BA6 mic. amp., 12AT7 carrier osc. and audio cathode follower, diode b.m., and 6BA6 i.f. amp. Simply connect microphone, 6.3v. a.c. and 150v. d.c. for 1.5v. r.m.s. u.s.b. output. Filter bandwidth 2.5 Kc.

Ideal basic unit for heterodyning to h.f. or v.h.f. bands. This board is identical to that used in the Yaesu FL-50 xmitter.

Take the hard work out of home construction for only—\$59.00! S.T. included. Postage extra. Shipping weight, 1½ lbs. Availability expected February.

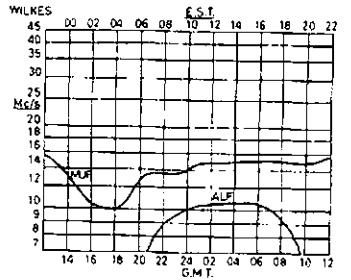
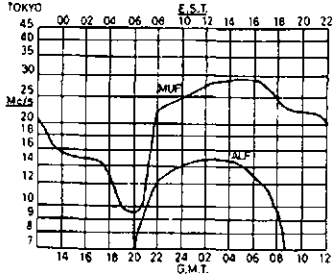
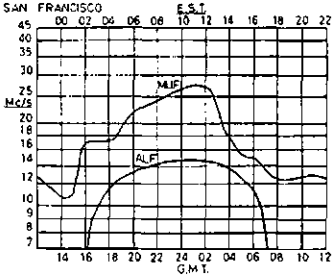
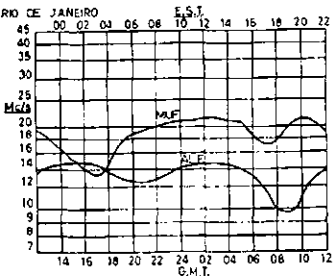
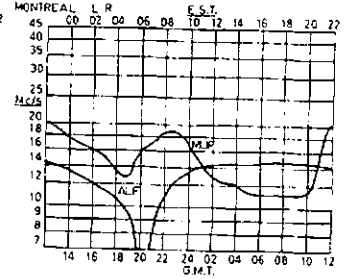
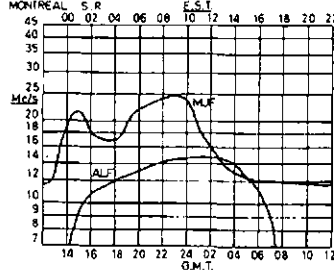
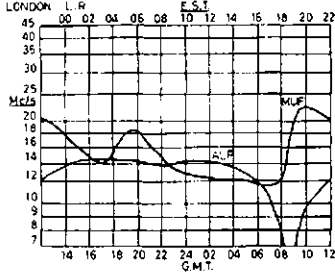
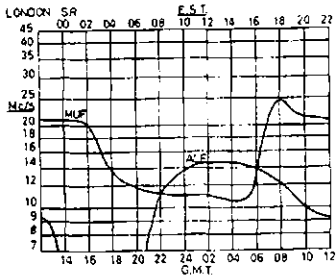
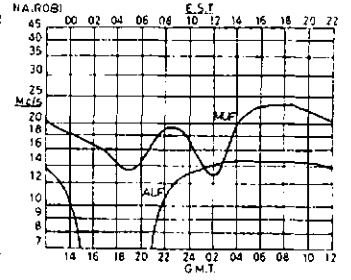
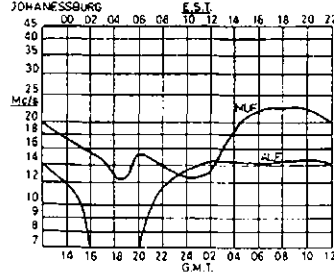
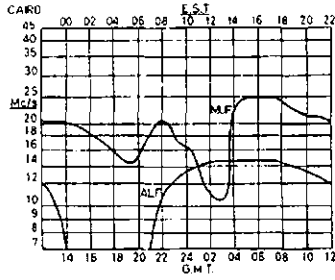
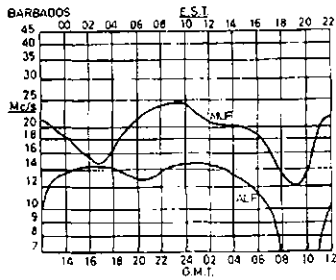
Obtainable from:—

BAIL ELECTRONIC SERVICES
60 Shannon St., Box 8111 North, Vic.
Telephone 89-2213

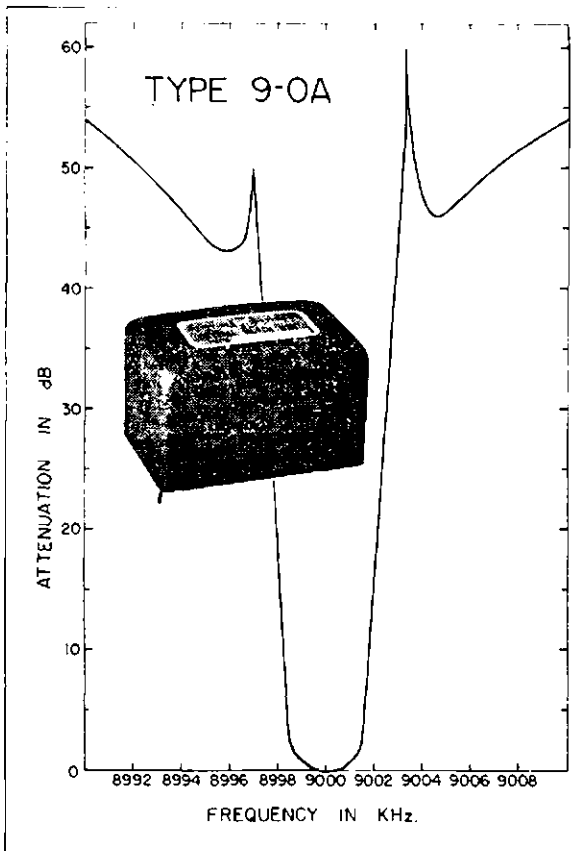
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PREDICTION CHARTS FOR JANUARY 1967



(Prediction Charts by courtesy of Ionospheric Prediction Service)



CRYSTAL DIVISION

NEW! DESIGNED AND PRODUCED IN AUSTRALIA

Pye 9 Mc. Crystal Filter Unit

TYPE 9-0A FOR S.S.B. TRANSMITTERS

To satisfy an ever-increasing demand for a filter suitable for s.s.b. transmitting purposes, Pye engineers have developed the Type 9-0A which is now in production at our Crystal Division. This filter, supplied with two Style "D" carrier frequency crystals and sockets, comprises a package unit. With each unit a typical schematic circuit diagram is supplied.

- Specifications:** 6.0 dB Bandwidth: 3 Kc. min.
40 dB Bandwidth: 6 Kc. max.
Pass Band Ripple: 2 dB max.
Insertion Loss: 4.5 dB.
Input Termination: 150 ohms plus 150 pF.
Output Termination: 150 ohms plus 120 pF.
Physical Dimensions: 2" x 1.375" x 1.125".

Recommended Oscillator Crystals: 8998.0, 9002.0 Kc.

Price each package unit - \$30.00 plus tax

Quantity discounts will be negotiated.

For further information contact:—

PYE PTY. LTD.

- MELBOURNE:** P.O. Box 105, Clayton Phone 544-0861
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SYDNEY: 59 Arndell Street, Forest Lodge Phone 68-4111
ADELAIDE: 1 Hould Street, Adelaide Phone 23-3970
PERTH: 151-165 Brisbane Street, Perth Phone 28-4338
HOBART: 141 Murray Street, Hobart Phone 3-8707

Correspondence re Federal Comment "On Growing Up"

FIFTY AND OVER

Brr-brr, brr-brr, brr-brr. "Oh hullo Bert, is that you? This is VK3ZOM in contact with over the telephone, do we? Yes, Bert, I just rang you up to say that I've got the 150 watt 6 metre rig going. Yes, I've been using it all the evening. It's got a 1627 in the final. Takes 9 amps heater current at 5 volts. Yes I did have a bit of trouble getting it going. But it seems OK now. All the meters are jumping round like they should. Modulator? Well I got hold of a 100 watt p.a. system amplifier cheap and I'm using that. You ought to see everything light up when I speak into the microphone.

"Contacts? Well, no, Bert, I haven't actually had any contacts. I don't expect to, really. You've been listening on 6 metres this evening and haven't heard me? No, I didn't expect you would. No, Bert, I'm crystal locked on the net frequency all right, but that is not the point. You see, it's this t.v.i. business.

"You remember when I was on ten watts I used to get complaints from neighbours with crummy t.v. sets. Well you can't expect the manufacturers to make a decent set with a selective tuner when they can get away with something that's flat for twenty megacycles.

"Oh no, Bert, I never had any trouble with the Inspectors. They're very nice chaps and they agreed that my transmission was quite OK. But of course if enough people complain they must be right even if they're wrong if you see what I mean. It's like Sunday baking, or defending democracy. So that's why I built this new rig.

"How do I think the new rig with 150 watts is going to stop t.v.i.? Well of course the new rig by itself wouldn't help but I've always wanted to run the full legal power so when I found a way of eliminating t.v.i. at any power I thought I might as well let my hair down. You can't see how I've managed to eliminate t.v.i.? It's quite simple, really, I'm using a new gadget I've designed myself. I call it an attenuator. No Bert not an attenuator, an antenator. What on earth is it? Well, you've heard of log periodic antennae? Well this one is made of real logs. That's right. Logs. Actually I used broom handles. It's got a loss of over 100 db in all directions, even in wet weather. Of course in the hot weather when you need the greatest possible loss to prevent t.v.i., the loss is practically infinite. It's not a very effective radiator? No that's the whole advantage. No radiation, no t.v.i.

"But actually even with this I was still managing to get out with the 150 watts until I made myself some special 75 ohm co-axial cable. Why didn't I buy some? Oh no, Bert, you can't buy this kind of cable. When I say 75 ohm cable I mean 75 ohms per foot. That's right. The centre section is resistance wire and it's 75 ohms per foot. Since the log antenna has a s.w.r. of several hundred . . . Hold on a minute, Bert, I think I can smell something burning.

"Bert? Hullo Bert. You're still there? Sorry to keep you waiting. No nothing serious. Just the 75 ohm cable caught on fire. I guess I'll have to work out some cooling system. Maybe connect the garden hose to it and let the water drip out the top . . .

"What's the purpose of it all? Well you know what they say. 'Put the game before the prize' and 'it's better to hope than to have' and all that sort of thing. Then one shouldn't do anything to prevent the neighbours watching cowboys and gangsters killing each other. After all, we're put in the world to help others, aren't we? What are the others put in the world for? Well really, Bert, I wouldn't know. They must be here for something I suppose. Anyway, I must rush now, I'll have to get the rig going again for tomorrow night. As soon as it's working I'll phone you up and tell you all about it. Cheers."

—Roy Hartkopf.

Fairchild Announces First Australian-Made Zener Diodes

The AN7101/2/3/4/5/ and 6 series of silicon zener diodes utilise the patented Fairchild "Planar" process to achieve a stable reference voltage with low dynamic resistance, low leakage, low capacitance and high reliability.

Low cost is a major feature of these zeners, with prices as low as 35 cents.

Full data is available by writing to the Marketing Services Department, Fairchild Australia Pty. Ltd., 420 Mt. Dandenong Rd., Croydon, Vic.

It would seem that VK4DZ himself has become a victim of the paralysing "parochialism virus"—probably carried up on some of those southerlies that blow from time to time. I often wonder if Divisional Councils have ever taken time to discuss the scope and responsibilities of the Federal body. If they did, there would probably be six different interpretations.

Basking in blissful ignorance then, it is not unnatural for the general attitude of the Divisions to be "we're all right Jack." It must be admitted that part of the blame for this ignorance could be laid at the feet of the Federal body—public relations work has been lacking in continuity over the years and it is this sort of omission that should be corrected by constitutional reform.

Mr. Watson can be forgiven for misconstruing the aspirations of the Federal body: November's Federal Comment is designed to provide more of the very thing that Mr. Watson wants; that is, service to members.

It is not the Federal body that has a distorted vision of its own importance, but the Divisions probably have. Once again we see the parochial outlook as Mr. Watson supports the idea of paid Federal staff yet is not prepared to trust the judgment of the Federal body. Does Mr. Watson imagine that the Institute would be dictatorial? Has he not listened to, and read of, constitutional proposals designed to guard against this sort of thing?

Divisional thought has been too long inbred, and it is my belief that the time is ripe for the whole structure to be examined: The Federal body has a name but nowhere to hang it; Federal Executive is appointed by one Division and ratified by the others; this same Division publishes "A.R."; this same Division also has the highest subscription rate in order to do so.

What a screwy system!

Every member of the Institute should consider his own part and decide whether it is better to perpetuate the narrow self centred ideologies of Divisional politics, or to be big enough to work towards a financially strong and comprehensive Federal body.

In any organisation both sides must be prepared to give and take. The total amount received by F.E. for routine administrative work is approximately \$1,000 per annum; this would just about pay a part-time typist and petty cash. The amount of \$1,200 stated by VK4DZ is accurate enough but by no means is it anywhere sufficient.

The courses open are clear. (1) You either reread November Federal Comment and accept the principle that a strong stable Federal body is in the best interests of every Australian Amateur even if it means some financial sacrifice; or (2) You reject any semblance of unity, adopt the "U Jack" policy and, as so succinctly put by one Federal Councillor, "drawn in the sewer of" apathy and neglect.

The choice is yours.

—Peter D. Williams, VK3IZ,
Federal Secretary, W.I.A.

Editor "A.R.," Dear Sir,

Referring to the Federal Secretary's comments "On Growing Up" ("A.R.," November 1966) it is apparent that F.E. has growing pains, but it appears that the direction of growth tends to be out, rather than up. It is regrettable that his theorising does not follow a practical line of thought.

Once again we have the problem, as in other Federal spheres, of a Federal body being carried away by a distorted vision of its own importance, and losing sight of the fact that its prime purpose is one of service to its members rather than vice versa.

When the pittance of 30 cents a head is multiplied by some 4000 members, this provides an income of \$1,200 per annum with which F.E. can administer its complex and varied affairs, and it must be borne in mind that this sum is additional to Federal Convention expenses, I.T.U. expenses, and F.E.'s generous contribution to the "Australis" project, all of which are separately borne by the Divisions. Nor is "A.R." a drain on this pittance, being charged to the Divisions each month by VK3.

Whilst I whole heartedly support the proposal that it is time that the offices of Secretary and Editor cease to be honorary ones, I cannot support any proposal that reverses the present position and gives F.E. control of collection of subscriptions, with return of some miserable pittance to the Divisions.

So far as this Division is concerned, of the present annual subscription of \$4.50, \$3.41 has been or will be paid out this year in the aforementioned Federal matters and "A.R." This leaves \$1.09 per member to meet the costs of administering the various complex affairs of the Division. As a matter of fact the greater part of this amount is absorbed by meeting-room rentals and monthly magazine, but on the present basis (and any increase in subscriptions would not materially add to the available margin) there is very little more that F.E. can draw out of the Division without forcing us into involuntary liquidation.

Again, whilst the practical benefits of having a paid executive are not denied, the practicability of financing the cost by a substantial increase in subscriptions cannot be overlooked, as the law of diminishing returns would seriously effect the final amount received.

—D. R. Watson, VK4DZ,
Hon. Treas., VK4 Division.

P.S.—The opinions expressed herein do not necessarily coincide with those of VK4 Council or Division, but after all for \$3.41, one should be entitled to make some criticism!

FEDERAL SECRETARY'S REPLY

Editor "A.R.," Dear Sir,

Mr. Watson kindly forwarded a copy of his letter and I should like to clarify one or two points and expand some others. In passing, apparently other members of the W.I.A. do not appear to be concerned as to how the "see" the Institute—silence could be taken as tacit approval of Editorial Comment!

DX

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

This will find you quite likely full of new year resolutions and the cheer that goes with them. Not a good mixture. However Amateur Radio wise maybe you're planning to go on the air. A good move as 1987 looks a promising year. DX should be like game on green pastures. There for the taking on all bands. The Totem Pole climbers are running out of new areas or spots (call them countries if you like), but the fever and frenzy will not be allowed to subside as new DX-peditions are being planned all along the way. There's still plenty of guano rocks and coral strips as yet unspoiled by any Ham antenna and the rules and regs. can also be stretched and squeezed or modified a little to include many of these barren or exotic spots in the D.X.C.C. list.

But what is more important (and of greater overall value to Amateur Radio) is the anticipated increase of general activity, especially on the 21 and 28 Mc. bands. Sunspot count by May 1988 is expected to be in excess of 100. This might recreate (for a while at least) a touch of the good old days.

Award hunting, it seems, is being pursued with more fervour than ever. Over 2,000 certificates and awards are available now to the A.R. population for various endeavours. The same can be said of this activity. Not overdone—a good thing, but to excess a very bad master.

DXing is about to assume yet another phase (in a few short years), world-wide coverage by translator satellite will unhook us from the whims of the ionosphere, making DX reliable and constant. This, you might say, will take the "bite" out of the sport. Not so, rather the reverse—the real era of challenge, adventure and romance is yet to come.

NOTES AND NEWS

Saudi Arabia: HZ1AB in Darhan is still going strong. Most operation is reported at high end s.s.b. 14 Mc. From 1200z and later.

Faeroes: Several active stations are workable in VK: OY2YL, OY8YL, OY3BB, OYTU, etc. Some piracy of OY calls is also reported.

Czech Maritime Mobile: These calls are familiar on the bands now. If you want a QSL post to Box 69, Praha, 1. Prefix is OK4/MM.

Jan Mayen: Changed prefixes on from here are JX5CI, JX2IK. Both 14 Mc. c.w. 1300z.

Splitbergen: Now JW instead of LA. JWN3N only resident active station as of now. 14 Mc. c.w./s.s.b.

Ilo de Oro: W9WNV, Don Miller, plans to be QRV soon from here. More info elsewhere.

Falkland Is.: VP8IQ and VP8HJ both active 14 c.w. around 0900 or later. Worked here.

South Georgia Is.: VP8AM, VP8HY also said to be using 14 c.w. Duration of stay not known. No other info.

(Much of the above by courtesy of VE3FXR, Ont. DX Ed. and Area. Tks Rog OM.)

Kerguelen: FB8XX originally was exclusively c.w. now he can be found on s.s.b. 14223, 1630z. Sometimes also 14114 1400-1600z.

Crozet: FB8WW also now on s.s.b. His usual times are 1200-1400 and 0400-0600z. 14203, 14210, 14255. QSL K2MGE.

Georgia: Jim UF6FE in Tbilisi on 14230 1200-1600. S.s.b. op. from here is rare.

Niger Republic: SU7AC 21360 1830z (not good QTR for VK). SU7AK 14230 2000z. Remember the SU7 stint by Dick WOMLY a few years ago? What a pile up.

Marlon Is.: ZS2MI 14190 on c.w. (yes A1 mode). Also 14110 14170 a.m., 1200-1500z, QSL ZS4OI.

Ivory Coast: TU2BD on daily 14205 0600z, QSL Box 172, Abidjan.

Andaman Is.: VU2DIA says he has now started to send out his QSLs in batches to the various countries (about time).

(The above in large measure by courtesy of LIDXA, Ed. Bill Lipsky.)

Easter Is.: WA2PTQ is still said to be active from this isle of images and mystery. He will QRT sometime late January so my info says. Not heard here, but said to be using 7 and 14 c.w.

Brunel: VS5JC says he too will QRT after the middle of Jan. for 9M2 prefix. Jack is to be found on 7008 after 1200z and then on 14030 approx. later still. QSL W5VA.

New Amsterdam: FB8ZZ still on 20 c.w. at 1100z. QSL to FR7ZD.

Bahrain: MP4BDF and one or two others are QRV on 14 c.w. and s.s.b. Any time after 1300z till 2100z. MP4BGH and MP4BEU 14020 1830z.

Dakar: 6W8DD heard often on 14035 approx. 0700z.

Tahiti: Hubert FO8BQ very busy on 14 c.w. QSL Box 374, Papeete.

Madiera: CT3AS worked both 14 and 7 Mc. around 2000z. Listen for him on 7005 approx.

Seychelles: At the time of writing this, VQ9TC is operating from here on 14 c.w./s.s.b. This stint could well be over by the time this reaches you. For QSL purposes I have Box 191, Seychelles or via W5 Bureau. This is unofficial.

Ruanda: Gene 9X5PS has been active all this past year and still going. His fist is not easy to copy. QSL to Box 826, Sibto Kigili, Ruanda (unofficial).

Afghanistan: YA1DAN 14219 1430z. On irregularly. One or two others also reported QRV.

Egypt: VE6QG/SU 14220 at 1430z. Also active SU1IM 14 c.w. 2000z.

Traelal Oman: MP4TBO 14 c.w./s.s.b. 1400 and later.

Ethiopia: ET3AC 14200 at 1400-1600z.

Germany: Larry DL5LT reports that QSLs for American DL4 and DL5 stations now go via 93 Sig. Batt. A.P.O., New York, 09175. (Tks Pete VK4PJ.)

ACTIVITIES

Pete VK4PJ seems to have been busy on 20, 15 and 10. Reports the following on s.s.b. Ten mx: OH2QL, UA3TU, SV1AE, HS1CB, ZC4CN, DL7AA, DJ6FN, 9V1NL, OH2TI, G2KO, GU0F, OH1VR, MP4BBW. Mostly around 28800 kc. 1100-1200z. Fifteen mx: U18MN, LZ1WR, DJ7CP, VS6EK, VE2EK, MP4MAW, IT1ER, ON8UH, ON4IZ, DL2EE, MP4TBO, ON5PD, EP2BQ, HB9ACQ, UG2AA, EA5HC, OE2PZL, 9V1NL, LX1DB, 411SU, etc. Twenty mx: ZB2AF, PJ3CD, CN8FC, VQ9AA/V, VQ9EF, VE3PN, DL5LT, G8TA, SM7TE, G3AJM, LA1MG, VE3DDR, XE3RE, PJAAC, VS2BB, M1B and many EUs. Best times 1200z and 2000-2200z 1.p.

Dud VK4MY sneaking in a few nice ones on s.s.b. on 14 Mc.: VE6QG/SU, ZC4RM, KC4USO/MV, 7X0AH, 9M6NG, DU1BF, KX6BV, VS9ALV, KJ6ACF, HL9KC, HL9KK, ZK1DW, HP1FR, KB6CZ, MP4TBO and EUs. FW8RC. Usual times.

Ken VK3TL sends in a larger than ever list of DX worked. Reports three new countries in the past week or two. All 14 c.w./s.s.b. CP1GF, CR9AI, CTYA, CX3BBD, EA6BH, E14AN, E1BQ, FH8FG, FR7ZN, FR7ZP (Glorioso), G14LI, CG8HT, GM4FM, GW2HQ, HR5LB/2, HC0LB, HM0HQ, HR1CR, HS4AK, IP1AA, KS4CC (Swan), SV1BH, MP4BGD, MP4MAW, OA6I, OH0NF, P11J, P2AQ, P2ZMI, PX1IE, PX1JS, VE1AW/SU, VE3FJZ/SU, VE6QG/SU, TA2FC, K1YCE/XVJ, YA1HD, VP1LP, VP2AZ, VP2GR, VP2VC, VP3GG, VP9FC, VP7NA, VP8HJ, VQ8EG, VQ8TC, VQ9AA/V, VP6VE, VP8MG, VP7DX, VQ9AA/V, VQ9HB, VQ9TC, VS9MH, VS9ALV, ZB2AK, ZC4JU, ZF1FE, ZK1AS, ZK1BW, 5A3TT, 5N2AAV, 5ZACK, 7X0AH, WOGTA/8F4, 9N1BG, 6Y5GG,

6Y5VV, 6Y5DW, 9Q5HF, and more. Best QSLs received: VE3FZU/SU, 1M4A, IS9WNV, HI3R4P, 9G1FY, GC2FMV, YA1HD, 3A0DX, XW8CA, 5U7AK. (Congrats. Ken OM—a mighty month's effort. Have you given away your regular profession?)

QTHs

VP8HJ — W2CTN.
ZF1EP — W4FJG.
VP2AZ — W0NGF.
CT2YA — Yasme Foundation.
VP7DX — Box 102 Freeport, G. Bahamas.
9N1BG — VE4OX.
FH8FE — W4ECL.
K1YCE/XV5 — W4UWC.
VE3JR — W3HQ.
VP1LP — Box 41, Belize.
TA2AC — K4AMC.
FR7ZP — W4ECL.
HS4AK — Box 11, Bangkok.
VP2VC — WA4AYX.
VQ8EG — 5A3TT.
YA1HD — DJ9DK.
MP4MAW — R.S.G.B.
9Q5HF — Box 143, Lenga, via Bunia, Congo.
(Many thanks to Ken VK3TL for supplying the above.)

SUMMARY

At the introduction I mentioned DXing and awards. What of the contest situation? There are now so many it's almost a regular week-end affair. Some are all band, others invite participation on one band 160-2 mx. Any week-end contest takes up a lot of time. There are preliminary preparations to be seen to and the tedious task of writing out a long contest log after the battle is over. Then there's the chores that cry for attention and a big sleep to catch up on the past two nights' torture. Not many Hams will tackle a full week-end contest. Particularly the family man. These "scraps" would be more popular if they were run over 24 hours only. What you can't prove in 24 you will not do in 48. The latter stint puts a handicap on the older Ham (like me). In the latter hours it's not ability that is on test but simply staying power. This is where youth is served and always will be. (For me, it is pure agony.)

In conclusion, let me bring to notice a comment which appears in every Amateur Radio magazine throughout the world, at some time or other: "Let's start another D.X.C.C. Listing on a 2-5 year plan." This proposal inevitably arises in an effort to bring some equity and justice to the present set-up. The present listings could remain and continue (God knows, they've earned it and haven't I sweated too), but let's have something to encourage the young aspirants. L.I.D.X.A. runs a one-year D.X.C.C. Totem Pole, and very successful it is, too. If my memory serves me correctly, the 1965 winner was a G, who ran up some 265 countries (beat that!).

My thanks to those who have taken the trouble to write and contribute; please keep up the assistance—the column needs you. Happy hunting in 1987. 73, Al VK4SS.

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P.O. Box 26, Beecroft, N.S.W.



season was a four-day opening to VK7 and VK5 on two metres, the QRM at my QTH could not be described in this column.

VK3 EASTERN ZONE

The Zone has been quite active of late with good openings to VK7 (reflections from Mt. Baw Baw), VK5 and VK2, all of which were on two metres. Activity in the Zone extends up to 432 Mc. and contacts have been made with Melbourne stations. Six metres has also had its share of popularity with openings to VK4, best day to date was Oct. 29 when all States were heard. The m.u.f. has been very high at times and some very good DX has been heard and worked.

Active Gippsland stations are VKs 3ZCG 144.003, 3ZSS 144.24, 3ZOZ 144.255, 3ZDP 144.003, 3ZDY 144.365, 3ZWH 144.48, 3ZDP 144.003 (s.s.b.), 3AFD 144.085, 3ZQB 144.075, and 3AWV 144.18. All these stations will be active this summer and looking for the DX type signals. 73, George 3ZCG, in Morwell.



YOUTH RADIO CLUBS

From now on you will have a new correspondent as I have taken over this job from Ken 1KM, who has been keeping you up to date on Y.R.S. news for the last four years. Ken has taken on a very responsible position in his school which will take up the time formerly allotted to Y.R.S. work. Congratulations, Ken, and best wishes for the future. Any news of the various Club and Postal Groups around Australia would be appreciated and the suggestion has been made that each group appoint a publicity officer to get the news to me by the end of each month. This should consist of information about your general activities, names of those who gain the various certificates, camping trips, in fact anything at all which you think may be of interest. The address for this is: Mrs. Mona Swinton, VK2AXS, P.O. Box 1, Kuluvara, N.S.W.

Mr. Rex Black, VK2YA, our Y.R.S. Supervisor, advises that he and Mrs. Black will be going to Canada and the U.S. early in the new year for a lengthy visit and during this time will visit various school radio clubs to see how they work and will also pay special attention to the novice licensing. As we receive news from Rex, this will be duly reported in "A.R." so everyone will know the latest.

Rex has been supervisor of the Y.R.S. since he started it several years ago. The result of his magnificent effort is seen on all sides now with many clubs and postal groups in each state—all working to promote the wonderful hobby of radio among the young people. His influence is felt outside Australia as well. Thanks cannot be put into words, Rex.

Mr. Dick Smith, of Sydney Teachers' College Radio Club, reports that four of their members have gained the Junior Radio Certificate and about five or six will be trying for the Elementary before the end of the year. Alan Nutley, of Meadowbank High Radio Club, has gained third place in the receiving section of the Remembrance Day Contest.

Mr. Don Craig, of Sydney Grammar School, College St., Sydney, is now Y.R.S. registrar for N.S.W. All registrations of new clubs, re-registration of old clubs, presentation of Certificates, prizes and a host of other jobs will come under his jurisdiction from now on.

Roger Davis, VK1RD, and Susan Brown, VK2BSB, are publishing jointly a very interesting newsletter for their postal group members. This contains a lot of good information apart from general news and should be of interest to others. Anyone wishing a copy need only send Roger a s.a.s.e. plus an extra 4c stamp. This would be a very good investment. Roger has had outstanding success with his club and recently had 11 members gain the Junior Certificate with marks ranging from 78 to 95 per cent. David Brown, who gained the highest mark, was awarded the O.T.C. book prize.

Jan Oosterveen, of Singleton, VK2BJO, has started another postal group and is preparing his members for the Elementary.

I have news from Bob Wright, leader of the Bundabery Youth Radio Club. He advises that several of his members have gone into good jobs as a direct result of their Y.R.S. training. One has been apprenticed to a local radio-t.v. service company, two are technicians-in-training to the P.M.G. Department, one went to the Department of Civil Aviation and another to the D.C.A. as a technician-in-training. This is a very fine effort, Bob, and demonstrates the importance of Y.R.S. in preparing lads for entry into the very important electronics field. Their advance information and interest in electronics must be a tremendous help and advantage to them. 73, Mona 2AXS.

Correspondence

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

Editor "A.R.," Dear Sir,

I have just finished testing the latest lot of transistors ordered from overseas surplus suppliers and I am well and truly disgusted. I should here like to suggest to the Australian Radio Amateurs that they should exercise great caution when attempting to take advantage of "bargains" in overseas transistors. Diodes tend to be more reliable, but it is simply incredible to find the junk which is sold under the name of "transistors". In this field, as in perhaps others, you don't get something for nothing. Therefore if you are going to order these "bargains" I suggest that you order a small lot only, to see whether there is any point going further. This will also have the additional advantage of protecting you from undue loss if the supplier decides to pocket your money without sending the goods. American surplus suppliers are not always immune to this temptation. Needless to say, most of the "money back guarantee" or "satisfaction guaranteed" policies do not apply to foreign orders.

The one reasonably reliable exception to the junk-transistor experience seems to be in the supply of computer circuit boards. The components available on the boards tend to be reliable and amazingly inexpensive. The transistors are usually functional and are supposed to be rated for several hundred milliwatts, beta usually from 30 to 150 (measured at 5v., 1 mA.), BVcbo above 30v. and frequency rating from 10 Mc. (for the 033, 063 types) to 70 Mc. or more (for 015, 065 types). Even here, however, I should stress a word of caution. It is said that these transistors are of the "2N1300 series type" and that series is rated ordinarily at 150 mW., with maximum Ic of 100 mA. or better. But I have conducted a series of tests on several types of circuit board transistors and should like to suggest that these theoretical ratings be halved, for practical purposes. Furthermore, the leakage current of these germanium transistors goes up alarmingly as they heat up and heavy base bias stabilisation is absolutely necessary if collector dissipation is to exceed about 20 mW.

The one bright light in the supply of surplus is the fact that the computer board suppliers appear to be reliable and co-operative. Their names can be found in the main experimenter or amateur magazines, mostly American. But I suggest that you order reasonable quantities at a time.

—R. L. Gunther, VK7RG.



CONTEST CALENDAR

- Until 15th January: Ross A. Hull Memorial Trophy V.h.f. Contest.
- 4th/5th February: 33rd A.R.R.L. International DX Competition (Phone), 1st week-end.
- 4th/19th February: A.R.R.L. Novice Roundup.
- 11th/12th February: John Moyle Memorial N.F.D. Contest.
- 18th/19th February: R.S.G.B. First 1.8 Mc. Contest.
- 18th/19th February: 33rd A.R.R.L. International DX Competition (C.w.) 1st week-end.
- 4th/5th March: 33rd A.R.R.L. International DX Competition (Phone) 2nd week-end.
- 18th/19th March: 33rd A.R.R.L. International DX Competition (C.w.) 2nd week-end.

A.O.C.P. THEORY CLASS

The Victorian Division of the W.I.A. will commence a theory class in February 1967.

Those wishing to enrol should do so immediately by contacting the Administrative Secretary, P.O. Box 36, East Melbourne, or by phoning 41-3535.

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

Well another year has begun, the Ross Hull Memorial Contest is well under way and many of you will have good scores and some of you will only have token ones, but don't let that worry you. Make an effort this year for each and every one who has exchanged cyphers to send in his or her log sheet. Who knows, you may even win this year.

Best of DX and good luck for the new year. 73, Cyril 3ZCK.

(The VK2 notes were received too late for inclusion in this edition.)

SOME DX GUIDES

- VK2: 146.00, t.v. Ch. 5A 143.750.
- VK3: 145.854, 53.032, t.v. Ch. 0 51.760.
- VK4: 53.032, 53.955, t.v. Ch. 0 51.740.
- VK5: 53.00, 144.8, 53.1.
- VK6: 52.006, 144.2, 52.656.
- VK7: 53.035.
- VK0: 52.9025.
- ZL: T.v. Ch. 1 50.75.

VK0CR BEACON

Rod Champness, VK3UG, left Melbourne on 29th November for Macquarie Island where, apart from his A.N.A.R.E. duties, he will be operating gear under the call VK0CR. Generally, Rod will be looking for VK contacts on 14.150 Mc. s.s.b. and other countries on 14.180 Mc. s.s.b.

By this time, Rod should have also set up a six metre beacon transmitter on 52.9025 Mc. which will transmit continuously. The rig was assembled in Melbourne following discussions with the National Antarctic Research Organisation and the W.I.A. for the purpose of investigation of auroral propagation.

The success of the project depends upon the number of stations throughout VK and ZL who are prepared to listen for the beacon. All who are interested are asked to contact either Noel VK3ZPK at 418 Nepean Highway, Parkdale, Vic. (90-4009), or Cyril VK3ZCK at 2 Clarendon St., Avondale Heights, Vic. (317-7579) to obtain a supply of special log sheets and detailed information about the beacon.

Rod also intends (when time permits) to call on 6 mx at five minutes to the hour E.S.T. All reports received will be analysed by A.N.A.R.E., so here is our chance to make another worthwhile research contribution as well as learning more of v.h.f. DX propagation.

VK3 HUNTER RIVER BRANCH

52 Mc.: The DX season has begun. The band opened on Oct. 29 to VK4 and in the evening Kevin 2ZKW and Bill 2ZWM worked some of them. On Nov. 15 it again opened to VK4 and 4ZGJ in Townsville was worked by 2ZWM, 2ZMO and 2ZUB. Later in the evening the Rockhampton and Bundaberg gang were heard. On Sunday, 20th, Barry 2ZUB heard a VK4 talking to a VK3 operating at the top end of the band (possibly around 53 Mc.—Ed.), 2ZMO then tuned up the band and heard a VK7 calling CQ; after some trouble, Mac worked the "seven".

Colin 2YJ has a beam up for this band and hopes to be on shortly. George 4ZLG has been operating portable from Newcastle during his vacation and has made good use of his 6 mx gear. Most of the locals have been working him, one enterprising laddy, after working his first "foreign" station, jumped into his car and swapped QSL cards. A cool change some weeks ago spoilt the DX, but the weather is now warming up so we are hoping for plenty more.

144 Mc.: This band has been in fair condition and a few openings to Sydney have been made use of by 2ZSG, 2ZWM, 2YJ and others. John 2ZJG has had a 5 over 5 up for some time, but recently changed it for a 10 element yagi which most definitely reduced his signal at this QTH. Bill 2XT, Rodney 2CN and others are active when time and toll permits. 73, Mac 2ZMO.

VICTORIA

Band conditions have been very good during the past month with good openings on both 6 and 2 mx. JAs have been heard in VK3 around 50 Mc. The best DX so far this

SWL

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

The prominent feature on the Amateur bands at the present time is no doubt the vastly improved conditions to be found in the higher frequency spectrum. With 10 mx so good that it has finally appeared on my rx, and 15 mx open for periods of 12 to 16 hours, it would appear that we are in for a very good time in the months to come. Thus with the three bands at their peak, the old AR7 performing moderately well, and Peter Drew and myself in the shack, one would have expected some interesting loggings last week-end (Nov. 20/21). This proved to be the case, and some really good DX was logged. Prior to this particular week-end, the loggings of VQ9AA and 9X5PS had taken the score to the 300 mark. Unfortunately, despite the outstanding conditions over the week-end, Peter and I both let Don Miller's FR7 jaunt escape us. This was followed by the rare appearance of CR4 on the bands, when two of them appeared in contact with ZL—unfortunately there was no hope of logging them, thus another country got away. Anyway, if this week-end was a taste of things to come, I guess there will be many busy S.w.'s over the holiday period.

DIVISIONAL NEWS

The election of officers for the VK3 Group for the next 12 months resulted in the following: President, Harry Roach; Vice-Presidents, Bob Halligan and Michael Krockmal; Secretary, Ian Woodman; Treasurer, Tom Armstrong; QSL Officer, Brian Hannan; Acting Publicity Officer, Harry Roach. The annual Christmas Party was arranged for Dec. 9, and the first meeting for 1967 will be Friday, Jan. 27. The VK3 SWL Group congratulates Greg Johnston of VK7 on obtaining the highest score in the R.D. Contest for 1966, but VK3 did not miss out entirely, as the Victorian Amateur Listeners' DX Club gained the highest points in the club receiving section. This group has been formed within the VK3 listeners group by several keen listeners who concentrate entirely on Amateur band DX. The station, situated in Kew, uses a G5RV antenna and a modified CR100 receiver with space for another six receivers.

The S.w.l. Newsletter, "Zero Beat," is issued six times per year and is attempting to cater for all tastes in short wave listening. Subscription is 60 cents per annum posted, and can be obtained by contacting the Editor, "Zero Beat," Box 52, Caulfield South, S.E.8, Vic. Members are reminded of the constructional night on 10th Feb., and the general meeting on Feb. 24.

VK2 News: I have been criticised for my rare inclusion of notes from this Division and would like to comment here that I rarely get any official information from the meetings. The officials concerned are welcome to send notes to my QTH and such notes will be included, however I do live over 70 miles from the meeting QTH and cannot attend the meetings. So to those who care to criticise, how about either picking up your own pen and sending some notes in, or appoint somebody to do this task. Otherwise my good friends . . . keep quiet.

DX NEWS

Looking for Cook Is.? ZK1BW shows up on odd occasions with a 5 x 9 a.m. signal. CE-3PR working into ZL with a 5 x 9 s.s.b. sig., gives QTH as Apolquindo 3575, Santiago. CN-8FV asks for QSLs to W2GHK. 7X0AP working into ZL on c.w. at 2000z on 14, QSL to Box 414, Alger, Algeria. FL8HM had a good signal with his 90 watts a few days ago. His name is Hassan and manager is WTWLL.

Some up-to-the-minute DX news arrived at this QTH by air mail tape however it contains operating times etc., for stations which most likely will be QRT by January when you read this. But the QSL arrangements for the stations concerned are: TAIDS and TAIAY are via SMOKV, TA2BK, 2FM and 2YC are via DJ2PJ. ON5DI/LX (K2MYR). UA0YP is in Zone 23. CT2YA was the Yasme operators. SV0WL on Crete (W3CJJK) and SV0WU on Rhodes, to Box 66, Rhodes. ZA2BBL is genuine, but has only a one month permit for November. His QSLs go to Box 702, Tirana. 3W8D has appeared on the bands in the latter stages of November and is genuine. CN8FT says QSL via W2GHK. 7Q7PBD gives the

same QSL manager. 9M2 QSLs should go via the Bureau, Box 777, Kuala Lumpur. TA2AC has been heard at this QTH at 1800z, QSL via K4AMC. PJ2MI has been appearing with a good signal into VK2, QSL via VE3EUU.

BAND CONDITIONS

10 metres has been open on many occasions of late, when KR6s, etc., and Ws have been logged as late as 1100z, whilst ON5 (0800z), SM and OH were heard at 0700z. As well, the band has been open at 2200z during several check periods, when Ws and Pacific stations were logged. On 6 mx Mac Hillard reports signals from VK4. DX-wise, 15 mx is good, it has been checked regularly here at periods from 1800z to 0300z, and 0500z to 1200z, and there have been signals on all occasions. But the best DX is undoubtedly on 20, particularly in the pre-dawn period when the Middle East stations are being logged quite well on the long path. As well as these, many South Africans and other exotic calls have been noted.

During this period some of the call signs logged were 5Z4JW, 5A3TW, 4X4JU, TR8AG, VQ8TC, CN8FT, 9Q5SS, VS9AJH, 9Q6FS, HK5, CR6AI, TA2AC, EP2RV, VE7AZ, VPTA, 9Q5QC, 9X5PS, VS9ALE, VP2GLE, CT3AS, 7Z3AB, CT2YA, CN8FV (via W2GHK).

Down on 40 mx the commercials and static have played havoc, nevertheless the DX is there, including MP4s on c.w.

AROUND THE SHACKS

Bob Mutton, down there in VK7, has not been doing much of late, however this is understandable for, by the time you will be reading this, he will be married. If anybody has the QSL address of 9G1ND and VE3FJZ Bob would like it, his address is 24 Springfield Ave., Moonah, Tas., or you may care to pass it on to me instead.

Bob Halligan, L3229, has had QSLs from 5W1AZ, VR8ET, VK9RH, GM3BQA and KL7EQG, as well as hearing three new countries, 9L1HX, PY5CE and VP2KJ. (The latter is on Nevis Is and is a certain QSL via the Flatbush Radio Club, Box 26, Flatbush Sta., Brooklyn, N.Y., 11226, U.S.A.—L2022).

Warwick L3211 has been spending quite a lot of time between study and his car, thus he has been rather inactive. New cards have arrived, these include VPIHR, 5N2AAW, YU-2NJF, T1ZPJ, VKOTO, KC6BW, 11CXT, DLIJK, 9J2FK, UB5NO, ZC4PC, VS6AJ and TG9EP.

Over to VK5 where Ernie Luff has been chasing the DX. He has logged CF6FR, EA3NI, H18XAL, KZ5MV, VE2BUJ/SU, UARTEK, ZC4CN, VP2AC, CX9CO, ZS6OT, T18LH, XW-8BS, 9L1HX, OA0HC, FO8AS, FW8RC, 7Q7PH, 4X4BK, VU2WZ, EP2AX, 9V1ND, FL8RA and many others. His latest QSLs to hand are W4HKQ, FK8BB, VE6AQL, VK6KK, CN8MT, CN8BB, E1SS, GC5ACH, VQ8AR, VP2VY, VP-2GR and HZ1AB.

Ian Woodman, L3006, has just acquired a new Lafayette HA-52A f.m. receiver and is busily probing the ether in the 152-174 Mc. region.

L2022's activities have been covered fairly well throughout these notes, only new QSLs other than special ones for E.A.R.C. and QRP awards were KJ6CF and a VE. The latter one is of special interest for it is only the second fully completely filled out VE card I have ever received and also for the fact that he replied to my card direct and returned the C.R.C.—an action unprecedented in these circles.

OVERSEAS LISTENERS

This month we would like to greet Hugh Jenkins, a 20-year-old listener from Kincardine in Scotland. Hugh started serious listening several years ago, using a No. 19 set, but recently acquired a Lafayette HE-40, which is providing all the DX Hugh can copy. Listening conditions in GM land are good, with plenty of really outstanding DX to be heard from the European and African areas. Hugh, who is a member of the rapidly-growing I.S.W.L. tape club, uses a commercial recorder built around the B.R.S. twin track, single speed deck.

DX LADDER

Here are the final listings for 1966, showing first the number of countries confirmed, then the number heard. Eric Trebilcock 293/296. Bryan Prosser 197/241. Peter Drew 192/265. Warwick Smith 151/214. Don Grantley 145/302. Afton Westcott 106/159. Ray Kearney 104/170. Ernie Luff 103/180. Greg Earl 103/168. These listings are for 100 confirmations or more.

That winds it up for this month and this year. Good DX, and all the best, de L2022.

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- Galaxy V. and Swan SW-350 all-band s.s.b. transceivers.
- Hy-gain multiband vertical antennae and tri-band yagi beams.
- Webster Bandspanner all-band mobile radiators.
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USED EQUIPMENT

- Galaxy V., demonstration unit, full factory warranty, \$460.
- Eddystone 888A, ham-band 10 to 160 mx receiver, \$225.
- LM-14 Navy type BC221 Frequency Meter, with calibration and manual, \$60.
- Collins KWM-2 d.c. mobile supply and mobile mount, \$100.

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FEDERAL AND DIVISIONAL MONTHLY NEWS REPORTS

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

FEDERAL QSL BUREAU

Results of the 1965 Scandinavian Activity Contest (S.A.C.) show the following results: C.w.—VK2APK; Phone—VK2APK 105, VK2JZ 44. Check log L3229.

Results of the 1966 Illinois QSO Party place the following: VK3APJ 15/9/135, VK3RJ 8/4/32.

Eric Trebilcock, VK3 Inwards QSL Manager, advises, "I have received a bunch of QSLs back from ex VK4TE (Willis Island) reiterating his previous advice that he is not the least interested in Amateur Radio any more. All QSLs for him will be returned to the senders." It is a pity that these types get to the much sought after locations and while there enjoy the fellowship that Amateur Radio offers, yet on return to home locations, are unwilling to honor the minor obligations entered into from the remote locations.

Old timers in Victoria were delighted to renew old friendships with Dan Wilkinson, ZL2AB, who visited VK again after a gap of two decades to see his mother who has amassed the total of 90 virile years. Dan, as his call sign indicates, is one of the senior Hams in ZL with over 40 years of active hamming behind him. After retirement from the Education Dept., Dan settled in New Plymouth which is at the foot of Mt. Egmont. He was tickled while here to contact ZL2BEM in his home town and learn of cold wet windy weather while in Melbourne he was "enjoying" a temperature of 102!

Jack W2CTN, of Amityville, Li., N.Y., who acts as QSL Manager for a great number of DX stations, has forwarded a complete list of the stations he is currently handling, together with those for whom he has acted for in the past. Will be glad to supply information on application with s.a.s.e. to this Bureau.

No QSLs from any of the many venues activated by Don Miller in the past two years have been received at this Bureau so far.

—Ray E. Jones, VK3RJ, Manager.

NEW SOUTH WALES

The lecture subject for the VK2 Division's November meeting had previously been announced as "Solid State R.f.," but during the month it was found that the lecturer (Mr. Ted Banstead, an A.W.A. engineer) would not be available. However, to quote one of the latest popular expressions, "not to worry"—our Education Officer (Harold 2AAH) very smartly organised a worthy substitute in Mr. Alan Morris, last year's winner of the "Best Lecture of the Year" award. The lecturer kept the large audience both awake and interested with a talk, illustrated by color slides, about the operation of aircraft from the British aircraft carrier H.M.S. "Ark Royal".

From 1961 to 1963 Mr. Morris had served aboard this vessel in various parts of the world, concluding his service with the rank of lieutenant. It is of course, not possible to give a full report on any lecture in these notes, but we will endeavour to give a resume of the most interesting points for the benefit of those of our readers who did not have the good fortune to be present.

The main object of the lecture, said Mr. Morris, was to give an outline of what was involved in putting an aircraft into the air with sufficient speed that it flies, and how this same aircraft is recovered safely so that it may be used again and again.

Under normal circumstances an aircraft taking off with sufficient fuel and bomb-load to make it worthwhile would require a runway of at least 8,000 feet. This distance is obviously impossible in the case of a carrier, the length of the "Ark Royal," for instance, being 810 feet. (Incidentally, it weighs 53,000 tons.) To make up for the lack of runway length, a device known as a steam-powered catapult is used. It is 156 feet long and the aircraft has reached flying speed (about 140 knots) by the time it arrives at the end of the catapult. There are two of these devices in "Ark Royal" and such a peak of efficiency has been reached that an aircraft can be launched every five seconds.

For a launching, the ship turns into the wind and increases speed to 30 knots. A helicopter, complete with a party of frogmen, travels alongside during each launching, ready to rescue the crew of the aircraft should it crash into the sea.

When an aircraft is taking off while a heavy sea is running, the launching is timed for when the bow of the ship is rising, thus giving the aircraft more altitude.

As each aircraft moves under its own power onto the catapult, a large metal panel is hinged upward from the flight deck. This is known as a jet blast deflector and, as its name implies, it prevents damage along the deck from the jet engines.

One of the gadgets used to fasten the aircraft to the catapult is called a bridle. This is made of wire rope and weighs about a hundredweight. Each time an aircraft is launched the bridle is lost overboard—at a cost of 12 dollars each. As there are normally some 70 launchings a day, this may appear rather a costly waste. However, the view is held that using these bridles more than once could result in the loss of an aircraft worth several million dollars, to say nothing of the crew.

Now that we have successfully launched the plane, the problem is how to get it back on deck again in one piece. The pilot is guided back to the ship by radar, and when in sight of it he lines himself up with a visual aid on the deck known as a deck landing projector sight. The aircraft flies in over the stern of the ship, catches an arrester wire with a protruding hook, expends about 10,000 h.p. and comes to rest. If by chance something goes astray with the hook, the pilot "gives her the gun," takes off again and awaits the erection of crash barriers on the deck. These are made of nylon straps and are sufficient to halt the aircraft.

This lecture had been arranged at short notice but the subject was covered thoroughly and, as mentioned early in these notes, maintained interest throughout. Frank 2QL had charge of the vote of thanks, which was carried by acclamation.

Eleven new members were accepted into membership of the W.I.A. at the November meeting, as follows: G. S. Kiernan, VK2BGK; C. E. Sims, VK2ABF; K. Brackenbury, VK-2ZKR; P. B. Fischer, VK2ZPF; R. Stacey, VK2QM; D. J. Slade, VK1DS, and the following Associates: L. J. McDicken, C. H. Wall, R. Cameron, I. B. Bowmaker, N. W. Gibson.

Silent Key: During November word was received of the passing of one of our members, J. A. (Jeff) Hodgson, VK2ASH, late of Korringal, via Wagga. One minute's silence was observed during a broadcast from VK2WI. We have not been able to learn any other details but we take this opportunity on behalf of members of extending sympathy to the bereaved family. At the beginning of the November monthly meeting a minute's silence was observed in memory of the late Don Knock, ex-VK2NO.

Following recent publicity about cards for non-members being handled by the QSL Bureau, the President (Tom 2OD) invited further discussion from the meeting. Those who read our Divisional notes in the November issue of "A.R." will remember that an invitation to attend a meeting was issued to anyone who thought they had cause for complaint about any of the Division's services.

This brought forth quite a deal of discussion but the only complaints aired were those concerning certain non-members and their attitude to the QSL Bureau. In fact, the general feeling of the meeting was not very favourable towards these individuals, some of whom apparently have no compunction about using the services of the Institute—providing the Institute foots the bill. Rather than accept the QSL Bureau's offer of handling non-members' cards on payment of a small charge, one such person in particular was continuing his anti-Institute broadcasts when in contact with DX stations.

The retiring QSL Officer (Syd 2SG) said that some non-members had even given the Division's post office box number to DX stations, but when these had been posted direct and carried the correct postage he had been in the habit of re-addressing them.

SILENT KEY

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

VK2ASH—Jeff Hodgson.

VK3JG—John Mabbitt.

Complimentary references were made to Syd's untiring efforts on behalf of the QSL Bureau for the past seven years, and his successor (Roger 2ZIG) was introduced to the gathering.

In closing the discussion, the chairman announced that Divisional Council would continue to keep an eye on the QSL position, but in the meantime the present rules would stand.

This month is a most important one, socially, for the VK2 Division, with the annual State Convention and Zone 2 Convention both being held during Australia Day week-end, January 27-29.

The Divisional Convention will commence with the monthly meeting on the Friday evening, January 27, when we understand there will be an interesting programme for the customers. While final details have not been decided, it is quite possible that Wireless Institute Centre will be open on the Saturday afternoon for afternoon tea and eyeball QSOs. Divisional Council has decided to hold an annual dinner again this year on the Saturday evening at the Centre. In former years this event was usually a "men only" show, but it will be remembered that last year members were encouraged to make it a social night by taking their wives with them. The result was such a success that it is to be hoped even more members will fall in with the same idea on this occasion. After all, what are a couple of dollars if it means an improved atmosphere with the little lady on the Amateur Radio front. Early booking is important in order that catering arrangements can be finalised. Don't delay—book today! The Secretary (Mrs. Betty Gerdes), telephone 47-4421, or Bill Lewis, telephone 31-4967, will be pleased to take your bookings.

The annual field day on the Sunday will, as usual, take place at our transmitter site, Quarry Road, Dural. Some thought was given to changing the venue this year, but after considering alternative sites it was decided that Dural still held the advantage. This is the 10th anniversary of the opening of our Dural property so it is to be hoped everyone will put their best foot forward to make this year's field day an occasion to be remembered. We would particularly like to see as many of our country members as possible joining with us for all the events over Australia Day week-end. There will be the usual field events, while a special effort is being made for the entertainment of the ladies and children.

As mentioned earlier, the Zone 2 Convention is set down for the holiday week-end in January, and I'm sure the Zone Officer, Max VK2BMK would like to hear from intending patrons.

Other coming events which should be kept in mind are the Gosford Branch's Field Day about the middle of February, and the "do's" at both Urunga and Canberra over Easter.

The good work performed by Amateur Radio operators in times of flood and bush fire emergencies is well known to all, and from a report given to the November meeting by Stephen VK2ZSK, President of the V.H.F. Group, it would appear that a new and rather novel community service is in the offing. Orchardists in the fruit growing district of Bilpin, near Mt. Kurrangong, recently approached the VK2 Division seeking assistance in tracking down the camping ground of flying foxes. For years the orchardists have suffered heavy losses from these creatures but have not been able to locate their "home base". Members of the V.H.F. Group have taken up the challenge and at time of writing were building up small transistorised transmitters. The plan is to attach the transmitters to a few captured flying foxes, and on release it is hoped they will be tracked to their camp by receiving stations set up on high spots around the area, with the assistance of several mobile outfits. Apart from preparing the equipment it is now just a matter of waiting for the fruit to mature and the appearance of the flying foxes. We will all be keeping our fingers crossed for the success of this venture. If it works it will be because of the skill attained by the v.h.f. boys on their regular fox hunts of a slightly different kind.

The Dural Committee has received a welcome donation to the VK2WI station equipment from that well known old timer, Joe Reed, VK2JR. This is a heavy-duty block and tackle, which should be invaluable for raising and lowering masts. The W.I.C.E.N. Committee recently

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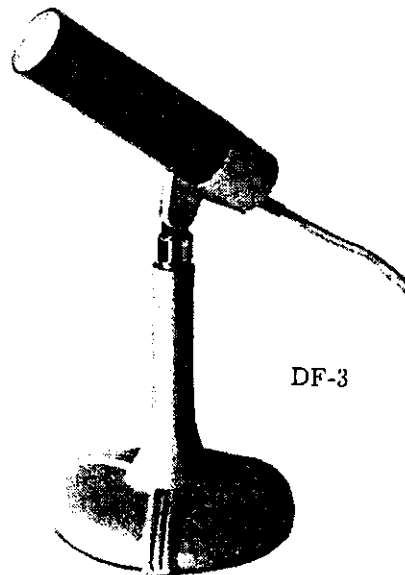
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acquired a 40 ft. mast so we can see Joe's donation being put to good use very shortly.

Now that the Divisional Library is a going concern for the first time in several years, it is to be hoped that members will make full use of this service, at the same time giving all concerned a fair go by keeping to the rules as regards return of books. Unfortunately there are still quite a number of gaps in the lists of several popular overseas periodicals, and the Librarian would very much like donations of these. Filling the gaps would make everyone happy, for it would be disappointing both to the Librarian and the member asking for a certain book if it were not available. Have a look at page 6 of November Bulletin and see if you can help the Library, and please note that all enquiries should be addressed to the Librarian, W.I.A., P.O. Box 154, Crows Nest, N.S.W.

Our Education Officer (Harold 2AAH) has issued a reminder about his taped lecture service. This is an excellent opportunity for clubs and other interested groups, or individuals, for that matter, to catch up with some very good lectures that Harold has on tape for your benefit. And what is worth thinking about—it's free, except for postage each way. A list of available lectures was printed in the Bulletin for April 1966, so make your choice and then drop a line to Harold, C/o the Wireless Institute Centre. While on the subject of services, if you are after Morse tapes, Ern 2EH is the man to contact, while those interested in joining up with this year's A.O.C.P. Class should write to Cec 2IR, also C/o. Wireless Institute Centre.

In concluding this first batch of notes for 1967, may I wish all my readers a happy and prosperous new year—and if you can spare a couple of dollars, don't forget the I.T.U. Fund! 73, Ivan 2AIM.

CENTRAL COAST BRANCH

The last meeting of the Central Coast Branch was held on Friday, Nov. 18, at the Gosford School of Arts. We were very fortunate to have John Featherstone, K7JUP, of Tucson, Arizona, talk about "New Thoughts in Communication". John is mainly concerned with electronic research at the University of Sydney and also as a consultant. He was enthralled with the galloping progress of radio in its various forms and felt that we have still only touched the fringe of the possibilities. He had much praise for the work of Radio Amateurs in the experimental field and also for the capacity of Australian technicians. It was a great pleasure to listen to John for, apart from his interesting lecture, his American lingo interspersed with Australianisms was very pleasant to the ear. Many thanks John.

Our President, Lindsay 2ON, has just returned from an extensive tour of New Zealand when he met some of the voices we hear on the air. We hope to hear more about this when he has had a chance to catch up on his work.

Our Field Day will be held at Gosford on Feb. 19, 1967. We always have some interstate visitors so mark this on your calendar in case you are planning a trip this way. 73, Mona 2AXS.

VICTORIA

EASTERN ZONE

There is still some quite good activity on the air in the Zone and different members are keeping the bands and nets occupied. Evidently quite a number of fellows in the Latrobe Valley are getting interested, some home-brewing and others letting the manufacturers do the hard work. There have been two s.w.'s sit for the L.A.O.C.P. in October, namely Albert Cash and Trevor. I trust the results have been to their liking—the more the merrier on the bands, or is it the more QRM.

The 2 mx f.m. net is quite active along the Princes Highway and some of our keen 2 mx fans such as George Francis, of Morwell (phone 43953) are always willing to help in whatever way they can to promote the present state of the Amateur art. George has been having quite good contacts into western VK3, to VK2, VK5 and VK7, so what about giving 2 metres a fly on s.w. and f.m. There are a couple of chaps in the Western Zone who will be pleased to work DX on two, Roy 3ZYG at Kaniva, and Jim (call sign unsure) at Nhill, who are recent L.A.O.C.P. winners, as well as the old hands. If you want some DX on the v.h.f., try 6 mx, you should get some good DX. I believe that JAs have been heard in Melbourne recently, could be a really good year. 15 and 10 mx have also been extremely good and David 3DY has been giving 10 quite a bit of time, as well as 20.

The Eastern Zone net on a Friday night on 3650 Kc. at 2000 hours is being kept active, but don't forget the more the merrier, and

its a chance to get to know your fellow Zone member. Sideband seems to be becoming the order of the day with quite a large number of the Zone members using this mode of operation, the exact percentages I don't know. Most appear to have commercial gear, although some are building their own. Shame on us commercial gear Amateurs? Martin 3AMV hopes to be on the air fairly soon with an s.s.b. transceiver, so should put out a good signal on the G5RV antenna.

Cliff 3AIT is still very busy on C.F.A. radio networks and when at work is head down, tail up, working on the automatic control gear at 3GL. As a result, the s.s.b. rig has had to take second place for a few months. Kell 3AEP is a very keen home-brewer and is now in the process of designing and building a completely transistorised s.s.b. transceiver. I'm not sure what power it will run, but I suspect that it will tote enough power to put a quite reasonable signal interstate by itself and much further with a linear. John 3AED is doing some experiments with s.s.b., so instead of being only able to tune one sideband we'll be able to take our pick. What about making it i.s.b. and we'll be able to take our pick of programmes.

George 3ZCG has kindly offered to take over my job of Zone correspondent. I have moved out of the Zone in fact, perhaps I'll be the Zone correspondent for Antarctica? Watch for the call sign VK0CR, the voice of Macquarie Island. I'll be active on 20 about 14160 and on 6 mx on 52.902 Mc. The latter is a beacon tx which you will have read about in "A.R." by this stage. With a little bit of luck we'll hook up on 6.

Remember, early in the new year is the Zone Convention which I believe is being held in Sale. All the best in the Zone, fellas, hope to work many of you on the air and I hope that you will give George all the help you can for the notes, particularly the h.f. news; George has his finger fairly well on the v.h.f. activity. Thanks for your notes, George. 73, Rodney 3UG.

SOUTH AUSTRALIA

The usual author for these notes, the most read writer of this magazine, Warwick 6PS, PanSy to you, has been taken to hospital and thus lays himself open to an extra attack by the "Gawler gang" who have been asked to stand in for him. First of all we hope that he will make a complete and speedy recovery and that by the time this is being read that he will be able to make suitable reply to any slander cast in his direction. It is felt that the VK5 Council will not know how to act if Pansy's possible comments are not available!

It is wondered if the visit of Fred 3YS, as reported in a previous issue, complete with a black box that issued only s.s.b. could have contributed to this lapse, hope not, although it is understood that Warwick's XYL did suggest that he procure one of those things "and thus join the strength".

Reading the leader in November '66 "A.R." must make most of us think deeply about the present set-up and future of our organisation, the need of which will not escape any member who stops long enough to consider the road ahead. At present, in spite of our annual subscription, the whole of the activities conducted by the W.I.A., and they are vast, are done on a "no pay" basis. Both State and Federal alike.

Just consider some State work. QSL card receipt and distribution for one. For VK5 this is a task done by George 5RX, who does a magnificent job, handling thousands of cards each year, keeping your costs down, maintaining records of your cash position with him, sorting out the cards for your collection, carting them to the meetings for distribution, mailing others, and so on. Extra to that he provides a very interesting segment for the Divisional Broadcast each Sunday. George really does his bit.

Brian 5CA, the genial editor and publisher of the S.A. Journal, is another who puts in endless time for the membership. Next time you receive your copy of the Journal, work out the effort that has gone into its preparation, printing, folding, mailing, etc., and ask whether you have offered to assist in any way. It's a mighty job that Brian and his small band of helpers do for the love of the game. Yes, Brian really does his bit.

The Sunday morning broadcast of the Division, presently in the hands of Murray 5ZQ, deserves better support. Don't leave it to him to "find the news," feed it to him. The session can only include limited coverage if the general membership don't become contributors. Murray also does his bit.

And so we could go on to Phil 5NN and his s.s.b. page for "A.R." The President and his Council and the time they spend in general

administration work on our behalf, Eric 5ZEJ and his v.h.f. notes for the session, Geoff 5TY and his band of W.I.C.E.N. enthusiasts, and so on. Expand this to each Division, and add to it the more specialised work of the Federal level when it is easily seen that the amount of volunteer time expended on behalf of general membership is vast, and in the main part expended by a dedicated few.

Why are we hammering this aspect this month? In order that each member will rally to support those who are guiding us at present, that we will take more interest in the work that lays ahead, that we will try and influence all non-members to join in and at least numerically add to the weight of our voice, and that by so doing we will finish up with a strong organisation that will help Region 3 become a voice in I.A.R.U.

Finally, on this matter, don't overlook our obligation to subscribe to the I.T.U. Fund, for we must be well represented at the Conference, and this costs money. You may have already sent in your donation, if so OK, but if not, it is not too late to do so.

Divisional Council membership is subject to nomination now, you will soon receive a Journal to this effect. When you do, make it a must to do something about it, the more nominations the better, or we want to keep our Division active and progressive.

A new department recently started for the benefit of VK5 members is the "Antenna Erecting Group". This is a group of chaps who are prepared to go to the assistance of any enquiry and help in the erection and testing of an antenna. This is not limited to the help of older members, but anyone wanting help. Being experienced they will short cut and get over many hurdles not known to newcomers. Enquire from the Secretary.

Have been keeping an ear to the ground wave on 40 and 80 these last few days in the effort to secure some copy and it is a source of wonder how often you hear the same networks in operation. Tune the high end of 40 most evenings and you are sure to run across Carl 5SS, Frank 5MZ with some of their cobbars from across the border and that perpetual optimist, 5WG, who was heard exhorting the group to "look on the bright side—never grizzle, be like me, always look on the bright side." To which philosophy all Carl could say was "Gee". Spin the dial down to 7050 and I'll offer even money the frequency will be occupied by Athol 5LQ with his ancient modulation or Jack 5LN and 5BH using "the thing". Tried to get through to the other end of the drain fellows, but no go—how about turning up that r.f. gain control.

Had a few words with Ken 5IM the other teatime just as his XYL called "come and get it". Ken stayed long enough to pass some kind remarks about my signal and to say that he had been keeping his schedule with 2AXL-2AHM three times a week for the best part of two years. Followed this with a very short hook-up with Col 5RO. Was one of my most regular QSOs on 8 once but since the change to 52 Mc. Col has been missing from the band. Better scrape that 2 megs off the xtal, Col, the JAs will soon be pouring in.

Anybody work that DX-peddler Arch 5XK? I believe he has been holidaying on Norfolk Island and took a key and a couple of dry batteries with him. How did it go Arch?

Sunday, Nov. 27, the S.A. V.h.f. Picnic was held in glorious weather at the Walnut Paddock, National Park. Earlier over the WI broadcast all and sundry were invited to rendezvous at Belair and enjoy the hospitality of the V.h.f. Group. I didn't put in an appearance till very late in the afternoon, but was made welcome and a quick count revealed 28 vehicles adorned with many and varied antenna systems. Garry 5ZK and Geoff 5TY were noticed "slumming" it with several Z types and Ross 5ZF, our worthy President, was seen surveying the scene with a very contented look on his face. Or was he merely watching the very fair examples of S.A. pulchritude as they tended the barbecues? Why is it the WI Picnics were never so well attended? What do the v.h.f.'ers have that the h.f.'ers haven't had longer? Don't answer that!

Heard Vern 5VB "conning" yet another one into building a quad the other night. Vern must have influenced more blokes into putting up quads than any two other Hams in S.A. But watch out Vern, my admiral, Bert 5EW out Elizabeth way has come up with a version of the modified G4ZU on an X frame that will make you look to your laurels.

What's this business of feeding an antenna with "iron ants"? Uncle Joe, 5UJ, up in Whyalla, claims wonderful results and when the s.s.b. gets teamed up with this after Christmas who knows what might happen.

That erstwhile exponent of 288, Don 5LO, made himself known the other evening on 80. Don was 3PO for a year or two and now signs

5PX. Remember that classic contact from Mallala Don, or perhaps I'd better not remind you. 50 watts to four 813s wasn't it? And a 500 ft. vertical!

John 5MX was another to say hullo on 80. I looked up the QSL John and found the date October 1949. How time gets away.

Forget who it was but one of the up-country types was telling the group about a cow he was trying to milk the other morning and was having no end of trouble. He said, "It took me ages to get him into the stall and I no sooner balled him up when he broke the leg-ropes and the next thing he kicked over the bucket." It was about this time the voice of Brian 5BI broke in to say "Boy, don't you know you've got the wrong kind of cow?" How would a mere technician know?

73 from the Gawler gang—VKs 5EF, 5ZJH and 5AX.

Nov. 22 saw the monthly W.I.A. meeting conducted as usual at the Master Builders' Centre, South Terrace. A below average attendance was present in contrast to similar previous meetings, which took the form of a trading table arranged by the W.I.A. Disposables Committee under the direction of Gilbert 5GX. Many excellent items were available from nuts and bolts to crystals, in fact you name it and it was there, well it was until someone managed to get their grubby little hands onto it. In all, a good opportunity missed by those who did not attend to stock their junk boxes.

Official business as usual was accepted in the apathetic manner that the average VK5 Amateur tends to view these matters. Unfortunately Warwick 5PS (PanSy to you) was not present to voice his opinion on any contentious issues. Nonetheless, an enthusiastic ear was given that evening to a proposal submitted by Council to the membership on the subject of insurance relating to members conducting organised Institute activities. For reasons unbeknown and not explainable, no such policy has ever been taken out. However this situation is to be remedied almost immediately following the unanimous accord given to the proposal by the members present.

With respect to this insurable safeguard, the instigator and super sleuth on the matter was none other than our genial giant, Geoff 5TY, the VK5 Federal Councillor, who incidentally during the course of business was reroadied into another term of office. Should the VK2 Constitution Committee read this, they may wish to know that Geoff aims to see a Federal Constitution signed, sealed and delivered to members before the completion of his ensuring term in office.

Geoff also presented a comprehensive report on W.I.C.E.N. activities including a commendation from the S.A. Fire Brigade for the groups' assistance in "Operation Guy Fawkes". Mention was also made of a special insurance cover to protect W.I.C.E.N. members that Geoff had managed to procure from one company. Does your right arm ever become weary Geoff? If not, what's your secret?

As usual, George 5RX was present to distribute the QSL cards and judging by the cards available, VK5 is certainly to the fore in the DX world.

On the v.h.f. scene the VK5 beacons (VK5VF) on 53.000 and 144.8 Mc. are once again oper-

ative. They were officially recommissioned at 1500 hours C.S.T. on 25/11/68. This was primarily due to the excellent work of Bob 5ZDX who contributed greatly to re-building the beacons into a new weatherproof cabinet, and then organising materials, labour, in fact the whole box and dice for the re-installation of the beacons back at the Channel 7 t.v. transmitter site.

On Saturday, 19th Nov., Bob, assisted by Eric 5ZEJ, Barry 5ZMW and Colin 5ZJH, set about laying an electrical supply service a foot into the "terra-firma," for a distance of 50 feet. This would have been okay for the boys had the temperature not been 95 degrees. Nonetheless the job was completed with frequent breathers to quench their thirst. In addition, the antennae were erected and a concrete foundation poured to seat the beacons on. It has been reported that one member of the quartet is a most agile tree climber and even more agile at lopping off branches that could have possibly damaged the antennae, which incidentally are stacked big wheel antennae for 2 metres and a turnstile for 6 metres.

On Sunday, 20th, Bob and Colin once again braved the elements, down 2 degrees to 93, to place the beacon box in position. This was duly achieved and by late afternoon the only remaining thing to be done was a checkout and approval by the P.M.G.'s Department. This was done on the following Friday (25th) and then the beacons were recommissioned into service almost instantaneously.

WESTERN AUSTRALIA

A Happy New Year to you all. I was almost tempted to wish you the Compliments of the Season, but this would be most ungentlemanly of me. With the festive season once again behind us we can turn our thoughts to annual holidays, acute sunburn, restless kids and all those thousands of jobs still waiting to be done since this time last year. This is the time of the year that each Division sends out extra patrols along the boundaries to repel boarders or welcome guests or something.

At the time of writing, our Secretary (Neil 6ZDK) has once again donned harness after a spot of holiday in Geraldton and a trip around the South West. He reports that everything went smoothly, unlike some previous years!

Talking of harness reminds me that Tom 6DP is about to step into "double harness". He was the recipient of some good advice at a recent meeting. For some reason it seems that Jim 6RU is in a good position to extend instructions on how to spend one's wedding afternoon. Jim was a little bit hazy when asked to recall that eventful day, so perhaps we had better let the matter rest. Ron 6RS repeated some sound advice, which I understand originated from 5PS (that man again), "Dishes before DX". I might have known that PanSy would get into the act! Anyway the very best wishes to both you and the little lady, Tom, you are no longer a Displaced Person!

Well we certainly are privileged to live in an affluent society aren't we. Take Bill 6WV and Eric 6VM and Cec 6KK for instance. Understand that each of these guys is piloting a new space vehicle around our sunny metropolis (city to you, sport). My spies tell me that Bill is still a little bewildered trying to juggle the new monster into the same spaces which the "Beetle" used to occupy.

Eric reports that the mobile gear is more reliable in this wagon, no troubles being experienced with antenna change-over relays.

Cec, being more skilful, manages very nicely on only two wheels. This intrepid character ventured out on the South West Highway and negotiated the track to Waroona where he demonstrated the new machine to Bob 6RG. It is the mostest motorbike, with blinking lights, hot and cold sliding doors—and, wonder of wonders—press button starting.

Ho hum, I wonder if I should really mention it or not? Perhaps, just in case some of the other Divisions couldn't bear to look at the results, we could whisper it quietly. VK6 WON THE R.D. CONTEST. Okay, okay, I can take a hint, but it is nice to be able to crow a little bit on occasions.

More news from the Y.R.S. front. Rod 6SE has organised a group of his students at the college at Carmel. Further South we have a report that the boys at Bunbury High are also active under the able leadership of Mr. Tom Tuffin. Y.R.S. boys are certainly giving a good account of themselves. In a recent exam. held by a certain illustrious department, Colin Webster, Graham Down, Colin Shier and S.W.L. Glenn Ogg were all well placed. Nice work fellers! Hope I haven't missed out on anyone, but you know how it is, even my most experienced informers tend to lapse into inaccuracy at this time of the year.

Basil 6BS is the latest addition to the side-band gang on 80, a very healthy signal, too, if I may be permitted an observation. It seems that his nimble fingers transformed an old "final" into a much more acceptable linear. One thing about Glad 6FG. He doesn't do things by halves! Like when he occasionally turns up at a meeting, he always manages to talk someone else into coming with him. Last time he coerced (wow, that's a better word than "kidded" isn't it?) Ray 6WU into coming along with him. Ray is a near city dweller these days, but complains that some of his mail is doing a round trip to places like Mt. Tom Price instead of fitting gracefully to Hamersley via Mt. Hawthorn. Not like our Postal Pixies to make a bo bo like that is it?

An exhausted carrier pigeon finally alighted on my quad the other day, bringing me tidings from the Golden Mile area. It appears that John 6ZBY has taken up residence in Kalgoorlie, much to the delight of Doug 6EP and his confederates. Six metres will sure get a thrashing now! No alterations to the skyline at the moment of writing, but to a fellow of John's calibre this aspect will not pose any great problems. Wouldn't be surprised at all if, aided and abetted by Doug, Percy and the gang, John soon converts to the "full" call sign.

By the time you read this there will probably have been a number of openings for 6 mx DX to our Eastern and Northern neighbours as it is about this time of the year that a rash of newspaper reports of "freak t.v. reception" appear. Ah, the wonders of modern science!

Had high hopes of hearing a bit more of Ted 6TM, after his brief but very welcome appearance during the last Jamboree of the Air, but no such luck. How about it Ted? Is it true that you have shifted QTH a bit nearer to Waroona town?

Bill 6WY and Roy 6RY, those consistent 20 mx hounds, have come up with another beauty. This time it was 3W8D Russell Milroy, who has been issued with the first official call from South Vietnam. I believe the dog pile had to be experienced to be believed.

Well, cheers for now fellers and safe travelling during the holidays.

Reminds me of the Sunday school teacher who had just told her class about Lot's wife who disobeyed instructions and turned around to look back and was promptly turned into a pillar of salt. One kid was scornful. "That's nothing," he said, "my Mum looked round while she was driving Dad's car, and she turned into a lamp-pole."

See yer, Ross 6DA.

HAMADS

Minimum 50c, for thirty words.

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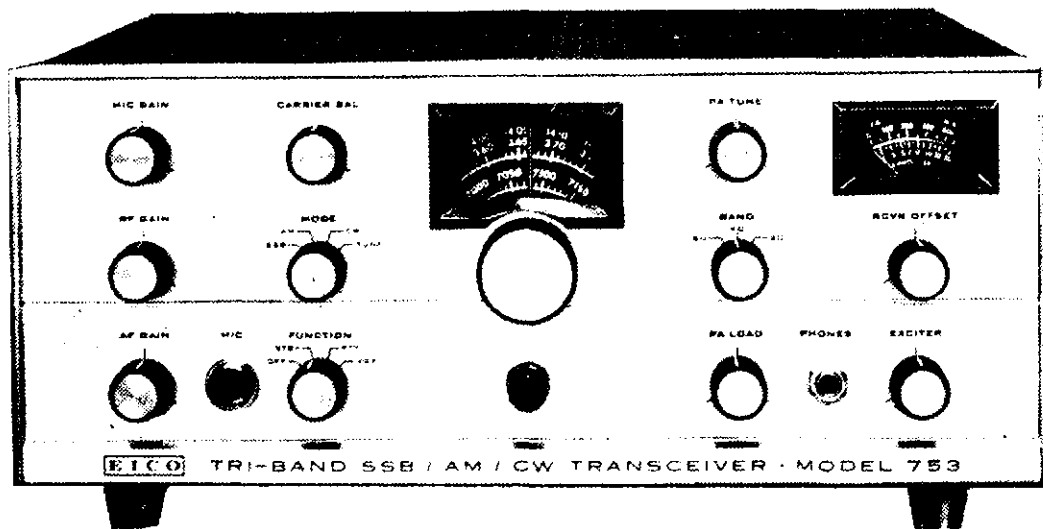
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amateur radio

Vol. 35, No. 2
FEBRUARY
1967

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FEDERAL COMMENT

★

REGION 3 I.A.R.U.

During the past year there has been a move towards closer co-
operation between the I.A.R.U. Societies of Region 3. The possibility
of a conference is being investigated.

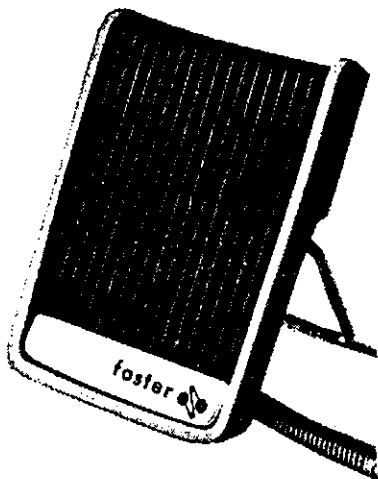
In Europe very successful meetings take place between representa-
tives of the various Region 1 I.A.R.U. countries including some from
Eastern Europe such as U.S.S.R., Poland and Czechoslovakia. However,
we must bear the following in mind. The distances involved in Europe
are less than those travelled by delegates to a W.I.A. Federal Conven-
tion. Due to the high technical development of Europe there are a
large number of active Societies which, because of their close proximity
to each other, have many common interests.

In Region 3 the distance between the major Societies is great and
in estimating the cost of a Region 3 Conference, it is apparent that
fares play the major part. Also in Region 3 there are some emerging
nations where there is no Amateur Radio and whose administrations
know nothing of it. This indicates that some missionary work on
behalf of Amateur Radio in this region would not go astray. This type
of work has been pioneered in Africa by the A.R.R.L. Africa presents
very similar problems to Region 3 as all the Region 1 activity seems
to be in Europe. If we are to have a Conference which is the best
way to unify Amateur Radio in Region 3, then we must expect the
major financial burden to fall on the strong Societies of the Region
of which the W.I.A. is one.

D. A. WARDLAW.

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A SYNTHETIC BATTERY FOR YOUR CARPHONE

(or how to make Transistor Regulated Power Supplies)

PART ONE

RODNEY CHAMPNESS,* VK3UG

SOME time ago I had cause to design and build several transistorised regulated power supplies. On looking through various magazines and so forth I accumulated quite a bit of "dope" on transistorised supplies. This was all rather beaut, the only troubles being that none were designed to supply more than 1 amp. and I required supplies that would deliver up around 10 amps. and not be too expensive to produce. The supplies were designed to take the load of a 60 watt transistorised transceiver, and put out between 12 and 14 volts under load.

The following designs will carry loads up to about 12 amps. with little modification. These units are just the shot if you want to run any equipment, transistorised or valved, which works off voltages in the 6 to about 18 volt range. They will certainly save having that messy battery hanging around the shack, with its attendant worry of charging, etc., when you only want to run the mobile sometimes on the bench.

These supplies will also double as efficient tapered-charge battery chargers; now that's something that has been always lacking from dealers' shelves. You only have to set the end voltage on open circuit, connect it to the battery and then go away and forget it and your battery will be fully charged but not overcharged. Well I'll get on with the description, circuits and pitfalls (and believe me there are enough of them until you wake up to them).

FIRST POWER SUPPLY

Circuit 1 shows the first power supply that I built. It is designed to provide up to 12 amps. maximum at 12 volts, and when off load it will produce about 14 volts, although I wouldn't recommend that you run it at 12 amps. for more than a few minutes, as take my word for it, it gets really hot. As a general rule, I wouldn't run it above about 7 or 8 amps. continuous as the junction in the transistor gets quite hot and the higher the temperature the more the transistor has to be derated from its maximum of 150 watts dissipation.

The power transformer used in this power supply is a 17 volt at 10 amp. unit available from Trimax. C3 is a transient suppressor capacitor, which is most desirable with silicon diodes. The diodes D1 to D4 consist of two 1N3491 and two 1N3491R. D1 and D3 are mounted on the one heat sink such as the Ferris type 7000, and are type 1N3491R; the diodes D2 and D4 are 1N3491 and are mounted on a similar heat sink. The transistor TR2 is mounted on a Ferris type 7003 heat sink. All these components are mounted directly

onto three heat sinks for better heat transfer, so they must be suitably insulated from earth.

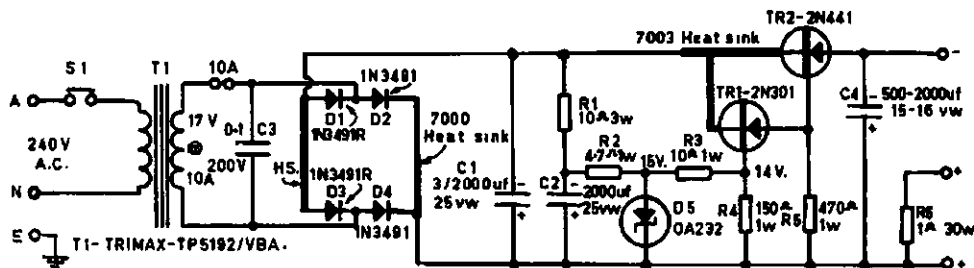
The 2N301 (TR1) is also mounted on a small heat sink of a few square inches; it does not have to be big as the 2N301 does not dissipate much heat. The diodes are fitted into stud adaptors, as in their normal state they have only a knurled edge suitable for fitting into automobile alternator blocks.

Across the diodes it is advisable to fit equalising resistors and capacitors, as shown in Circuit 2, the values shown would be suitable for Circuit 1. You can get away without equalisers as the p.i.v. across the diodes will not be higher than 48 volts but this is going close to the wind with diodes rated at only 50 p.i.v. The reason for equalisers is that one diode in a series train will commence conduction a fraction of

dissipate more heat as the output voltage is decreased.

The resistor R5 is used to stabilise the output voltage. The leakage in the 2N301 causes the reference voltage to rise to the rectifier output voltage, and the resistor counteracts this effect. (Probably collector-emitter leakage, someone who knows more on transistors may be able to correct me if I'm wrong.) Capacitor C4 is used to give final filtering, particularly at the higher frequencies, as I found the voltage regulation much better in the supplies when this capacitor is fitted.

Well that is the gist of the first power supply, it is simple and easy to get going. There are no particular ways of construction necessary, with the exception that plenty of air needs to flow around the heat sinks. The fins must be in the vertical plane for efficient



CIRCUIT No. 1.

a cycle sooner than the others, so placing the full peak voltage across the succeeding diodes and possibly causing the p.i.v. to be exceeded of the following diodes, causing a break down. I had it happen to me, so be warned.

If you wish to do it by the brute force method, use the type 1N3492 which has a p.i.v. of 100 volts. In the later supplies I use the higher voltage diodes, and also the equalisers, just to be on the safe side.

Capacitor C1 consists of three 2,000 uF. 25 v.w. electrolytic capacitors. Allow here about 500 uF. per amp. of output current. The network R1 C2 is a voltage dropping filtering network. The filtering here is passed on through R2 to D5, the reference zener diode, which is a type OAZ232 and is rated at 7 watts 15 volts. This is mounted on the same heat sink as the 1N3491 diodes, this heat sink being the positive line. As 15 volts is a little high for 12 volt equipment, a fixed divider R3-R4 is used to establish an output voltage of about 14 volts. R4 could be replaced with a potentiometer, so giving variable output voltage. The disadvantage with this idea is that as the potentiometer is set for lower voltages, the regulation becomes decidedly inferior due to the variation in current drawn by the 2N301 base. Another point to consider is that the 2N441 will be required to

cooling. Incidentally, the resistor R6 was fitted to the output so that batteries could be charged from the supply. The supply output through the 1 ohm resistor can be shorted without harm for a short time, but most definitely not straight across the supply.

This is quite an effective supply and will fill many needs, but falls down in the following aspects: its voltage regulation, although not bad, could be improved; there is some ripple in the output; it is only suitable for about 12 volt use, and last, but certainly not least, it has no overload protection (which in some circumstances is not important, but you short the output and see if you have a workable 2N441 transistor in the unit after you remove the short). With all these short comings in mind I decided that a more sophisticated power supply was needed so the unit shown in Circuit 2 was evolved.

SECOND POWER SUPPLY

The advantages of the second unit are that it has only a variation of between $\frac{1}{2}$ to $\frac{1}{2}$ volt between full load and no load, with loads ranging up to about 9 to 10 amps. The ripple on the output is indiscernable on the 3 volt range of an a.c. meter, so I reckon that is good enough for any equipment that I'm ever likely to use. One of the main features this unit has is the variety of

* 14 Buckley St., Sale, Vic.

overload protection circuits incorporated. It has both short term overload protection provided by TR1, and long term overload protection afforded by the Zettler relay, as well of course we have the standard cartridge fuse.

One other feature is the ease with which the output voltage can be set. This particular unit was designed with only one voltage output in view, namely 12 to 14 volts, but with slight alteration in the value of some components it will produce up to about 25 volts, although this voltage would only be available at rather low amperage.

The circuitry is very similar to the previous unit up to the output of the rectifier filter unit, with the exception that diode equalisation is used. Two transformers are used in series, giving an r.m.s. output a.c. voltage of 23.3 volts at a 4 amp. load, but on open circuit this r.m.s. voltage rises to 25 volts and the peak voltage that C6 charges to is in the vicinity of 35 volts. As the particular transformer I have used has only a rating of 4 amps., more current than this can only be drawn for short periods.

The function of TR3, 4, 5, 6 and C8 are the same as TR1, 2 and C4 in the first circuit. R13, 14 and 15 are equalising resistors for the 2N441 transistors to help maintain exactly the same or as near as the same current flowing through all transistors. If they are not fitted, one may take most of the current and as it gets hotter it will take increasingly more and eventually run itself to destruction. R5, 6 and C7 perform the same job as R1, 2 and C2 in the first circuit of filtering, and voltage dropping.

Now from here on the principle of operation differs considerably. The voltage for the base of TR3 is obtained through R5, 6 and this voltage is adjusted and controlled by the conduction of TR2. The emitter of TR2 is held at a certain voltage negative in respect to the positive terminal of the rectifier output. The current necessary to keep D5 conducting is obtained

through R10. TR2 has its base taken to a voltage divider across the output (R12). The setting of this potentiometer governs the relative voltage between base and emitter of TR2 and so the relative conduction.

Depending on the relative conduction of TR2, depends the voltage present at the base of TR3, and so the output voltage of the supply. Now say a heavy load is placed onto the output, so bringing the voltage down a volt or two. As the voltage has been reduced, so drastically the base emitter voltage of TR2 will be reduced, therefore it will possibly even be cut off, so meaning that TR3 will get a much increased voltage to its base, which will be reflected in a greater output voltage. The output settles down to a value which is very nearly the same as the original voltage (it happens much quicker than can be described) and also the converse is true should the load decrease and the voltage tend to increase.

To obtain best regulation the negative lead of the potentiometer R12 should go right to the respective output terminal. By doing this any voltage drop in the wires to the output socket are automatically compensated for in the supply regulation circuit. As a matter of interest the mathematical increase in the effective capacity is the value of C7 x gain of TR3 x gain of TR4, which works out roughly to $2000 \times 30 \times 20 = 1.2$ Farads. Not bad huh?

Where this supply's regulation beats the simpler supply is that the regulation error voltage is obtained from the output, whereas with the simpler supply regulation is applied before the filter transistors.

R12 is the voltage output preset or it can be a variable on the front panel. If you require to run the output of this supply over a wide voltage range two alterations should be made. R10 should be increased in value to 3.3K and instead of going to the emitter of the 2N441 transistors, it should go to the collectors. R12 should have a 560 ohm

resistor placed in series with its positive lead.

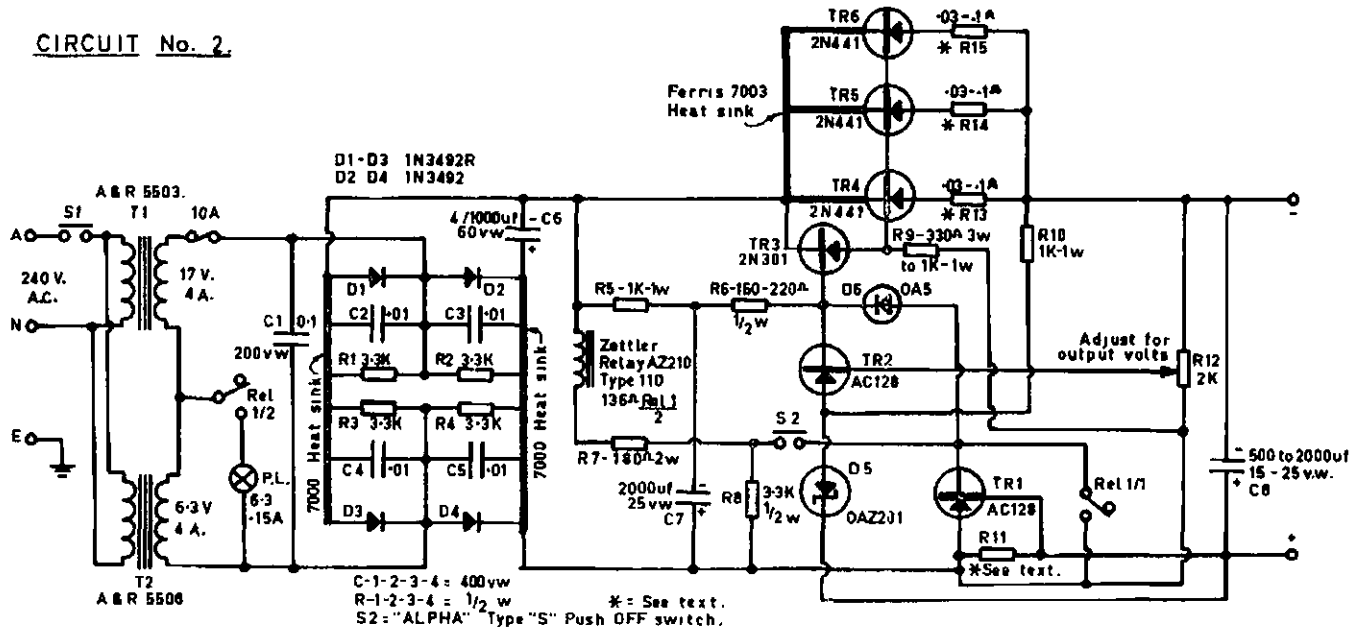
I suppose you have been wondering why I used three 2N441 transistors in the output of this supply and I only used one in the simple supply, and the output currents are approximately the same. Well a little arithmetic is desired here. When a drain of 10 amps. at 13 volts output is in use, the input voltage on the collectors of the 2N441s is about 21 volts so the total wattage dissipated by the transistors is $10a. \times (21v. - 13v. = 8v.) = 80$ watts. Now each of these diodes can stand 150 watts and 15 amps. each. What a waste of transistors you'll say. They are, unfortunately, very necessary if long life of these transistors is the aim.

Consider now the supply on open circuit, the voltage is 35 volts across C6 and you now accidentally short the supply. The current even with the overload circuits will allow for a short-time 14 amps. to pass, even though the overload is set to commence operating at 9 to 10 amps. Now 14×35 is 490 watts and the combined ratings of the transistors is only 450 watts, so perhaps I'm being a little on the Scotch side. The overload current quickly drops to about 12.5 amps. within a very short time, so before the junctions have time to overheat the dissipation is below their maximum wattage. I blew up two transistors before I woke up to the fact that this severe overload was altogether too severe.

OVERLOAD CIRCUITS

Now to the operation of the overload circuits. TR1 is the overload transistor and it is normally in the cut-off condition as the current in the resistor R11, and so the developed voltage, is so low that up until about half of the normal maximum output current is drawn from the supply it does not conduct. As the voltage across R11 rises, TR1 commences to conduct and draws current through the relay and R7 and so the voltage at the collector of TR1 gradually comes nearer to the

CIRCUIT No. 2.



Versatile Loads for Power Supply Tests

S. T. CLARK,* VK3ASC

positive rail of the supply. As this voltage becomes lower it eventually reaches a point where the collector of it is the same as the collector voltage of TR2. When the voltage on the collector of TR1 is more positive than the collector of TR2, D6 will commence to conduct so lowering the reference voltage at the base of TR3, and so dropping the output voltage.

The more current that is drawn from the supply, the lower the voltage will become and if the overload is only gradual the voltage will only be a fraction of a volt with current drawn of about 12.5 amps. The size of R11 is adjusted so that the diode D6 will only just start to conduct when the maximum normal current of about 9-10 amps. is being drawn. R11 consists of a length of 22 to 24 B. & S. enamelled wire, the length determined by experiment, but should be in the vicinity of 6 to 7 inches. The emitter resistors of TR4, 5 and 6 are also made of enamelled wire, being about 25 inches of 28 B. & S.

Now the overload if sustained will make things all very hot, and possibly cause the transistors and the power transformers to go up in smoke after quarter of an hour or so, as the heat sinks get warm enough under normal full load conditions. To combat this problem I fitted a small relay with two c/o. sets of contacts. As the relay is in the supply line to the overload transistor, it will be energised and will pull in after a fraction of a second, so placing the base of TR3 virtually at positive potential, meaning that there will only be a fraction of a volt output. The current I have measured across the output has been in the range $\frac{1}{2}$ to $\frac{1}{2}$ amp., which is well within the power supply capabilities. The other relay contact brings on a pilot globe which gives an indication that the overload has occurred.

If now S2 is pressed, it releases the relay and if the overload is removed the supply resumes normal operation. The resistor R8 is to keep the peak voltage to the collector of TR1 to below 32 volts when the supply is on open circuit, as its maximum collector emitter voltage is 32 volts. The OA5 is recommended for D6 due to its low forward resistance and high current carrying capability.

That about completes the description of the circuit, there are no particular pitfalls in building it. The three 2N441 transistors can all be mounted on a single 7003 heat sink. The general building tips apply equally to this one as to the simpler supply. I built all the control circuits onto a piece of matrix board and clamped the AC128 transistors down onto a heat sink, separate to the main supply heat sinks.

ALTERNATIVE CIRCUITS

I have been having some further thoughts on these power supplies and should you require 8 amps. continuously at 13 volts or thereabouts, I would suggest that instead of having two transformers in series, two 17 volt 4 amp. battery charger transformers should be purchased and used. The transformers will also take it much more kindly, or a transformer the same

(Continued on Page 10)

Recent visitors to my shack, who have seen the dummy load I use for power supply tests, have indicated that they will use the idea in their own shacks.

The load consists simply of 12 batten holders and five switches, and a three-pin plug fitted to a sheet of Masonite with a $1\frac{1}{2}$ in. x $\frac{3}{4}$ in. wooden surround.

The batten-holders are wired in series in four groups of three. In series with each group is a switch of the snap action type (Ring-Grip or other surface mounting type with a large air gap). In series with the system is placed the three-pin plug.

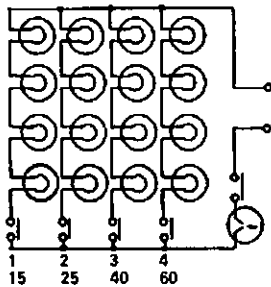


FIG. 1.

- 15w. equals 1.
- 25w. equals 2.
- 40w. equals 3.
- 60w. equals 4.
- 60 plus 15 equals 5.
- 60 plus 25 equals 6.
- 60 plus 40 equals 7.
- 60 plus 40 plus 15 equals 8.
- 60 plus 40 plus 25 equals 9.
- 60 plus 40 plus 25 plus 15 equals 10.

Main switch permits opening/closing load system. Three-pin plug makes series metering (current) measurement easy or permits use as series dropper for tests on small motors, etc.

By using up to 12 lamps, with shorting adapter plugs as necessary, it is possible to test power supplies of almost any rating up to 800v. In my case I usually, but not always, use lamps of 15, 25, 40, 60 watt rating in each string of 1 to 3 lamps and by switching in the desired sequence can simply and cheaply obtain ten current increments from open circuit to maximum load.

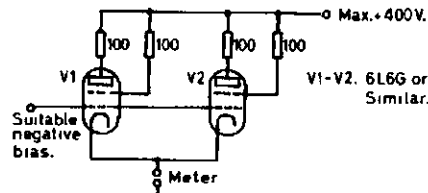


FIG. 2.

Resistors could be substituted in the same manner if desired, but since these are more expensive than the lamps and not so convenient, I use the lamps.

The second load I have used which may also be used as a series regulator consisted of two 6L6 type valves taking their heater supply from a small transformer which also supplied suffi-

* 26 Bellevue Ave., Rosanna, N.22, Vic.

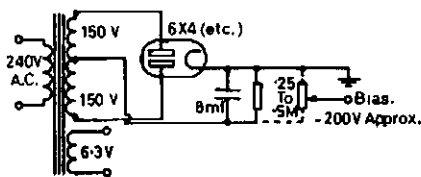


FIG. 3.

cient voltage to bias the tubes off. So long as resistors of about 100 ohms are inserted in series with plate and screen connections practically any number of tubes may be operated in parallel. They can be of almost any type—6L6, 807, 1625, 6CM5, etc., can be used. It is only necessary to watch that plate current and plate dissipation ratings are not exceeded. The 6L6, 807 and 1625 will handle 25 watts per tube, i.e. 100 mA. with 250 drop across the tube.

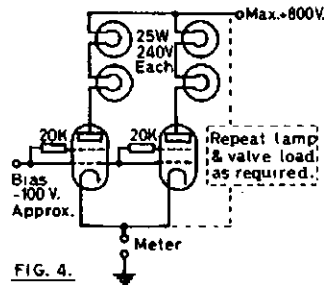


FIG. 4.

With modern transformers bias of 100v. may be easily obtained from a winding of about 40v. by using a voltage doubler. The full wave voltage doubler circuit is as shown.

By feeding the plates through load resistors, lamps work well and strapping the screen to the grid through a resistor of 10-20k ohms for hi-mu triode type operation these tubes will handle up to 800v. without any trouble and dissipate up to 75w. per leg, consisting of tube and two 25w. 240v. lamps in series. The bias adjustment pot or pots permits continuously variable control so that load current may be set at any value which may be convenient.

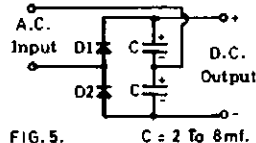


FIG. 5.

Use silicon selenium rectifiers with p.l.v. (p.r.v.) of 4 x r.m.s. input voltage for safety. Capacitors may be quite small, 2-8 mf., because current drain is limited to a few mA.

SILENT KEY

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

- VK2IN—Arthur Meadows.
- VK2OP—A. Roy.
- VK3LP—Geo. Wiburd.
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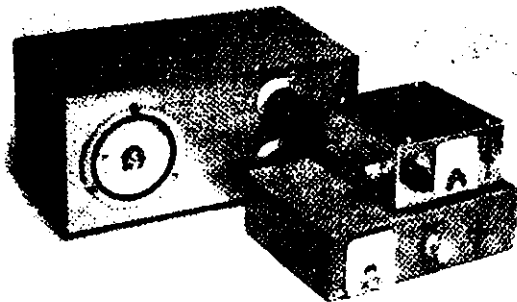
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THE VARIMATCHER*

An Easily-Reproducible S.W.R. Bridge featuring Adjustable Impedance

DOUG DEMAW, WICER



THE "Varimatcher" is an outgrowth of the author's attempt to build an s.w.r. bridge that could be balanced easily and could be duplicated with a minimum of effort. Since it was desirable to have better sensitivity than was common in other bridge types, emphasis was placed on that facet of the project as well.

Four models of the Varimatcher were built and tested. All units performed satisfactorily from 160 through 2 metres and although each model was purposely built with different physical dimensions, line lengths and placement in the cabinets being dissimilar, all four balanced easily and with no fuss.

The Varimatcher requires no juggling of resistor values, no pruning or bending of wires to attain initial balance, and no matching of component values other than the diodes.

The sensitivity is such that full scale deflection with a 1 mA. meter will occur on 160 metres when 27 watts of r.f. power is fed through the bridge. A power level of 7 watts will produce full scale deflection on 3.5 Mc. Progressively less power is needed as the operating frequency is increased.

● It's said, "There's nothing new under the sun," and perhaps this is true where s.w.r. bridges are concerned. After all, the field has been well covered in recent years. Nevertheless, the bridge described in this article represents a new approach, not only in securing better sensitivity from the Ham shack s.w.r. bridge, but also in minimizing the mechanical problems in building such a unit.

sampled by section B of L2 and is rectified by CR2. The meter switch, S1, routes the direct current from CR1 and CR2 to the sensitivity control, R2, and then to the 1 mA. meter. The meter is adjusted for full scale deflection with S1 in the forward position by varying the resistance of R2, and if the line is matched to the load, there will be no reading when the meter is switched to read reflected power. The higher the standing wave ratio, the greater will be the meter deflection in the reflected position.

BUILDING THE BRIDGE

Ordinary hand tools can be used for building the Varimatcher. The bridge channel, L3, can be formed in a bench vise. The 1/4 inch diameter copper tube, L1, can be cut to length with a hacksaw or tubing cutter. The hole in the centre of L1 is made with the narrow side of a flat file. The important consideration when forming the parts of the bridge is to maintain symmetry. The walls of L3 should be 1/4 inch apart across the entire length of the channel. The centre hole in L1 should be equidistant from the ends of the line. Pick-up line L2 is made from the inner conductor and polyethylene insulation of a piece of RG-59/U co-ax. cable. The ends of L2 should protrude equally from L1 (Fig. 4). The connection to R1 is made by a short length of bus wire (the shorter the better) from the centre of L2 to the centre lug on R1.

The tap on L2 should be made before the pick-up line is inserted into L1. This can easily be done by cutting away approximately 1/4 inch of the poly insulation at the dead centre of L2 and soldering a 2 inch length of No. 20 bus wire to the element. The bus wire should be folded back against the pick-up line and pulled through L1 until it is visible at the centre hole of the copper tubing. It is a simple matter to pull it out through the hole for connection to R1 after which a few drops of epoxy cement should be placed in the hole. This will insulate the centre tap wire and will anchor L2 inside L1, assuring long-term symmetry. (Do not insert L2 into L1 until after L1 is soldered to J1 and J2).

The co-ax. fittings, J1 and J2, are mounted on one wall of L3, Fig. 2, and R1 is at the centre of the same wall. L1 is centered in L3 and soldered to J1 and J2. Fixed resistors can be used in place of control R1 if only one transmission line impedance is to be used. The resistors should be 1/2 watt composition units, preferably with 5 per

the load. The pick-up line, L2, is centred in L1. Because L2 is inside L1, and because the line current does not flow on the inner wall of L1, coupling between the two takes place only at the ends. This arrangement offers two benefits: The reflected and forward power portions of the pick-up line, L2, are divorced from one another physically, resulting in better isolation between the two halves of the pick-up element. This contributes to better balance in the bridge. Also, with this construction it has been found that it

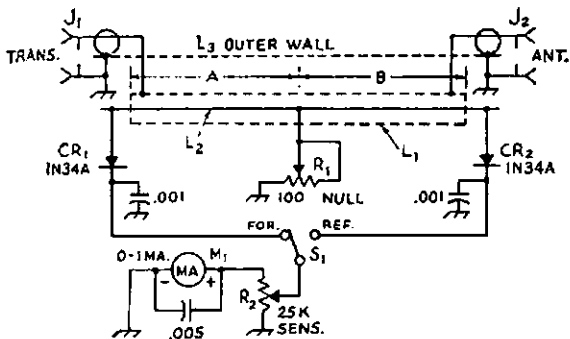


Fig. 1.—Schematic diagram of the WICER Varimatcher. Capacitors are 1,000 volt disc ceramic and values are in pF.

- CR1, CR2—Matched germanium diodes, 1N34A or equal.
- J1, J2—SO-239 co-ax. fitting.
- L1, L2, L3—See Fig. 4.
- M1—1 mA. meter.
- R1—100 ohm. linear-taper carbon control. See text for fixed resistor values.
- R2—25,000 ohm linear-taper control.
- S1—S.p.d.t. toggle or slide switch.

An additional feature was desired, that being the ability to use the Varimatcher with either 50 or 75 ohm lines without the need for changing the terminating resistors on the pick-up line. A 100 ohm potentiometer (low resistance type) used as a termination, and accessible from outside the cabinet, makes it possible to null the bridge for either impedance in a matter of seconds. More on this later.

HOW IT WORKS

R.f. from the transmitter is applied to the bridge at J1, Fig. 1. The current flows along L1 and out through J2 to

is unnecessary to tinker with the value of terminating resistance, regardless of the element length or shape. The termination is approximately 51 ohms for 50 ohm lines and 33 ohms for 75 ohm lines.

The bridge in Fig. 2 has an outer conductor, L3, for the co-axial element (outer channel and L1) which is necessary to prevent stray coupling between the forward and reflected power ends of L2. The walls of the bridge cabinet in Fig. 3 tend to serve the same purpose.

Some of the forward power is sampled by section A of L2 and rectified by CR1. Similarly, the reflected power is

* Reprinted from "QST," May 1966.



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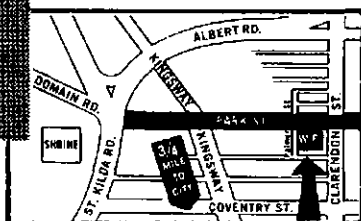
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cent. tolerance. Normally, the lead length between the fixed resistors and the centre of L2 should be kept as short as possible. The $\frac{1}{2}$ watt resistors showed no evidence of capacitive or inductive reactance that would cause bad effects in the 1.8 to 30 Mc. range, but at 50 and 144 Mc., they showed a small amount of capacitive reactance, and some experimenting with the lead length between L2 and R1 was required to get a good null. The inductance of the lead between R1 and L2 can be used to cancel the capacitive

reactance of the resistor at v.h.f. This has no effect on the performance of the bridge in the 1.8 to 30 Mc. range.

Because a 51 ohm $\frac{1}{2}$ watt resistor does not act like 51 ohms at 144 Mc., but more like 56 ohms, the accuracy drops off in the v.h.f. range. An actual s.w.r. of the order of 1.3 to 1 might appear to be a ratio of 1:1. Nevertheless, the bridge is accurate enough to be useful for most applications, and is not necessarily any less accurate than other reflected power bridges used at v.h.f.

The bridge shown in Fig. 2 uses an Allen-Bradley 100 ohm linear-taper control for R1. Of the many brands

tried, the Allen-Bradley (Ohmite) potentiometer was the least reactive. In practice, it compares favorably to the $\frac{1}{2}$ watt fixed resistors used. The bridge of Fig. 1 and Fig. 2 was nulled at 144 Mc. and held calibration over the entire range from 1.8 to 148 Mc.

When soldering CR1 and CR2 into the circuit, be sure to grasp the pig-tails of the diodes with a pair of long-nose pliers so as to conduct heat away from the bodies of the diodes. This will prevent damage to the units. The wiring from the cathode ends of CR1

and CR2 is not critical and can be routed along the sides of the cabinet.

A more compact version of the Varimatcher is shown in Fig. 3. The bridge element is bent into a U shape to cut down on the space required in the box. No outer channel (L3) is used, as the sides and the bottom of the box tend to serve that purpose. The length of L1 is six inches in this model, but the circuit is the same as that shown in Fig. 1. A 2 x 4 x 4 inch utility box is used to house the bridge and the layout is symmetrical. Details are shown in the photo.

Individual taste will dictate the size and shape of the cabinet for the bridge

of Fig. 2, since the length of the bridge element is not critical. The important thing to remember is that the shorter the bridge unit is, the less sensitive it will be, and the less will be the isolation between the reflected and forward power sections of the pick-up line L2. A 4 inch element was used in the model pictured in Fig. 5. Balancing the bridge at v.h.f. became a bit more troublesome in this model, indicating that this might be a practical limit in miniaturisation of the Varimatcher.

ADJUSTING THE VARIMATCHER

If the bridge is to be used no higher than 30 Mc., it should be checked out on the 10 metre band. A Heath C-antenna or equivalent 50 ohm dummy load should be connected to J2. The more accurate the termination at J2, the more accurate the bridge will be. A home-made dummy load, usable at power levels of $\frac{1}{2}$ watt or less, is illustrated in Fig. 6. It is quite accurate from 1.8 to 55 Mc., but at 144 Mc. will show capacitive reactance as in the case of terminating resistor R1, Fig. 1. As this will cause the bridge to be inaccurate at 144 Mc., an effort should be made to borrow a good 50 ohm termination for 2 metre calibration. If the Varimatcher is to be used on 2 metres, the initial checking should be done at that frequency.

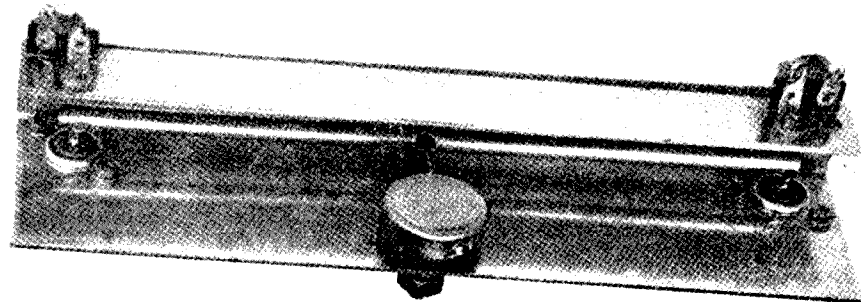


Fig. 2.—Bridge element of the Varimatcher. Style of construction permits mounting the bridge in transmitter cabinets, transmatch housings, or individual cabinets. The diode pig-tails are routed through the holes in the outer channel and are soldered to the terminal lugs. The 0.001 pF. capacitors are also soldered to the terminal strips at the ends of the channel.

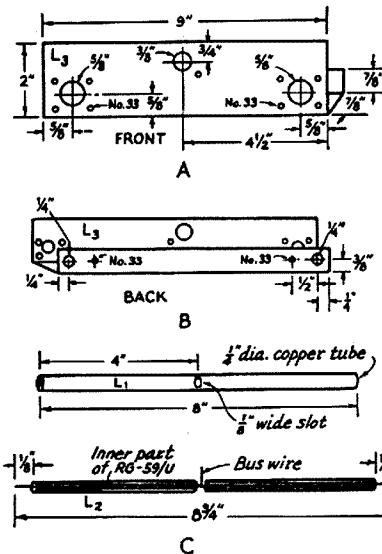


Fig. 4.—Layout dimensions for the bridge. At A, the outer channel (L3). At B, the back side of L3. Shown at C, the copper tubing dimensions (L1) and the inner line L2. L2 fits into L1 after the bus wire is soldered to the centre of L2.

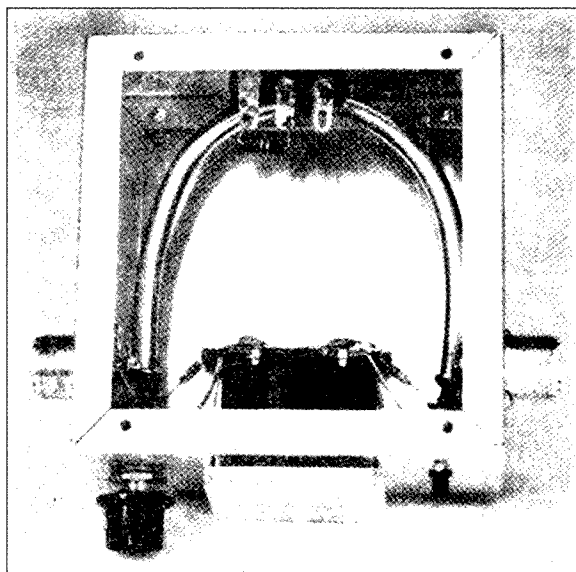


Fig. 3.—A miniature version of the Varimatcher. L1 and L2 have been bent into a U shape to conserve space. The circuit is the same as Fig. 1 but the length of L1 has been reduced to six inches. The bridge cabinet measures 4 x 4 x 2 inches.

With a few watts of power applied at J1, adjust R2 for full scale deflection of the meter while S1 is in the forward position. Then set S1 to the reflected position and adjust R1 for a null in the meter reading. This should be zero deflection when the circuit is working properly. If the bridge is to be set up for use with 75 ohm loads, the procedure is the same but a 75 ohm dummy load must be used.

If fixed resistors are used in place of the control of R1, no tinkering should be required to secure a perfect null in the 1.8 to 30 Mc. range. For 2 metre use, however, the lead length

between R1 and the centre of L2 must be adjusted until a suitable null is obtained.

After nulling the bridge, check again and make sure that full scale meter deflection occurs at the forward position of S1. Next, reverse the cables at J1 and J2, set S1 to the reflected position, and see if a full scale meter reading results. If CR1 and CR2 are reasonably well matched, the meter readings will match up. If you do not wish to purchase a set of matched diodes, and have a supply of 1N34s on hand, you can select a pair that will work well in the circuit by measuring the

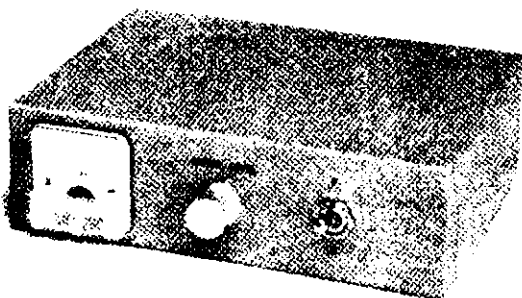


Table 1.

Power for Full Scale Meter deflection, L1 = 6 inches

Band	Power
160	22 watts
75	7 "
40	2 "
20	0.7 "
15	0.45 "
10	0.2 "
6	0.1 "

Fig. 5.—A mobile model of the Varimatcher, made to fit under a Heath TWOer or SIXer. The circuit is the same as Fig. 1 but the bridge has been shortened to a four inch length.

front and back resistance of a few of them and picking a pair that are about the same value.

USING THE BRIDGE

The Varimatcher will handle the full output of a kilowatt transmitter. The models described in this article were tested with the author's 2-kw. p.e.p. input transmitter on all bands from 3.5 to 29 Mc. Additional tests were made on 6 and 2 metres at lower power levels. With R2 wired into the circuit as shown in Fig. 1, the resistance in series with CR1 and CR2 must be decreased to maintain a full scale meter reading as the transmitter power is

increased. Table 1 gives the r.f. power levels required for full scale meter deflection (1 mA. meter) at maximum sensitivity for a 6 inch element. The Varimatcher can be used with very low power v.h.f. rigs for tuning and matching adjustments. A feature which should appeal to the solid-state experimenter. Even greater sensitivity could be realised by substituting a 100 μ A. meter for the 1 mA. unit. This should not be necessary, however, for normal applications.

The Varimatcher has many uses. It can be used for mobile, fixed, or portable operation.

If you have put off building an s.w.r. bridge, now might be the time to get the job done. The cost of the Varimatcher is nominal and the unit can be built in a few hours. Don't forget—this is the season for building, repairing and adjusting antennae. The Varimatcher will help you to get that feed line matched to the antenna.

A SYNTHETIC BATTERY FOR YOUR CARPHONE

(Continued from Page 5)

as I used in the first supply could be purchased.

Another advantage of the lower voltage is that lower voltage filter capacitors can be used, i.e. 2000 μ F. 25 v.w. instead of 1000 μ F. 60 v.w. for the rectifier filter section. Resistor R9 could quite possibly be reduced to 330 ohms, as I think that the 1000 ohm resistor is a little on the high side. The resistor should have a rating of 2 to 3 watts. With three transistors in parallel I think the transistor leakage is possibly a little high to be completely handled by this higher value resistor. When the overload relay pulls in and

the output is "un-short-circuited" the voltage of the output rises to about 6 volts, but with very little current though. The base of the 2N301 is clamped to approximately $\frac{1}{2}$ volt so I think this is the explanation, as the 2N301 would in general keep the output to this figure less this leakage was high.

You may well say a 10 amp. power supply is all very well, but my equipment draws more than 10 amps. Well if you only require about 13 volts on load and you use a 17 volt transformer that will take the full load without the voltage falling more than about a volt, the second power supply could be set so that the overload circuit did not commence operating before the current had reached 13 amps., this might be suitable. The wire necessary for R11 I would recommend being now 20 B. & S. The overload pilot could be arranged to be supplied through a series resistor across the 17 volt transformer.

Perhaps you have some 6 volt equipment that you want to build this up for, well I would suggest getting hold of a hefty 12 volt transformer and build a supply similar to the above types, and adjust the overload to come in at about 16 amps. The reference zener diode might be changed to a OAZ200, as it has a slightly lower zener voltage. The size of R5 would have to be lowered, as would R10, the resistance perhaps of the Zettler relay and the attendant series resistor R7. R8 would not be required in this supply or any supply using a transformer rectifier system where the peak off load voltage does not exceed about 30 volts; AC128s don't like more than 32 volts across them. Zettler relays are available, I imagine, from a number of firms although I have only seen them advertised by one, by a firm located in Spencer Street, Melbourne.

Well that about wraps it up chaps. Hope this article has given you a few ideas on this type of equipment and its uses. I will be building a higher amperage 13 to 14 volts unit which I am hoping will put out up to 18 amps. with no great strain, possibly incorporating an even more sophisticated overload circuit, with delayed overload lock-out. (Part Two of this article will contain this proposed new supply.) This newer supply will have a larger heat sink and I would certainly recommend that you use a larger heat sink, possibly two 7003 heat sinks, if you intend taking about 10 amps. continuously from one of these described power supplies.

As the existing supplies I have made only supply their maximum current for about 30% of the time, I don't need to worry unduly about the heat sinks as they cool off in between transmissions.

The supplies I have built, you will notice, have neither side of the output earthed so your equipment can have any pole earthed with safety.

AMATEUR FREQUENCIES:

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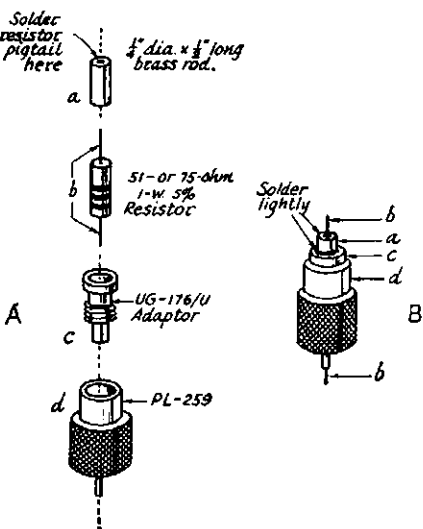


Fig. 6.—Details for building a 50 or 75 ohm dummy load for balancing the bridge. This low-reactance load is useful for adjusting R1 at v.h.f. Do not permit the resistor to become overheated when soldering the unit together. Keep all leads as short as possible. See text for details on the use of this load. (Resistor is carbon.)

TRANSISTORISED SIDEBAND

COL HARVEY,* VK1AU (Ex VK3UO, VK2AQU, VS1AU)

WITH commercial equipment now readily available for use on the Amateur bands, home construction and experimenting is becoming the prerogative of the inquisitive and the poor. This article shows how Amateur know-how and simple facilities can be used to up-date an existing transmitter or provide the basis for home construction of a modernised sideband exciter.

When the phasing exciter, built in 1959, was replaced four years later by a mechanical filter exciter I firmly believed that the combination of a mech-

approximations. The linear is still the old converted c.w. rig described in "A.R." about six years ago, which uses an 803.

THE SPEECH AMPLIFIERS

Obviously the easiest place to start a transistorised conversion is in the audio stages. The circuit at Fig. 2 produces very similar results to those obtained with a 12AX7. The response is better and the transistorised version seems to be less sensitive to hum and r.f. pick-up. Using a low output dyna-

cate of the speech amplifier, and vice versa. Here I met my first stumbling block. In a valve amplifier, capacity coupling suffices to link the vox amplifier and the speech amplifier. This proved impractical in the transistorised version because it caused a severe reduction in output from the speech amplifier. Eventually I decided the easiest way was to use the audio signal passing from the first collector to ground via the volume control. Inserting the low impedance winding of a transistor transformer in this lead provided easy pick-off and did not affect the output of the speech amplifier.

Additional gain was intentionally provided to anticipate the time when the original onboard relay unit (the "Sure-Fire" vox) would be converted from its present 6SN7-6H6-6SN7 configuration. Similarly, to aid in isolation and inter-connection, transformer output was provided. The transformers used are not critical; any cheap small transistor type with vaguely appropriate impedance characteristics will do. The transistor vox amplifier develops about 20 volts across the transformer secondary and this ensures that adequate trip voltage will be present even when the microphone is not used for close talking. The "vertical component" type of construction, typical of commercial practice, was used because it has some advantages over the schematic method adopted for the speech amplifier. With vertical construction there is at least one long pigtail left on components which are removed during experiments! Also the completed matrix board occupies less area. As with most three-stage amplifiers "motorboating" can occur. The 150 ohm resistor and the 100 uF. capacitor in the supply line should therefore not be deleted. The resistor may even need to be increased to about 470 ohms.

MOUNTING THE MATRIX BOARDS

Before getting too carried away with construction on matrix board, it is wise to give thought to the method to be used to mount each stage in the cabinet or chassis. I chose to use a method reminiscent of Amateur practice in the

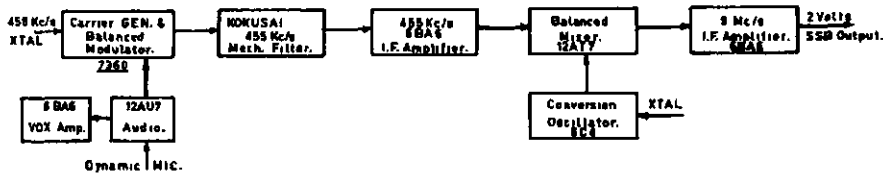


FIG. 1a. VS1AU - VK1AU. 1962-1966.

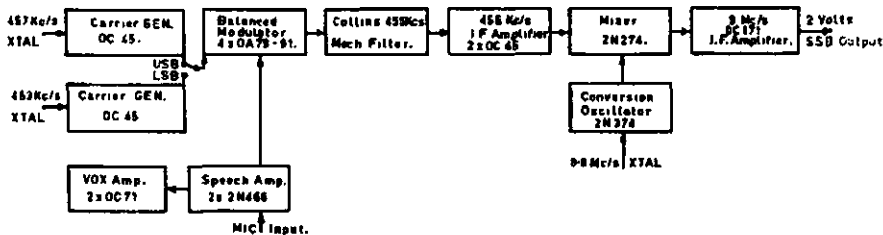


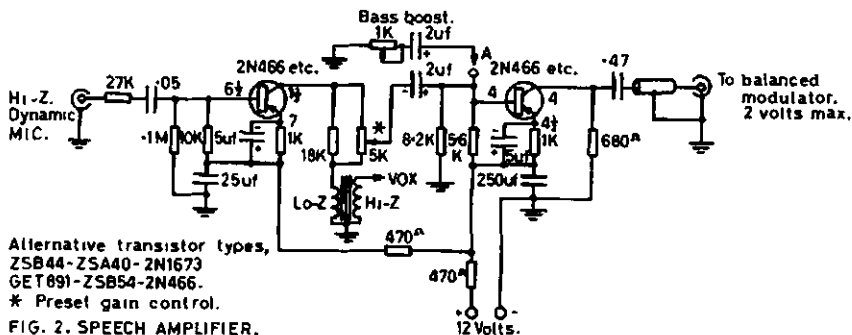
FIG. 1b. VK1AU 1966-?

anical filter, a gated beam 7360 balanced modulator and carrier generator, and a 12AX7 speech amplifier was so satisfactory that it would probably continue in service indefinitely. However, Amateur Radio being the hobby it is, discussion soon produced an urge to try some form of transistorised project. In the same way in which the original phasing project caused doubts that the project was probably too complicated for an Amateur without good test equipment, so with the transistorised project. However, in both cases, making the decision to start was more difficult than achieving fulfilment. Although access to an operating sideband transmitter made the project very much easier, the notes which follow should make it possible for anyone with normal Amateur inquisitiveness to start from scratch and succeed.

As in most projects which do not exactly follow a published design, the basic problem is to decide the number of stages and hence the layout which will be needed. The knowledgeable calculate this from first principles, but the suck-it-and-see process is almost as good and for most of us probably as quick. Fig. 1 (a) and (b) show the comparative block diagrams for the same exciter, one using valves, the other transistors. This should make it easy for you to insert your own

mic microphone, there is enough audio at the output of the second transistor to operate a pair of low impedance phones at good volume, so checking the circuit is easy. Because the speech amplifier is class A there is no sign of the class B distortion so typical of transistor personal radios.

With this initial success to promote confidence, the next stage to be tackled was a vox amplifier to replace a valve unit previously driven from the first stage of the 12AX7 speech amplifier. For sake of experiment, a different circuit (Fig. 3) was tried, although the vox amplifier could have been a dupli-



Alternative transistor types, Z5B44-Z5A40-2N1673 GET891-Z5B54-2N466. * Preset gain control.

FIG. 2. SPEECH AMPLIFIER.

The response of this Collins amplifier peaks at 3 Kc. If this is not to your liking, low frequency "boost" can be introduced by connecting a tone correction capacitor between earth and point A. Very little audio is needed for correct operation of the balanced modulator.

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1930s when wood was a common constructional material. An appropriate length of wooden strip of the desired length and height can be quickly slotted with the hack or panel saw and subsequently screwed or Araldited to the chassis so that the matrix board can slide into the saw slots. The board will be retained by friction if the slots are an appropriate width; or the boards can be secured by a screw. If the wooden rails are planed smooth and painted or sprayed before mounting, a first class appearance is obtained.

PROBLEM AREAS

With the two easiest sub-chassis tested and put aside, the project enters an area where trouble can be encountered, which will be difficult to resolve unless the means exists to listen to, or alternatively measure in some way the existence or non-existence of r.f. signals needed for normal operation. With access to such facilities, valuable experience will be gained particularly in experiments with the balanced modulator and carrier oscillator sections. All the problems encountered at VK-1AU were amenable to correction by normal Amateur methods, supplement-

Incomplete carrier balance:

- Reduce carrier oscillator drive to the optimum value for the diodes in use.
- Match diodes for similar forward resistance.
- Adjust resistive and capacitance balance carefully.
- Avoid leakage around the filter.
- Avoid regeneration in stages after the filter.
- Ensure that the injection oscillator frequency is down the skirt of the filter.

Unstable balance:

- Avoid wire wound balance potentiometers.
- Use plated crystals.
- Avoid r.f. feedback.
- Use quality diodes to minimise temperature effects.

Balance changes when linear is operating:

- Improve s.w.r.
- Reduce stray r.f. in the back.
- Avoid r.f. pick-up in tuned circuits of low level stages operating near signal frequency.
- Improve shielding and by-passing.

The object is to provide relative measurements and an indication upon which to tune, rather than a specific voltage measurement. It is based on the use of a frequency meter such as the BC221 as a source of low level r.f., an r.f. probe (see Fig. 4), and a cheap v.t.v.m. with an 0-1½ volt d.c. scale. If this combination will read the r.f. output of the frequency meter, then it will have sufficient sensitivity to provide useful comparisons in the low level r.f. stages of a sideband exciter. With no load, my BC221 produces full scale

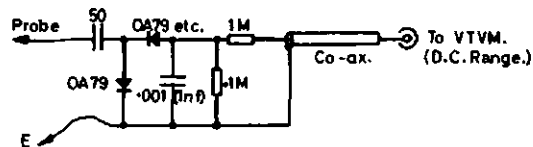


FIG. 4. R.F. PROBE.

A typical v.t.v.m. probe, easily built into a pill box. The probe tip is a three-inch bolt. My receiver b.f.o. and local oscillators develop about 3 volts d.c. with the circuit values given above.

deflection of the v.t.v.m., i.e. 1½ volts d.c.

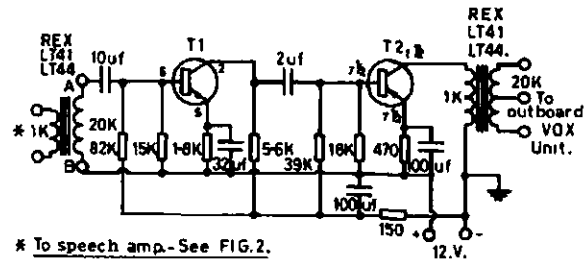
Transferring the probe to the exciter then gives the following comparative readings:—

- BC221 or 455 Kc. osc. at input to the balanced modulator: Quarter scale (due to load resistor).
- Either side of the filter: Quarter scale (because the probe unbalances the modulator).
- Mechanical filter output: Nil (because the filter attenuation is about 10 db).
- 455 Kc. i.f. transformer primary: Half scale (if audio tone applied or modulator unbalanced).
- 9 Mc. mixer output: Quarter scale.
- 7 Mc. mixer output: Half scale.
- Audio output: Nil (because the probe coupling capacitor is too small for audio).
- Mixer oscillator injection level: Quarter scale.

Because the probe v.t.v.m. combination has not been calibrated, there is no point in offering numerical values. It should be noted also that switching the frequency meter from 455 Kc. to the equivalent frequency on the h.f. range reduces the v.t.v.m. reading by about 30%. Whether this is due to reduced probe response or to reduced output of the frequency meter is not known. However, a v.t.v.m. reading will still be available even at 9 Mc., which will be sufficient to allow adjustment of the exciter.

FILTER PASSBAND

At Figs. 5 (a) and (b) the method used to check the passband of the available mechanical filter is shown, together with the result. Note the effect of a minor change in frequency on the output of the amplifier after the filter. Note also that with the transmitter i.f. amplifier loosely coupled to the i.f. of the station receiver, the resultant signal can be heard and the conversion from double sideband to



* To speech amp.—See FIG. 2.

FIG. 3a. T1-2. OC71-OC70-2N186-2N280-ASV14.

This circuit was developed by Philips for use as a gramophone amplifier. With a pair of outboard OC72s, it can develop 200 mW. from only ¼ volt input. If used as a speech amplifier, the input arrangement at (b) will be needed for high impedance input.

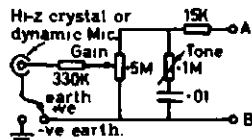


FIG. 3b.

ed with a little patience and some good on-the-air advice. Amateurs with only a reasonable multimeter, a general coverage receiver and some form of r.f. indicator and a frequency meter need have no qualms about attempting a similar project.

The following will suggest possible courses of action in the event of unsatisfactory operation.

L.f. crystal fails to oscillate:

- Adjust emitter tank coil Q.
- Select more active crystal.
- Adjust feedback capacitor and/or emitter by-pass.
- Adjust bias.
- Reduce loading.
- Check resonant frequency of tank coil.
- Increase feedback—if necessary with a tickler.

Balanced modulator fails to balance:

- Ensure the modulator/filter interface is capacitatively balanced. (Appearances can be deceptive and some filters may require connection via an i.f. transformer.)
- Ensure all diodes are serviceable.
- Reduce drive from carrier oscillator.
- Avoid r.f. feedback from later stages.
- Ensure output from upper and lower sideband crystals is identical and optimum.

Insufficient sideband suppression:

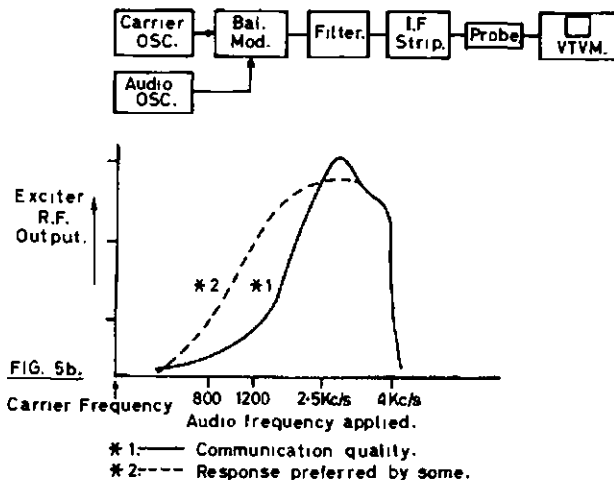
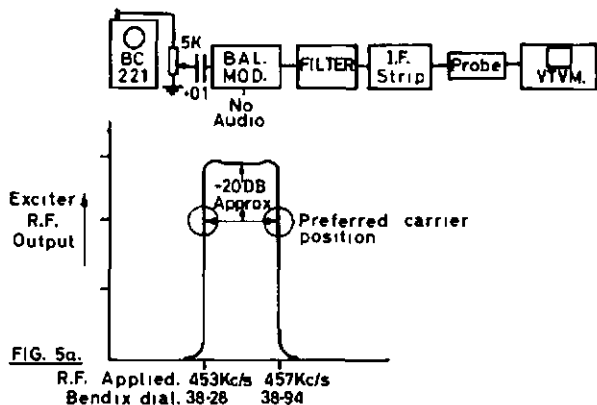
- Set carrier frequencies about 20 db down each skirt of the filter.
- Avoid regeneration in amplifier stages after the filter.
- Reduce drive and injection levels to mixer stages.

Inefficient mixing:

- Use normal d.c. voltage when testing.
- Provide good Q and loose coupling.
- Adjust signal and oscillator voltages for optimum output. Keep low.

SIGNAL LEVELS

As some of the procedures suggested above necessitate r.f. measurement, it is mandatory to have some means of indicating the presence of low level r.f. Although this can be done roughly by ear, or S meter if the signal can be fed to the receiver, it is more convenient to have some form of r.f. probe. Few Amateur shacks have access to accurate test equipment, consequently any statement of r.f. voltages is likely to be meaningless unless both experimenters have access to similar equipment of comparable accuracy. Nevertheless, as it is important in getting new equipment operative, to know what approximate signal levels are involved, the following procedure may prove helpful.



Because the response curve is so steep-sided, a small change in frequency causes a large change in output. If the carrier is placed too far down the slope the lower frequency audio components will be attenuated. The peak in the response at about 2½ Kc. is due to the characteristics of the balanced modulator with 0.01 uF. inserted at X. The final result will be a compromise between carrier frequency, desired response, and resultant suppression.

single sideband observed as the injection frequency is moved across the plateau to the skirt.

Whilst set up like this, the i.f. transformer in the i.f. strip should be set to give maximum response at the centre of the filter passband. This will improve the overall response curve and ensure optimum suppression. With a serviceable mechanical filter the whole of each skirt will be covered by a change of dial setting on the BC221 of only 17 graduations (e.g. between 38.11 and 38.28). The entire passband of my filter lies between dial readings of 38.11 and 39.07, and the shape factor closely follows those advertised.

crystals are obstinate starters, particularly if the Q of the output tank is too low. However, I have successfully used conventional i.f. transformer windings, or miniature transistor type i.f. transformers as the tank coil.

At 455 Kc. it is best to listen on or near the crystal frequency for indications that the oscillator is working cleanly, because the d.c. milliamp. meter indication at resonance is a little difficult to interpret.

An identical oscillator circuit is used for the injection oscillator for 8.4 Mc. (or whatever frequency you require).

Because crystal activity and capacity have an effect on circuit values needed for reliable oscillation, it is best to bread-board a basic circuit with which to prove available crystals. Stubborn crystals may require alterations to the bias divider network, feedback capacitor, and emitter by-pass capacitor. Some stubborn low frequency crystals may even necessitate the addition of a feedback winding of a couple of turns through which to couple the crystal between base and collector.

CHOICE OF DIODES FOR THE MODULATOR

The reverse resistance is of little significance in diode modulators but reasonable care must be taken to eliminate diodes which are not similar in forward (low) resistance. This is because, under modulation, differing voltage will be developed across unmatched diodes and may be sufficient to unbalance the bridge. This causes re-appearance of carrier and roughish audio. It is therefore well worth while to set up some accurate method of measuring forward resistance. Regardless of the type of diode chosen, this criterion is the one to apply when matching. It will not overcome capacity unbalance caused by temperature variation, which can be as much as 1 pF. per degree F.

THE CARRIER GENERATOR

With preliminary arrangements for checking decided, construction of the carrier generator oscillator can be commenced. The circuit at Fig. 8 draws only 4 mA. at 12 volts, but provides adequate drive. The r.f. measured at the crystal will drive the probe-v.t.v.m. combination off scale, and if the injection frequency is at the top of the filter skirt, will require only 10 pF. for optimum coupling to the modulator. When the crystal frequency is altered to the 20 db point on the skirt, the coupling capacitor can probably be increased to about 50/130 pF. Some

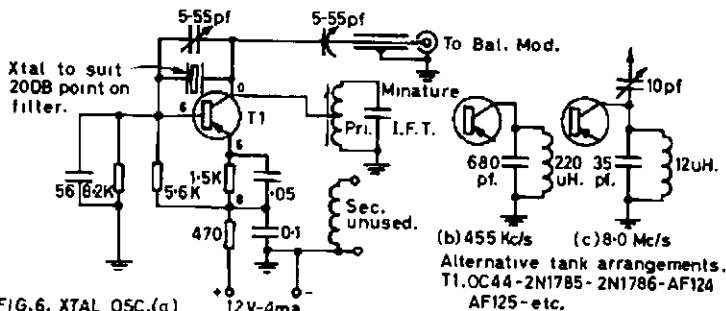


FIG. 6. XTAL OSC. (a) This oscillator must be well under control of the crystal. Distortion will result from any "pulling" of the oscillator by the balanced modulator or from under or over drive. Minor adjustments to frequency can be made by means of the trimmer across the crystal. Too large a value may prevent oscillation. The coupling capacitor should be in the oscillator shield can.

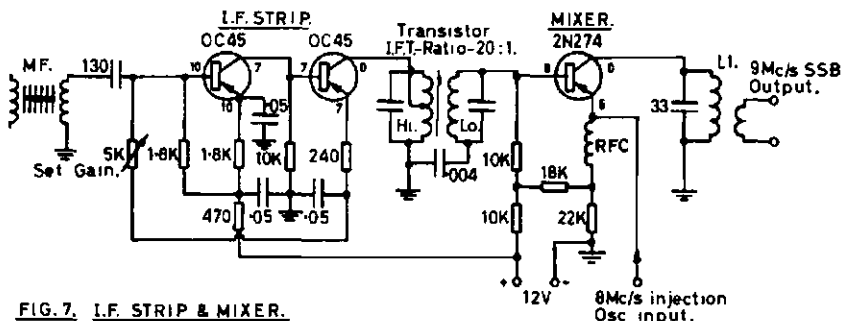


FIG. 7. I.F. STRIP & MIXER.

Because the secondary of a transistor type i.f.t. consists of only about five turns, very little 455 Kc. r.f. can be measured at the mixer base. The 5K pot will allow a 2:1 change of gain through the i.f. strip, and should be used in preference to the audio gain control. L1 can be link coupled to the receiver to prove correct mixing. Removal of either the 455 Kc. or 8 Mc. drive should eliminate the resultant signal. Normal operation results in about a 57 signal. This is a modification of a Collins circuit, and incorporates three necessary corrections to a previously published circuit.

THE I.F. STRIP

Initially, it was thought that one stage of transistorised i.f. at 455 Kc. would be sufficient. However, the insertion loss of the mechanical filter, together with the comparatively low output from the diode balanced modulator, necessitated a two-stage i.f. strip. The circuit finally used is shown in Fig. 7.

THE FIRST MIXER

One would think that nothing could go wrong with a mixer, however, although they will mix readily, transistor mixers are more critical than their valve counterparts. If unwanted products are to be minimised, oscillator and signal injection levels need to be accurately set, and output circuits kept at as high a Q as possible.

Although I attended to these aspects, I fell into the trap of testing the mixer with 6 volts instead of the design figure of 12, and it was some time before the reason for disappointing results was identified. Also, the idea seems to be to run transistor mixers at very low signal levels, recovering the gain in a subsequent amplifier at signal frequency. An OC171 or AF114 in any convenient r.f./i.f. type amplifier circuit will prove effective.

THE BALANCED MODULATOR

This portion of the project had not been identified in advance as a problem area. In point of fact, it turned out to be the real challenge. Despite a lack of information in the available Amateur literature to suggest that traps awaited the experimenter, it was soon apparent from on-the-air comments that many Amateurs, and some professionals, had experienced difficulty in obtaining proper operation. On the other hand, several Amateurs reported excellent operation at their first attempt.

By nature, the simple diode modulator is a temperamental device. It is temperature sensitive, voltage sensitive, capacitance sensitive, and apparently frequency sensitive. It needs to be operated in a non-linear region so that it will mix audio and r.f. but not so non-linear that it will distort the product.

Although the obvious precautions for bridge balancing were taken, initial results were discouraging. Initially for example, a change of crystal frequency, even by tens of cycles, unbalanced the modulator. If the r.f. level was made even marginally too high, balance could not be regained without a very large increase in capacitance trim. In fact, it was impossible to substitute the alternative crystal needed for opposite sideband operation without requiring a drastic capacity re-balancing of the modulator. This, despite care in layout, a Collins filter as the load, selection of diodes whose forward resistance was matched to within 0.1 of an ohm, and use of the recommended r.f./a.f. ratio of 6:1.

After much on-the-air experimenting, and discussion with knowledgeable sidebanders such as VK2BK, it was realised that the amount of carrier passed through the mechanical filter was drastically affected by the relative position of the injection frequency on

the filter passband. For example, a crystal only tens of cycles up the skirt from the desired 20 db point in the slope provides a voltage which may well be half a volt in three in excess of the value obtained from its companion crystal correctly placed on the opposite skirt of the filter. The bridge must therefore be capable of suppressing this increased level of carrier.

The effect may also be appreciated by considering that if the carrier is placed at the centre of the filter response plateau the result will be a.n., with the unwanted sideband being progressively reduced as the carrier frequency is edged over the edge of the plateau. With almost vertical skirt response, a very small change in frequency then causes a very large change in output from the filter. The closer the carrier frequency to the plateau, the better the carrier cancellation demanded of the balanced modulator and the better the diodes that are needed. The final injection frequency is therefore very much a matter of choice, being a compromise between optimum suppression and desired audio characteristic.

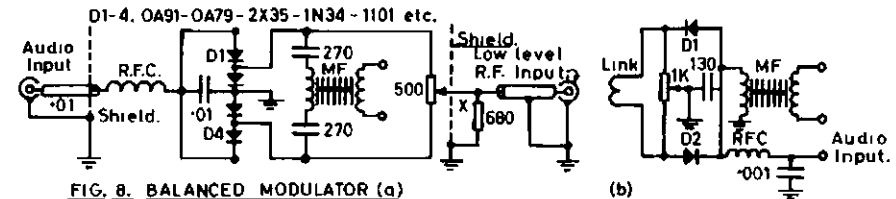


FIG. 8. BALANCED MODULATOR (a)

(b)

The normal bridge arrangement has been drawn differently to minimise the risk of incorrectly wiring the diodes. The 270 pF mica capacitors resonate a Collins filter. Fig. 8(b) shows an alternative arrangement.

The correct spot can be found by use of the BC221, monitoring the resultant in the receiver and adjusting the injection frequency until a slightly high pitched audio results. It will be necessary to use an attenuator, Fig. 5 (a), to set the optimum signal level from the BC221. A stable b.f.o. type oscillator can then be set to the frequency indicated by the meter, or a crystal can be adjusted to provide the desired frequency. Note that during adjustment every change in carrier frequency will probably necessitate re-balancing of the bridge. If these effects cannot be overcome, they can be minimised by the use of separate carrier oscillators for each sideband.

Turning again to the diodes, and granted that there is a wide range of temperatures in Canberra in winter, 1N297As quite definitely showed the adverse effect of 30 degrees of temperature change. This required up to an extra 40 pF. across one arm of the bridge to regain balance (the resistive value remains almost unchanged).

From advice subsequently received, it seems that computer type diodes, such as the gold-bonded OA5 and OA7, are not so prone to these effects, OA79s and OA91s and Fairchild 1101s are also well regarded. Regardless of the type of diode used, all will have an optimum r.f. voltage (allegedly about 5 volts) at which best mixing occurs. Apparently all will be intolerant of unduly high (or low) input levels. The

trick therefore seems to be to choose r.f. and audio input levels which best suit the diodes in use. Laboratory equipment is needed to measure low r.f. voltage levels accurately, but fortunately in practice the proper level can be decided by listening tests, whilst progressively adjusting the r.f. input.

As it is somewhat distracting to chant "hello test" for long periods, I recommend placing a broadcast receiver close to the microphone and then leisurely adjusting the balanced modulator for best recovered audio. (If the balanced modulator is "pulling" the carrier oscillator it will be impossible to recover clean audio.) If music sounds reasonable when converted to s.s.b., speech will be first class. Very little audio is needed for best operation. The curve at Fig. 5 (b)(1) was taken with an 0.01 uF. capacitor at X, as recommended by Collins. However, superior results were obtained without it.

Two circuits are given in Fig. 8 from which to choose and experiment. Many Amateurs have had success with each. The choice depends largely on the method used to transfer r.f. from the carrier oscillator. Link coupling is

particularly attractive, requiring about 5 volts r.f. across the link for best operation. The modulator should not subsequently need re-adjustment when the linear is made operative. If it does, this is an indication of carrier leakage, r.f. feedback, or regeneration.

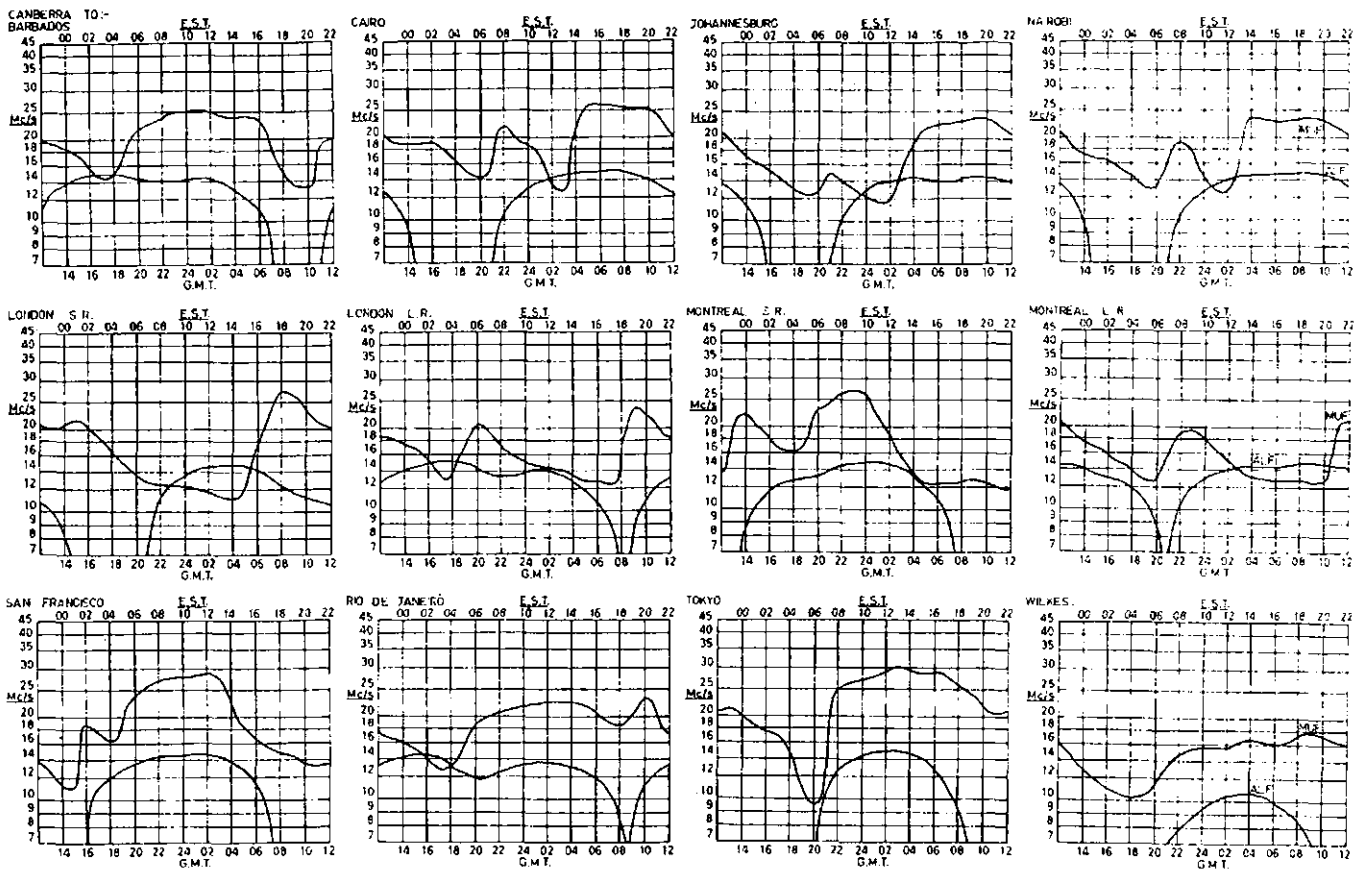
LAYOUT

Interconnection of the various sub-chassis presents no problems. As with valve equivalents, the use of shielded d.c. wiring and feed-through capacitors is advantageous. Normal layout principles suffice. It will be found possible to mount all the stages described in a box which is large enough to contain a v.f.o. and associated slow motion dial. There will even be room for an additional amplifier stage at 9 Mc. should this be found desirable. Because the required v.f.o. frequencies depend on the choice of sideband generator frequency and vice versa, this aspect will not be discussed, other than to suggest the use of an oscillator and emitter follower such as used in the Swan 350, or described in "Amateur Radio" in February 1964.

Due to the low r.f. levels around the balanced modulator, difficulty may be encountered if an attempt is made to operate in a strong r.f. field such as exists near linear tank coils, or in circumstances where a high s.w.r. causes r.f. "hot-spots" on the chassis. These difficulties are minimised by layout, shielding and by-passing.

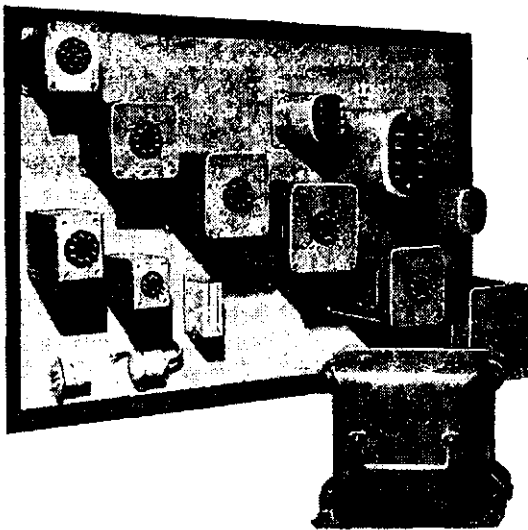
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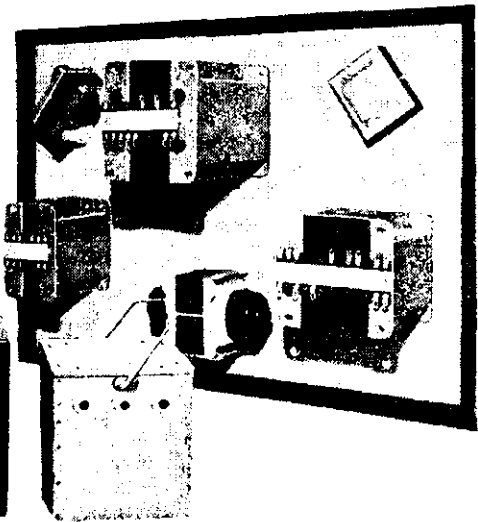
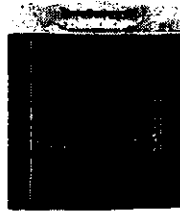


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LM 51

BUFFER STAGE

Readers may wonder why this project has been interrupted at a low level stage and why the remaining outboard v.f.o. mixer and subsequent buffer-driver have not been transistorised. They could be, but for home station use there is little point. All the stages described can be operated economically from one or two lantern batteries. The 300 volt supply is still needed for other purposes such as linear screen supply, buffer plate supply, bias, vox relay, etc., so there is little point in using additional transistor stages whose d.c. requirement is going to run into an amp. or so and necessitate use of a car battery or another a.c.-d.c. supply. Furthermore, the last mixer necessarily operates at a relatively high level and at this stage of development a balanced design is preferred so as to minimise the risk of spurious product frequencies. The 12AT7 circuit at Fig. 9 is well proven in this role and is therefore retained for the present.

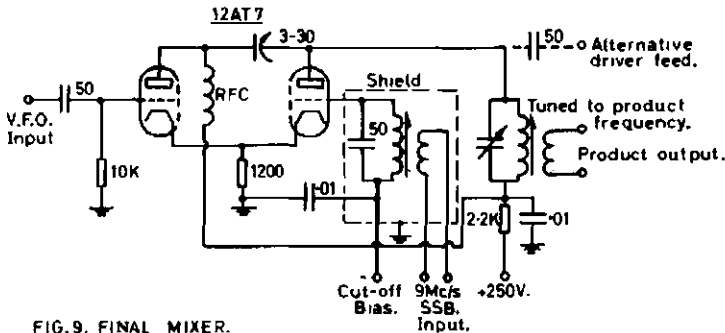


FIG. 9. FINAL MIXER.

The 9 Mc. input coil should be shielded. After the product frequency has been identified and the plate tank peaked, the receiver is tuned to the v.f.o. frequency and the 3-30 pF. "phasing" capacitor adjusted for minimum received signal.

TRANSISTORS

Finally a word about transistor types. Because stage gain is proportional to frequency, it is hopeless to expect audio-rated transistors to operate effectively at radio frequencies. Fortunately r.f. transistors will operate at audio frequencies. Therefore the important ratings to consider are the intended operating frequency, and the intended maximum operating voltage, choosing the cheapest transistor which will fit these limits.

If a milliamp. meter is inserted in the supply line for the initial "smoke test", there should be no chance of accidentally damaging a transistor by allowing excess current to develop excess temperature. Note, however, that the application of excess voltage from any cause (including violent self-

oscillation) can instantly destroy the gadget. Therefore regard voltage ratings as "never-exceed" values. The stages described to date are not operated near their critical ratings hence transistor substitution, within reason, should present no problem. Table 1 shows a general basis for substitution.

The frequency F is that at which the gain will fall to reference level. Therefore as a basic rule, always choose a transistor for r.f. amplification whose recorded characteristic of f_{α} , f_{β} or $f_{\alpha\beta}$ is at least treble the intended operating frequency. V_{max} is the maximum voltage permitted between emitter and collector.

SUMMARY

Although this project was started as a means of learning about transistors, it quickly developed into a typical radio project. Transistors as such, proved to be the least problem. Techniques already common in Amateur Radio proved entirely adequate and at no

stage was it necessary to dig far into transistor theory and application. In fact it wasn't even necessary to use Ohm's Law! The project showed that seemingly complicated projects can be successfully completed with normal Amateur know-how and co-operation.

As with the phasing rig project in 1959, it was only necessary to get a signal on the air to obtain ready help from others who had trodden a similar path. The satisfaction resulting from successful completion (?) of the project makes the time spent on it seem negligible.

Others contemplating similar projects will be re-assured by the knowledge that there are now more than 825 VK Amateurs active on sideband, many of whom are well qualified, and willing to share their experience with others.

SCHEMATICS

Figures shown around the transistors indicate d.c. voltages on the base, collector and emitter.

ACKNOWLEDGMENTS

The majority of the 7 Mc. gang have helped at one time or another with useful reports. Special thanks are due to those who gave extra time to listen to tests and offer on-the-air advice. Without this, the project might never have been so successful.

Basic ideas for suitable circuits came from Collins, Phillips and Mullard bulletins, and manuals such as the "CQ" Sideband Handbook and the Transistor Radio Handbook, now advertised in the magazine.

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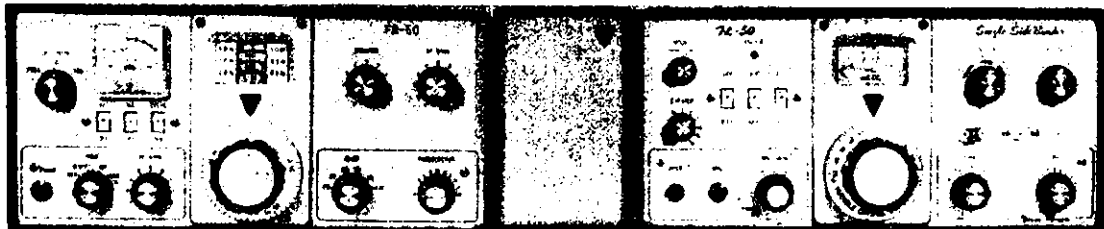
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Task	Type Used	Family	mW. Vmax.		Freq.
			mW.	Vmax.	
Speech Amp.	2SB54	PNP (a.f.)	80	25	1 Mc.
Vox Amp.	2N280	PNP (a.f.)	125	20	300 Kc.
9 Mc. i.f.	OC171	PNP (r.f.)	50	15	70 Mc.
455 Kc. i.f.	OC45	PNP (i.f.)	80	15	3 Mc.
455 Kc. osc.	OC44	PNP (osc.)	43	15	15 Mc.
8 Mc. osc.	2N374	PNP (r.f.)	80	40	30 Mc.
Mixer	2N274	PNP (osc.)	80	20	30 Mc.

Table 1.

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VALVES: 6BZ6 r.f., 12AT7 1st mixer, 6CB6 2nd mixer, 2 x 6BA6 455 kc. i.f. amp., 6BE6 prod. det., 6BA6 b.f.o., 6AW6 audio with output 1.5w. to 4 ohm, 600 ohm and headphone. Two transformers for h.f.o. and buffer, one for c.c. 2nd osc. Diodes for a.m. det., a.n.l., a.v.c., and power supply. Zener regulator.

PANEL CONTROLS: B.f.o., monitor gain, r.f. gain, mode switch (off, std-by, a.m., s.s.b., c.w., a.v.c., a.n.l., calibrator on-off).

REAR CHASSIS: Ant., rcvr. mute, "S" meter adjust, speaker, oscillator output, ground, accessory power outlet, a.c. power cord. Power requirement 230 volts 50 c.p.s. a.c., at 50 VA. Matches the FL-50 in appearance and styling. SP-50 speaker and 100 kc. calibrator, optional extras. Price £125 (\$250).

FL-50 is a complete five-band transmitter for s.s.b., c.w. and a.m. 50w. d.c. input, built-in solid state voltage regulated power supply, ant. relay, adjustable pi network with low Z output. Five crystal lattice filter with 5172.4 kc. carrier crystal. Built-in v.x.o. enables approx. 10 kc. shift, crystals extra by order. Separate v.f.o., FV-50, available for full coverage. Metered for p.a. current and r.f. output. P.t.t. control via suitable p.b. mic. V.o.x. kit available. A.l.c. circuit prevents overdrive. Ideal on c.w., straight or break-in operation.

PANEL CONTROLS: Operate-standby, power on-off, mic. gain, mode, carrier insert, netting, bands, plate tune, ant. load, grid tune, v.x.o., int.-ext. osc. selection, meter mA./r.f., crystal socket. **REAR CHASSIS:** Ant. socket, key jack, bias adjust, rcvr. ant., osc. input, connections for rcvr. mute and linear control, power outlet, ground, a.c. cord. All plugs supplied. Power 230v. a.c. 50 c.p.s. at approx. 100 VA.

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FV-50 V.f.o. gives full band coverage for the FL-50 where independent operation is required. V.f.o. ranges are 8.5-9.2, 12-12.5, 15.7-16.4, 22.7-24 Mc., and with slight re-alignment can be used for other 5 Mc. filter transmitters. Dial similar to FR-50. Uses two transformers, and can be powered from FL-50 (12v. a.c.) or with an external battery. Appearance matches the FL-50, size 6" x 6" x 8 1/2". Price £32 (\$64). All valves, diodes, spares, etc., stocked. Prices include S.T. Tri-band beams, l.p. filters, s.w.r. meters, co-ax. connectors, baluns, etc.

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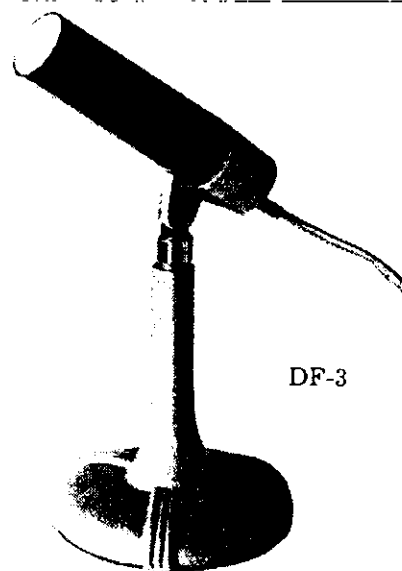
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SIDEBAND

Sub-Editor: PHIL WILLIAMS, VK5NN

This month it is desirable to avoid, again, the use of diagrams in the sideband notes, because of holidays and other matters which make their preparation difficult with the time and facilities available.

Since we are soon to have a new set of regulations governing Amateur operation and the impact of these on "Sideband" will soon be felt, I am going to commence discussions on linear amplifiers, in which will be included the long promised survey of input circuits for grounded-grid amplifiers, so that those who have requested this will not have to wait long.

A general discussion to give people the feel of what this linear amplifier business is all about, will not go amiss, as this will give some of the reasons for treating certain aspects of amplifier design and operation in greater detail than others which have been familiar to the Class C amplifier brigade.

The P.M.G.'s Dept. has recently written to the W.L.A. asking for comment on proposals for the 400 watt p.e.p. (output) rating for s.s.b. equipment, which will bring Australia into line with the British method of rating.

To explain why this rather generous looking figure has been adopted we must remember that human speech, which is what Amateurs are permitted to transmit in the A3a mode, is a combination of many sinusoidal tones transmitted in somewhat orderly chaos. The generally orderly pattern is recognisable as human speech, but the chaos is to be found in the numerous combinations of tones and their phase relationships, which build up the complex waveforms we know as speech. Even though the amplitude of any one of these tones may be small, the combination of many tones in the right phase relationship, can produce peak amplitudes having quite high values.

The problem of assessing the value of the peak is a rather complex one which is well known to communications engineers designing multichannel systems. Basically, every time the number of tones to be transmitted by a system is doubled, the capability of the system to transmit the signals supplied to it must be increased by 6 db. Conversely, if a system has a known single-tone capability and is required to transmit multi-tone signals, then the amplitude of each must be reduced by 6 db each time the number of tones is doubled. This is a theoretical value which holds up to about 6 or 8 equal tones, but when the signal contains about 30 tones the practical peak falls short of the theoretical by about 9 db. due to the fact that they are not all likely to be "rising" at the same instant, to produce the theoretical peak.

We have been discussing peak values, not RMS values, but here I would like to mention the special case of the 2-tone RMS power test. The RMS power (thermal power in a load resistor) will increase by 3 db each time the number of tones is doubled. This gives us the basis of the proposed method of measuring power output from an s.s.b. transmitter. With two equal audio tone input signals to the s.s.b. transmitter the power indicated in an R.F. watt meter is 3 db below the peak envelope power rating of the transmitter. To assess the maximum p.e.p. of the transmitter this should be measured at the same time as the R.F. envelope is analysed for distortion—for which a visual method is most commonly used—i.e. display the R.F. envelope on an oscilloscope while carrying out the power measurement. The visual onset of distortion is usually fairly obvious and sufficiently useful for low-powered Amateur transmitters. For multikilowatt commercial transmitters, more sophisticated methods of measuring distortion are used, such as spectrum analysers capable of indicating distortion products as much as 120 db. below the desired output frequencies.

The human voice gives intelligible signals over an electrical circuit if its response is limited to a frequency range of 300 cps. to 3000 cps. Further restriction may result in loss of intelligibility which may be tolerable under Amateur DX communication conditions, where you know pretty well what you want to hear from the other chap, anyway. Call sign, handle, QTH. QSL? and several numbers to give a signal report—and you have another country! For an s.s.b. signal we simply pick up this bundle of frequencies as they come from the audio amplifier and translate them up to the R.F. band we are using, by adding on the carrier frequency (sometimes, for lower sideband, we subtract them from the carrier frequency) and then we amplify this band of R.F. signals to the desired level and apply them to the antenna system.

For public address work we amplify the signal as it stands and apply the original frequencies to a loud-speaker system. The only difference between the audio and s.s.b. amplifiers is that the relatively small percentage bandwidth of the s.s.b. amplifier enables us to use tuned circuits as loads, and the tuned circuits permit single-ended amplifier operation instead of "push-pull" which is essential for the high-powered audio amplifier (unless you like using 852 triodes in class A).

The above analogy is given so that the mystery surrounding the linear amplifier and its operation will not

cause a mental "freeze". If you look at the Class B operating data for transmitting tubes as modulators the same pair of tubes either push-pull or in parallel in R.F. circuits, will deliver the same output. The limitations of ratings with frequency will still apply as for R.F. Class C duty, and such complications as neutralisation and screening are still needed, but currents, voltages, driver impedances, plate H.T. supply regulation, and the duty cycle for speech operation in modulator service with ICAS ratings, will still apply for s.s.b. operation. Correct plate impedance matching is just as essential for peak output as it was in modulator service, and operation with the correct quiescent current will reduce distortion in an s.s.b. linear in the same way as it reduced "cross-over" distortion in the modulator.

The main point to be understood after reading as far as this, is that s.s.b. signals are just like audio signals. Their average power is low, their peak power may be high, low distortion amplifiers, operating in Class A at low levels, Class AB1 at medium levels, and Class B at high levels, are used for their amplification. The new P.M.G. regulations will allow us to instal equipment capable of providing a peak output level of 400 watts of R.F. It is not necessary to provide all the power transformer to operate at this level continuously as normal speech has a low duty cycle. But it is necessary to use Class B amplifier tubes which will give the emission (from filament or cathode) and which will operate at the high plate voltage, and which have sufficient plate dissipation to cope with the quiescent (no drive) conditions, to give low distortion output at the peak output rating. Remember too, that Class B amplifiers are rarely more than 60% efficient, the tank circuits are lossy (particularly on 10 and 15 metres).

The transmitter final will have to contain high emission tubes operating at high plate voltages—of a 150w. a.m. transmitter on modulation peaks. You should operate these with fairly high quiescent current and voltage, but just loafing along as far as the meter readings on speech are concerned. Conservative operation means that you will not be hitting the peaks too often and will, therefore, have a clean signal.

Imagine your voice as though it were, say, 16 five watt signals (at radio frequency) all on different frequencies, stopping and starting and changing all the time, to provide the intelligence you wish to convey. The average power (output) of this combined signal could be about 80 watts (this corresponds to a modest input to the plate) but the peak would be about 400 watts of peak R.F. envelope power.

The linear amplifier to do this can be designed into less than 1 cubic foot of case—but the 150 watt a.m. final plus modulator would most certainly take a lot more space and power from the mains.

Let's settle for sideband!

73 for now, Phil 5NN.

I.T.U. FUND ACKNOWLEDGMENTS
Canberra Radio Society \$10.00
Harvey, C. G., VK1AU \$2.00

NEW CALL SIGNS

SEPTEMBER 1966

- VK2AWU—W. A. P. Luke, 2/285 Maroubra Road, Maroubra.
 VK2BEC/T—C. E. Crowe, 385 Bent Street, South Grafton.
 VK2BON—M. C. Cain, 53 Floraville Road, Belmont North.
 VK2BRF—R. C. Fosberg, 34 William Street, Hornsby.
 VK2ZEE—J. L. Jones, 1 White St., Darling Point.
 VK2ZHI—J. Pollock, 15 Mathew Parade, Blackland.
 VK3LM/T—J. A. Wilson, 14 Merrilong Street, Ringwood East.
 VK3TY—J. J. Martin, Lot 264 Wellington Road, Springvale North.
 VK3AEZ—A. W. Stewart, 12 Trevatt Court, Mildura.
 VK3AMB—M. A. Taylor, 58 Bronte Street, Heidelberg.
 VK3ANU—D. C. Diamond, 49 Fewster Road, Hampton, S.7.
 VK3ZHU—A. G. Moritz, 7 Wadham Street, Pascoe Vale South.
 VK3ZJS—D. A. Stewart, 74 Wilson Street, Wodonga.
 VK3ZKZ—G. W. Van Galen, 13 Clivedon Court, Leopold.
 VK3ZQN—J. W. Nott, 14 Garnet Leary Avenue, Black Rock.
 VK3ZQT—D. R. Martin, 36 Maidstone Street, Altona.
 VK3ZSX—S. F. Lane, Orchard Drive, Croydon.
 VK3ZTQ—C. Quain, "Tlamaree," Doongalla Road, The Basin.
 VK3ZUH—A. K. Hore, 82 Kitchener Street, Broadmeadows.
 VK3ZVL—D. G. Long, Kettles Road, Lang Lang.
 VK3ZVP—L. Kurcki, 18 Boort Street, Broadmeadows.
 VK3ZVR—E. A. Van Rhijn, 12 Evans Crecent, Laverton.
 VK3ZXA—D. L. Mitchell, 17 Mabel Street, Camberwell.
 VK3ZXC—L. A. Costa, 23 Little Myers Street, Geelong.
 VK3ZXE—A. R. Smith, 11 Levuka Street, Seaford.
 VK3ZHJ—J. E. Brown, 23 Montgomery Street, Wendouree, Ballarat.
 VK3ZYS—S. H. Barber, 35 Olympiad Crecent, Box Hill.
 VK3ZZA—P. T. Ament, 22 Brinkley Avenue, Ballarat.
 VK3ZZE—R. S. Elkin, 8 Windsor Avenue, Charlton.
 VK4BS—Toowoomba Guide and Scout Radio Club, Postal: P.O. Box 108, Town Hall Post Office, Toowoomba. Station: Rangeview Scout Hut, Picnic Point, Toowoomba.
 VK4CT—R. G. Graf, 10, 26th Avenue, Palm Beach.
 VK4IK—L. J. McIlree, 253 The Esplanade, Cairns.
 VK4KE—T. J. Fishpool, 98 Jellicoe Street, Toowoomba.
 VK4PP—N. L. Martin, Station: Point Cartwright Drive, Biddina Beach. Postal: Wallace Street, Bell.
 VK4QM—C. A. Miller, 28 Grigor Street, Moffat Beach, Caloundra.
 VK4SR—G. N. Scott, 31 Basnett Street, West Mermaids.
 VK4ZEG—E. F. Gill, 22 Westbourne Street, Townsville.
 VK4ZKW—K. L. Watson, 52 Merthyr Road, New Farm.
 VK4ZPC—P. D. Crewdson, 33 Hansen Street, Moorooka.

- VK4ZSE—R. J. Stroud, 108 Dorrigo Street, Kedron.
 VK4ZSC—R. A. Chernich, 28 Atkinson Street, Hamilton.
 VK4ZWD—W. D. Metcalfe, 22 Westbourne Street, Hermit Park, Townsville.
 VK5DI—W. T. Lucas, 27 Butler Street, Elisabeth Park.
 VK5PL—D. M. Roberts, C/o E. S. & A. Bank, 238 Main Road, Blackwood.
 VK6ZBI—L. P. Priest, 113 Hampshire Street, East Vic. Park.
 VK8ZEN—N. R. Dowle, 6 Hilda Street, Shenton Park.
 VK7FB—M. L. Jenner, 223 Bathurst Street, Hobart.
 VK9KS—K. S. Smith, Station: 3 Modilon Road, Madang. Postal: P.O. Box 46, Madang.
 VK9RI—R. M. Inwood, Station: Moru Street, Boroko. Postal: C/o O.T.C., Box 58, Port Moresby.

OCTOBER 1966

- VK1BC—B. H. Christensen, 1 Bosch Place, Chiffey.
 VK1DS—D. J. Slade, 7 Robert Campbell Road, Dunroon.
 VK2WG—Wagga District Radio Club, Station: 33 White Street, Kooraling. Postal: Wallace Street, Coolamon.
 VK2BJF—P. J. Fackender, Flat 1, Lot 4, McDonogh Estate, Princes Highway, Dapto.
 VK2BJS—J. B. Stacy, Station: Panorama Road, Calala, Tamworth. Postal: RMB 822C Tamworth.
 VK2BRT—R. B. Tice, "Old Castle," Leadville.
 VK2ZHK—A. J. Leo, 218 Old Kent Rd., Greenacre.
 VK2ZNP—C. C. Burge, 167 Mitre Street, Bathurst.
 VK2ZPH—P. J. Shannon, Flat 5, 282 Johnston Street, Annandale.
 VK2ZWC—W. F. Cromarty, 580 Buchhorn St., Albury.
 VK2ZWX/T—J. A. Wilkinson, 48 Franklin Rd., Orange.
 VK4BL—A. F. Jacobsen, Station: 25 Kilikvan Avenue, Kenmore. Postal: Box 82A, G.P.O., Brisbane.
 VK4CM/T—T. M. B. Elliott, 24 Esplanade, Burleigh Heads, Gold Coast.
 VK4OO—M. Blackstone, 384 Fig Tree Pocket Road, Fig Tree Pocket.
 VK4ZAM—A. A. S. Millard, 25 Beaton Street, Mackay.
 VK4ZDD—D. L. Dwyer, 67 Pring Street, Hendra.
 VK4ZHO—R. J. Hoare, 16 Wendover Street, Grovely.
 VK4ZLZ—D. J. Connolly, 26 Stanton Street, Belgian Gardens, Townsville.
 VK4ZRP—R. Pearson, 10 Kenbarry Street, Brighton.
 VK5HF—G. Harman, Portable in S.A. Postal: C/o O.I.C. Aerodrome, Ceduna.
 VK5QX—J. J. Hunt, Portable in S.A. Postal: C/o P. Longhurst, 6 Northampton Crecent, Elizabeth East.
 VK5ZJN—J. C. Newgrain, 37 Para Street, Salisbury.
 VK8DE—H. G. Austin, C/o O.T.C. Carnarvon.
 VK6DS—P. A. Smith, 31 Floyd Street, Triggs.
 VK8ZET—P. J. Taylor, 52 Connolly Street, Wembley.
 VK8ZGE—J. V. Delano, 145 High Road, Melbourne.
 VK7WH—W. J. Henry, 642 Nelson Road, Hobart.
 VK7ZCP—C. S. Ferger, 37 Galvin Street, Launceston.
 VK7ZJV—J. J. Vangalen, 7 Rufus Street, Gowrie Park.
 VK7ZTH—A. T. Head, Flat D, 5 Robert Street, West Hobart.

- VK7ZXT—A. I. Bedelph, 42 Smith Street, Smithton.
 VK0CR—R. D. Champness, Macquarie Island.
 VK0CS—C. Simpson, Mawson.
 VK0GP—G. N. Payne, Wilkes.
 VK0TO—T. Oirog, Wilkes.

OBITUARY

BOB MEADOWS, VK2IN

Bob passed away on December 7 after several years of ill-health at The Entrance. A few weeks previously he had been active on 7 megs. using a Swan 240, from Terrigal. He was born in England and was in radio-electrical retailing before the war. During the war he served in the R.A.A.F. as Communications Officer. In 1948 he joined Mingays Electrical Weekly as radio technical editor. During 1957 and 1958 he toured most of Australia and operated VK2IN from his caravan, while calling on thousands of radio retailers and broadcasters for his magazine.

In retirement he took a great interest in the Gosford Radio Club and lectured to A.O.C.P. classes. Bob's report on a transmission was accurate and well worth asking for. He will be missed by his many, many friends. He leaves a widow, son and two daughters. To them we extend our sincere condolences.

ALF. SCHOFIELD, VK6TS

It is with regret that we record the passing of VK6TS, Alf. Schofield. An Amateur of 28 years' standing, born in England, he came to VK6 five years ago and was active on 40 and 80. He ran a business at Northam and lived at Kenwick in the metropolitan area. He died on October 12 last and Amateur Radio lost a very likeable person in Alf. The Institute, in fact all Amateurs, extend to his wife, son and daughter our heartfelt sympathy.
 Vale Alf.

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VK4ZAZ	26	7	VK3WK	68	2
VK4ZBE	29	6	VK5LC	1	1
VK3ZFM	22	4	VK6DW	3	1
VK3ZHF	25	4	VK2AEZ	10	1
VK3IM	30	4	VK3XA	11	1
VK9AU	32	4	VK3GM	12	1
VK4PU	35	4	VK3ACL	14	1
VK2ABR	46	4	VK2HO	17	1
VK6BE	65	4	VK3ZEA	18	1
VK4ZGL	70	4	VK7ZAQ	34	1
VK4HR	4	3	VK5ZBR	37	1
VK3PG	5	3	VK5KO	42	1
VK2ABC	8	3	VK3ZGP	51	1
VK2VW	9	3	VK3ZIG	54	1
VK5GG	19	3	VK4ZEK	56	1
VK5ZAX	20	3	VK6ZDS	60	1
VK5CL	21	3	VK3WV	64	1
VK5C	22	3	VK6ZCK	69	1
VK7LZ	24	3	VK2ZKW	73	1
VK3QV	39	3	VK2ZDK	75	1
VK4ZK	55	3	VK2ZML	78	1
VK4ZAL	58	3	VK2ZDP	77	1
VK5KK	61	3	VK2WH	15	—
VK5ZGF	63	3	VK5AX	36	—
VK4RY	2	2	JA1BYM	43	—
VK3ZGZ	28	3	JA1O	44	—
VK5ZZ	31	2	VK4ZAA	45	—
VK7ZAO	33	2	VK6ZAA	47	—
VK5ZMK	36	2	VK5ZSG	52	—
VK3ZGM	40	2	VK6ZCM	53	—
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Correspondence

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

"SERIES" ANTENNA

Editor "A.R.," Dear Sir,

I refer to a letter by Col. A. McKenzie in "Amateur Radio," January 1967, which first of all states that the title of an article by me in "A.R.," October 1966 is "incorrect and misleading." Other matters are also raised in relation to certain technicalities.

I cannot subscribe to his statements in any way and suggest that he do a little re-reading in which the antenna radiates. He mentions antenna gain but did not in one instance give any practical results on the operation of his array.

At this stage I do not wish to bore readers with any more remarks on the "Series" antenna other than to say that it is strictly a one-band affair and in view of further developments the "Series" antenna is now considered redundant and relegated to the junk heap.

I have devised another antenna which has the distinct advantage of two-band operation and of which I have forwarded full details to you for publication.

—Wal E. Salmon, VK2SA.

PEN FRIEND REQUIRED

Editor "A.R.," Dear Sir,

During a recent contact with HB9AFI I received a request for a VK Ham with whom the operator could correspond; I wonder if you could arrange a small paragraph in the most appropriate place in "Amateur Radio" to assist? The details are as follows:—

HB9AFI, Kurt Wetter, age 25 years, Sablons 4, Lausanne/VD, Switzerland.

Equipment: National NCX-5, Ant. GSRV.

I don't have time to keep up a regular correspondence, and am nearly twice his age!

—Ralph J. Knight, VK5NK.

"THE PRIMITIVE ART"

Editor "A.R.," Dear Sir,

In "Federal Comment" in "A.R.," September 1966, Peter Williams VK3JZ made some pertinent remarks as to the part c.w. (Al mode) has played up to the present in the ever enlarging field of Radio communication and its chances for the future. Sadly, it would appear that many who read the comment did not understand its implications. Or is it that the "knockers" just can't help themselves in alluding to the c.w. men as antiquated adherents of a "primitive art."

I repeatedly hear on the bands (including the Z boys who should be the last to make voice) derogatory remarks as to so and so and his old Al mode. All the same sarcasm comes up in direct conversation and in the mail. I have been asked why I persist with c.w., as if its pursuance is something that is not now acceptable in the best Amateur Radio circles any more. A VK5 has written to say that Amateur Radio now has three groups—s.b., v.h.f. and the dregs.

Let me here make a qualification. I am not referring to the good-natured banter between c.w. and s.b. men, but to the insinuating "talk down" attitude of the persistent knocker, who in this regard suffers from a disordered psyche and finds it necessary to destroy what he cannot conquer. A netherland turn of mind—or the real primitive.

While the next I.T.U. conference may well bring changes that could affect Al mode, simply because change is the order of all things, I cannot visualise c.w. becoming a mode of the past for a considerable time yet. Certainly never will it become known as a primitive art.

The pro. c.w. man turned s.b. devotee seldom if ever makes a derogatory comment. He knows too well what proficient c.w. operating really is.

And what is it?

It is the mode that permits a circuit when all else fails. (Those s.b. men who disagree with this say it is each man to his mode.)

It's slower than the spoken word but not that much to really fast operators. But it is more accurate. In fact, 100% accurate.

It suffers no dialect difficulty. This is a great advantage over the spoken word. The Queen's English (to name but one language) is mouthed in divers places but parochial dialect often renders it foreign language. The duck talk men might take a point here and

say that some particular fists represent a language right out of this world. Actually bad senders (those whose character formation and spacing is incorrect) don't survive. They are given the message early and steps are usually taken.

Then there's the argument of bandwidth requirements for c.w. as opposed to s.s.b.

And it seems that c.w. mode will have its place as R.C. advances to the use of translator satellites and in man's first forays to outer space. Before its decline dot-dash is going to have an awful lot of use.

It would appear that only a very small percentage of aspirants who now take out their Ham tickets go on to become accomplished c.w. operators. This is to be expected as no novice period of operation is required and the new Amateur simply puts aside his key after having primed himself sufficiently to last out the few minutes of code test needed to pass.

To those so unskilled it is a sweaty, exhausting, and dreadfully restrictive process that holds no hope of competence or efficiency. To the apt there's no pain or strain even at 40 w.p.m. No conscious mental juxtapositioning is required to convert code into words. It just occurs—and if one is writing it down it simply flows from the pen to the paper (like the well-known Biro ad.).

Rather than be eventually termed the "primitive art" it may well become termed as a talent or accomplishment of the "elite."

Perhaps I could do no better than to quote KH6UK and W6NLZ. Both men of experience in R.C., they wrote in "QST" some time ago—"Inasmuch as it has the narrowest bandwidth and the lowest s.n.r. requirements, the first contact using each new space communication system that comes along with probably be made on c.w., as was the case with the satellite Scatter and Moonbounce. The skill of the receiving operator at weak signal reception, i.e. the art of digging stations out of mud, can have a great effect on the minimum required s.n.r. for any specified degree of reliability. This is where effectiveness can be bought most cheaply, for it does not cost a cent to train a good operator. In general, the higher one's receiving speed, the more instantaneous his character recognition is likely to be, and the better he will prove to be as a weak signal operator. In fact, the best such men are those who are able to think directly in code, without the necessity for mentally translating into English. It is no accident that the great achievements in Amateur Radio communication have as a rule been made by "old c.w. hands who rag-chew easily at 40 w.p.m."

So if you've progressed to s.s.b. don't become a code knocker. Keep in mind the part c.w. has, is, and will play yet in the future advancement of R.C.

Bear in mind that s.s.b. mode is in for some drastic changes in the coming years.

One of the primitives (or "elite").

—Al, VK4SS.

Publications Committee Reports

Firstly an apology for not publishing a report for the last two months. The pressure of work getting out two issues of "A.R." and the Call Book so close together proved too much for the system. Unfortunately the lack of reports meant no reminder for our scribes, and some overlooked the earlier copy date for January issue and the fact that we do not include notes in February issue.

At our November meeting correspondence was received from VKs 3ACM, 7RG and Bundaberg Amateur Radio Club.

Technical articles were received from VK2SA and VK2BSJ.

The main items of business handled dealt with the Call Book and arranging for the final checking of the proofs before going to press.

The December meeting was pleased to see two visitors, Ron Higginbotham and Peter Williams.

Correspondence was received from VKs 4AF, 4DZ, 5AX and 7LL, whilst technical articles were received from VKs 2ATE, 3UG and 3ALZ.

Being the last meeting of the committee for 1966 only routine business was handled.

VICTORIAN DIVISION STATE CONVENTION

will be held during
LABOUR DAY WEEK-END
11th, 12th and 13th MARCH

Location:

BAIRNSDALE

Saturday: Dinner starts 6.30 p.m. sharp.
Convention meeting starts 8 p.m. sharp.

Sunday: There will be NO transmitter hunts, scrambles, etc. Instead, it is to be a family day. We have chartered the "Tambo Princess" and will spend the day cruising on the Gippsland Lakes. Lunch on board.

Monday: Free to do as you please.

Accommodation in the area, and capacity on the "Tambo Princess," is limited so early booking is essential. If you have not yet received your notice form giving complete details, phone 34-9387.

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VK2 DIVISION

RADIO EQUIPMENT STORE

Happy New Year. Do you have an up and coming junior op. in the shack? Do you find that your half finished projects are being completed for you, but not quite the way you want them? If so, perhaps we will be able to solve the problem for you with one of the kits listed below. (The only danger will be that Junior will learn too much and completely kick you out of the shack.) These kits, which are of New Zealand origin, are supplied to the Y.R.S. Scheme.

Fountain Experimental Science Kits.
Kit 2. Junior Electronic Laboratory.
Kit 3. Advance Radio Kit.
Battery power only, complete with a comprehensive instruction book. Limited numbers, so do not delay. \$20 per kit, postage included. P.S.: Don't let the XYL read about these or you may have to buy one to keep the harmonics from under foot.

We recently obtained a number of TALBE survival beacon transceiver units. These units are the type used by air crews and form part of their Mae West gear. When the antenna is released the unit automatically transmits a beep tone for d.f. purposes. When the search aircraft is close, the unit is equipped with voice sending and receiving. Consists of two units, one being the antenna and microphone/speaker and the other the transmitter, receiver and tone equipment. Transmitter is crystal locked, in the 120 Mc. region. Crystal is removed as it was on an international distress frequency. Receiver is a superregenerative, 5 wire in battery tubes are used. Could be suitable for conversion to 2 metres, 1/2 watt output. \$5.00 per unit plus 75 cents postage and packing. Weight 3 lb. approx.

We also have the following available:-

Type S power supplies. \$25.
Collins ART-13 transmitters. \$60.
Cossar Signal Generators, Type 52A, 5 to 52 Mc. \$35.
SCR 522 Test Sets. (Sig. Gen., field strength., battery box, in wooden case). \$19.
AR7 Receivers. Various conditions. \$80 down, according to condition.
The following Receivers (slight mods.)
AR88, BC348, AMR300.
Pye Reporters (low band a.m.). \$17.
Pye Rangers (low band a.m. 8AQ5 p.p. mod., 3/12 final). \$25.
Teletype equipment. While much has already been sent interstate a few bits remain. (Melbourne Amateurs should check with VK3ZEO who could give you details about units already in VK3.)

All the above items are F.O.R. Sydney. These orders are assembled and dispatched to our carrier twice a month. Please include a S.A.E. with all inquiries.

Next month there will be details of the coil formers mentioned on page 17 December issue. Make 1967 your building year. We may be able to help out with Vernier dials, meters, multimeters, knobs, co-ax fittings.

All inquiries for the above should be addressed to:-

Radio Equipment Store,
Wireless Institute Centre,
14 Atchison Street,
CROWS NEST, N.S.W.

TAPED LECTURES

26. Short Wave Listening. 80 mins. No slides. Sid Molen, VK2SG.
27. Introduction to Amateur Radio, 35 min. 17 slides. Sid Molen, VK2SG.
28. Transistors in Communication Receivers. 80 mins. 24 slides. B. Eversford, VK2AEB.
29. T.V. Station Antenna Design, Pt. 1. Structures, types of radiators. 75 mins. 22 slides. John Vanderley.

Have you read the Editorial in December "A.R."? With the theory exam every six months you will have to be sure of everything before the exam., six months is a long time to wait for the next try. The VK2 Division will be starting a new series of lectures twice a week at W.I.C. Theory and Morse. Remember that the correspondence course is always available. Details obtainable from the Course Supervisor, 14 Atchison St., CROWS NEST, N.S.W.

CRYSTALS AND CRYSTAL FILTERS

9.0 Mc. McCoy Silver Guardian, \$30.

9.0 Mc. German KVG XF-9A, \$30.

9.0 Mc. McCoy Golden Guardian, \$40.

S.S.E. octal plug-in filters, 6 frequencies between 5175 and 5300 Kcs., \$15.

9060 and 8000 to 8025 Kcs. FT-243 crystals, \$1.50.

Matched carrier crystals included with all filters. postage extra.

IN STOCK

Galaxy V and Swan SW350 all-band s.s.b. Transceivers.

Hygain Tri-band and 40-M Yagi beams.

Hygain multiband Verticals.

D.C.-D.C. and A.C. Power Supply units and transformers for same, also complete A.C. supply kits.

Webster Bandspanner all-band mobile radiators.

ON ORDER

Heath HW-22A and HW-32A transceiver kits.

Heath HA-14 linear amplifier kits.

Gonset 2-M s.s.b. transceivers.

Jackson Bros.' vernier dials and vernier movements.

USED EQUIPMENT

Near-new Galaxy V, demonstration unit, full factory warranty, \$460.

Sideband Electronics Engineering

P.O. BOX 23, SPRINGWOOD,
N.S.W.

Phone Springwood 51-1394,
not part of the Sydney exchange!

DX

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

Local VK activity seems very quiet. No doubt many ardent DXers are away with their families on vacation. However, the rare prefixes are rolling in, both on 20 and 15, with more than one CQ Pacific going a-begging. Conditions should show a steady, if unspectacular improvement as the year progresses, 21 Mcs. may do best in this regard. Already some of the 20 mx ops. are being heard there.

DX-PEDITION TO LORD HOWE ISLAND BY VK5XX

As most are aware, Arch XK5XX spent his vacation at this exotic spot. The trip, in spite of one or two major setbacks, was quite successful, inasmuch as that Arch did not go to make it a high-powered stint but to have a holiday as well.

Arch worked under difficulties the whole time he was there, from November 23 to December 10, 1966. The tuning assembly of the main receiver was damaged in transit, and he was forced to work with a standby rx that had no bandspread. There were other minor troubles and a freak cyclonic "blow" brought down all three antennae. But he did manage between 500 and 600 QSO's almost all on 20 mx and including several countries on both LP circuits. Rig was QRP 40 watt.

The island itself is one of those delightfully "away from it all spots". Some 6 1/2 miles by one-half mile wide approx., and depending on its existence on the tourist trade.

Arch apparently made a lot of W's happy. Many letters have been received saying "at last Lord Howe"—and Arch says one W told him that he took two days off from work to be sure of a QSO?

Now where to next year, Arch OB?

NOTES AND NEWS

Keramede Islands. ZL1AI is on Roe Is. 14,120 and 14,130 a.m., xtal control. He should be there for a while. Will work cw on this freq.

Norfolk Is. VK9JA is on, using s.s.b. gear. 14,180 but uses other freqs. VK9RH is also on sometimes.

Vietnam. 3W8D was worked here on 14,220. Says he is not on the banned list and is perfectly legit. No QSL information available.

Amsterdam Is. 14,040 asking that his QSLs be sent via FR7ZD.

Armenia. UG6SC 14,205 around 1330z. Gabon. TR8AG on daily. 14,140, 2000z, QSL Box 157, Libreville.

Faeroe Is. OY7ML s.s.b. activity around 1300z. QSL W2GHH.

Turkey. TA2AC worked here 14,020 at 1800z. QSL K4AMC. Big sig.

Cameroon. HK1QQ/TJ8 14,020, 1630z, will be active for a year. QSL home call.

Chatham Is. John Washer, who operated from here in 1963 is expected to return and operate during 1967.

Albania. Never were there so many rumours about activity from this spot. IIRB is now trying to obtain permission to put out some activity from here. Specific dates if they come to hand.

Syria. Rasheed YK1AA active again. Did anyone get his QSL from earlier stint (I did not—Al).

Iris and Lloyd of Yasmee Fame. Should be back home now having a well-deserved rest. But they are expected to be hitting the DX train again soon. This time it will be the African continent.

Brunei. VS5MH skeds WIDGJ, his QSL manager, Mon., Wed., Sat. 14,190, 1235z.

Macao. CR8AH is active on 7000 at 1100z.

Indonesia. WOGTA/8F4 now has permission to work W stations. He also will work any who calls him for a brief QSO.

Trucial Oman. Roger MP4TBO has been on almost daily at 1300 GMT on 14,198, listening 5 up, via Longpath. QSL via V1AKZ.

Gambia. Ray WA6LEBP is now signing ZD3G from here. He is a Peace Corps member, and should be here for about another year. He usually operates just below 14,200, listening 14,205-210 after 2000 GMT. He is presently running 60 watts to a dipole, but hopes to have a more elaborate set-up shortly. QSLs via K6ENX Otto Miller, 3246 Grand Av., Vista, Calif. 92083.

Gabon. Guy TR8AH, a newly active station, has been on 14,024 at 2100 GMT and is a good cw op. QSL via Box 3122, Libreville.

Dahomey. TY2BC is the call of 5N2AAW and AAX. They are active from here nearly every week-end, working mostly Europeans.

Macquarie Island. Rod VK0CR is active on s.s.b. at present. He is on 14,180, listening 14,205 at about 11-1400 GMT almost daily. He is also on 14,080 c.w. at 0700 GMT. QSL via VK7 Bureau, or Greg Johnson, Inglis St., Newtown, Hobart, Tas.

Maldives. VS9MB on daily, 14,058, 1330z. QSL W2CTN.

VU2 QSL Cards. If you have had QSLs returned by ARSI try Box 53, Bangalore.

VS90C, Masirah Island. QSL to 21 Berwick Cres., Sidcup, Kent, England. Jim is now QRT.

Tokelau. ZM7FL operated by VR2FF will be active sometime after Jan. 1. QSL to K00TB.

South Orkneys. LU1ZG has been on 14,200 a.m., listening about 5 kc. up, at 05-0600 GMT on several occasions. QSL via LU4DMG.

Rio De Oro and Ifni. This stint by EA7JQ and EA7GF will most likely be over by the end of January. My official information on this DXpedition says QSL to URE, Box 220, Madrid, but contributions will not be accepted. (This might be a condition of licence issue and it may mean that the government concerned is not the first to consider such operations as an endeavour to make petty capital from petty exploitation rather than an Amateur endeavour.—Al).

Ebon Atoll and Comoron Reef will not count for DXCC. Separately it is. Reported as official from A.R.R.L.

Muscat and Oman. VS90C active 14,200, approx. 2200z.

Sudan. ST2BSS, 14,185, 1800z. It was earlier reported that no licences were on issue from here but this seems legit.

Easter Is. WB2JVD/CEQ is the call now being used from the Isle of Idols. 14,222, 2400z. Also reports to hand of 21 mc. activity.

Comoros. FH8CD regularly on s.s.b. at low end of 20 mx phone segment also at low end of 28 Mc.

Wake Is. Several on from here on all bands. Both cw and s.s.b. Take your pick. KW6ED, KW6EJ, KW6DS, KW6ER.

French Somaliland. FL8RA are one or two others are QRV. Both 14 and 21 Mc. Both modes. 1300z or later.

Libya. 5A1TQ on each day on a.m. 14,160, 1630z. QSL J. Best, Box 1098, Tripoli.

Cote D'Ivoire. TU2BK 14,040. Worked here at 2100z.

ACTIVITIES

Dud VK4MY now sporting himself a big beam on 20 mx, worked the following on s.s.b.: HRIKAS, HSI6B, MP4TBO, 5A4TR (YL op.), VE6QC/SU, UD6BV, VQ9AA/A, TG8IA, UL1BF, 601AU, 4X4UL, 9V1MY, ODSNC, ODSAI, WOGTA/8F4 (21 cw.), HM1DE, DUTSV, CX1AAC, MP4BDF, ZE5J1 (21 Mc.), CX2CQ, CRTLU (14 cw.), 5R8AL, ZC4CL, VS9ALV 14,145, EG7XL, VS9MB, EF2BQ 14,102, 5A3TW and others.

Dud says he worked WN8NE/KG6 on Guam and after he passed on his QTH as Gold Coast, S.E. Queensland, he was asked what country is that???

Chas, VK4Uncle Charlie, who amongst other things has worked DXCC (confirmed) this past 12 months on about 25-30 watts QRP, reports QSOing the following: 15 mx: F9EA, DJ6BN, FL8RA, IIFOS, ST2AS, Box 244, Pt. Sudan; 20 mx: F9OQ, UV9OM, YA3TNC, 4X4QA, 4S1DA, YJ8BW, SM6AEK, VE1KG, CP5EZ, TI2PZ, HL9KR, HL9TS, KS6BV, XS5JM, 1G5A, CE6EF, HK7UL, FO8BJ, ZL1AI, Roe Island, and more.

Peter VK4PJ reports 20, 15 and 10 mx open. However, the latter is most uncertain. On 14 Mc. these nice ones were worked: VS9ALV, XE1EEI, UA3CA, UA1MU, VP9CP, HRIJAP, XE1GGW, 9Q5HD, OH1P, UA1KBY, DU1BF, 9V1LK, 11VUY, VE6QV/SU, UA9YO, VO1FB, VE1OZ, G9QAX, XW8CA, OA8Y, FJ3CE, EC8KA, CE6FK, CW6FC, VP2AA, G3MW, EA8EZ, KP8AJ, FJ2Q, HK9KH, 9YAVT, 5A3TW, SF8ANM, ON4TY, VP8RG, EL2AK, HS1CB, VE0MY, VP9FK, 9M2PO, CT1FQ, VP7OL, YS1AG, SM6AEK, HIBSC, FW8RC, G3JAF, HR1CN, 6Y5MJ, ZF1GO, VY5CFA and many more. Mostly around 2000z LP and 0800z. On 21 Mcs. 4X4HK, VU2CQ, VS6EK, VR2EK, OE1HKW, OE2BSL, G3UMI, OZ3KE, G6PK, G3IWH, G3JAF.

Ken VK3TL now has a 50-ft. GP with 8 radials on 20 mx as a standby for his quad and reports it works fb. This month's cw/s.s.b. effort is as follows: FP8CQ, FP8CY, FR7ZL, FY7YM, WB2JVD/CEO Easter Is., HPI1YZ, LX1SD, PJ2CU, P33CD, PJ5CE, UF6KPA, VK5XK/2 Lord Howe, VQ9AR, VQ9BK, YA3TNC, ZF1GC, ZL1AI Kermadec, 1G5A Geyser Reef, 3W8D, 5Z4JH and 5Z4SS.

Best QSLs received: XF1EP, VS9KR/Kamran, GD3RWF, VK0MI, 5W1AX, VP2VC, GC2FMV, GC4LI, GC3KF, GC8ACH, KG6SZ,

KG6SZ, EA8EZ Canary Is., IP1AA, IOFGM, CN8BB, ZL5AA, 6Y5DW, ZB2AK, 506BW, GW6YQ, FP8CQ, CT2YA, CT3AU, VP8HZ, Falkland Is., 5N2AAW.

QTH's (By Courtesy Ken, VK3TL)

1G5A—W4ECL
VQ9AR—WA8GUA.
FP8CQ—W4GSM.
WB2JVD/CEO—K5GOT.
FY7YM—Box 63, St. Laurent, Cayenne.
YA3TNC—W3TNC.
3W8D—Russell Milroy, c/o RMK/BRJ 340 A.P.O., 96312, San Francisco.

SUMMARY

Forty Meter Lament.

Often when struggling with the layers of QRM on this band or trying to find an unoccupied cycle into which I can slide a CQ, I begin to ponder on the decline of this band. The truth is that 7 Mcs. is a remarkably fine band for DX, but now the rare ones it seems seldom appear—suffocated under layers of Europe and Asian and commercial QRM. Between 1600z and 2100z this band is usually open to all points west. Sometimes as far as LP to U.S.A., but the intense European inter-country QRM renders QSOs impossible. One wonders also how many of these commercial stations that inhabit the first 20-30 Kcs. of the band are legitimate or bootleggers.

We are told by our Federal and International advisers not to wail under this mountainous layer of power QRM, but the stage has been reached whereby during these early morning hours there is but a few Kcs. left that are free from this type of interference. And these are so packed with so many European and Asian hams struggling for QSOs that long distance contacts are well nigh impossible. This cw segment of 7 Mcs. has not gone yet, but the hammer of foreclosure is raised and its going—going—?

I'm typing this particular paragraph off the cuff, but if my memory serves me correctly our good President, L. Blagborough, VK4ZGL, sent out forms not long ago asking that any non-Ham activity be noted and forwarded. I don't believe he received one reply. 'Nuff Sed!!

My thanks to the month's contributors, LIDXA, Fla. DX'er, VE3FXR, G3UGT, VK4PX, VK4DY, VK4UC.

DX es 73. Al, VKASS.

R.D. CONTEST

Correction and Addition

G. Earl, L7138 844 points
VK5JT 73 points

CANBERRA CONVENTION

The annual Convention of the Canberra Radio Society will take place during the Friday, Sat., Sun. and Mon. of the 1967 Easter week-end. The venue this year will be the new Griffin Centre in the heart of Canberra. This is a modern brick building, air-conditioned, with all conveniences and unlimited parking. It is situated a few yards from the shops, restaurants and other amenities of the Civic Centre.

Visits are being arranged to a satellite tracking station, Mt. Stromlo Observatory, and a deep space tracking station, also to the National University and other places of technical interest. For the non-technical Canberra offers a wealth of attractions for the visitor.

Competitions and contests will cater for the Hams, S.W.I.'s, the ladies and children, with appropriate prizes. These will be held in conjunction with the picnic lunch at a new and different beauty spot.

The special highlight will be the Convention dinner and reception, to be held this year at the Hotel Canberra on the Saturday evening.

It is essential that intending visitors book accommodation as early as possible. Write to the Canberra Radio Society, Box 1173, Canberra City, marking the envelope Easter Convention and setting out the type of accommodation and price range required. The range is from a suite in the big hotels down to the floor of our old clubroom for the hardy types, but please write soon.

Convention registration remains at \$1, payable on arrival, and the dinner is \$3.25.

If you're not sure if it will be worth it just ask someone who's been before, and don't forget it's a family affair.

ANTENNA PROBLEMS?

Having trouble making a suitable antenna for the 2 metre band? Stop worrying, Antiference (Australia) Pty. Ltd. have the answer for you. They have just released a 10 element "Yagi" designed for 2 metre operation. Model 109/2M. 10 element beam on a 10 foot boom, with the following characteristics:—

1. Characteristic impedance: 300 ohm.
2. Frequency response: 140 to 150 Mc. \pm 1 db.
3. V.S.W.R. Maximum: 1.2 to 1.0 across 144-148 Mc.
4. Gain: 12 db \pm .5 db across 144-148 Mc.
5. Front to back ratio maximum: 15 db across 144-148 Mc.
6. Acceptance angle: \pm 28°.
7. Optimum stacking distance: 66".

Interested? The above is priced at \$14.00 plus 12½% tax if a call sign is quoted. (If no call sign is given the tax rate is 25%.) Freight on rail Sydney to your nominated railway station.

Obtainable from: Radio Equipment Store, Wireless Institute Centre, 14 Atchison St., Crows Nest, N.S.W.

Radio Equipment Store

New series Catalogue available. Posted free during the month of February. Write today to:

Radio Equipment Store,
Wireless Institute Centre,
14 Atchison Street,
Crows Nest, N.S.W.

Please print name and address clearly.

ERRATA

Re article "Propagation of Amateur Signals allied with Ionospheric Predictions." January 1967, "A.R."

The words at the top of Figs. 3a; 3b; 4a; 4b; 5a and 5c which are indistinct should read—SUNSPOT MINIMUM —.

In column 2 on page 6 the last line should read "VK2WI broadcasts from Dural on 7 Mc. were, etc."

Since the article was prepared some new information has been issued by Zurich which amends the information in column 2, page 2, and reads:—

Beginning with 1966 our predictions were based on the following assumptions:

Date of coming sunspot maximum	1968.7
Highest smoothed monthly sunspot number	100

Now improved predictions can be given:

Date of coming sunspot maximum	1968.5
Highest smoothed sunspot number	110



CONTEST CALENDAR

4th-6th February—33rd A.R.R.L. International D.X. Competition (Phone)—1st week-end.

4th-19th February—A.R.R.L. Novice Round-up.

11th-12th February—John Moyle Memorial National Field Day Contest.

18th-19th February—33rd A.R.R.L. International D.X. Competition (C.w.)—1st week-end.

18th-19th February—R.S.G.B. First 1.8 Mcs. Contest.

4th-6th March—33rd A.R.R.L. International D.X. Competition (Phone)—2nd week-end.

18th-19th March—33rd A.R.R.L. International D.X. Competition—2nd week-end.

W.I.A. D.X.C.C.

Listed below are the highest twelve members in each section. Position in the list is determined by the first number shown. The first number represents the participant's total countries less any credits given for deleted countries. The second number shown represents the total D.X.C.C. credits given, including deleted countries. Where totals are the same, listings will be alphabetical by call sign.

Credits for new members and those whose totals have been amended are also shown.

PHONE

VK5MS	314/335	VK4HR	261/277
VK3AHO	313/325	VK2JZ	269/274
VK5AB	300/314	VK3TL	249/263
VK6MK	298/315	VK3ADE	223/237
VK6RU	296/319	VK2AAK	221/225
VK4FJ	275/282	VK2APK	217/220

C.W.

VK3KB	318/341	VK2EO	279/300
VK2QL	295/315	VK2AGH	278/289
VK2ADE	291/313	VK3NC	268/286
VK3CX	291/312	VK3ARK	261/289
VK4FJ	287/309	VK6RU	251/272
VK3AHQ	281/293	VK8XB	248/261

Amendments:

VK3YL	241/258	VK3TL	243/246
VK3RJ	232/245		

OPEN

VK2ADE	305/329	VK4HR	279/301
VK2AGH	305/323	VK2ACK	278/300
VK6RU	301/324	VK3ARK	270/278
VK6MK	300/317	VK3TL	268/272
VK4FJ	293/316	VK3NC	261/287
VK2VN	285/300	VK3JA	266/283

A.O.C.P. THEORY CLASS

The Victorian Division of the W.I.A. will commence a theory class in February 1967.

Those wishing to enrol should do so immediately by contacting the Administrative Secretary, P.O. Box 36, East Melbourne, or by phoning 41-3535.

HAMADS

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

Advertisements under this heading will be accepted only from Amateurs and S.W.'s. The Publishers reserve the right to reject any advertising which, in their opinion, is of a commercial nature. Copy must be received at P.O. Box 36, East Melbourne, C.E. Vic., by 5th of the month and remittance must accompany the advertisement.

SELL: Army Power Supply, 2000 v. at 300 mA., perfect. Also BC221 Frequency Meter with own book. Also commercial amplifier with EL34, suitable public address, etc. Take best offer. Phone 84-7516 (Melbourne).

FOR SALE: A.W.A. Communication Rx, with circuit, plug-in coils, 5 to 22 Mc., signal meter, crystal filter, b.f.o., etc. \$30.00. Phone 99-1458 (Melbourne).

FOR SALE: Heath VF1-U V.F.O., all bands to 28 Mc., perfect order, includes book, 2.5. S. Dogger, VK2ZRD, 30 Finlay Av., Earlwood, N.S.W.

FOR SALE: Petrol Generator, 2 h.p., 4 stroke, air-cooled motor, 3-brush generator, 12-28v., regulated approx. 50 a., \$88, O.N.O. 2 mtr. 100w. table top Tx with 75w. mod., xtal and v.f.o. controlled, complete with rack mounting h.t. supplies, \$160, O.N.O. Three 2-mtr. 10-element Yagis on 12 ft. booms, \$10 each. Low Noise (W2AZL) 417A 2-mtr. Xtal Conv., with pwr. supply, \$40, O.N.O. BC455 Rx (6-9 Mc. Command), \$14. Battery operated transistor Tape Recorder, \$16. Modified 522 2-mtr. TX, 30w., EL34s, in modulator, \$10. Field strength Meter for 2 meters., batt. operated, \$6. A.W.A. T.V. Tuner, 13 ch., \$14. Acos HGP40 Pick-up with heads, \$6. 2-mtr. Turnstile mobile Ant., \$8. 2-mtr. Final in copper box, ¼ wave tuned lines in grid and plate ccts., suitable for 6/40s or 829Bs, \$20. 7 Mc. xtal Conv. (transistorised), B/C band I.F., \$18. 50w. Mod. Txfr., prim. Z 0-7.5k, sec. 5k and 8k c/tapped, \$12. VK3JS, R. C. Whitaker, Flat 5, 9 Thames Prom., Chelsea, Vic.

SELL: Drake 2B Rcvr., with Q multiplier and handbook, perfect condition, \$360 or offers. A.M. Rig, table cabinet, aluminium, 22 x 12 x 12, 140 watts, no junk parts, Gelsco v.f.o., etc., pair 800 mod., pair 6146 final, \$90 or offers to VK5WG, C. E. Schmidt, 3 Chitunga Rd., Eden Hills, South Aust.

SELL: 3BZ, Tx, \$20. 2 only BC659 F.M. Car Phones, \$16 each. AT5 Tx, \$9. AT5 Coupling Unit, \$5. Canadian Tx, two 807s, 12v. generator, \$8. Bendix TA12, original condition, modulator and channel selector, \$30. Mini for wire recorder, \$20. Philips Eliminator \$4. R. & H. Transmitters, 698, 807, 807, \$10. Early 522 Tx Rx, \$11. VK3AQB, 20 Owens St., Yarraville, Vic. 68-6667.

WANTED: Collins KWM2 or 32S-3. Send details, lowest cash price, or see my ad. December "A.R." Tom Dineen, VK3TD, Stephens Rd., Mt. Eliza, Vic. Phone Melb. 787-1407.

100 Kc. Xtals, type AR2W, new, \$5.50. VK4SS, 3 Whynot St., West End, Brisbane, Qld. Phone 4-6526.

Repairs to Receivers, Transmitters; constructing and testing; xtal conv., any frequency; Q5-ers, R9-ers, and transistorised equipment.

ECCLESTON ELECTRONICS

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430 Elizabeth St., Melb'ne. Ph. 34-6539

FINAL SALE

of Computer Circuit Boards from Australian Electronics. 20c per transistor, \$15 per hundred, all other components free. We still have some diodes left, and plenty of good books at modest prices.

AUSTRALIAN ELECTRONICS,

76 View Street, Hobart, Tasmania

A LARGE RANGE OF TRANSMITTERS, RECEIVERS, TEST GEAR, AND DISPOSALS RADIO PARTS AVAILABLE

★ ARR2 V.H.F. RECEIVERS

234-258 Mc. Tube line-up: three 6AK5s r.f., 9001 1st mixer, 9001 oscillator, 9001 2nd mixer, 9001 i.f. amp., 9001 detector, 9001 b.f.o., 9001 b.f.o. control, 12A6 audio output. 1st i.f. 540-1030 Kc. 2nd i.f. 200 Kc. \$5.00 complete with tubes. Circuit 50c.

★ T.V. POWER TRANSFORMERS

Voltage Doubler. Primary 200-220-240v., Secondary 218v. 270 mA., 6.3v. 8a. \$1.95.

★ T.V. I.F. STRIPS

Completely wired three-stage 36 Mc. i.f. strip. Video and sound take-offs. Australian manufacture, well known make. Tubes used, three 6EX6s. Price less tubes, \$1.50.

★ TRANSCEIVERS, TR1986-7

115-145 Mc. Employs heterodyne exciter in tx. TT15 p.a. Single xtal locks Tx and Rx on same frequency. In-built modulator. Supplied with 4.86 Mc. xtal. \$30, circuit \$1.

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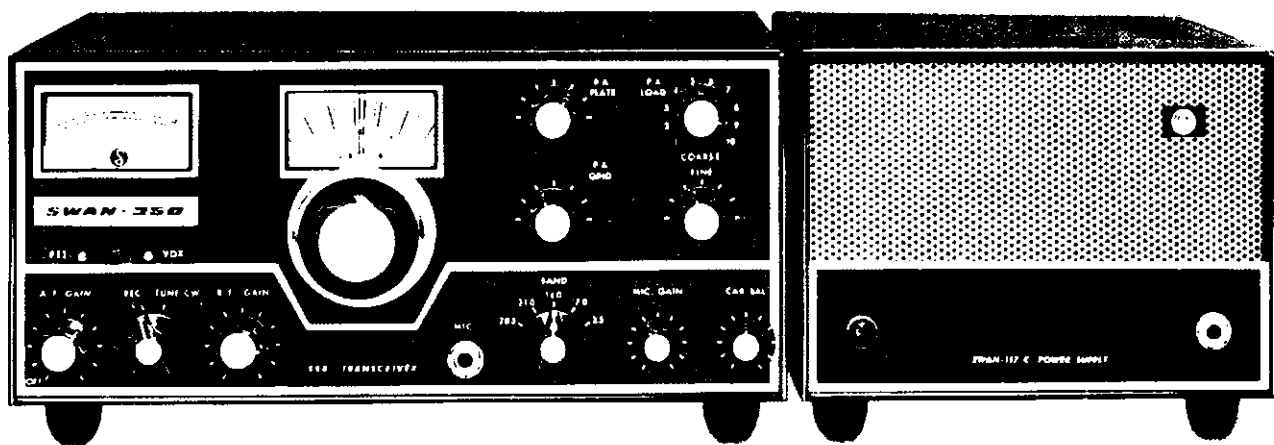
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EDITORIAL



"BE PREPARED"

As we were completing the compilation of this issue the first authentic reports of the disastrous fires in Tasmania are coming through. It is known that many of the Amateurs are operating emergency communications, but so far we have no details to publish. We hope to be able to print the full story at an early date.

It is known that so far three of our members have lost everything they owned, and it is possible that others have also suffered heavy loss, but so far we have not been able to obtain the full picture.

In order to assist those Amateurs who have been affected, Federal Executive has asked that we publish the fact that they are accepting donations to assist our friends in Tasmania. At this time donations of money are requested, and depending on the response, later consideration will be given to the possibility of assisting with the replacement of equipment.

Having seen what devastation a major outbreak of fire can cause, it behoves all W.I.C.E.N. groups to adopt the Boy Scouts' motto—

"BE PREPARED"

K. E. PINCOTT, Editor.

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OVERTONE OPERATION OF QUARTZ CRYSTALS

PART ONE

D. H. RANKIN,* VK3QV

TWO of the biggest changes in Amateur Radio techniques in the past ten years have been the advent of s.s.b. and the almost universal acceptance of crystal locked transmitters and receivers on the v.h.f. and u.h.f. bands. Both these advances have progressed with the help of the overtone crystal.

The early designs for v.h.f. crystal locked converters efficiently solved many of the serious problems of the day such as lack of frequency stability and accurately calibrated tuning dials, but in doing so a new problem arose. The usual approach was to use a cheap "disposals" crystal in the 2 to 10 Mc. range and multiply the frequency electronically until the requisite mixing frequency was obtained. The multitude of frequencies thus present in the converter invariably introduced spurious responses somewhere in the tuning range of the converter-receiver combination.

The advanced Amateurs soon found that starting the crystal multiplier chain with a high frequency rock minimised the problem. But then there were very few disposal crystals over 10 Mc. available and for several possible reasons—no doubt relatively high cost being one of the most important—the newer plated type units going up to 15 and 20 Mc. were never widely accepted by the fraternity.

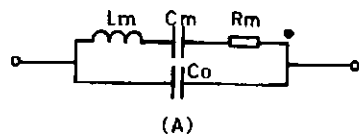
Thus, experimentally inclined people looked into the possibility of making the fundamental 2 to 10 Mc. crystals work on an overtone mode, a method of operation for which these pressure mounted crystals were never designed. Operation was unreliable in most cases and the odd crystal that "overtone" well was a cherished possession. In addition, the frequency obtained from an overtone circuit was a bit of a mystery. It was rarely, if ever, three or five times the marked frequency and it did not seem possible to "pull" the crystal in the way 7 or 8 Mc. ones could be. The circuits required had to be operated near the point of self oscillation—so near in fact that quite often equipment worked in a fashion without the crystal being plugged in at all.

This was not a very satisfactory state of affairs and some improvement came about when correctly designed overtone crystal units became readily available at reasonable prices. Problems still exist, however, but most would seem to stem from a lack of knowledge of how the modern plated overtone crystal should be treated. Very little has appeared in the Amateur literature on this subject and it is hoped that this article will go a little way into correcting this lack.

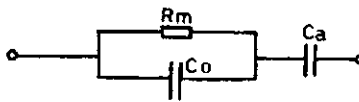
SOME THEORY AND DEFINITIONS

The simplified equivalent circuit of any quartz crystal is well known, particularly to those who experiment with

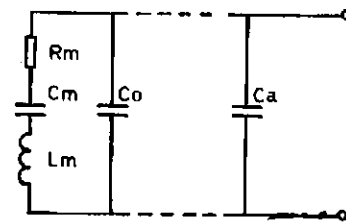
• Changes in techniques over the past decade have brought almost all of the experimentally inclined Amateurs into contact with the so called "overtone" crystal. This article describes the differences, and similarities, between fundamental and overtone units and indicates some pitfalls that may befall the unwary user. In addition, some questions are raised and answered that hitherto have not appeared in the Amateur literature.



(A)



(B)



(C)

FIG. 1.

Equivalent circuits of a Quartz Crystal.

- The general case.
- Series resonance case where XCo is greater than Rm , i.e. Co has no effect.
- Parallel resonance case.

DAVID RANKIN, VK3QV

Has held an Amateur licence for 12 years—the first four as a limited licensee. Served on F.E. for nearly eight years, initially as Federal V.h.f. Manager, but later as Federal Activities Officer. This position entails responsibility for co-ordination and liaison between the Federal Executive and various co-opted officers such as Federal Contest Manager, Awards Manager, Y.R.S. Co-ordinator, etc. The Federal Activities Officer also collates and holds the official file on Australian V.h.f. Records.

crystal filters. Fig. 1A shows the generally accepted schematic with L_m being called the motional inductance (analogous to quartz mass), C_m the motional capacitance (analogous to elastic compliance), and R_m the series resistance (analogous to frictional loss). C_o is the static capacitance which is made up of the actual electrostatic capacitance of the quartz disc itself (parallel plate capacitor—see later) plus stray capacity associated with the crystal holder.

Series Resonance is achieved at that frequency where the reactive values of L_m and C_m cancel, i.e.

$$f_s = \frac{1}{2\pi\sqrt{L_m \times C_m}} \dots (1)$$

where f_s is the series resonant frequency and L_m and C_m are as defined previously.

Fig. 1B shows this condition in circuit form and it can be seen that the crystal now looks like a resistor of value R_m shunted with capacity C_o . If C_o is some value of capacitance added in series to the circuit then the equivalent series resistance (e.s.r.) of the crystal is given by the expression

$$\text{e.s.r.} = R_m \left\{ \frac{1 + C_o}{C_o} \right\}^2 \dots (2)$$

If C_o is removed, the expression becomes

$$\text{e.s.r.} = R_m \dots (3)$$

Note that the e.s.r. is not dependent on the static capacity across the crystal (C_o) and in fact is not dependent on added shunt capacity either when operated in a series resonant configuration. This fact is important and will come up later in the discussion on overtone circuits. For good overtone crystals the e.s.r. is low, 60 ohms or less, and the lower this value the better is the crystal.

The series resonant frequency of a crystal, f_s , is also known as the zero.

Parallel Resonance. There is a second frequency at which a crystal unit will behave as a pure resistance and that is the frequency at which the reactive values of L_m and C_m plus C_o in series cancel. This parallel or anti-resonant frequency is given by the expression

$$f_p = \frac{1}{2\pi\sqrt{L_m \times C_1}} \dots (4)$$

where f_p is the anti-resonant frequency

$$\text{and } C_1 = \frac{C_m \times C_o}{C_m + C_o} \dots (5)$$

L_m is as stated previously.

Fig. 1C illustrates the situation and the figure of merit in this case is called the equivalent parallel resistance (e.p.r.) and is given by the expression

$$\text{e.p.r.} = \frac{1}{\omega_p^2 (C_o + C_1)^2 R_m} \dots (6)$$

where $\omega_p = 2\pi f_p$, and C_o , C_1 and R_m are as defined previously.

Note that in this case the added external capacitor C_1 is shunted across

* 1879 Malvern Rd., East Malvern, S.E.5, Vic.

C_s and together with C_o forms C_1 the load capacitance. Then C_s in equation (5) would be replaced by C_1 .

If C_s is removed equation (6) simplifies to

$$\text{e.p.r.} = \frac{1}{\omega_p^2 C_o^2 R_{in}} \dots (7)$$

Note that the e.p.r. is dependent on both frequency (ω_p) and C_o , whereas e.s.r. in the series resonance case was independent of frequency and static capacitance (refer equation 3).

Thus for parallel resonant operation it becomes necessary to specify the external shunt capacity C_s when nominating the required frequency. The e.p.r. of an overtone crystal is much higher than the corresponding e.s.r.—of the order of several hundred ohms and the higher the e.p.r. the better the crystal.

The parallel or anti-resonant frequency of a crystal, f_p , is also known as the pole.

POLE-ZERO SPACING

Fig. 2 shows a plot of reactance versus frequency based on the equiv-

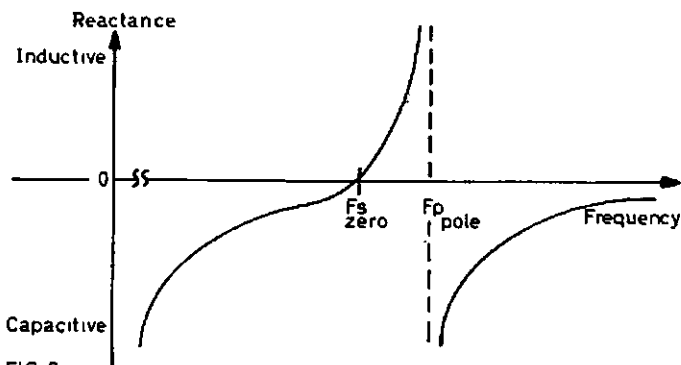


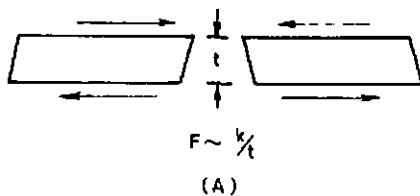
FIG. 2.

A reactance v. frequency plot for a quartz crystal illustrating the pole-zero spacing.

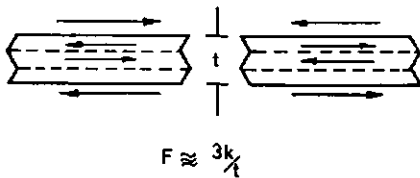
alent circuit in Fig. 1A and it summarises the above points. Note that at frequencies below f_s the crystal behaves as a capacitance as it does also for frequencies above f_p . Between f_s and f_p , however, the crystal unit behaves as an inductance whilst at f_s and f_p it becomes a pure resistance—very low at f_s and very high at f_p . In the ideal case (no frictional loss) the e.s.r. would be zero (refer equations 2 and 3) and the e.p.r. would be infinitely high (refer equation 6). Normal operation of any crystal is at f_s or between f_s and f_p and the recommended operation for overtone units is f_s . This segment of the frequency spectrum, $f_p - f_s$, over which a crystal can be made to oscillate, is known as the pole-zero spacing.

OVERTONE OPERATION

Most of the crystal types encountered by Radio Amateurs possess more than one mode of vibration. However, discussion here will be confined to the types generating frequency in the h.f. and v.h.f. spectrum and in particular to the AT and BT cut types that vibrate in the thickness shear mode. The older h.f. X and Y cuts are now obsolete and not considered. Further details of the AT and BT cut quartz plates may be found in the references given in the



(A)



(B)

FIG. 3.

Diagrams showing in cross section the deformation of a quartz crystal. Fundamental mode is shown at A, and third overtone mode at B. K is a constant of proportionality.

ness of the quartz plate or disc, but is also affected by any substance that increases the mass of the vibrating body—a substance such as lead pencil, soft solder, pure silver or pure gold.

If the same quartz plate is excited at approximately three times its fundamental frequency it will vibrate in the manner illustrated in Fig. 3B. Note that the quartz now behaves as if it consists of three distinct layers. Such operation is called the third overtone mode. Similarly, if the plate is excited at five times, seven times, nine times, etc., the fundamental frequency, then the quartz "splits" into 5, 7, 9, etc., layers and fifth, seventh, ninth, etc., overtone operation is obtained. It is important to note that only odd order overtones can be excited with the conventionally mounted AT cut crystal.

For crystals operating in the overtone mode the frequency is approximately proportional to one-third the thickness of the plate for thirds, one-fifth the thickness for fifths, one-seventh the thickness for sevenths, and so on, and once again mass loading has a secondary effect. More of this approximate relationship in a moment.

If the electrical characteristics of the crystal plate at its various overtone frequencies are examined closely it will be found that the reactance v. frequency relationship will be the same as that shown in Fig. 2 for fundamental operation. Thus, the spectrum of an AT cut crystal will look something like that shown in Fig. 4, i.e. there will be a pole-zero spacing associated with each mode of vibration. Anyone for a crystal filter at 100 Mc. made from fifth overtone crystals?

It is of interest to note the values of f_p and f_s at the fundamental, third and fifth overtones of a particular crystal unit.

f_p	3395.22	10155.84	16876.70
f_s	3387.39	10155.34	16876.38
$f_p - f_s$	7.83	0.50	0.32

Note that the pole-zero spacing at the overtones is very much smaller than at the fundamental. Thus the overtone frequency is harder to pull—but, it isn't impossible.

The Overtone Frequency

One of the mysteries associated with overtone operation was "what will the output frequency be?" There are two reasons for this well known problem and the principal reason is a real problem to the crystal manufacturers.

As stated in the previous section, the relationship between the overtone fre-

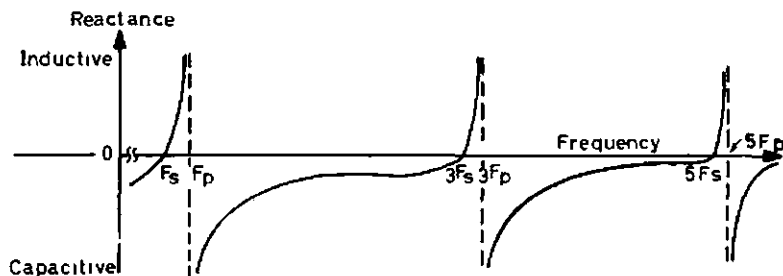


FIG. 4.

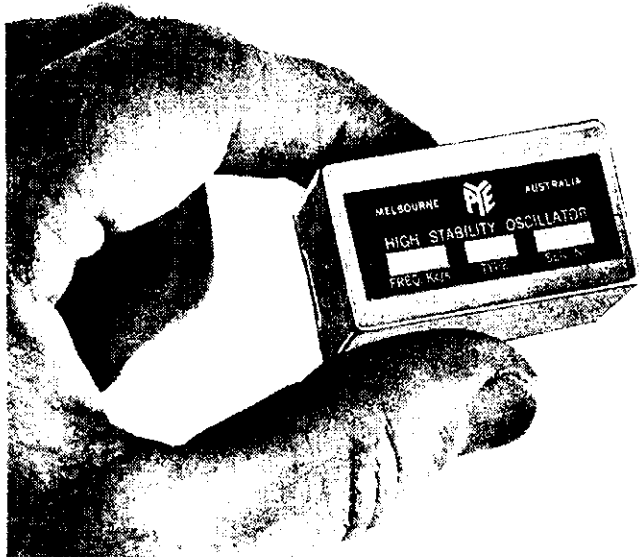
A reactance v. frequency plot illustrating the poles and zeros at the fundamental mode, third overtone and fifth overtone modes.

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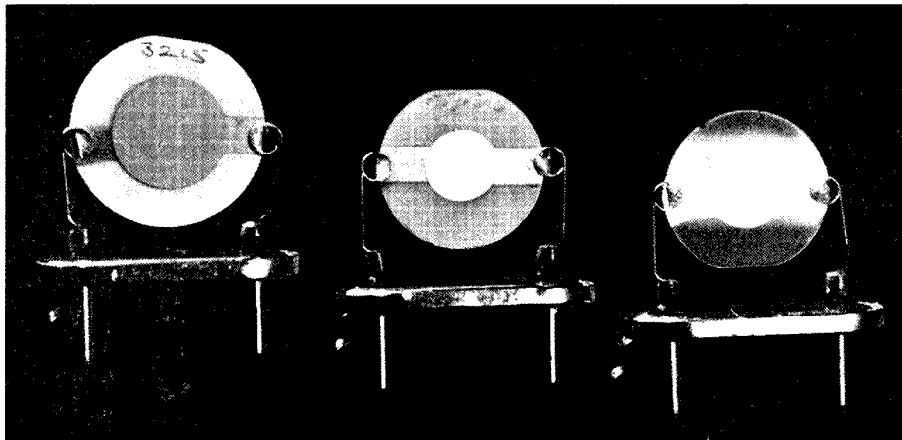
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LM41

quency and the thickness of the quartz plate is very approximate. So much so that in practice no attempt is made to correlate thickness and overtone frequency precisely. The manufacturer in fact gets around the problem by ignoring it—overtone crystals are always finally calibrated at the overtone frequency for which they are intended. Thus, the problem of what is the frequency is minimized when a crystal designed and calibrated for the particular overtone required is used.

The reason for the approximation between overtone frequency and thickness seems to be associated with the degree of uniformity of thickness or flatness across the quartz plate. In a perfectly uniform or optically flat disc the relationship would be exact, but since with present techniques the manufacturer cannot achieve this economically he must oscillate the crystal on its required overtone and measure the actual overtone frequency. This is expensive as special oscillators and frequency measuring equipment with extended ranges must be used.

The secondary reason for the uncertainty of the frequency of an overtone crystal is associated with the existence of a pole-zero spacing at the overtone and as already described the crystal may be made to oscillate on any frequency between its pole and zero. Thus once again it becomes necessary to



The mounted but uncanned crystals are, from left to right, a 3.2 Mc. fundamental gold plated, a 52.4 Mc. third overtone silver plated, and a 75.0 Mc. polished fifth overtone silver plated. Note the variation of polish on the quartz blanks and the "keyhole" shape of the electrodes.

specify the operating point between f_s and f_o if precise frequency is to be obtained. This reason is only secondary because the difference in frequency due to either inaccurate or lack of specification will be of the order of a few kilocycles at overtone frequency. Quite frequently this is no worry in Amateur operation. On the other hand the difference between three

times fundamental frequency and the third overtone frequency can be as much as 70 kc. For example, one crystal when operated on fundamental series resonance came out as 17549.25 kc. and when oscillated at third overtone series resonance as 52708.57 kc.—a difference of 60.8 kc. This deviation becomes greater the lower the frequency until with plated fundamental crystals of approximately 6 Mc. and under it becomes very difficult to achieve overtone operation at all. Interested readers may care to work out the arithmetic involved with the deviation for the example of the 3.3 Mc. crystal given earlier.

It should be noted now that operation on the third overtone is quite different to using the third harmonic of the fundamental frequency. The crystal plate vibrates in quite a different manner so that no r.f. energy is produced at a frequency lower than the overtone. Thus with a 42 Mc. third overtone crystal operating correctly there will not be any r.f. produced at either 14 or 28 Mc. However, there will be harmonics of the overtone at 84 and 126 Mc., but these are produced by the non linear operation of the oscillator valve or transistor in the same way as second or third harmonic frequency is produced in fundamental style oscillators. Herewith lies the prime advantage of the overtone crystal.

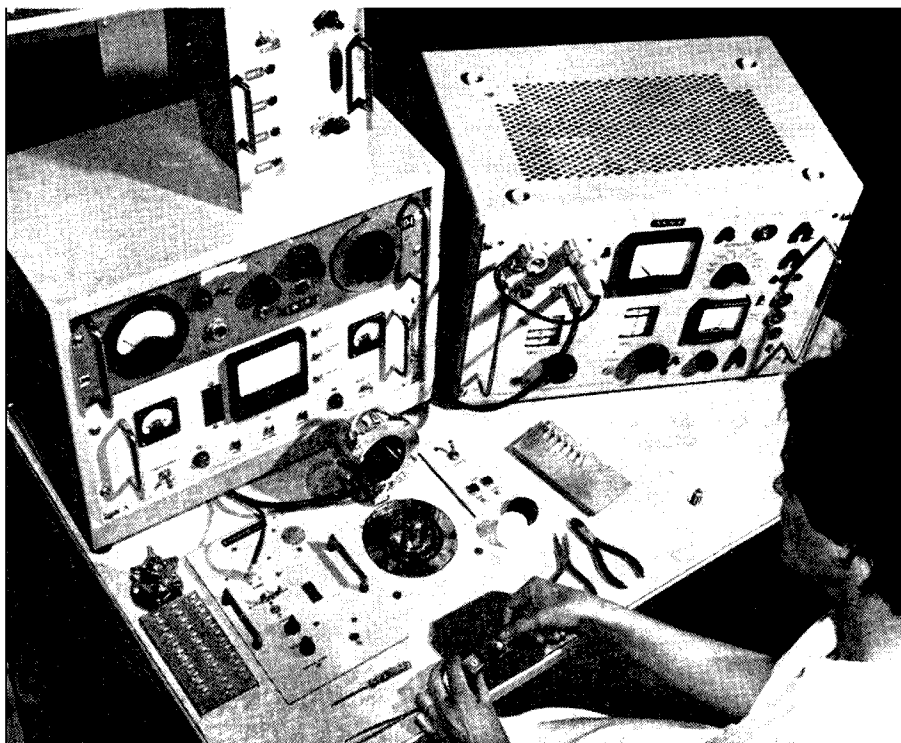
If the 42 Mc. unit is oscillated at its fundamental of approx. 14 Mc. there will be r.f. energy at 14, 28, 42, 56, 70 Mc., whereas if it operates at 42 Mc. r.f. energy will be present only on 42, 84, 126, 168, 210 Mc., etc. The chance of having a "birdie" in a crystal locked converter—tunable receiver combination is thus very much less with the overtone style of operation.

Construction of an Overtone Crystal

What then are the physical differences between an overtone and a fundamental crystal? Why do overtones work better in overtone mode than the other types?

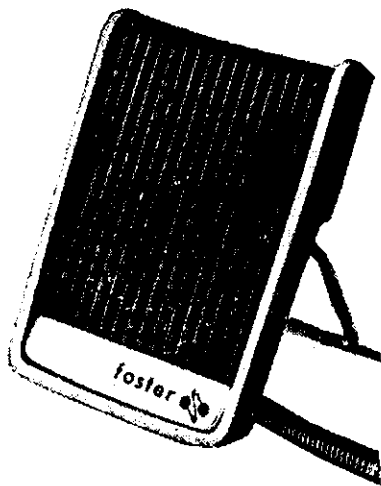
There are a number of differences and one has already been mentioned, viz. the calibration of the overtone at the actual overtone frequency. A sec-

(Continued on Page 19)



This photo illustrates the latest technique of putting a plated crystal on frequency. The frequency synthesiser on the right of the operator is set up to the required frequency. The crystal to be processed is suitably masked and placed in the chamber immediately in front of the operator. The photo shows the operator fitting a crystal unit into the masking device. When the chamber lid is closed the air within the chamber is evacuated and gold or silver is evaporated onto the crystal in a controlled manner. The added mass of gold or silver will lower the crystal frequency.

The horizontal panel to the left of the operator is a special oscillator that is connected to the crystal within the chamber. The output of this oscillator is fed to the synthesiser, mixed with the synthesiser frequency and the difference frequency displayed on the larger meter on the synthesiser panel. As the gold or silver evaporates the decrease in frequency is indicated on this meter and the operator can place the crystal frequency within 0.001% of that required.



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THE IMPEDANCE METER

PETER D. WILLIAMS,* VK3IZ

ALTHOUGH the principle is not new, impedance measurements with the simple device described can take the doubt out of transformer ratios, filter choke impedances, and electrolytic capacitors.

Impedance measurement is accomplished by comparing the voltage drop across the unknown impedance with the voltage drop across a resistive standard when the same current is flowing in both of these circuit elements. The circuit is shown in Fig. 1 and the constant current resistor is approximately 100 times the standard.

To make measurements an audio frequency oscillator is required, preferably with an output impedance of 1000 ohms or less as the voltage source, together with a v.t.v.m. of good sensitivity and accuracy.

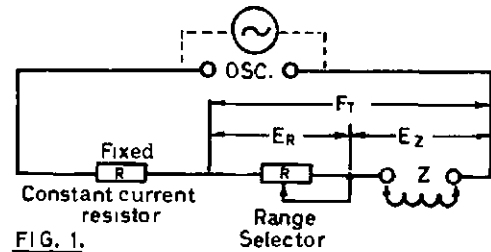


FIG. 1.

CONSTRUCTION AND PROCEDURE

The construction is entirely one of personal preference, the only precaution is to use shielded cable for the leads shown. It should also be noted that a physical "ground" as such is not provided and the terminals marked "LO" should be connected to the ground terminals of the oscillator and voltmeter. However, when measuring an unknown, which is isolated from ground, the "LO" v.t.v.m. terminal should be grounded. If the unknown is not isolated from ground, no other ground connection should be used.

When measuring high impedances, a cathode follower amplifier should be connected between the impedance meter and the v.t.v.m., otherwise the shunting impedance of the v.t.v.m. must be taken into account. For example, the input impedance of a Heath v.t.v.m. is 1 megohm.

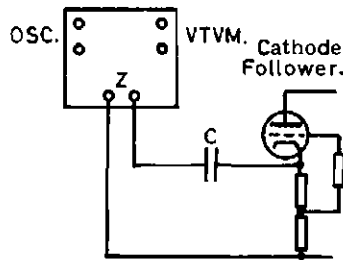
Having connected the v.t.v.m. and oscillator to the appropriate terminals, the impedance to be measured can be connected across the terminals marked "Z." The "R-Z" switch will measure the voltages shown in Fig. 1, viz. E_R , E_Z . Then—

Set the range selector switch at the value nearest the estimated value of the unknown impedance.

With the "R-Z" switch at "R", adjust the output control of the oscillator until a convenient reading such as 1, 0.1, or other power of 10 is obtained on the v.t.v.m.; this voltage is E_R .

Turn the "R-Z" switch to the "Z" position and read the v.t.v.m. This voltage is E_Z and is proportional to the impedance of the unknown. For example, if the initial voltage setting in step 2 above was 1 volt, the unknown impedance equals the reading of the v.t.v.m. times the resistance of the standard (i.e. the setting of the decade or range selector switch).

If the initial voltage setting was 10 volts, the unknown is one-tenth as much. Thus if the decade switch is set to 100 and the v.t.v.m. made to read 1 with "R-Z" switch in the "R" position, and if it reads 2.38 when switched to the "Z" position, the unknown has an impedance of 238 ohms. If the meter had initially been set at 10 however, the unknown would be 23.8 ohms.



USING THE METER

To make this clear let us consider ways in which the instrument can be used.

RESISTANCE MEASUREMENT

With the oscillator and v.t.v.m. connected as described earlier, connect the resistor which is the unknown to the "Z" terminals. Suppose the resistor is marked 680 ohms, then set the standard resistor decade switch at

1K and set the oscillator at the frequency at which it is desired to make the measurement—say 100 cycles.

With the switch "R-Z" in the "R" position, turn the output control of the oscillator until the v.t.v.m. reads some convenient value such as 0.1 or some other power of 10. Then turn the "R-Z" switch to the "Z" position and the v.t.v.m. will indicate the actual impedance of the unknown.

Thus if the meter reading drops from 0.1 to 0.071, the actual value of the resistor is 710 ohms or 5% higher than its rated value.

It is evident that the meter may also be used as a direct reading resistance device by substituting a d.c. source for the oscillator and either a v.t.v.m. or standard type meter. How—
(Continued on Page 11)

PETER WILLIAMS, VK3IZ

Federal Secretary, has been licensed under this call since 1950 and was a member of the Institute prior to obtaining the call VK3IZ. Until coming to Melbourne seven years ago, Peter operated from country areas of Victoria, being at that time a member of the teaching profession. Currently he is manager of an American electronics subsidiary. Institute activities have included the secretaryship of the Victorian Division until his promotion(?) to Federal Secretary in 1965. Amateur Radio interests are broad but confesses a preference for constructing rather than operating. Current projects include a high resolution spectroscan, a new receiver, and sorting out the intricacies of r.t.t.y. machines—and Federal affairs.

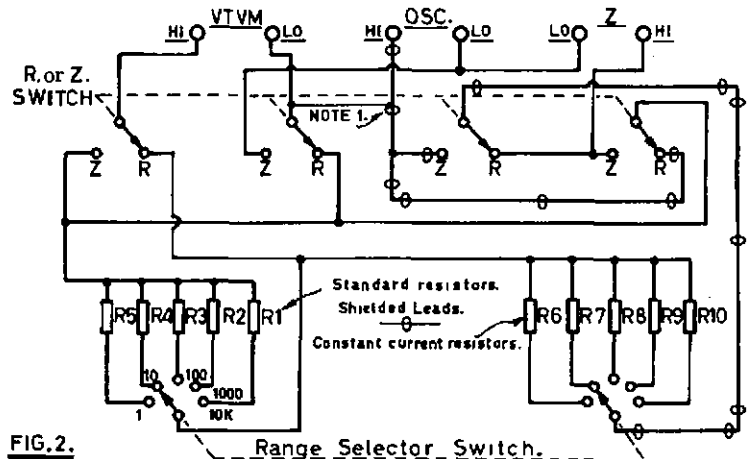


FIG. 2.

Note 1.—Connection to braid as shown. Join all braids.

Resistors	Carbon.
R1—10K	½ w. plus and minus 1%
R2—1K	" " " "
R3—100K	" " " "

R4—10 ohms	½ w. plus and minus 1 %
R5—1 ohm	" " " "
R6—100 ohms	4 " w. 5 %
R7—1K	1 " w. 5 %
R8—10K	½ w. 5 %
R9—100K	½ w. 5 %
R10—1M	½ w. 5 %

* Ingrams Road, Research, Vic.

A TRANSISTORISED 80 METRE RECEIVER

HAROLD L. HEPBURN,* VK3AFQ

FOLLOWING the articles on the Moorabbin Club Project Receiver which appeared in "A.R." towards the end of last year some comment on the finished receivers is in order.

The first section deals with the general method of testing while the second section covers some of the problems encountered and how they were overcome. In addition, some possible modifications and improvements are suggested.

TESTING THE FINISHED RECEIVER

Since those taking part in the project had, in the main, constructed and tested one stage at a time, the first four stages (audio, b.f.o., i.f. and local oscillator) were operative and roughly lined up before the final stage was constructed. Readers who have followed this series of articles and who have attempted construction along the lines suggested herein will no doubt have done something similar. On completion of the r.f./mixer stage, then, it remains only to wire all the boards together and complete the alignment process.

With the r.f. and audio gain controls at minimum, the total current drawn by the completed receiver should be about 20 mA. at 12 volts. Minor variations may be encountered and are unimportant but gross variations, especially on the high current side, should be investigated before going further. Since it is assumed that the first four stages were operating correctly, the r.f./mixer board and the interconnections would be the first point to check.

The i.f. stages and the b.f.o. are then re-aligned. With audio and r.f. gains at mid travel and the b.f.o. switched off, a signal of about 100 mV. at 455 Kc. is fed to the collector of the AF117N mixer through a small (say 25 pF.) capacitor.

A standard signal generator can, of course, be used but the writer used a small, transistorised, crystal oscillator for this phase of the alignment.

A 20,000 o.p.v. multimeter, set to its 10v. range, is connected between the a.v.c. line and ground to act as an alignment indicator.

Starting with L4, all six i.f. transformers are adjusted for the minimum reading on the multimeter. The input from the signal source will need to be reduced as alignment proceeds.

With the i.f. stages on frequency (and the 455 Kc. signal still being injected), the b.f.o. note condenser is set to mid travel and the b.f.o. switched on. The core of L1 is then adjusted to give zero beat with the injected signal.

To align the front end the b.f.o. is switched off, the r.f./mixer gang set at full capacity and the local oscillator tuning condenser set about 5% open (i.e. at about 95 on a 0-100 scale).

A modulated signal of about 100 microvolts at a frequency of 3.50 Mc. is then fed into the antenna terminal. The core of L8 (the local oscillator tank

coil) is then adjusted for minimum reading on the multimeter. The cores of L11 and L12 are adjusted to give the greatest dip in multimeter reading, once again reducing the signal level as alignment proceeds.

Alignment is then checked at 4.0 Mc. and, if correctly wound, L11 and L12 should not require any adjustment, while a peak in signal strength should be obtained just before minimum capacity on the preselector gang.

The b.f.o. amplifier output coil (L2) may now be adjusted.

Feed a strong modulated a.m. signal to the receiver and adjust to zero beat with the b.f.o. on. With the b.f.o. still on, detune the b.f.o. oscillator coil (L1) slug until the beat note is inaudible. At this stage the audio output from the speaker should have dropped considerably. Adjust the core of L2 until audio output drops to a very low level or nulls out completely. Finally bring the core of L1 back to its original position, i.e. into zero beat with the incoming carrier.

The receiver is now fully aligned and may be connected to an antenna.

MODIFICATIONS AND IMPROVEMENTS

Audio Stage

Two participants, using the basic audio board, have increased the audio output to just under 1 watt in the following manner:

- (a) The TO3 output transformer was replaced with a TO7 component and the 15 ohm secondary tapping used to drive the 15 ohm speaker provided with the kit.

HAROLD L. HEPBURN, VK3AFQ

Licensed since 1960, Harold has been active in many phases of Institute activity. He served on the VK3 Broadcast Committee for three years and for a similar length of time on the VK3 Divisional Council. He has been State Controller for the VK3 W.I.C.E.N. organisation for over four years and has been Federal Vice-President since 1965. He is also the Secretary of the Moorabbin and District Radio Club.

Born in England, Harold settled in Australia in 1956 after a seven-year period of (working) travel which took him to many countries including Iran, France and New Zealand. A chemist by profession, he has been engaged for many years on the production and administrative sides of various technical enterprises including oil refinery, heavy chemical manufacture and plastics.

He has written several articles for "A.R.," the most recent being this series on the Moorabbin Club project receiver.

- (b) The upper base bias resistor for the two output transistors (AC128) was reduced from 4700 ohms to 1500 ohms and the bottom base bias resistor was reduced from 100 ohms to 33 ohms. The common emitter resistor was reduced from 22 ohms to 4.7 ohms.

This modification is given "as is" although it is felt that heat sinking of the AC128s and the use of a thermistor in the base bias circuit would be necessary for safe working under adverse temperature conditions.

B.f.o. Stage

It has been found in many cases that the b.f.o. oscillator has been grossly overdriving the b.f.o. amplifier. This has caused the generation of very strong harmonics, the 8th harmonic on 3640 kc. being extremely troublesome. In addition, the b.f.o. note was very rough and precluded proper reception of s.s.b. signals.

Both the overdriving and the need for the harmonic trap can be obviated by reducing the feed voltage to the b.f.o. oscillator (but not the b.f.o. amplifier) to between 1½ and 2 volts.

This can be done by fitting a resistor under the board. Its value will best be found by experiment but will be somewhere between 27K and 39K.

Be sure that the resistor only drops the voltage applied to the oscillator collector and base connections and not to the amplifier base and collector. The amplifier should continue to be fed at -7½ volts.

In one case at least, an improvement in sideband reception was reported when the method of coupling the b.f.o. to the product detector was changed. As designed, b.f.o. voltage is fed from the output link of the b.f.o. amplifier coil in series with the detector emitter. Grounding the emitter direct and capacity coupling the output link through a 50 pF. condenser to the base of the detector (OC44N) transistor is claimed to give better results.

The I.F. Stage

A fairly large number of cases of poor i.f. stage performance were encountered. In every case the winding of the coils was found to be the reason. In some cases improper tapping points had been made, with the result that the collectors of the i.f. amplifiers were grossly mismatched in the direction of greater gain and thus instability. In a few cases the "neck" of the ferrite coil former had been broken off and in other cases poor soldering of the winding wire terminations had caused problems.

With proper attention paid to the winding of the coils most i.f. strips performed as intended, but in one or two receivers the stage could be made to oscillate when incorporated in the finished set.

Poor dressing of the supply leads to the various boards or higher than

* 4 Elizabeth St., East Brighton, Vic.

normal gain have been the main causes, but stagger tuning of the six i.f. transformers (L4, L5, L6, L7, L9 and L10) will reduce the tendency. A 2 kc. "stagger" is quite sufficient.

In the most stubborn cases a low value resistor (100-1000 ohms) across the input terminals of the i.f. board is a certain cure. Use the largest possible resistor. Note that the tuning of L9 will be affected and its tuning will be very broad when a resistor is used across the i.f. input.

In one case it was found that L9 would not peak even with the core right in. Rather than rewind the coil, an additional 50 pF. was placed across the existing 270 pF. capacitor associated with L9.

The optional S meter circuitry given in the r.f. stage instruction calls for a 0-1 mA. meter to be connected between the "cold" end of the 10K load resistor in the collector of the OC72 a.g.c. amplifier and the -7.5 volt line.

In general the meter "saturates at somewhere between 0.4 and 0.6 mA., similar to the bridge circuits used in valve receivers.

If a greater saturation level is required (so that an S9 signal reads S9 on the meter recommended and a very strong signal reads over S9) it can be achieved by reducing the value of the 10K load resistor.

As a starting point for experiment, reduction of this resistor from 10K to 6.8K will provide about the right result. There is no need to remove the i.f. board to do this. The 10K resistor is left in place and paralleled with, say, a 22K resistor to reduce its value.

This modification does not affect the a.g.c. action.

There are some grounds for believing that the r.f. volume control could be more effective. Replacement of the 500K switch pot. provided with a 50K component is the first step.

The original points on the board to which the r.f. volume control was taken are bridged across. The cold end of the 82K base bias resistor for the OC72 is thus connected permanently to the -7.5 volt line.

The 47K base bias resistor for the first AF115N amplifier is now removed and replaced by the 50K pot. One end of the pot is taken to the "cold" end of the input link. The other end and the slider are connected together and taken to ground.

Local Oscillator Stage

When testing local oscillator boards at a project meeting it was immediately apparent that severe frequency drift was being encountered. The fault was not, as opined by one club member, due to the use of drift transistors, but rather to the 0.01/25v. redcap condenser used to decouple the cold end of the oscillator coil to ground.

On Fig. 14 of the instructions the offending component is the one placed at an angle between the lower end of the r.f. choke and the +7.5 volt input point.

Replacement of this condenser with an 0.022/200v. styrofoam component cured the trouble. The actual value of the condenser is not of prime importance as anywhere between 0.01 and 0.05 will be suitable. The important

point about the replacement is that it be suitable for the service. It is recommended that either silver mica or styrofoam be used. Styros work and they are cheaper!

When development work was being carried out on a 2 metre converter for use with the project receiver, it was found that the local oscillator of the receiver was producing a large number of "birdies".

Further work with a signal generator showed that—like the b.f.o. oscillator—the local oscillator was producing a rich crop of harmonics. Once again the cure was to reduce the feed voltage to between 1½ and 2 volts.

A resistor between the negative tie post on the i.f. board and the local oscillator board can be used to drop the voltage to the required value. A resistor around 39K is a good starting point. It is of interest to note that the stage will oscillate at voltages down to -1.0 volt.

In a few of the local oscillator boards it was found that a sudden jump in collector current occurred at about half capacity of the tuning gang. The reason for this is not clear, but was cured by reducing the feed voltage as recommended in above paragraphs to 1½ to 2 volts.

R.F./Mixer Stage

Some constructors have experienced difficulty in getting the preselector gang to peak at each end of its travel.

Providing always that the coils have been correctly wound the cause usually lies with the two 100 pF. condensers in series with the tuning gang being at the low end of their tolerance range. The addition of an extra 100 pF. across each of these two condensers will enable a peak to be obtained at 3.5 and 4.0 Mc.

Alternatively the two 100 pF. condensers can be bridged across. This will mean the two gang condenser will now tune over the image frequencies so that care must be exercised in choosing the correct position.

Broadcast break through was experienced in one case where a large non resonant antenna was used. Over two volts of assorted broadcast r.f. was measured at the end of the antenna. This was causing the protective OA91 diodes to conduct and generate a nice selection of harmonics. Where it is not possible to use a resonant antenna (or a suitable antenna tuning unit) the only cure is to use a small antenna.

One constructor has fitted a small mechanical filter in place of L9 and L10. Input to the filter was taken from the collector of the AF117N mixer and the end of the 1K decoupling resistor. Output was taken directly to the input of the i.f. board. The filter used in this instance was a 6 kc. Toyo unit using small input and output transformers. Suitable matching terminations would have to be made if the Collins or Koksual filters were used.

General

One participant has modified the tuning range of his receiver to cover 2 Mc.

While no change was made to the coils on either the oscillator or r.f.

boards, the values of most of the fixed tuning capacitors were drastically changed.

As an indication it is possible to reduce the 470 pF. silver mica on the oscillator board as far as 150 pF. and still maintain oscillation.

Removal of the 220 pF. silver mica series condenser on the oscillator board will widen its tuning range.

To keep "track" the series condensers on the r.f. board can be bridged out and the parallel capacities reduced in value.

No firm values will be given for this modification since the receiver was not designed with such a wide coverage in mind. The possibility is mentioned only to show that it can be done if the would-be modifier is prepared to do some experimenting.

LOW DRIFT CRYSTALS

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1.6 Mc. to 10 Mc.,
0.005% Tolerance, \$5

☆

10 Mc. to 18 Mc.,
0.005% Tolerance, \$6

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SINGLE SIDEBAND ON V.H.F.

KEVIN CONNELLY,* VK3ARD

ONE of the aspects that becomes obvious in being involved in the various matters before F.E. is the threat to our band allocations unless we make more use of them. This is just as true on the v.h.f. bands as on the h.f. Just look at the congestion on the commercial channels a little higher in frequency than our 2 metre allocation and you can see where one threat could come from.

So what can be done to put more stations into this band for instance? Well, now that there is a tremendous increase in the amount of s.s.b. gear being used on the h.f. bands, this presents all these "d.c. band" types with an excellent starting point for getting on to 2 metres—with s.s.b., a.m. or c.w.—just as they do on 14 Mc. These notes are intended to show just how simple it is.

Apart from the h.f. s.s.b. rig you need (1) a receiving converter and (2) a transmitting converter. Let's look at each one in turn.

RECEIVING CONVERTER

I feel that there are a lot of chaps who, like me, were left with a receiving converter and an old a.m. 2 mx transmitter (complete with some t.v.i. too, because of a crystal chain frequency that included 43 Mc. one way or another). So I scrapped the Tx and just connected the receiving converter into my Drake s.s.b. Rx at 7.5 Mc. using two of the spare band positions provided (each tunes a 600 Kc. segment) and thus I can have 144-145.2 Mc., which is more than the normally used section of the band, leaving out the f.m. nets.

If you don't have a 2 metre converter there is a very simple crystal controlled converter described in the

*45 William St., Mt. Waverley, Vic.

A.R.R.L. Handbook (also in the V.h.f. Handbook). This gives an output on 14 Mc.—what more do you want?—and these are really easy to get going. The hard work has gone out of these converters now with the amount of constructional detail provided.

TRANSMITTING CONVERTER

The information available on the transmitting converter is not so widespread. I built a similar one to that described in the V.h.f. Handbook and because I have found that many chaps are put off by believing that, like other s.s.b. gear, it is difficult to build, the unit is described to show that it is indeed very simple to construct as an adjunct to your h.f. s.s.b. Tx.

From the block diagram it can be seen to consist of five stages:— (1) an overtone crystal oscillator using a crystal to give an output on 43.333 Mc. using the triode section of a 6BL8; (2)

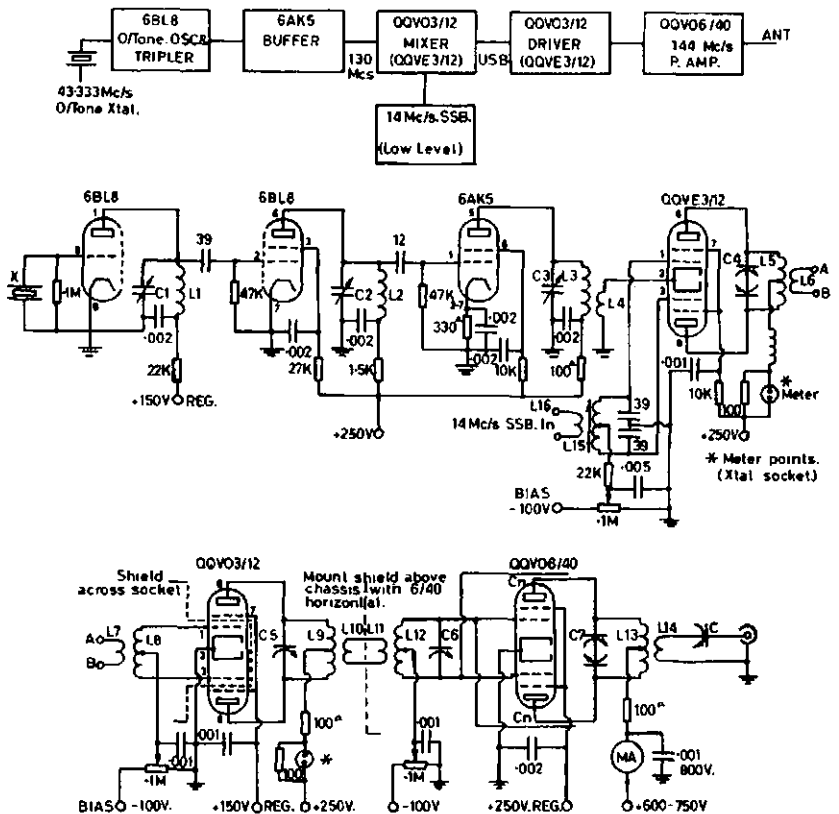
a tripler to 130 Mc. using the pentode section of the 6BL8; (3) a buffer stage on 130 Mc. using a 6AK5 to isolate the oscillator from the s.s.b. mixer; (4) a mixer for the 130 Mc., into the cathode of the 6QV03/12 with the 14 Mc. s.s.b. from the h.f. rig into the two grids; (5) a driver for the 144 Mc. s.s.b. output; (6) an AB1 class amplifier.

GENERAL NOTES

Several things worth noting are:— (a) The 14 Mc. input from the h.f. rig is only "flea power," less than ½ watt, and is best taken from the driver stage. A 10 pF. capacitor to the plate of this driver is all that is required and connect this to a co-ax. socket for convenience.

This connection, plus a means of disabling the 14 Mc. output stage (a switch in the filament supply, screen

(Continued on Page 11)



- L1—7 turns No. 22 ½ in. diam. ¾ in. long.
- L2—6 turns No. 20 9/32 in. diam. ¾ in. long.
- L3—6 turns No. 20 9/32 in. diam. ¾ in. long.
- L4—1 turn at cold end of L3 (link in between last turn).
- L5—5 turns No. 18 ¾ in. diam. ½ in. long, centre tapped.
- L6—2 turns at centre of L5 (loose coupled).
- L7—Same as L6 loose couple to L8.
- L8—6 turns No. 20 ¾ in. diam. 1 in. long, C.T.
- L9—8 turns No. 18 ¾ in. diam. ¾ in. long, C.T.
- L10—2 turns link loose couple between centre turns.
- L11—Same as L10—couple between centre of L12.
- L12—2 turns ¾ in. diam. ¾ in. long, C.T.
- L13—3 turns 1½ in. diam. 1½ in. long, C.T. (Plate lines would be better.)
- L14—Link.
- L15—36 turns No. 24 close wind on slug, former 5/16 in. diam. C.T.
- L16—3 turns over centre of L15.
- C1—2-20 pF. plunger type.
- C2—2-10 pF. plunger type.
- C3—2-10 pF. plunger type.
- C4—2 x 15 pF.
- C5—3-30 pF. Philips.
- C6—3-30 pF. Philips.
- C7—2 x 10 pF.

KEVIN CONNELLY, VK3ARD
 My first introduction into the Amateur ranks was as VK3ZBC in 1959. I obtained the full licence and the present call sign, VK3ARD, in 1960 and since then the main interests have progressed through a.m. and s.s.b. on both h.f. and v.h.f. bands to lately r.t.t.y., mainly on 14,090 Kc.
 Although my occupation as a professional engineer (qualifications: Diploma of Electrical Engineering) is generally removed from the field of Amateur Radio, the technical experience from this hobby is often extremely useful, now that electronic equipment is becoming more and more involved in the 50 cycle power field.
 The duties of Federal Treasurer fell to my lot (with gasps from the auditor!) when I joined Federal Executive in 1965.

THE IMPEDANCE METER

(Continued from Page 7)

ever, the resistance of the meter should be large compared to the highest resistance to be measured. Care should be taken not to exceed the ratings of the standard resistors when using either oscillator or d.c. voltage.

IMPEDANCE OF AUDIO TRANSFORMER

When checking the impedance ratio of say, an audio transformer rated at 500 ohm line to 4 ohm, connect a 4 ohm resistor across the 4 ohm winding so the transformer is matched to its proper impedance. Connect the primary to the "Z" terminals and make the measurement of impedance at one or more frequencies as desired. The impedance as measured and presented by the winding should be 500 ohms. The impedance of the 4 ohm winding can also be measured by connecting to the meter and placing a 500 ohm load on the primary terminals. Use the 1 ohm standard resistor and the v.t.v.m. reading in the "Z" position should be approx. 4 times that obtained in the "R" position, corresponding to an impedance of 4 ohms.

MEASUREMENT OF FILTER CHOKE

If you wish to use a choke rated at say 4 henries, the impedance measurement could be done at 100 cycles since this is the frequency of the largest ripple component in a 50 cycle full wave rectifier. At this frequency, since the impedance of an inductance is $2\pi fL$, the impedance is approx. 630L and the 4 henry choke should

have 2520 ohms impedance. The 1K standard resistor should be used, and a reading of approx. 2500 ohms would be expected.

As impedance is affected by magnetic saturation produced by the direct current flowing in its winding, impedance can be measured under this condition by connecting the choke to a source of d.c. in series with a suitable resistor. The resistor should have a value of at least five times the impedance of the choke being measured so that the shunting effect of the low impedance of the power supply will not invalidate the measurement.

MEASUREMENT OF ELECTROLYTIC CAPACITORS

The meter can be used to measure impedance of electrolytics at various frequencies and at the higher frequencies it will be found that impedance does not decrease in inverse proportion to the frequency. This is because an electrolytic capacitor behaves approximately as a capacitance with a series resistance — determination of actual impedance values will shed much light on the filtering effectiveness to be expected.

IMPEDANCE OF A CATHODE FOLLOWER

To measure the output impedance connect as shown. The blocking capacitor C is used to keep direct current out of the circuit and its value should be such that its impedance will be small in comparison to the impedance being measured—check it first on the meter! Of course, there must be no signal present from other sources when making impedance measurements.

It should be noted that measurements can be of a high order of accuracy at low frequencies and low impedance values providing the v.t.v.m. is accurate. However, less accurate meters are not ruled out providing the meter error is a constant percentage over its range.

This is because the impedance measurement is a ratio of two voltages E_R and E_z , remembering that linear voltmeters have relatively large percentage errors near the zero end of the scale, whereas log type meters are equally reliable at any part of the scale.

At high impedance values and higher frequencies, > 15 Kc., the error can be reduced by artificially increasing the input impedance of the v.t.v.m. by placing a 1 meg. resistor in series with the high or ungrounded input terminal, and right at the terminal.

The need for this is explained by the fact that the shunting of the unknown impedance by the input resistance of the meter causes some error to be introduced.

For those interested in checking those disposal "boat anchors" or doing a little private investigation in the audio field, have a closer look at this simple device.

S.S.B. ON V.H.F.

(Continued from Page 10)

supply or the complete h.t. supply (perhaps) and an extension of the push-to-talk circuit to control the converter h.t. supply to its output stage, are all that is required to be done to the h.f. rig. These can easily be done so as to permit removal later.

(b) The regulated 150 volt supply to the overtone oscillator is essential to prevent frequency modulation effects with changing voltage. I found that a separate regulated supply to this stage ensured a stable signal and this runs energised on both receive and transmit.

For good measure I took this regulated supply, a second regulated supply for the screens of the driver, and the 250 volts supply for all except the 6/40 output stage, from the one supply and it all runs continuously—no switching required.

(c) A bias supply (taken via a $\frac{1}{2}$ wave silicon rectifier from the transformer in (b)) is distributed to separate potentiometers for the mixer, driver and output stages. Each pot. is adjusted separately to give the required standing plate currents (see table). This arrangement makes the adjustments very easy.

(d) Although it is likely that the mixer could drive the 6/40 stage directly, the driver provides the necessary tuned circuits to reject the unwanted 130 Mc. and 116 Mc. (130-14) output.

TABLE 1

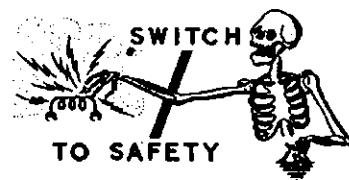
Measured operating values are:—
Mixer plate current 12 mA.
Driver plate current 35 mA. kicking to 45 mA.
6/40 plate current 40 mA. kicking to 105 mA.

Check that no grid current appears in the mixer, driver or final stages. Do not overdrive the mixer from the 14 Mc. input!

Anyone further interested in constructional diagrams, operating values, etc., could contact the writer. There are at least four of these units in operation in VK3 on 2 mx at present.

CHANGE OF ADDRESS

W.L.A. members are requested to promptly notify any change of address to their Divisional Secretary, not direct to "Amateur Radio."



VK2 DIVISION

RADIO EQUIPMENT STORE

Have you found it difficult to obtain coil formers? The R.E.S. catalogue in the past listed a range of 7 mm. formers and cans. Now 4 mm. has been added. Full details are in the new catalogue. Briefly this is the range:

4 mm. Formers: Short (15 mm.) 7 cents; long (33 mm.) 8 cents. Cans—short single, short double, long single and long double, 10 cents. Bases—single and double to suit above combinations, 10 cents. Slugs—30 to 300 Mc. range, 5 cents.

7 mm. Formers: Refer catalogues. Short formers, 3 cm.; and long formers, 6 cm.; in either tag or eyelet bases. Cans to suit. There is a range of screwdriver or hexagan slugs from 100 Kc. to 300 Mc. A new former in the range is a 7 mm. by 1 inch with a 9-pin base.

A small selection of other sizes are carried. As the Store is staffed on a voluntary basis, please allow a few days to elapse for your reply or order. All inquiries to Radio Equipment Store, Wireless Institute Centre, 14 Atchison Street, Crows Nest, N.S.W.



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SPECIFICATION DETAILS:

Data	PCI	PC2	PC3	PC4	PC5	PC7	PC9
Power Output mW.	150	400	400	400	3W	800	Pre-Amp.
Input Impedance—ohms	1.5K	1K	2.5K	220K	1.5K	1.5K	1M
Output Impedance—ohms	40	15	15	15	3	8	600
Supply Voltage—volts	9	9	9	9	12	9	9
Typical distortion %	2	3	3	3	3	3	1
Frequency response	300-15K	200-12K	200-12K	200-12K	50-12K	50-12K	20-20K
Overall Dimensions	2x1	2½x1½	2½x1½	2½x1½	5½x1½	3x1½	2x1
All ¼ in. high.							
PRICE	\$5	\$6.27	\$6.27	\$6.27	\$12.47	\$7.53	\$4.50
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SUGGESTED APPLICATIONS:

PC1—Audio Amplifier. Intercom. Amplifier. Lab. Instr. Amplifier.

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PC3—D.C. Relay Driver. Sound-level Meter Amp. Low power Battery Stereo. Heating and Ventilating Control Amp.

PC4—G.P. Amp. and Driver's Office Dictating Machines. Listening Booth Amps.

PC5—Portable Audio Amps. Car Radio Audio Amps. Servo Amplifier. Tape Relay Amp. Automation Drive Amp. Burglar Alarm Amp.

PC7—Tape Language Lab. Telephone Dictating Machine Amps. Control Amp. for Textile Machinery.

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Type K5B20: Normal a.c. (r.m.s.) Circuit Voltage, 240 r.m.s., Current capacity 5 amps.

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Pulse Diode, Type K2C 78c plus S.T. 12½%
Pulse Transformer \$1.20 plus S.T. 12½%

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DITTO ½ WATT: 50 for \$1.00 plus S.T. 25%. Plus pack and post 5c.

Small Imported Electrolytic Condensers

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12c each or lots of 50, \$5, plus S.T. 25%.

Plus pack and post 10c.

2, 5, 10, 25, 50, 100 uF. 6 v.w.

2, 5, 10, 25 uF. 12 v.w.

2, 5, 10, 50 uF. 25 v.w.

2, 5, 10, 25 uF. 50 v.w.

NEW! MINIATURE POWER SUPPLY

6, 9, 12 volts at 500 mA. Useful for transistor equipment such as tape recorders, record players, radiograms, etc. May also be used as trickle charger for car batteries.

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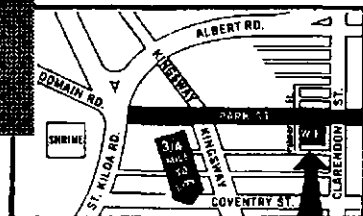
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WIRELESS INSTITUTE OF AUSTRALIA—ITS ADMINISTRATION

G. MAXWELL HULL,* VK3ZS, Federal President

IT is probably true to say that in any organisation, society, club or institute, the members of the organisation, unless actively engaged in its administration, know very little about how it functions. There are exceptions to this and a few members do like to know the ins and outs of the organisation to which they belong and pay their subscriptions, so they interest themselves in finding out.

However, this short article is directed to the member of the Wireless Institute of Australia—and any non-member who reads the Institute's magazine—so that he can find out in 10 or 15 minutes' reading what might otherwise take a considerable time. It is hoped you will find it interesting and enlightening.

Let's take a brief look at Australia to refresh our memories. The map of Australia is broken into States with their respective Call Areas. These Call Areas also represent a Division of the W.I.A., therefore we have the N.S.W. Division (VK2), Victorian Division (VK3), Queensland Division (VK4), South Australian Division (VK5), West Australian Division (VK6) and the Tasmanian Division (VK7). Then we have the Territorial Call Areas of the Australian Capital Territory (VK1), Northern Territory (VK8), Territory of Papua and New Guinea (VK9) and Antarctica (VK0).

In addition there are a number of islands around Australia which adopt the call prefix of the State under whose jurisdiction they are administered, and for the purposes of being attached to the W.I.A., licensees in these areas are members of that State's Division. In this way also, members residing in the Australian Capital Territory (A.C.T.) become members of the N.S.W. Division, although it is envisaged one day there will be enough VK1 licensees to form a VK1 Division of the Institute.

Broadly speaking, the Federal organisation of the Wireless Institute of Australia consists of all the Divisions grouped together as one body. It is governed and administered by a **Federal Council** composed of a member representative, known as the **Federal Councillor**, from each Division of the Institute. Because its financial resources are limited, and the Divisions are separated by quite large distances, it is not practical or financially possible at this stage of its growth for the **Federal Council** to meet more than once a year which it does at Easter time.

The **Federal Council** is responsible for formulating the Institute's policy on matters that concern the Institute at Federal level. At present the **Federal Council** must vote (whether at a Federal Convention or when required during the year) either in accordance with a voting instruction from his

Division, or by a vote which must subsequently be ratified by his Division.

The implementation of the decisions of the **Federal Council** is the responsibility of a group known as the **Federal Executive**. This **Executive** body is composed of a Federal President, Federal Vice-President, Federal Secretary and four other persons who may carry out the functions of Federal Business Manager, Federal V.H.F. Manager, Federal Treasurer and Federal Publicity Manager, or any other "title" which from time to time may be "attached" to these Officers. Under its Constitution the **Federal Council** may also authorise the co-option of any further number of personnel who can hold ex-official appointments in order to carry out specific duties.

And so the **Federal Executive** acts for, and on behalf of, the **Federal Council** in managing the Institute by carrying out its policies and administrative decisions, acting for the Institute in negotiations with the Postmaster-General's Department in respect of the Regulations under which the Amateur Service is permitted to operate in Australia, liaising with overseas organisations concerning matters pertinent to world-wide Amateur Radio, acting on behalf of the **Federal Council** in matters which in the opinion of the **Federal Council** may concern more than one Division, dealing with its finances in such manner as may be from time to time determined by the **Federal Council** and directing the editorial policy of the official organ of the Institute—"Amateur Radio" Magazine insofar as it relates to Federal matters.

Because the Central Administration of the Postmaster-General's Department has always been located in Melbourne, the **Federal Council's** policy has always been that its **Executive** should also be located there. For this reason the Victorian Division has always been known as the **Headquarters Division**, and under the **Federal Constitution** has been responsible for selecting and nominating the appointments to the **Federal Executive**. Each year these nominations are sub-

mitted to the Divisions for approval and so it is that each Division has its "say" in who is appointed and has the power to reject any nominee who it considers unsuitable to hold office.

Probably the most important man in the W.I.A. Federal organisation is the **Divisional Federal Councillor**. As his Division's representative on the **Federal Council** he is responsible to convey information from his **Divisional Council** to the **Federal Executive** and from the **Federal Executive** to his **Divisional Council**.

He should be nominated by the members of his Division after careful selection because he carries a heavy responsibility to see that the wishes of the members of his Division are properly directed to the **Federal Executive** where it is the prerogative of the **Federal Council** to deal with them; and it is his further responsibility to convey to the members of his Division through his **Divisional Council** the results of any such representations or of any other matters dealt with by the **Federal Executive** on behalf of the **Federal Council**.

Because of his unique position he has two important areas of judgment in which he must be involved; one in his **Divisional Council** with the affairs of his Division on behalf of its members, and the other with the **Federal Executive** on behalf of the **Federal Council**. This means he must be a person with "vision" and able to divorce his mind from a **Divisional** outlook when acting as the liaison between his **Divisional Council** and the **Federal Council**.

With the exception of the **Federal Traffic Officer** (who doesn't always exist) and the **Federal QSL Officer**, all communications between the **Federal Executive** and the **Divisional Council** pass through the hands of the **Federal Councillor**. When the **Federal Traffic Net** is in operation it passes traffic by radio communication from the **Federal Executive** to the **Divisional Traffic Officer** who passes the information on to the **Federal Councillor** in his Division. This traffic net was used consistently and efficiently in years gone by but with the advent of fast airmail services and the difficulty in obtaining the services of good c.w. operators in every Division, the net has currently ceased to function. The **Federal QSL Officer** has direct contact with the **QSL Officers** in each Division and this is the only function of the Institute's **Federal Administration** which does not pass through the hands of the **Federal Councillor**.

This briefly explains the Institute's administration down to the **Divisional Council** level. Each Division has its own **Council** which is appointed by, and acts on behalf of, its members, and the **Division** functions under its own **Memorandum of Articles of Association** (or **Constitution**). All the Divisions—with the exception of the **Queensland Division**—are registered as

G. M. HULL, VKZS

Licensed with call sign VK3ZS since 1937. Past Federal Secretary of the W.I.A.—six years. Present Federal President—4th term. Manager and director of small electronics firm. Director of East Recording Company. Public address equipment engineer. Active on the air on s.s.b. 50 years of age and active with table tennis and tennis as sporting relaxation. Ex-R.A.A.F. W/T operator (air) and wireless mechanic, six years during World War II.

Companies or incorporated **Associations** for the protection of their members. Since 1952 each Division has adopted a constitution which is almost identical in each State (The Uniform Divisional Constitution) which permits all Divisions to operate in very much the same manner.

The Memorandum and Articles of Association of your Division is available to you on request if you did not receive a copy when you joined the Institute in your State. The document gives you the power to vote (if you are a full member) and it is worth your while to peruse it occasionally so that you can raise your problem through the correct channels and have it dealt with by the Federal Administration if it is a matter which concerns Amateur Radio generally and not in the nature of a purely domestic problem. If your problem is a domestic one, then you should have it dealt with by the Council of your Division.

Your Division is divided into **Zones** or **Branches**, and there are **Clubs** in your State which are affiliated with your Division. These organisations indulge in Emergency Networks (where such are active), Fox Hunts, Scrambles, Exhibitions, V.h.f. activities and other kinds of interesting events peculiar to the hobby of Amateur Radio.

Your State Division provides the personnel for other groups in addition to your Divisional Council. All States may not have the numbers to be active in all spheres but generally there is a V.h.f. Group, Short-Wave Listeners' Group, W.I.A. Communications Emergency Network (W.I.C.E.N.), Amateur Operator Certificate of Proficiency Classes which train you to the standard necessary to gain your transmitting licence, Youth Radio Scheme (Y.R.C.) Organisation and other special groups, all of which work for the good of Amateur Radio.

And finally, there is the **Publications Committee** of the Headquarters Division. On behalf of all the Divisions of the W.I.A. it publishes "**Amateur Radio**" Magazine which is the official Federal Organ of the Institute. There is direct liaison between this Committee and the Federal Executive where discussions can take place on national and international matters or matters of policy of concern to the Federal Council.

The Publications Committee is also responsible for the printing of the **Australian Radio Amateur Call Book**, **Amateur Station Log Books** and **Contest Log Sheets**. The costs of these publications are borne by the Headquarters Division.

From all this you may wonder how the Institute gains its finance! This comes from your subscription when you join as a member. The fee might vary a little between States depending upon the overhead carried by individual Divisions. The larger Divisions own freehold property so their fees are a little higher than the smaller Divisions. However, compared with other organisations, W.I.A. fees are quite modest for the work the Institute does in protecting and maintaining the hobby of Amateur Radio for this generation and the generations ahead.

In conclusion I would like to express a few personal thoughts regarding the W.I.A. organisation and the future.

To my mind the most important single function of the Institute is the representation of the Australian Amateur Licensee whether he be a member or not, the protection of Amateur operating privileges and the maintenance of reasonable regulations governing Amateur Radio in this country.

This requires the expenditure of not a little finance and a great deal of time which, perforce, must at this stage be forthcoming from men of calibre, enthusiasm and experience in an honorary capacity if we are to adequately meet future problems.

In discussing our Federal Organisation one should ask if there are any shortcomings? And if one had served—or was serving—in an administrative capacity in any part of the organisation, the answer would very probably be—yes! The organisation as briefly detailed in this article has been operating under a Constitution which is quite old and which was last amended in 1947, whilst the membership over this period has grown from about 1500 to over 5000 and is steadily increasing. From "inside" the organisation it is obvious that the existing Constitution, whilst having served a most useful purpose, is outdated and needs overhauling with a view to making the Institute "work" with the efficiency which modern day enterprises demand if we are to combat the pressures which are manifest, and of growing concern, to Amateur organisations all over the world.

Such a shortcoming in our organisational setup is not something new, for as far back as 1960, the Late John Moyle, VK2JU, who represented the W.I.A. as an official observer with the Australian Delegation to the 1959 I.T.U. Conference, had this to say:—

"Closer to home we have two major reforms to make. Firstly, we must obtain a much greater sense of Federal responsibility from the ordinary Amateur and from the Divisions.

"Secondly, we must evolve a Federal set-up which will work At present the Federal Council isn't doing its job, and the Federal Executive has become exhausted trying to cope with an almost impossible situation.

"I am not intending here to supply a set of answers to this matter, which is an ideal item for a Convention if there ever was one.

"But I am prepared to say that unless we are prepared to solve the problem, and to spend money doing it, we can't blame . . . anyone . . . if Amateur claims are overlooked because we are inadequately organised to handle them.

"To my mind it is an urgent and critical situation."

These were strong words from an Amateur whose views must be respected, for he above all was in a position to understand the problems of our organisation.

In 1962, with a knowledge of these problems in mind, the Federal Council set about writing a new constitution designed to Federate the W.I.A. so that it could work with the efficiency required of it. To date it has produced three completed drafts all of which were torn apart by the Federal Council to produce a fourth and (it was hoped) final draft. This appears to be nearing acceptance by all Divisions.

The most important of the proposals for a new **Federal Constitution** was firstly, the establishment of new procedures to enable both the Federal Council and the Federal Executive to reach decisions more rapidly; the system existing today of a **Federal Council** representative having to have "instructions" from his Division in order to vote, or having to have his vote ratified by his Council if he voted without instructions is surely archaic and frustratingly time consuming in the extreme!

Secondly, the Institute's Magazine, "**Amateur Radio**," presently the responsibility of the Victorian Division to finance and publish (together with the other publications aforementioned) should surely be a truly Federal obligation financed jointly by all Divisions through a proper Federal Organisation.

Thirdly, to enable the above ideal conditions to exist in such manner that financial protection is afforded for those engaged in the administration and the members alike, it is proposed that the Federal Organisation be registered as a Company.

Fourthly, the **Federal Executive** must have more freedom to formulate policy between Federal Conventions whilst remaining subject to policy decisions of the **Federal Council**; and procedures will no doubt be evolved by which the **Federal Executive** can seek guidance from the Divisions whilst arbitrating on their behalf.

The proposed Constitution is envisaged as being a continuation of the existing basic organisation, namely that the Divisions together form the Company represented by the Federal Councillors. Here is not the place to enter into a discussion of the mass of detail that has gone into the formulation of the machinery of the provisions of the drafts. However, the overall objective has been to provide a suitable framework within which the Federal body can work with room for flexibility to meet the needs and problems of the future.

A majority of the Divisions have agreed to a final amended draft. I believe that the near future will see an agreement by all the Divisions, and this will mark a vital milestone in the development of the Wireless Institute of Australia as the representative body of the Amateur Service in Australia.

One point has repeatedly been made—that a constitution and rules do not of themselves make an organisation strong and effective. Only the calibre of the men who are appointed to carry out the respective tasks demanded by an organisation can do this, and then most effectively only with the support of every member they represent.

(Continued on Page 22)

AMERICAN DOW-KEY ANTENNA RELAYS

Coil Ratings: 6, 12, 24 volts d.c. at 2 watts.
6, 12, 24 volts a.c. at 6va., 50-60 cycles.
Special coil voltages available on request.
R.f. Ratings: 1kw. power rating to 500 Mc.;
20 watts power rating to 500 Mc. in types
DK60-G and DK60-G2C in de-energised
condition. The DK60-G and DK60-G2C have
a special isolation connector in the de-
energised position to reduce cross-talk to a
minimum.

V.S.W.R.: Less than 1.15:1 from 0 to 500
Mc. (50 ohm load).

Isolation: Greater than 60 db. at 10 Mc. in
DK60 and DK60-2C; greater than 100 db.
from 0 to 500 Mc. in DK60-G and DK60-
G2C when in energised position.

Operating Time: Less than 30 milliseconds
from application of coil voltage; less than
15 milliseconds between contacts.

Connections: Standard SO239 type v.h.f./
U.h.f. Co-ax. Connectors. Available with
Type N, BNC, TNC and C Connectors to
order. \$4.16 extra.

Type DK60 standard single-pole change-over	D.C.	A.C.
	\$13.12	\$19.25

Type DK60-G standard single-pole change-over with special isolation contact in de-energised position to reduce cross-talk	\$20.15	\$21.15
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Type DK60-2C, same as DK60, but includes external set of double-pole change-over contacts	\$20.25	\$21.38
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Type DK60-G2C, same as DK60-G but with external double-pole change-over contacts	\$21.78	\$23.30
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DOW-KEY MANUAL CO-AXIAL SWITCHES

R.F. Ratings: 1kw. to 500 Mcs.
Fine Silver Finish. Fitted with UHF type
SO239 co-axial sockets.

DK78-2 Single Pole two throw	\$18.22
DK78-3 Single Pole three throw	\$18.58
DK78-6 Single Pole six throw	\$20.25
DK78-T Transfer Switch	\$19.80

MECHANICAL FILTERS

COLLINS Type F455A Mechanical Filters,
455 Kc. Wiring instructions with each unit.
Price (inc. S.T.): \$85.

LOW PASS FILTERS

A "Cabena" Low Pass Filter will fix t.v.l.
Cut-off frequency, 30 Mc., attenuation at
60 Mc., better than 30 db.; insertion loss,
negligible. Impedance 50-72 ohms.

Price \$11.50

PENETROX "A"

Famous: American aluminium and copper
corrosion inhibitor. Avoid bad electrical
connections and corroded joints on beam
antennae, T.V. antennae, etc. Use—

PENETROX "A"

Price: \$1 per tube

C.R.C. FORMULA 2.26 FLUID

For use on electronic and electrical equip-
ment of all kinds. Displaces water and
moisture. Improves electrical properties.
Protects metal surfaces and lubricates.

16 oz. pressure packs, Price \$3.00

CATALOGUE

4-Page Lift-out Supple-
ment listing selected range
of products useful for
Amateur use.

PRICES INCLUDE SALES TAX,
BUT ARE SUBJECT TO
CHANGE WITHOUT NOTICE.

Availability of Imported Lines
are subject to delivery from
overseas from time to time.

A & R TOROID BALUNS

General Specifications: Power rating—Types
A, B, C, 200 watts or 400 watts p.e.p., pro-
vided the s.w.r. is less than 2:1. Con-
struction—Toroidal ferrite cores, fully en-
capsulated with epoxy resin and silica
under vacuum. Suitable for use in cold to
sub-tropical areas. All except 355C and
356C are provided with antenna insulator
support brackets. Balun dimensions approx.
2 in. diam. x 1 in. plus socket and lugs.
Weight approx. 3/4 to 4 oz.

Type 350A—Impedance ratio 1:1. 75 ohms
unbalanced to 75 ohms balanced. 3 to 30
Mc. For use at centre of a dipole antenna
with co-axial cable feed line or at base
end with 75 ohm twin line. Co-axial
connector is Belling & Lee L604/S and
lug terminals. Price \$3.77 (inc. S.T.)

Type 351A—Impedance ratio 1:4. 75 ohms
unbalanced to 300 ohms balanced. 3 to 30
Mc. For use at centre of a folded dipole
antenna with co-axial feed line or at base
end with 300 ohm twin line connector
and terminals as 350A. Price \$3.77 (inc.
S.T.)

Type 352A/BC—Details as 350A except
frequency range 500 Kc. to 5 Mc., or to
30 Mc., for receiving purposes only with
increased attenuation. Price \$3.77 (inc.
S.T.)

Type 353B—This is a type 350 with a co-
axial socket SO-239 (Amphenol screw
type). Price \$4.40 (inc. S.T.)

Type 354B—Type 351 with SO-239 co-axial
socket. Price \$4.40 (inc. S.T.)

Type 355C—Impedance ratio 2.1:1. 52 ohms
unbalanced to 25 ohms unbalanced. 3 to
30 Mc. For use at the base of a mobile
whip antenna, coupled to fixed or adjust-
able transmitter output impedance. Lug
terminals. Price \$3.50 (inc. S.T.)

Type 356C—Impedance ratio 3.1:1. 78 ohms
unbalanced to 25 ohms unbalanced. 3 to
30 Mc. Lug terminals. Use as 355C.
Price \$3.50 (inc. S.T.)

"ADEL" NIBBLERS

Makes area cut-outs for transformers, etc.,
as simple as ABC. Price \$7.50.

CO-AXIAL FITTINGS AND CABLE

PL259 Co-axial Plugs, suit 3/8 in. cable	\$0.39
SO239 Co-axial Sockets	89c
UG175/U and UG176/U cable Adaptors for use with PL259	\$0.24
C32-16 Right-angle co-axial connector Jack to Plug, suit PL259	\$1.88
C32-17 T. Connector—Plug and two Jack Ends—suit PL259	\$2.83
C32-14 Coupling for two PL259 Plugs	\$1.72
Belling & Lee L734P Co-ax. cable plug	\$0.32
" " L604S co-ax. chassis- socket	\$0.29
" " L603/B co-ax. chassis socket ground insulated	\$0.25
" " L734/S recessed co-ax. chassis socket	\$0.25
" " L734/J co-ax. cable sock- et	\$0.43
" " L1421 Bulk-head cable socket	\$0.58
" " L616 Coupling—couple two L734/F plugs	\$0.38

PT81M (UR67) 52 ohm co-axial cable, per yard	\$8e
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RG58AU 50 ohm co-axial cable, per yd.	\$0.36
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PT9M 55 ohm co-axial cable, yd.	25e
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PT77M 70 ohm (UR70) co-ax. cable, yd.	\$2e
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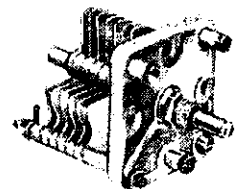
PT11M 70 ohm co-axial cable, yd.	40e
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FORMULA 11 open wire 300 ohm transmission line, 100 ft. coils	\$5.00
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K20 72 ohm Twin Flat Line	yd. 15e
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KA47 300 ohm Twin Flat Line (solid or slotted)	yd. 8e
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KA45 300 ohm Heavy Duty Flat Line (solid or slotted)	yd. 12e
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EDDYSTONE CONDENSERS

478 Split Stator 15 x 15 pF.	\$2.90
580 Single Section 13.5 pF.	1.95
581 " " 63 pF.	2.05
582 " " 63 pF.	2.80
583 Split Stator 23 x 23 pF.	3.25
584 Butterfly 32 x 32 pF.	2.80
585 Single Section 81 pF.	2.80
586 " " 140 pF.	3.90
587 Butterfly 16 x 16 pF.	3.90
588 Single Section 27.5 pF.	2.90
589 " " 66 pF.	2.90
718 Differential 26 x 26 pF.	2.10
730 Butterfly 10 x 10 pF.	3.25
738 Double Bearing 100 pF.	5.27
817 Tx Type S. Section 270 pF.	5.15

"JABEL" TR14 REAMERS

Ideal for clean finish on small panel holes
and cleaning out for neat fit.
Price: \$1.05 each.

HEADPHONES

Brown's Type F 2,000 ohm high impedance	\$14.15
Akal A5E8S Stereo/Mono 16 ohm low impedance	\$15.63

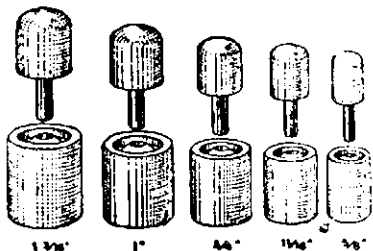
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PUNCHES



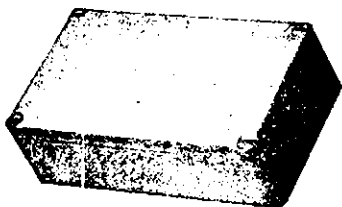
WILLIS HAMMER DIE PUNCHES

WILLIS hammer type die punches are made to precise sizes for use in industry wherever a clean, round hole is wanted. Designed to punch down to 14 gauge steel. Centre remnant removed with a flick of the hand. Can be used in die press. Special sizes made to order at slight additional cost.

3/8 in.	\$2.40	1-1/2 in.	\$6.00
7/16 in.	\$2.40	1-5/8 in.	\$6.40
1/2 in.	\$2.60	1-3/4 in.	\$7.20
5/8 in.	\$2.60	1-7/8 in.	\$8.00
11/16 in.	\$2.80	2 in.	\$8.40
3/4 in.	\$3.00	2-1/16 in.	\$8.60
13/16 in.	\$3.20	2-1/8 in.	\$9.00
7/8 in.	\$3.80	2-3/16 in.	\$9.40
1 in.	\$4.80	2-1/4 in.	\$9.60
1-1/16 in.	\$4.00	2-5/16 in.	\$9.60
1-1/8 in.	\$4.00	2-3/8 in.	\$10.40
1-3/16 in.	\$5.00	2-1/2 in.	\$11.00
1-1/4 in.	\$5.20	2-3/4 in.	\$12.40
1-5/16 in.	\$5.20	3 in.	\$13.40
1-3/8 in.	\$5.60	3-1/4 in.	\$15.80
1-7/16 in.	\$5.80	3-1/2 in.	\$18.20

Q-MAX CHASSIS PUNCH

SCREW TYPE			
3/8 in.	\$1.58	17/32 in.	3.80
7/16 in.	2.00	1 1/4 in.	3.80
1/2 in.	2.00	1 5/16 in.	4.08
9/16 in.	2.00	1 3/8 in.	4.08
5/8 in.	2.00	1 1/2 in.	4.08
11/16 in.	2.56	1 5/8 in.	4.44
3/4 in.	2.56	1 3/4 in.	4.44
13/16 in.	3.08	2 in.	5.60
7/8 in.	3.08	2 3/32 in.	6.64
15/16 in.	3.68	2 1/2 in.	7.92
1 in.	3.68	1 in. sq. hole	5.56
1 1/16 in.	3.68	1 1/16 in. s. hole	5.32
1 1/8 in.	3.68	2 1/32 x 15/16	
1 3/16 in.	3.68	rectang. hole	7.62

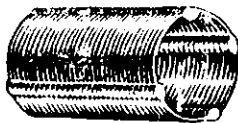


INSTRUMENT BOXES

Cat. No. 896

These virtually water-tight die-cast boxes are made of zinc alloy material in four sizes. Each box is supplied with a close-fitting flange lid, securely held with countersunk 4 BA screws. Natural finish. These substantial boxes are invaluable for many purposes. Sizes available:—

Type 650	4 1/2 x 3 1/2 x 2 in.	\$2.79
Type 845	7 1/2 x 4 1/2 x 2 in.	\$4.50
Type 896	4 1/4 x 2 1/4 x 1 in.	\$1.93
Type 903	7 1/4 x 4 11/16 x 3 in.	\$4.86



"WILLIS"

AIR-WOUND INDUCTANCES

Take the hard work out of Coil Winding—use "WILLIS" AIR-WOUND INDUCTANCES

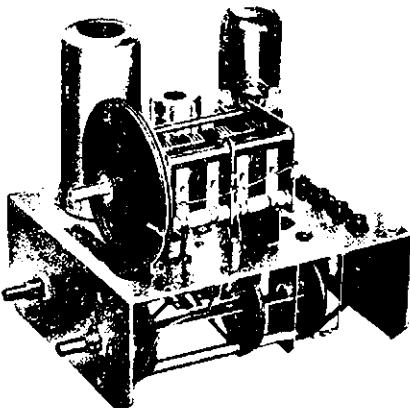
No.	Turns		B. & W. Equiv.	Price
	Diam. per Inch	Length Inch		
1-08	1/2	3	No. 3002	59c
1-16	1/2	16	No. 3003	59c
2-08	3/4	8	No. 3006	70c
2-16	3/4	16	No. 3007	70c
3-08	1	8	No. 3010	82c
2-16	3/4	16	No. 3011	82c
4-08	1	8	No. 3014	95c
4-16	1	16	No. 3015	95c
5-08	1 1/4	8	No. 3018	\$1.28
5-16	1 1/4	16	No. 3019	\$1.28
6-10	2	10	No. 3907	\$1.55

Special Antenna All-Band Tuner Inductance (equivalent to B. & W. No. 3907 7 in.)

7 in. length, 2 in. diameter, 10 turns per inch, \$2.76

References: A.R.R.L. Handbook, 1961; "QST," March 1959; "Amateur Radio," Dec. 1959.

GELOSO V.F.O.



Illustration—Model 4-102

Model 4/104 V.f.o. Unit. Tunes 80, 40, 20, 15, 11 and 10 metres. Complete with calibrated dial and escutcheon. Uses 6CL6 and 5763 valves. Price (valves extra) \$24.55.

Model 1/102 V.f.o. Unit. Tunes 80, 40, 20, 15 and 10 metres. Complete with calibrated dial and escutcheon. Uses 6J5G, 6AU6 and 6L6 valves. Price (valves extra) \$24.55.

Model 1/105 V.f.o. Unit. High stability unit using output from relatively low variable frequency generator mixed with the output from a quartz-crystal generator. Low frequency generator covers range of 500 Kc. on the 30, 40, 20 and 15 metre bands and 1 Mc. on two sections of the 10 metre band. Uses 6U8, 6AH6 and 6CL6 valves. Suitable for use in s.s.b. transmitter. Price (valves and crystals extra), \$38.43.

Each model comes complete with calibrated dial, pointer and perspex escutcheon. Full circuit diagram with each kit. Valves and crystals extra.

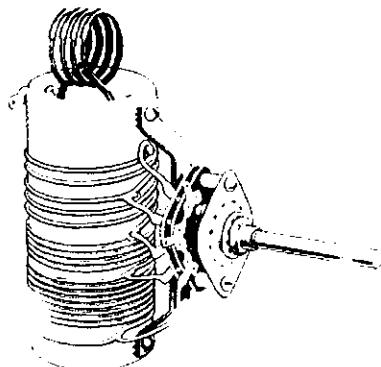
GELOSO KIT FOR D.S.B. TRANSMITTER

The following components comprise the GELOSO Kit for construction of D.s.b. Transmitter. For circuit details refer Nov. 1965 issue of "Electronics Australia".

4 115 Crystal controlled Beat Frequency Oscillator	\$28.12
N1657 Calibrated Dial, Pointer and Escutcheon	\$6.30
N4 113 Pi-Coupler	\$4.85
N771 Condenser	\$4.50
N774 Condenser	\$4.50
N17534 All Wave R.F. Choke	96c

Valves not supplied with V.f.o. Valves for V.f.o.: 6U8, 6AH6, 6CL6.

PI-COUPPLERS



WILLIS MEDIUM POWER TYPE

For use up to 600 watts p.e.p. Match plate loads of 2,000 to 3,500 ohms (Z) and higher into co-axial cable. Operating Q increases on higher frequencies to increase harmonic suppression enabling practical values of tuning capacity to be used on 10 and 15 metres and allowing for wiring inductance (L). Incorporates extra switch section for shunting additional capacity (C) if required, or switching other circuits. Switch rated for 10 amps. at 2,000 volts with contact resistant (R) of 0.8 milli-ohms. Price \$8.85.

Geleso Pi-Coupler Type 4/111 for use with parallel 807's, 6146's, etc. 75 w. \$3.94.

Geleso Pi-Coupler Type 4/112 for use with S-ended 807, 6146, etc. 75 w. \$3.94.

Geleso Pi-Coupler Type 1/113 for use with parallel 807's, 6146's, etc. 100 w. \$4.37.

COIL FORMERS

3 4 inch Poly. Formers with mounting base and iron slug	30c
7 16 inch Paxolin Formers with mounting base and iron slug	23c
3 3 inch Poly. double slugged I.F. Formers with can	81c
Two-pin Polymax G.d.o. Formers with winding protective shroud for Inductances	72c

EUROPEAN DIN TYPE CONNECTORS

Three pin cable male Type S3	55c
Three pin cable female Type K3	68c
Three pin chassis female Type B31	18c
Five pin cable male Type S5	60c
Five pin cable female Type K5	71c
Five pin chassis Type B51	18c

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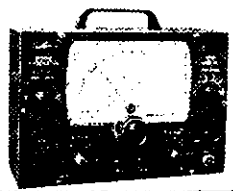
TEST EQUIPMENT

S.W.R. METERS

KYORITSU Model K-109 Standing Wave Ratio Bridge. 1:1 to 1:10 s.w.r. Impedance 50 and 75 ohms. Frequency range 1.5 to 60 Mc. Includes 0-100 d.c. microammeter. \$20 inc. sales tax.

GRID DIP OSCILLATORS

Transistorised Eddystone "Edometer" type Grid Dip Oscillator. 390 Kc. to 115 Mc., with set of seven plug-in coils. Zener stabilisation maintains constant performance with falling voltage. Can be used as g.d.o. for resonance checks on tuning circuits, for actual measurement of inductance and capacity. An in-built modulator stage provides use as signal generator for receiver alignment or as a signal source for audio tests. Can be used as absorption wavemeter, heterodyne wavemeter and modulation monitor. Tuning is simplified by geared reduction drive while the clearly calibrated scale permits rapid reading. Meter sensitivity is adjustable. Unit includes jack for Morse key for use as Morse code practice oscillator. No external power source required. Price \$84.75 (inc. S. Tax).



SIGNAL GENERATORS

Leader LSG11, 120 Kc. to 390 Mc.

Frequency range (six bands): 120 Kc. to 130 Mc. on fundamentals; 130 Mc. to 390 Mc. on harmonics. Mod. frequency 400 and 1000 cycles. Uses 12BH7, 6AR5 plus selenium rectifier. Provision for xtal oscillator by use of external xtal (xtal not supplied), 1 to 15 Mc. Dimensions: 7 1/2 x 10 3/4 x 4 1/2 in. Professionally finished, grey crackle enamel. Price \$30.75

VACUUM TUBE VOLT METER

"KYORITSU," MODEL K-142

Highly dependable for measurements of voltages from d.c. to r.f., output (db) and d.c. resistance.

A.c. volts: Sine wave: 0.1v.-1500v., 7 ranges. Peak-to-peak: 0-4000v., 7 ranges. Output (db m): minus 20 db to plus 65 db.

Input Impedance: 1.4 megohms. D.c. Volts: 0.1v.-1500v., in seven ranges. Input Impedance: 11 Megohms.

Resistance: 0.2 ohm to 1000 Megohms, in seven ranges.

The K-142 Vacuum Tube Voltmeter uses a P-60 d.c. 200 microammeter and operates from 240 volts 50/60 cycle a.c. mains. Large clearly calibrated meter gives ease of reading. Price \$56.25 (inc. S. Tax)

KIKUSUI MODEL 539 3" C.R.O.

240v. a.c. operation. Printed circuit board wiring. 5 c.p.s. to 1 Mc., time base oscillator to sweep 10 c.p.s. to 100K c.p.s. in steps with continuous in-between variation. Ideal s.s.b. measurement with coupled r.f. sampling signal. Weight 11 lb.

Price \$125. (Full instruction book supplied)

GELOSO INTER-COMMUNICATION SET

Here is the intercom system that you can install in half an hour with the greatest of ease!

N. 9501—Master Unit

This is the basic set of every system. It contains a 3-transistor amplifier, a loud-speaker microphone and the feed batteries. Case in shockproof material, with rear apertures to fasten the set on the wall. Supplied with 3 meters of flex and plug. \$13.84.

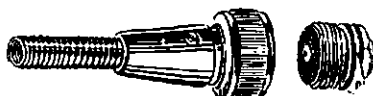
N. 9508—Slave Unit for Indoor Use

It contains a loudspeaker-microphone. Case in shockproof material, with rear aperture to fasten the set to the wall. With 0.30 metre of flex and plug. \$3.10.

N. 9567—Slave Unit for Outside Use

It contains a loudspeaker-microphone with waterproof impermeabilised protection. Case in shockproof material to be set flush in wall or on panel. Rear screw terminals to fix the line cable. \$3.51.

The "Gelosco" Inter-Communication System is not a toy. It is designed for rugged use wherever communication is wanted between various points—in an office block, home, hospital or shop. Write for free brochure on installation ideas and details.



MICROPHONE CONNECTORS

Acme-Amphenol Type Male and Female Cord and Chassis Connecting

Centre single contact female cable	60c
Centre single contact male cable	50c
Centre single contact male chassis adaptor	45c
Centre single contact phone plug	63c
Single Pin male cable	70c
Single Pin female cable	70c
Single Pin female chassis	50c
Two pin cable male	75c
Two pin cable female	75c
Two pin chassis female	50c
Three pin cable male with lock ring	\$1.05
Three pin cable female with coupling thread	98c
Three pin cable female with lock ring	\$1.15
Three pin cable male with coupling thread	98c
Three pin chassis female	75c
Three pin chassis male	82c
Four-pin cable male with long ring	\$1.15
Four pin cable female with coupling thread	\$1.15
Four pin cable female with long ring	\$1.21
Four-pin chassis female	82c
Four pin chassis male	90c

RECORDING TAPE

Top Quality Recording Tape, guaranteed no drop out.

Standard Play	600 ft. x 4 in.	2.82
	600 ft. x 5 in.	\$2.57
	900 ft. x 5 1/2 in.	3.49
	1200 ft. x 7 in.	4.25
Long Play	2400 ft. x 7 in.	7.81
	210 ft. x 3 in.	1.13
	450 ft. x 4 in.	2.12
	900 ft. x 5 in.	3.49
	1200 ft. x 5 1/2 in.	4.25
	1800 ft. x 7 in.	5.79
Double Play	2400 ft. x 5 1/2 in.	8.63
	300 ft. x 3 in.	1.71
	600 ft. x 4 in.	2.82
	900 ft. x 4 1/2 in.	3.30
	1200 ft. x 5 in.	4.67
	1800 ft. x 5 1/2 in.	6.37
	2400 ft. x 7 in.	7.81
	450 ft. x 3 in.	2.79
	900 ft. x 4 in.	4.19
	1200 ft. x 4 1/2 in.	5.85
	1800 ft. x 5 in.	7.23
	2400 ft. x 5 1/2 in.	8.63
	3600 ft. x 7 in.	13.31

TRANSISTORS AND DIODES

AC107	\$1.90	2N269	\$1.40
AC125	85c	2N270	\$1.24
AC126	85c	2N279	\$1.16
AC127	96c	2N280	\$1.54
AC127/128	\$1.86	2N281	\$1.25
AC127/132	\$1.81	2N301	\$1.99
AC128	90c	*2N301	\$2.25
2-AC128	\$1.81	2N301A	\$3.30
AC132	85c	2N370	\$1.84
2-AC132	\$1.72	2N371	\$1.84
AC172	\$1.00	2N372	\$1.34
AD139	\$2.10	2N373	\$1.43
2-AD139	\$4.21	2N374	\$1.43
AD149	\$2.22	2N406	84c
*AD149	\$2.25	2N408	84c
2-AD149	\$4.41	3N410	85c
*2-AD149	\$4.50	2N412	85c
AF102	\$2.00	2N591	90c
AF114N	90c	2N647	96c
AF115N	80c	2N649	90c
AF116N	85c	2N1010	\$1.40
AF116NS	85c	2N1637	85c
AF117N	85c	2N1638	85c
AF118	\$2.10	2N1639	85c
AF178	\$2.00	2N2613	96c
AS128	90c	2N2614	\$1.00
BC107	\$1.00	AA119	30c
BC108	90c	2-AA119	60c
BC109	\$1.30	AS25	60c
BF115	90c	BA100	44c
OC26	\$2.55	BA102	\$1.22
2-OC26	\$5.10	BA114	59c
OC30	\$4.00	BA122	30c
2-OC30	\$8.00	BY100	\$1.50
OC44N	89c	OA90	28c
AC45N	89c	OA91	29c
OC57	\$2.22	OA95	33c
OC58	\$2.22	OA210	85c
OC59	\$2.34	OA605	55c
OC60	\$2.40	OA610	61c
OC65	\$2.43	OA620	65c
OC66	\$1.43	OA630	80c
OC70	\$1.16	OA650	\$1.05
OC71N	\$1.24	OA660	\$1.22
OC72	\$1.25	OA670	\$1.40
2-OC72	\$2.50	OA675	60c
OC74N	85c	OA675	50c
2-OC74N	\$1.71	1N37A	28c
OC75N	\$1.24	1N617	29c
OC79	\$1.40	1N618	33c
OC169	\$1.83	1N3193	85c
OC170	\$1.83	1N3194	85c
OC171	\$1.90	1N3195	\$1.22
OC975N	\$1.71	1N3196	\$1.50
2N217	88c	1N3253	72c
2N217S	88c	1N3254	90c
2N218	90c	1N3255	\$1.25
2N219	90c	1N3256	\$1.55
2N220	90c	1N3563	\$1.71
2N247	\$2.50		

* Supplied with mounting material.

TELEPHONE TYPE PLUGS AND JACKS

Plug—shielded cover nickel plated C20-1	72c
Plug insulated phenolic cover C20-3	60c
Plug—shielded cover chrome plated C20-5	50c
Plug insulated phenolic cover C20-6	52c
Plug—bras. P.M.G. type bk'lite cover No. 150	71c
Jack sockets for above 1/2 in. mtg. bush C20-2	32c
Jack sockets for above 3/8 in. mtg. bush C20-4	32c
Plug—miniature telephone type C30-1	38c
Plug—miniature telephone type BULGIN P519	50c
Plug—miniature telephone BULGIN P529	70c
Jack socket suit C30-1, P519, P529 J30	54c
Plug compact insulated cover BULGIN P36	54c
Plug—shielded side entry BULGIN P536	86c
Plug—shielded P.M.G. type BULGIN P538	77c

PLEASE INCLUDE FREIGHT WITH ORDERS

TARQUIN TRANSISTOR SPEAKERS

Model	In Sizes 2 1/4 and 2 1/2 inch		Power Cap.	Gauss	Price
	Diam. inch	Imped. Ohm			
TR1	2 1/4	8	0.1w.	6500	\$2.00
TR2	2 1/4	15	0.1w.	6500	\$2.00
TR3	2 1/4	40	0.1w.	6500	\$2.50
TR4	2 1/4	40	0.1w.	6500	\$2.72
TR5	2 1/2	8	0.3w.	7000	\$2.25
TR6	2 1/2	15	0.3w.	7000	\$2.25
TR7	2 1/2	40	0.3w.	7000	\$2.75

(* with 6 BA tapped magnet housing)

ROLA SPEAKERS

Selected range for Communications Receivers, Inter-Com. Systems, Transceivers, etc.

Type 3CQ, 500mw., 3 in. square, voice coil Z: 3.5, 8, 15, 27, 47 ohms	\$3.23
Type 4CQ, 3 1/2w., 4 in. square, voice coil Z: 3.5, 15, 27 ohms	\$3.35
Type 5CQ, 3 1/2w., 5 in. round, voice coil Z: 3.5, 15, 27 ohms	\$3.52
Type 6H, 6w., 6 in. round, voice coil Z: 15 ohms	\$4.10
Type 6M, 7w., 6 in. round, voice coil Z: 15 ohms	\$5.38
Type 8H, 6w., 8 in. round, voice coil Z: 15 ohms	\$4.70
Type 8M, 10w., 8 in. round, voice coil Z: 15 ohms	\$5.86

Full range of ROLA SPEAKERS available from 2 inch and oval styles to 12 inch high fidelity types.

Speaker Transformers to suit all Speakers. Type "C" (10w.) \$1.60; Type "D" (7w.) \$2.27 Type "E" (5w.) \$1.73.

Wharfedale, Goodmans and other imported and local High Fidelity Speakers supplied to order. Prices on application.



VALVE SOCKETS

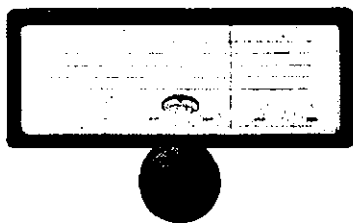
TELETRON
BAKELITE
MOULDED
AND
MICA
MOULDED
VALVE
SOCKETS
SKIRTED
AND
UNSKIRTED

ST27G 7-pin unskirted bakelite	10 cents
ST27L 7-pin unskirted mica	13 cents
ST29G 9-pin unskirted bakelite	11 cents
ST29L 9-pin unskirted mica	15 cents
ST47G 7-pin skirted bakelite	28 cents
ST47L 7-pin skirted mica	31 cents
ST49G 9-pin skirted bakelite	31 cents
ST49L 9-pin skirted mica	36 cents
ST48G octal moulded bakelite	10 cents
ST48L octal mica filled	16 cents

CANS FOR SKIRTED SOCKETS

1-9 1/16 inch Can Length—	
CS7/1 for 7-pin	15 cents
CS9/1 for 9-pin	22 cents
1-15 1/16 inch Can Length—	
CS7/2 for 7-pin	16 cents
2 inch Can Length—	
CS9/2 for 9-pin	22 cents
3-3 8 inch Can Length—	
CS7/3 for 7-pin	19 cents
2-3/8 inch Can Length—	
CS9/3 for 9-pin	22 cents
Ceramic 7-pin Skirted Sockets	30 cents
Ceramic 9-pin Skirted Sockets	35 cents
Ceramic Octal, 4-pin, 5-pin, 6-pin standard Valve Sockets	\$1.10 ea.

INSTRUMENT DIALS

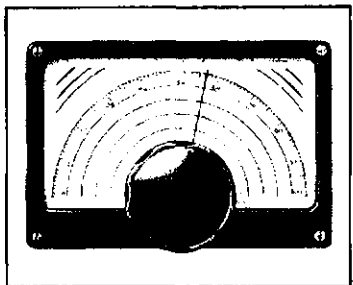


Cat. No. 898

GEARED SLOW-MOTION DRIVE ASSEMBLY

A high grade assembly designed for instrument applications. The movement is gear-driven and fly-wheel loaded, giving a smooth, positive drive, with a reduction ratio of 110 to 1. The pointer has a horizontal travel of 7 inches. A circular vernier scale, marked over 100 divisions, rotates five times for one traverse of the pointer, and, read with the "100" scale on the dial, provides a total of 500 divisions.

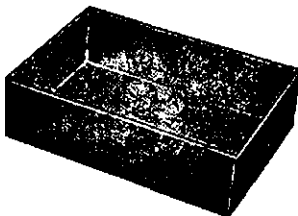
Price \$21.75



Cat. No. 598

FULL VISION DIAL

The epicyclic, ball-bearing drive mechanism is of improved design and has a reduction ratio of approximately 10 to 1. The movement is smooth and free from backlash. The dial escutcheon measures 6 in. long by 4 1/2 in. wide plus a 3/64 in. lip. The scale is marked 0-100 over 180 deg. and is 5 in. across. A large fluted instrument knob is fitted. Ripple black finish. Ideal for s.e.b. equipment. Price \$8.18.



ALUMINIUM CHASSIS

17 inch x 12 inch x 3 inch	\$2.75
17 .. x 10 .. x 3 ..	\$2.57
17 .. x 8 .. x 3 ..	\$2.35
13 .. x 10 .. x 2 1/2 ..	\$1.95
13 .. x 7 .. x 2 1/2 ..	\$1.70
11 .. x 8 .. x 2 ..	\$1.60
10 .. x 6 .. x 2 ..	\$1.35
8 .. x 5 .. x 2 ..	\$0.98
6 .. x 4 .. x 2 ..	\$0.90
5 .. x 3 .. x 2 ..	\$0.82

WAFER SWITCHES

Series 20—Earth Return.		
Type 20.	1 pole 2 pos.	56c
Type 24.	1 pole 3 pos.	65c
Series 20—Insulated Return		
Type 22.	2 pole 2 pos.	74c
Type 22.	2 pole 2 pos (spring return)	\$1.10
Type 23.	1 pole 2 pos.	65c
Type 26.	3 pole 2 pos.	84c
Type 27.	1 pole 3 pos.	74c
Type 28.	2 pole 3 pos.	81c

WAFER TYPE "H"

1 Pole 11 Position—	1 section	\$1.15
	3 section	1.96
1 Pole 12 Position—	1 section	1.70
	2 section	2.57
	3 section	3.47
2 Pole 4 Position—	1 section	1.10
	2 section	1.89
	3 section	2.66
2 Pole 5 Position—	1 section	1.10
	2 section	1.89
	3 section	2.66
2 Pole 6 Position—	1 section	1.60
	2 section	2.58
	3 section	3.47
3 Pole 3 Position—	1 section	1.10
	2 section	1.89
	3 section	2.66
3 Pole 4 Position—	1 section	1.60
	2 section	2.57
	3 section	3.47
4 Pole 2 Position—	1 section	1.10
	2 section	1.89
	3 section	2.66
4 Pole 3 Position—	1 section	1.60
	2 section	2.58
	3 section	3.47
6 Pole 2 Position—	1 section	1.60
	2 section	2.58
	3 section	3.47

(Spindle 2 1/2 in from Bush Face—1/2 in. spacing between sections.)

MODULATION TRANSFORMERS

BRITISH "WODEN"

Type No.	Audio Watts	R.F. Watts	In. Current	Max. Sec. mA.	Price
UM0	10	20	80	m.A.	\$13.50
UM1	30	60	120	m.A.	\$19.98
UM2	60	120	200	m.A.	\$27.68
UM3	120	240	250	m.A.	\$29.70

NEON LAMPS

GE Type NE51 M.B.C.	110v. neon lamps,	
1/4 watt		39c
GE Type NE2 Pig-tail	110v. neon lamps,	
1/4 watt		25c

RESISTORS

Cracked Carbon Resistors, 5%, 1/2w.	10c
Cracked Carbon Resistors, 5%, 1w.	12c

MAINS TOGGLE SWITCHES

German knife-blade type, self-wiping contact toggle switches:

Type APR—	
1016C single pole changeover	47c
1019C as above with centre "off"	50c
1011C single pole "on-off"	40c
507 two pole "on-off"	69c
509 two pole changeover end contacts	70c
519 two pole changeover rear contacts	75c
559 four pole changeover	\$2.58
649 2 two pole changeover centre off	\$1.08

PUSH BUTTON PANEL SWITCHES

Type APR—	
1212C push to break return "on"	60c
1213C push to make return "off"	60c
1316 single pole changeover	\$1.80

PLEASE INCLUDE FREIGHT WITH ORDERS

Some Observations on Amateur Radio in Britain and Canada in Comparison with Australia

DAVID WARDLAW,* VK3ADW (also G3RYW and VE3CAY)

OVERTONE OPERATION OF QUARTZ CRYSTALS

(Continued from Page 5)

ond factor is the greater attention paid to the surface of the quartz discs. Extra lapping is usually carried out with finer abrasive powders to get the two main surfaces of the disc as flat as possible. In the case of fifth overtones even more lapping is carried out on the disc and in the final stage abrasives similar to jewellers' rouge are used. This polishes the quartz to such an extent that it becomes transparent not merely translucent as in the case of third overtones.

The accompanying photograph illustrates this point and also shows how the quartz plate is held between two springs. The "keyhole" shaped electrodes are evaporated onto the quartz in a vacuum chamber, one on each side of the disc with the tails in opposite directions. These plated electrodes take the place of the metal electrode plates in the old FT243 and DC11 style crystals. At frequencies removed from the pole-zeros the crystal looks like a small parallel plate capacitor—4 to 7 pF. in practice—with a quartz dielectric. This makes up the main part of the C. discussed earlier.

The third and final important difference between overtone and fundamental crystals is the material used for the electrode. The general shape and method of mounting is the same in both cases, but third overtones are usually silver plated and fifths are sometimes silver and sometimes aluminium plated. In this country and the U.K. fundamentals are usually gold plated (pure gold too). Some American fundamental crystals may be silver plated from a cost angle. Silver and aluminium are used because of their lower density, but have the disadvantage of tarnishing when exposed to the atmosphere.

There are other differences which will vary from one manufacturer to another and a discussion of these is beyond the scope of this article. Nevertheless it should be quite clear now that there are substantial differences between crystals designed for fundamental and overtone operation and that the Amateur should make up his mind what type he wants to use. The only things he will achieve by trying to get first class performance from rocks not designed for the job is grey hair and stomach ulcers.

To assist the Amateur in making up his mind, Part Two of this article will discuss practical limits on frequency and activity for the various types of crystals, circuit to use and not to use, and a simple method of measuring activity.

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3. "Quartz Crystals as Oscillators and Resonators," by D. Fairweather and R. C. Richards. (Marconi Review Publication.)
4. "Guide to the Specification and use of Quartz Oscillator Crystals," by Radio Communication and Electronic Engineering Association, London.
N.B.—References 3 and 4 are now out of print, but good technical libraries should have copies available.

FIRSTLY let's look at licensing. In Britain the main licence is the Amateur (Sound) Licence A which allows all normal operating privileges, however, for mobile operation a special mobile licence must be obtained. There is also a special licence for television transmissions. In 1964 a v.h.f. telephony class of licence was introduced, allowing operation on the 430 Mcs. band and up. The licence fee is \$5 Australian.

Unless there are exceptional circumstances no call sign is re-issued. The earliest G call signs issued being the G2 followed by two letters. All the post-war licences are in the series G3 followed by three letters for Amateur (Sound) Licence A, G6 followed by three letters for television, and G8 followed by three letters for v.h.f. telephony. Stations operating under the reciprocal licensing agreement use G5 followed by three letters then their own foreign call sign. This does not apply to Australians who, because they are British subjects, can take out a normal station licence.

If you move from one country to another in the British Isles, only the prefix letters change. For example, if G3XYZ goes to live in Scotland he becomes GM3XYZ. There is no duplication of call signs within the British Isles. The GB prefix is used for special activities stations such as exhibitions, v.h.f. beacons, etc.

In Canada the operating privileges available depend on the certificate held by the licensee. The initial certificate, the Amateur Operator's Certificate, allows c.w. only on the high frequency bands with telephony above 50 Mc. After a period of twelve months telephony operation is permitted on the 28 Mcs. band. The advanced Amateur Operator's Certificate requires a further examination after the initial twelve months' operation as an Amateur, the holder being allowed full privileges on all bands. As in the U.S.A., Canada has compulsory telephony sub-bands; fortunately they extend below the U.S. telephony sub-bands. The power limit in Canada is 750 watts input to the final. The licence costs just over \$2A. and is administered by the Department of Transport and not the Post Office as in Britain and Australia.

In Britain wide use is made of the 160 metre band. Unlike Australia, the atmospheric noise on the band is low, and the distances required are not great. This band is shared with trawlers known as fish phone.

The 80 metre band is good for European contacts and also into North America. 40 is just as full of spurious signals as it is here. European short skip can cause bedlam on 20 and accounts for VK signals often not being heard by the G's.

There is quite a lot of v.h.f. activity and although there is no 50 Mc. allocation there is a band 600 Kc. wide at 70 Mc.

In Canada the use of the bands is much more like in Australia. U.S. commercial equipment is readily available in Canada but the price is about 20% up because of import duties. The Sweepstakes—a domestic contest very similar to the R.D. Contest—is very popular, having separate weekends for phone and c.w.

The district radio club plays a large part in the life of the average British Amateur. There is a degree of competition between clubs which is fostered by several contests between representative club stations on the 160 metre band (c.w. only).

The main contest of the year in Britain is the National Field Day in which most clubs enter a team. Each entrant is allowed two stations which divide the h.f. bands, taking three each. Not all clubs divide the bands the same way and during the contest this makes estimating the position of rivals a little more difficult. Some of the smaller clubs only enter one station (three bands only). These stations compete for a minor award. There are also awards for the top scoring station on each band. This is a c.w. only contest.

In North America the Field Day is also very popular. All modes are allowed and one transmitter can be used on each band if the club can muster enough, as the telephony sub-bands count as separate bands for the contest. The results are grouped by the number of transmitters used.

In conclusion I would like to say that the travelling Amateur can be certain of getting a great welcome wherever he goes.

Dr. DAVID WARDLAW, VK3ADW

David was first licensed in 1948. He became Victorian Division Federal Councillor in 1955 and held this position until 1958, when he was elected President of the Victorian Division. He relinquished this post in 1962 as he was going overseas for further study. He was in Canada and Great Britain during 1963, 1964 and 1965. In Canada he operated as VE3CAY, and as G3RYW in Britain. On his return he was immediately appointed to Federal Executive, and now maintains a close liaison with overseas societies, especially the R.S.G.B., with whom he was closely associated during his stay in that country. David is a keen operator, and can always be relied on to participate in the N.F.D.

* 21 Tormey St., North Balwyn, E.9, Vic.

WHAT IS AN AMATEUR?

ALF SEEDSMAN,* VK3IE

A GOOD dictionary will tell you that the word is related to the Latin word "amo," which means—I love.

An Amateur is a friendly person who does things for love—someone who is interested in doing things for a purpose other than personal gain.

For some reason he is regarded by many as a second-rate exponent of art or science, who can be satisfied with the mediocre, because his livelihood does not depend on it.

His results need not possess sales appeal, and his services cannot be commanded by financial pressure.

True, his resources may be limited and certain lines of enquiry may be denied to him; but necessity and invention are closely related. Many simplified techniques have been developed by Amateurs because "classical" methods are too expensive.

The field of electronics is a happy hunting ground. The art of communication is vital to all members of the human race from the cradle to the grave. In its electronic form it is one of the arts, like painting and real music, which can be enjoyed from early youth to old age, by rich or poor. Self-taught people in all arts often excel, and produce results which may stir the envy of some "conventionals" who have "studied" the art seriously, for a livelihood.

The joy of achievement is the chief coin in which an Amateur can be paid. Once he starts thinking—"This is good. It works, and it only cost 'x' dollars. If I make a hundred of these I'll make a fortune"—he is no longer an Amateur. His love of the art is unfaithful. He is more in love with the money. You say this is pointless. If he discovers something, why shouldn't he cash in on it? Very well, let him turn professional. Tennis players do it. They go on playing mighty good tennis thereafter; but not for the Davis Cup. Our limited bands are for Amateurs.

Listening on some Amateur frequencies recently has sounded to me like a session of sales-talks on the virtues of certain brands of ready-made "Amateur" equipment. Are we slipping? I can remember (years ago certainly) when to mention on the air even the brand of valve you were using was just not done.

The other night I gave a wry smile when I heard a loud-mouthed gentleman on twenty say—condescendingly—"Congratulations, O.M., on the sig. your little rig is putting out. My rig is a . . . which, of course, is a more sophisticated version of yours plus a . . . final feeding a . . . beam. It gives me the extra couple of S points which made all the difference in the . . . contest. You've got to have it these days to be in the race."

Now just exactly what is this race? Is it an Amateur event or a professional handicap? A sporting rivalry or a comparison of bank balances?

I do not use c.w. very often now, but I can see that these c.w. boys have something that is in danger of being lost by other modes. They are artists—some of them, anyway. They take pride in communicating with the minimum of complications. Modulation for them is always 100%, key down to key up. Four tubes are any amount for a transmitter. Brevity is a built-in necessity, or they won't find many who will work with them. There are fewer c.w. snobs than other types, and comparatively few exhibitionists. Their art is the ability to exchange ideas with a distant person by turning a switch on and off according to a recognised pattern of timing. It is behaviour to mutually accepted rules—true civilisation—controlled self-expression. Only occasionally do you hear the "rare one" obliterated during transmission, and rarely is the "but-ter-in" successful in pushing in, ahead of the queue, when the "rare one" changes over to receive the other station of an established QSO. Good "dog-piles" are fine, however, at the proper time, and good fun.

Good behaviour apparently is more difficult for other modes of transmission. For instance, teletypists have not endeared themselves with the rest of the Amateur fraternity by their methods of "clearing a channel," and then holding it by sending "dits." One finds the same type of manner in a piggery at feeding time.

Pushing in on a phone QSO, without being invited to join in, is not uncommon. The old idea of waiting till the formalities at the end of an over are being observed, and then giving your call sign once with the words "on frequency" or "waiting," is preferable to "doubling" during the course of the "over," without invitation. It is also less likely to result in the other stations moving to another frequency to avoid the QRM.

It adds up to this, in my opinion. If you want people to communicate with you, you must make it worth their trouble. You must constantly keep in mind what is happening at the other end.

ALF SEEDSMAN, VK3IE

Alf is by occupation a civil engineer with the Victorian Railways. Aged 62, he claims the "vital statistics" of 36, 40, 40. He lists 80 mx, 40 mx, 20 mx, s.s.b., d.s.b., a.m. and c.w. as his order of preference. He is very interested in Antarctica, but has never been there. Other DX from the back fence onward is welcome. All Alf's gear is home-brew. He was an early post-war worker on v.h.f., but this side of activities is now left to his son Donald who holds the call VK3ZIE.

The subject that may be interesting to you in great detail, may be just plain boring to the other man. He may not want to hear that you possess an XP326 into a PK517 feeding a QP24 two hundred feet high. He may not own a Cadillac, yet he may be able to go places you haven't heard of, and have a wealth of knowledge you might find interesting. He could be a boy operating his first contact—very nervous, but getting a marvellous kick out of it. He could be a man on the ice in Antarctica—just a little bit homesick, or a man on a yacht in the Tasman—just a little bit seasick.

Whoever he is he has feelings, opinions, problems technical and private, as well as the same desire to communicate, which brought you into your shack and caused you to turn on that switch.

That is, assuming you are really an Amateur.

If you feel the need for doing a little advertising of some product you are interested in, keep your fingers off that switch. If you touch it for that purpose, I hope it bites you, and that your feet are wet.

— . . . —

AVOID BECOMING A ROBOT

Most of you are Radio Amateurs—devoted to Amateuism—a term which has many explanations. An excellent statement on this statement—one which really highlights the unselfish view—was published more than ten years ago in a French Amateur Radio magazine. The comments made are no less applicable now than they were then.

The permanent secretary of the Academie des Sciences has affirmed that "The Amateur is a fundamental and indispensable role in all activities." From our point of view in Radio, electronic theory has no meaning unless applied electronics follows. The experiments tried and the experiences considered exist only with the view of immediate application. The results obtained ought, in effect, to be put at the service of humanity as soon as possible.

Whether he be aware of it or not, the individual lives by means of a continual exchange of services with this large family of humanity. If he attempts to isolate himself, he nevertheless profits from the work of others, without giving anything in exchange; he becomes a parasite.

The spectacular aid that the OM performs, sometimes in case of emergency, should not make us forget his permanent and modest utility. This resides in all of his activities, to the extent that he makes them known. One does not expect a flood of brilliant results of him, but rather the gentle stream of news which comes from his patient daily experience. It is in this manner that techniques are perfected and the frontiers of the unknown are slowly pushed back. It is pure egotism to hide in one's station and never communicate one's ideas, schemes, contacts or trials of things. It is also to deprive one's health of the light of that friendly co-operation which makes Amateuism so charming. Thus, your work, experiments and research should be made public at meetings, expositions and at national and international conferences. It is necessary to know the results obtained, even if they are not brilliant. Another OM will know, perhaps, how to use them in a better manner. Do not be too personally occupied and look at the results objectively.

Whether you like the lower frequencies or u.h.f./v.h.f., remote control, antennae; whether you be young or not-so-young and more or less a slave of routine; avoid becoming a robot. Think, work, and make your efforts known. It is only under these conditions that Amateuism will develop.

—L. Aubrey, F8TM.

(Source: Radio R.E.F., August-September, 1956.)

* 49 Cookson St., Camberwell, E.6, Vic.

SIDEBAND

Sub-Editor: PHIL WILLIAMS, VK6NN

GROUNDING GRID INPUT CIRCUITS

To most people the "grounded grid" amplifier is a gloriously simple affair in which the grid, if a triode, or grids, if a pentode or tetrode, are solidly earthed to the chassis, and the drive applied to the heater or cathode through a large capacitor. Bias supplies, screen supplies and that horrible grid tuning may be done away with, but you need plenty of h.t.—so they say—and all your driving power, well almost all, appears as output. Neutralisation, too, can be forgotten.

Speaking as one who has been through the stage at which "grounded grid" appeared to be the answer, but was found wanting—I now pass on all the pitfalls, difficulties and necessary refinements which must be considered when this type of amplifier input circuit is used.

CHOICE OF TUBES

It is very important to choose the right tubes for your grounded grid stage. From the r.f. gain point of view the high slope triodes are good, but the actual construction of the tube should be carefully observed. A zero-bias tube type is a help in eliminating the bias supply.

The simple triode is the simplest tube to use as its grid is usually robust and is designed to take grid current. From the screening point of view, those tubes whose grids are connected to a screening disc between the plate and the cathode are a good choice, as you will find when we come to use the 10 metre band in a year or two. This disc is then brought out of the envelope through about three separate leads through the glass so that a good r.f. ground, having low inductance, is possible.

The Eimac 3-400Z triode is very good from this aspect. It has been designed for this application, and, in addition, requires no grid bias supplies as the quiescent plate current drawn at recommended plate voltage is such as not to exceed the rated plate dissipation.

The popular 811-A tubes used in parallel combinations—two, three or four together—have the desirable features such as high peak emission, low plate-to-cathode capacitance, and zero-bias operation, but the long, single-wire, internal grid lead, which does not provide adequate shielding of the heater leads, necessitates neutralisation at the higher operating frequencies. The grid lead inductance does not permit the effective grounding of the grid. A feedback winding on the heater choke (bifilar choke to supply the heater current) and a neutralising condenser of the usual disc type are nec-

essary and the design of this is "cut and try" on the 10 metre band, as such things are not amenable to calculation.

Some of the continental triodes in the TB series are suitable for grounded grid operation, but stiff bias supplies are usually required. In these days of zener diodes and shunt regulated transistor bias supplies, this is not a difficult problem. The shunt regulated supply should have a standing drain sufficient to back off any change in voltage on the grid, due to the flow of grid current back through the shunt.

Small by-pass capacitors must be used at the tube socket for r.f. grounding of the grid, but any other capacitors on the bias supply should be very carefully chosen, so that grid current will not build up the bias voltage on a condenser. I have heard "linears" on the air suffering badly from this effect and any attempts to explain it usually are not understood.

Many handbook type bias supplies, designed for modulators and class C amplifiers, will not regulate effectively with the reverse current from a linear (r.f.) amplifier. I have frequently had to double the bleed current in the bias supply potentiometer to improve regulation.

CATHODE TUNING AND MATCHING CIRCUITS

In Fig. 1 is shown the recommended method of feeding the cathode input amplifier. The usual method of supplying heater current to the amplifier valves is through a bifilar-wound coil on a half inch diam. ferrite rod about 5" long. In the case of, for example, four 811-As in parallel, the heater supply is 16 amps. at 6.3 volts. The copper necessary to carry this is a winding of double 14 s.w.g. for each

lead and even this will get a little warm, so a two-layer coil with two parallel conductors in each layer is used.

Since most cathode input impedances are in excess of 50 ohms and the exciter output is usually 50 ohm cable, it is necessary to use either a pi-network or tapped coil, low Q matching circuit, as shown. A Q of about 2, i.e. low enough to not require re-tuning throughout a band, is usually employed. To achieve this C1 should be between 12 and 20 pF. per metre, then for two or more valves in parallel the higher value is usually chosen to be about 400 pF. on 20 metres.

The tuned circuit, apart from providing a means of matching, eliminates asymmetrical loading on the exciter which, without its "fly-wheel" effect, would result in distortion in the amplifier. This effect is discussed in an article first published in "QST" (August 1961) by Messrs. Orr, Rinando and Sutherland, who are W6SAI, W6KEV and W6UOV, respectively, all from Eimac's. It has been included in the A.R.R.L. "Single Sideband for the Radio Amateur," fourth edition, 1965.

The pi-network in Fig. 1 usually has C1 fixed at the desired value and matching is then carried out by varying C2 and L1. These matching circuits may be fixed for each band and switched. Adjustment is carried out at a fairly high level of excitation, with the reflected wave adjusted to minimum on the bridge. If the tapped tuned circuit is used the same procedure is adopted. The matching will not be perfect throughout the full range of drive, but is most important at high levels of output from the exciter, particularly those having fixed output impedance, i.e. no variable loading capacitor.

Some variation in the tapped tuned circuit coil circuit may be made by winding it with a piece of Pyrotex mineral insulated cable with a single inner conductor. This may be used to carry the heater supply, thereby eliminating RFC1, the filament choke. This is possible, but construction of a coil from this cable is quite a difficult job and results in a bulky switched grid circuit. Fixing the taps to a coil made

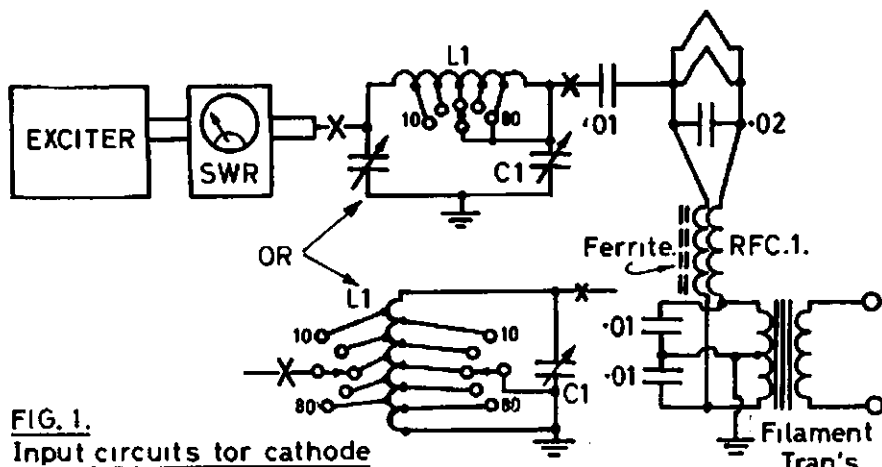


FIG. 1.
Input circuits for cathode driven amplifiers.

of 3/16" o.d. cable, so that it can be bandswitched, is quite a job, I assure you.

VARIATIONS ON CATHODE DRIVE

With multigrid valves it is possible to ground all grids and drive the cathode as stated above, but you can get a shock when you check the grid current. I can remember stopping short in the middle of a sentence on seeing a grid current meter reading 300 mA. at relatively low drive. Putting the normal supply voltage back on the screen and bias on the grid, reduces grid current in a remarkable way, but if, as shown in Fig. 2, the grid is tapped up C1, less drive is applied to the grid and more to the screen.

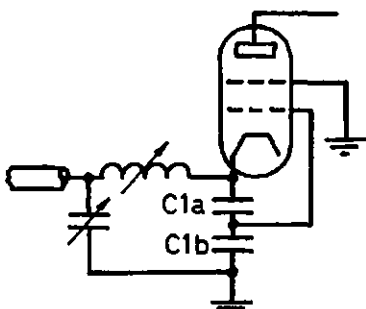


FIG. 2. Super cathode driven tetrode amplifier. (D.C. circuits not shown.)

The advantage of the super-cathode drive is that it can feed through a large amount of drive power if plenty is available, since the drive to the cathode is greater. Input matching is still required, as the input impedance is higher than usual. With some of the larger tetrodes such as the 4-125A and 4-250A, some improvement in linearity is achieved with super-cathode drive. Operation with equal grid and screen currents appears to be common and results in reasonable distribution of the power dissipated by the grids.

The semi-cathode drive shown in Fig. 3 is useful to know about when the exciter is too small to provide the drive required for full grounded-grid operation. But we never seem to get something for nothing, for we are now faced with a complex input circuit,

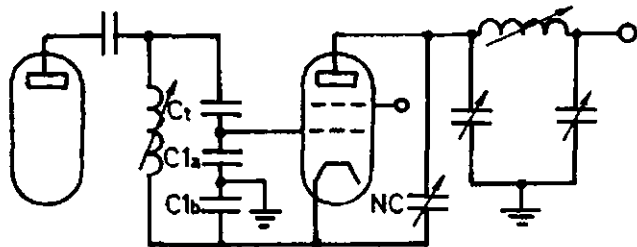


FIG. 3. Semi-cathode driven tetrode amplifier. (D.C. circuits not shown.)

together with the possibility of having to neutralise the stage. With equal drive to cathode and grid (in opposite phase) the driving power fed through is reduced to about half.

A word is in order about the 4X150A and 4CX250B tubes and others similar. It is advisable to operate these in the super-cathode-drive mode to reduce the grid current at full drive, otherwise damage may result. Some d.c. voltage on the screen may be used for the same purpose. About half of the screen voltage for class AB operation is usual.

The operation of some of the big, old tubes like 803s, 810s is quite possible, but you should realise that quite a lot of drive voltage is needed and quite a high plate voltage is needed to obtain reasonable output. However, as soon as we calculate the plate load impedance for operation at 2000 volts or more, the minimum plate capacitance of tube plus strays starts to limit the upper frequency. To work above about 15 Mc. we have to lower the plate volts or use a very high Q (loaded) circuit in the plate, with loss of power gain at low voltage or coil heating at higher Q. Again, a compromise is necessary. The choice is yours.

The 813 will get you to 30 Mc.—but use a tuned input circuit, or your signal will "spread".

73 for now, Phil VK5NN.

ODE TO A MODE

In days of old when Hams were bold and Sideband not invented, Words were passed by pounding Brass and all were quite contented. (With apologies to Wm. Shakespeare—or was it PanSy?)
—From "R.S.G.B. Bulletin," October 1966.

W.I.A.—ITS ADMINISTRATION

(Continued from Page 14)

So let us, by our efficient organisation and tolerance of the other person's point of view; by our respect for the decision of the majority and our appreciation of what the Institute represents in the world of Amateur Radio, seek to attract such men, for the aim of all licensed Amateurs should be directed to the major problem—of ensuring that the world's greatest hobby is protected and maintained for all time.

Publications Committee Reports

As at the time of writing the Committee has not had a February meeting, and therefore there is no report available to cover general business.

During the last month correspondence has been received from VKs 5XK, 5ZMG, 6E1, 7LL, H. H. Walker, Canberra Radio Society, T. Mayne, Warwick Johnston, "73 Magazine," and F. Gauld. Technical articles have been received from VKs 2TQ, 2AHI, 2AOU, 2ZDI, 3ZRY and 3ZOM.

We are prepared to consider publishing letters addressed to the Editor without disclosing the name of the writer, but unless the writer is prepared to disclose his name to the Committee such letters cannot be accepted as having been written in good faith. Any person wishing to have letters published under a "nom de plume" should send such mail with a covering letter explaining they do not wish to have their own name published.

The February issue was late due to the long holiday period and the fact that we could not arrange the preparation of the issue before the Xmas break due to the work involved in publishing the Call Book.

This present issue is a special in so far as the major portion of the material has been provided by members of Federal Executive. Our thanks go to these gentlemen for their ready co-operation with this project, and for the rapidly with which they each prepared their article, especially as they were given only a matter of two or three weeks in which to do it. We trust that members of the Institute will gain a clearer picture of the members of F.E. and an understanding of some of the problems in their work. At the same time members can see for themselves that despite the amount of time they devote to institute affairs, they manage to spend some time at their hobby.

SUBSCRIPTIONS DUE

All members of the W.I.A. are reminded that annual subscriptions are now due and should be paid promptly to their Divisional Secretary. Non financial members will not receive a copy of "A.R.," and back copies may not be available upon request. To preserve continuity of your files of "A.R.," please pay your annual subscription now.

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SWL

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

My comment in the last S.w.l. notes in reference to the lack of VK2 notes has brought a prompt answer from former sub-editor, Charles Abernethy, in his capacity as publicity officer for the VK2 S.w.l. group, but he cannot pass to me that which is not passed to him, so chaps, when you appoint a publicity officer (and I assure you it won't be Charles) this year, make sure that he is aware that this page in "A.R." is open for his reports. QTH for letters is at the top of this page, and I can be reached at Penrith 2-0660 during working days.

OVERSEAS LISTENERS

Arthur Borradaile is a master sergeant in the U.S. Air Force stationed at their base in Biloxi, Miss. Art has just returned to W5 after a 2½-year stay in DL, this being preceded by 18 months on Okinawa, and several on Taiwan. His QTH is sufficiently good for an indoor antenna to perform adequately. Receivers are Grundig TR-5000 solid state, Hallcraftner S-38c, Telefunken 5486MX, and Blaupunkt Derby for portable or mobile work.

AROUND THE SHACKS

Harry Major L3102 and Mrs. Major left Melbourne in February for a trip through England and Europe. Harry has asked me to advise that his query service will be suspended until his return.

Peter Drew has finished his leave, and is now down at Balcombe in VK3. Over 50 cards were waiting him on his return to VK6, HC1MX, HV1CN, LU6ES and 6Y5MJ being new confirmations, taking him to 187 confirmed. Others of an interesting nature were ZL5AA, 9J2BA, 5Z4JD, YN1FP, Y04SI, VP1LB and UP2NM. Over the Christmas period 10 metres was open to HB, UV, OE, DL, SM, G, UB5, OD5, UA6, I, OH and OK. Fifteen also provided some good DX around 1400z.

Our prominent DX man, Frank 2QL recently contacted a W2 on 21 at 11.45 p.m. EAST, following which they QSY'd to 28, then in succession to 3.5, 7 and 14 making contact on all h.f. bands within the hour, presumably on c.w. At L2022 there is little to report in the way of DX, but did manage to log CR6IJ, 5A2TV, SV0WU, TR8AH, WB2VJD/CEOA and W0GTA/8F4 on 20 metres. Cards received included CR6EL, EA8FE, FK3AC, G3AAM, G3ID, K5EBR, 7Z3AB, OK3QN, 9Q5IG, VQ8BJ, WA7DNB, KW8BS. In December I acquired a 6 metre rx, built a power supply for same, and spent much of January searching that band. Unfortunately I had no beam, and was forced to use my long wire which runs east to west, also another running N/S. Locals were logged up to 31st December when a pile of VK4s came in, followed on new year's day by a fantastic signal from 4ZWB in Dalby, 7ZAH in Ulverstone, 5ZBR, 3UT, 2ZGX/M, an unidentified VK6 (sounded like 6LK/F), and carrier only from ZL1AKY who was in contact with 5ZBR, the latter being 5, 6/9 with much QSB.

Since writing the foregoing, QSLs have been received from Jack W2CTN for the W0GTA/8F4 operation on both 15 and 20, also KB6JZ. A further confirmation has taken Mac Hilliard to 89 confirmed with 250 countries heard. Tony Wege L5073 has just acquired a new rx. Best loggings on 20 metres were OK3, 60I, 7Q7, CR6, SV, H18, ZD3, EP3, VR6, ZKI, EL3, 5A3, with 9HI being heard on 15. Inward cards were received from VE1AFY, HS1CB, EI3C, KG6IJ, XW8CA, XW8BS, DL1MM. Whilst in VK5 we have a letter from Ernie Luff. Many listings were made on 20, among them UM8EZ, QAG, XW8, ZS1, DL, VK0CR, VP2GLA, SP, YAI1FW, OK3 and VP8. EA4JG was logged on 15. Of interest are the QSLs received: ET3AC, K4WMB, UW4HZ, W4LRN, F3KW, VE7AHX, I1RCD, DL3KC/M, Z56AIM, K8ONV, EP2BQ, VE7ZD, these being all on 20, whilst several VK5s QSL'd for both 6 and 160 metre reports. Ernie now has a score of 193/120 with an application lodged for the W.I.A. S.W.L. D.X.C.C.

It is always a pleasure to hear from our No. 1 S.w.l., Eric L3042, whose duties with QSL bureau must give him little time for listening. Using 40 metres Eric logged DL, G, F, I, LZ, OK, SP, UA1, UA0, UB, U18DA, VU2FN (Eric's first VU on 40), YO, YU and 4Z4NAB. 20 metres produced the following: CT3AS, FB8ZZ, HL8TH, IS1GF, UAIKED, VPIVR, VR4CR, YJ8BW, ZS6JK, 457EC, 5A2TV, 7X0AH, 9E3USA and 9X5MM. Inward

QSLs: EP2BQ, HK5CR, KX6DR, 606BW, KX6ER, PY1BYK/7, FY2BJH, UM8KAA, VK4DU/MM plus cards from G, DM, HA, J, OK, UB, UC, UP, UR, VE, VK, W and ZL. Statistics given by Eric are always interesting and this batch is no exception. Total scores: 299 heard, 293 confirmed. For 1966, 145 heard from 38 zones, inward QSLs: 108 countries 36z, a total of 608 cards, with 1327 reports sent out for the year. Total log entries to end of year, 307,319. Highest number of cards for the 20 years 1946 to 1966, 928 from G. 898 from Germany, 543 from UA1, 453 from W, and 356 from UA9/O.

Finally, a letter from Bob Halligan L3229. Inward cards of late were VU2RU, XW8BJ, OE3EGL, ZB2AJ, IS1SCB, ZF1GC, YS1AG, KR6MM, YK1AA, 9J2MM, giving Bob a confirmation figure of 105, from 161 heard.

Before closing this section I must congratulate the VK3 group for the job they have done in pruning the S.w.l. list in the new Call Book. How about it VK2?

TAPE RECORDING

Many S.w.l.s throughout the world use the medium of tape to make contact with each other, and some very fine friendships have resulted from its use. I personally have regular contacts with a number of I.S.W.L. members throughout the world, and I feel sure that s.w.l.s here in Australia will be interested to know that the well-known Newark News Radio Club have discussed re-forming their tape section, and if this is done members and participants will benefit greatly. Bob Fowler WB2VUY has asked me to bring this before our VK tape fans, and if any of you are interested in this proposed tape club, you can let me know, or drop a line to Bob at 155 Baldwin St., Bloomfield, New Jersey, 07003, U.S.A.

AWARDS

Among the more interesting awards we find listed is the Robin Hood award, the purpose being to commemorate the doings of Robin Hood and his merry men, who wandered the Sherwood Forest. Sponsored by the Newark Short Wave Club, Newark, Nottinghamshire, U.K., the award is available to both s.w.l.s and licensed Amateurs. There are three Robin Hoods, G3TWV, MP4TBO and ZL3QH/G3UYJ, and twelve merry men, G3s UXF, UVF, KVP, UYU, TWX, OWR, UEB, SLZ, ELJ, EVG,

OEV and DJL. To be eligible you must have QSLs from one Robin Hood, and at least five of the merry men, special stickers available for single band operation, all contacts to be since 1st January, 1966, and applications with log data and five IRCs to Award trustee, Francis G3TWV. Interesting, but not really easy.

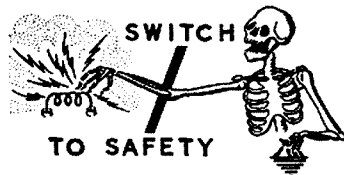
QSL LADDER

Scores to date for those with over 100 confirmed are: Eric Trebilcock 299/293, Bryan Prosser 283/243, Peter Drew 265/197, Don Grantley 303/154, Warwick Smith 214/151, Ernie Luff 193/120, Afton Westcott 159/106, Bob Halligan 161/105, Ray Kearny 170/104, Greg Earl 168/103, and a late letter from Mac Hilliard back from holidays with a card waiting from VQ8AX giving him 250/100.

Notes have been rather light this month, due to non-arrival of DX news from overseas, and the holiday period. Best of luck to all entrants in the John Moyle field day event, and good DX to you all. 73, de Don L2022.

CONTEST CALENDAR

- 4/5 March: 33rd A.R.R.L. International DX Competition (phone), 2nd week-end.
- 11/12 March: Thirtieth B.E.R.U. Contest (c.w. only).
- 18/19 March: 33rd A.R.R.L. International DX Competition (c.w.), 2nd week-end.
- 29/30 April: P.A.C.C. Contest 1967 (V.E.R.O.N.).
- 8/9 July: R.S.G.B. 108 Mcs. "Summer" Contest.



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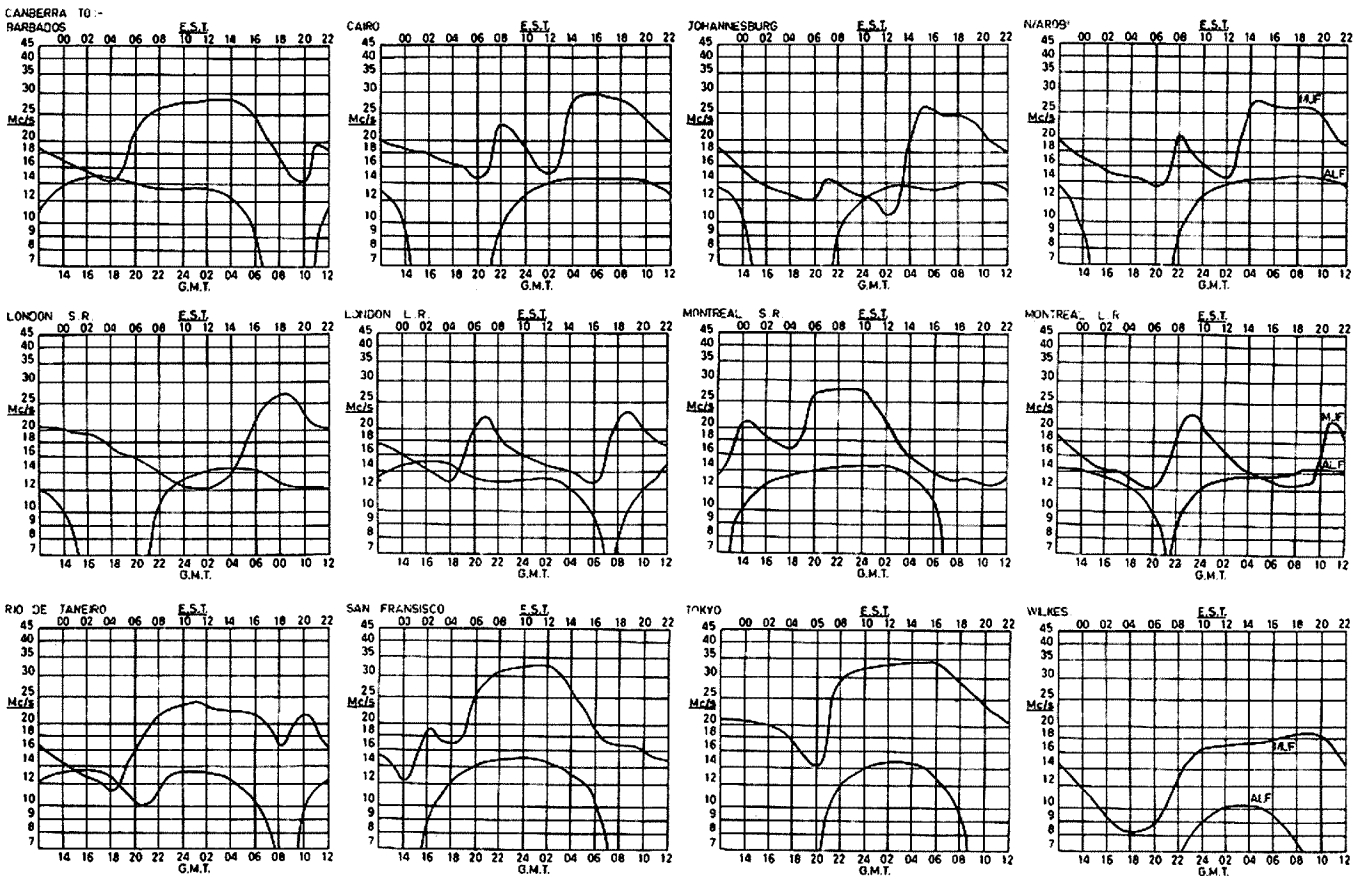
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(Prediction Charts by courtesy of Ionospheric Prediction Service)

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LOCATION : Sydney.

APPLICATIONS : To reach
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- Perth : Telephone 39-1521
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- Adelaide : Telephone 49-6123-5
- Hobart : Telephone 2-7054

DX

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

Several letters were received this month, both local and overseas, reporting openings on 10 mx. KV4CI in the Virgin Is. has been working VK/ZL around 1130z. CT3AS also says he is hearing Oceania about this time or earlier from 0700z. Some East Coast W's have noted occasional openings. Local information says that 28 Mcs. has been open to U.S.A. at times during the day and VK4DV reports QSO-ing Europeans around 0700z. The few times I have listened there has been an odd very weak signal from the States around 0000z. So there are signs of life where previously nothing stirred. The back-room boys do not paint an over-optimistic picture for this band during the next sunspot maximum during 1968, but like the boy scouts methinks it is best to be prepared and gratefully accept what the fickle goddess of h.f. communication, the Ionosphere, may care to bestow. So have you added those extra elements to your quad or yagi yet?

NOTES AND NEWS

Nauru: VK3AH/9 will be QRV from here by the time you receive this. Mode s.s.b. Lord Howe Is.: Arie VK2AVA expects to be active during May. Mode s.s.b. French Oceania: FO8BL on 14,075 0730z. QSL Box 45, Papeete, Tahiti. Easter Island: Reports still coming through that WB2VJD/CE0 is on daily 21,350 and 14,240. 2200 and 0800z. QSL K5GOT.

Tunisia: Joe 3V8AZ, 14,110 Kcs. asking QSLs be sent via W6BBE. (LIDXA) Iceland: TF2WKE each day, 20,330 s.s.b., 1500z. (LIDXA) Also TF3AU, 14,050 2000z. Afghanistan: Wolf YA5RG, 14,230, 1300z. QSL DL6ME (LIDXA). YA1FB, 14,200 1200z. New Hebrides: Bill YJ8BW says he will be on the island 2 1/2 years. Works c.w. mostly all days. Some a.m. Expects to have s.s.b. soon. Best time for him is 1700z or later. QSL via Postmaster Port Vila.

East Malaysia: Ron 9M8RS, 14,030, 1200z. Turkey: TA2AC worked here 14,030 1700z. QSL K4AMC.

Greenland: OX5BU, 14,030 2000z. Coming in strongly over North Pole. Big echo on sig. Seems very active. QTH Thule. St. Helena: ZD7IP workable here at 1930z around 14,025. Also heard weakly on 7 Mcs. occasionally at 0700z. QSL R.S.G.B.

Macquarie Is.: Rod VK0CR on every chance he gets. 14,070, 14,180 0800z and 1030z. QSL Greg Johnston, 3 Inglis St., Newtown, Hobart. Guinea: CR3KD, 14,078 and 21,225 a.m. (Fla. DX'er).

Norfolk Is.: VK2BRJ/9 will be here for two months. Mainly c.w. 7, 14, 21, 28. On every day. He is W4CHA. Is going next to Nauru if possible. QSL W4ECI Also active from Norfolk is Ray VK9RH.

Kermadecs: ZLIAI still active 14,150 a.m. but will QSO any mode on the fq. Zone 28: UA0YD, 14,001 1045z and UA0YP, 14,106 s.s.b. at 1030z. (Fla. DX'er.) West Carolines: KC6CK, 14,250 0830z. East Carolines: KC6CL, 0830z, 14,225 (Fla. DX'er.) Iran: EP2AX. QSL K4OEI, EP2BQ, P.O. Box 1065, Teheran. Both active 14 s.s.b. 1300z.

Canton Is.: KB6CZ, 14 c.w. 0700z or later. QSL K4MGQ.

Brunei: VS5BS, 14 c.w., 1200z. Qatar: Bill OD5EL reports that he is now licensed as MP4QB and plans to DXpedite here with Bob OD5BZ about two months from now. (LIDXA)

Gabon: Guy TR8AH has been fairly active on 14 Mcs. c.w., 14,030 and 14,055 at 20-2200 GMT. QSL via Box 3122, Libreville, Gabon Rep. (LIDXA)

Ivory Coast: Dave 5U7AK is on every Tues. and Fri., 14,230 at 1900 GMT, with W8JY and W8KYY acting as emcees. Fred 5U7AL has been on 14,194 at 2200 GMT, listening 14,205 and asks QSLs via Box 201 Niamey (LIDXA)

Saudi Arabia: 7Z3AB is on 14,190 at 1400 G.M.T. listening as directed, almost daily. HZ3TYQ Vic Crawford is now operating 7007 and 3505 c.w. at about 1230 daily (LIDXA)

Rio Di Oro: Justo EA9EJ continues his sporadic activity on 21,190 and 21,210 Kcs. a.m. at 1900 GMT, listening occasionally above 21,250. A knowledge of his Spanish is helpful. QSL via Box 22, Villa Cisneros, Rio De Oro. (LIDXA)

Cook Is.: Trevor ZK1AR is active most days at 0300 GMT on 14,170 a.m., and is awaiting arrival of his beam and s.s.b. rig. (LIDXA) Tchad Republic: Serge TT8AB has been on 21,355 Kcs. a.m. at 1900 GMT with excellent signals. QSL via Box 401, Ft. Lamy, Chad. (LIDXA)

Andamans: VU2DIA Hegde on 20 c.w. at 1022z, 14,025 Kcs. (ZLIHV) Gibraltar: ZB2AM Mike on 20 mx c.w., 0820z. Mike will be operating /MM in Aug./Sep., after which he will be G3JFF. When he leaves the Rock, only about one ZB2 left. (ZLIHV)

Malawi: TQ7GB, TQ7EC, both regularly on 14 c.w., 1930z, around 14,003 and 14,025 respectively.

Gambia: ZD3G will be here for 1 year. 14,200 2000z. QSL K6ENX.

Thailand: HS3NT on 21 Mcs. 1100z.

Yemen: 4W1K, 14,120 Kcs. 1900z. QSL HB9AAT.

Cote D'Ivoire: TU2AY, 21 s.s.b. QSL Box 20,194, Abidjan.

ACTIVITIES

Dud VK4MY really has been among the good ones this month. He worked on 14 s.s.b. the following: FO8BQ 14,110, VP9DC 14,124, VK9XI 14,219, ZP1GC 14,144. QSL VE4DQ, VK9RH 14,148, VP9FU 14,114, VP6WE 14,120, WB2VJD/CE0, EP3AM 14,235, XW8BS 14,222, 9M2FX 14,121, 6Y5VV 14,141, FJ2AQ, KP4BCL 14,232, VP9GK 14,125, PJ5CE 14,130, ZC4CI 14,208, VR1C 14,185, KX6FH 14,215, TQ7PB 14,118, 9Q5HF 14,118, VP5RE 14,107, VQ9EF 14,101 Seychelles, VK0CR 14,180. Also these few on c.w.: KX8ER 14,050, K8CG 14,040, FK8BI 14,010, JH1ABJ 21,057. Dud reports as active the following: VQ9AR 14,138, 6Y5MJ 14,128, VR6TC 14,170, HS4AK 14,121, VP2AA 14,140, 9Q5SH 14,235, 9U5BB 14,140, TR8AG 14,140, 9E3SA 14,046, UP6KBA 14,050, EI3BK 14,040. FO8BL 14,040, JT1AJ 14,050, HM1BW 21,051. All the above during early morning or afternoon. (Thanks, O.M. Keep up the good work.)

Henry VK8HA writes from Darwin, N.T., and says DX is improving, particularly on 14 and 21 Mcs. He lists the following as QSO'd mostly between 0700 and 1200z. 20 mx: FR7ZD, U18MF, UL7GW, UQ2HQ, UT5HP, UA3UH, FB8ZC, FB8XX, LZ1KPW, ZS5BA, CR9AH, CR7HC, 5Z4SS, DJ9GD, MP4BGH, 5R8CQ, 9J2BC, UB5XA, UC2DN, YO8FZ, OK1KDT, 9J2AB, UV3BC/M, HK7YE, HA7PJ and others. On 15 mx: EP2RV, OZ4H, SM6BDW, OH1XX, HM1BB, HPIRF, 9J2WR, UAOKZD, FO8B, HA4KYB, DJ6WQ, ZG4FS, IICUV, G5TOK, VA4ZK, FBLD, MP4EDF, OH2AA, UG4P, DL8AV, SF8X, UP2UK, ZS1C, MP4MW, U88LG, EI5F, UC2KCB, 4X4CI, GM3OLK, LH1AA, OD5EJ, VQ9AR, LZ1FF, G6X1, ZE1BO. (Thanks Henry. Please write again, old boy.)

Pete VK5PJ reports conditions on 10 and 15 mx as down on the previous month. On 28 s.s.b. he QSO'd DJ5JI, DJ6ZKA, 9M2NF, MP4BBW, 7X0AH, YO9CN, JA3ICV, DL1TV, VS6FS, UN8AE, 9M2LO. On 21 Mcs.: YA1BW, DJ9BW, G3BHW, G5FI, YA1VF, F9XQ, FR7ZB, 4X4BL, OZ3KE, G6XE, OEPFZV, G6XN, G3IWW, G3JAF, G3LB, 9M2DQ, VS6FD, KZ5NF, HS1CB, LZ1FF, VJ5L, etc. on 14 Mcs.: CT1PQ, IV1VE, VP7LD, VJ5L, etc. on 14 Mcs.: FWRRC, HR1JAF, 9Q5HO, HR1CN, XE1NE, 6Y5MJ, ZP1GC, YU5CFA, YSIDHE, CP5BK, 5Z4JV, 3C5FHD, VQ8AX, 457NE, VS9ALV, VP5AB, CE6EQ, 9J2WR, CR6CY, DU1BF, 5Z4JH, YS2BB, CP1FK, HK3AF, VE6QG, 3U7, TQ7PB, 601AU, YK1AA, 9Q5SS, 9M6MG, SW8D, US4RTEK, 9X5MW, 5U7AL, 9G1JM, GM8SV, UQ2KFG, VP7NA, HR1KAS, PJ4AC, VS5MH, XW8BD and many, many more. (Really a nice list, Peter, O.M.)

Merv VK4DV writes from north Queensland to report on conditions. 10 mx is open at times through the day at JA and EU and some prefixes have been worked. However, Merv says that 21 Mcs. has been the best with signals coming through about 0645z. Lots of EU were worked, such as G, GC, GI, GD, CT1, OH and 3C3FJZ/SU Egypt. (Thanks information O.M., please let's have some more.—Al.)

Yours truly, VK4SS, managed these on QRP on c.w. 7 Mcs.: CT3AS, GC4LI, UA3KAH, OH5UP, ZD7IP, VO1FB. On 20 mx: VK2BRJ/9 Norfolk, 9J2BC, 4Z4AG, 4Z4HQ, 9X5FS, 9X5NSA, 9X5NV, VP2GLE Grenada, VP2MR Montserrat, 3C7KZ, CT3AS, VQ9AA, TQ7EC Malawi, YJ8BW, CO2DR, VS9HRV Kuria Muria, 5A2TV, YSIDHE, 6O6BW, VQ9AR, VU2WNV Laccadives, VP1VR Br. Honduras, VS9MB Maldiv, ZD7IP St. Helena, VF6FJ Barbados.

Ken VK3TL, whose ear for DX seems as sharp as a pointed dog for game, nosed out these juicy ones. Worked on 14 Mcs. c.w./s.s.b., CR5SP Sao Thome, CR7CI, K00XV/CE0, EP5AM, H18XJG, HV3S3, I51GF, TI9JC, Cocos, TU2BA, VJ2KM St. Kitts, VF5RB, VS9HRV K.

Muria, VQ9EF, VQ9AA/C Chagos, VU2WNV Laccadives, VK2AIF/V5, YA5RG, YK1AA, 5Z4JH, 9X5PS, 9U5BB. Best QSLs received: TU2BA, CR5SP, OH0NF, CR7GF, VP1WH, 7X0AH, FY7YM, GM4FM, LX2UW, 5A3TT, 5A4TR, K1NEI(VT), WB2VJD/CE0, PJ2MI.

QTH's

By courtesy Ken VK3TL:
TU2BA—Box 172, Abidjan, Ivory Coast.
TI9JC—C/o TIJIC.
HV3S3—Box 9048, Rome.
VP2KM—Box 152, St. Kitts.
VQ9EF—Box 191, Victoria, Mahe.
YA5RG—DL6ME.
CR5SP—S.A.C. Ilha, De S. Tome.

SUMMARY

According to information received from A.R.R.L. Headquarters, "3W8D has not been approved for contact by U.S. Amateurs. Some have QSO'd this station and he maintains he is legitimate. Some are running traffic for him. Since the F.C.C. has made no mention of this station he is still on the banned list as far as we are concerned."

Ebon Atoll HC8E and Cormoran Reef are areas that are not part of the U.N. Trust Territory and as a result are under the administration of the U.S.A. As such they do not meet the criteria of separate countries and are therefore removed from the DXCC list. (By courtesy of the Fla DX'er.)

It is rumoured that when Don W9WNV returns to the U.S.A. he will put his case for the retention of the above Atoll and Reef and maybe one or two other doubtfuls. One can only hope he has the same ability in persuasiveness as he does with his operating.

My thanks to the regulars who support the column more than they imagine, VK3TL, VK4DY, VK4UC, VK4PJ also to VK4DV and VK8HA. Please more news.

73, Al VK4SS.

AMATEUR FREQUENCIES:

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W.I.A. D.X.C.C.

Listed below are the highest twelve members in each section. Position in the list is determined by the first number shown. The first number represents the participant's total countries less any credits given for deleted countries. The second number shown represents the total D.X.C.C. credits given, including deleted countries. Where totals are the same, listings will be alphabetical by call sign.

Credits for new members and those whose totals have been amended are also shown.

PHONE

VK3MS	314/335	VK2JZ	262/277
VK3AOH	313/325	VK4HR	261/277
VK6RU	301/324	VK3TL	254/258
VK5AB	300/314	VK2AAK	233/237
VK6MK	298/315	VK2APK	226/229
VK4FJ	275/292	VK2ADE	223/237

New Member:

VK4HA 100/104

Amendments:

VK4KS	154/168	VK4PX	130/131
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C.W.

VK3KB	319/342	VK2AGH	279/292
VK3QL	295/315	VK3NC	266/286
VK2ADE	291/313	VK3ARX	261/269
VK3CX	291/312	VK6RU	251/272
VK4FJ	287/309	VK3XB	249/262
VK3AHQ	281/293	VK3TL	245/248

New Members:

121/121 VK4SN 100/104

Amendments:

VK2APK	244/251	VK3AXK	205/218
VK3RJ	233/246	VK4KS	101/106

OPEN

VK2AGH	308/326	VK2EO	285/306
VK2ADE	305/329	VK4HR	279/301
VK6RU	305/328	VK2ACX	276/300
VK6MK	300/317	VK3JA	272/280
VK4FJ	293/315	VK3TL	272/278
VK2VN	291/306	VK3ARX	270/276

Amendments:

VK2APK	261/269	VK4PX	166/171
VK4KS	184/201	VK4CK	109/110
VK4SN	104/110		

Y.R.S.

By the look of the amount of correspondence received so far this column will grow and grow. I hope to receive news from all States regularly to be able to make a separate item for each State so any news about successes in the various certificates, etc., will be very welcome—by the last Wednesday of each month please.

A very attractive Y.R.S. Japel badge has been designed by Howard Rider VK3ZJY is on order, and will shortly be available for the very small sum of 50 cents. This is a wonderful way for boys to find out who is interested in radio.

Radio Instructor's Certificates are available for Club and Postal Group Leaders who contribute so much to the instruction of young people. Conditions for this award may be obtained by writing to Mr. Roger Davis VK1RD, 14 Hovea Street, O'Connor, A.C.T. (Form YRS/9). Please enclose a S.A.S.E. plus eight cents to cover cost. There are many leaders who give a big slice of their valuable time to the Y.R.S. and do not realise their own worth. Please contact Roger to find out more about this.

Incentive Packet System will be continued in 1967 at least for N.S.W. at the moment. Y.R.S. members who gain any Certificate or award are eligible and the list is as follows: Elementary—1 packet, Junior—2, Intermediate—3, Senior—4, Advanced—5; Radio Telephone and Wireless Telegraphy Certificates (Grade 3)—1 packet, Grade 2—2, Grade 1—3. Each packet is worth about two dollars and contains the appropriate parts for the various stages. To claim these packets, Club and Postal Group leaders should write to Mr. C. L. Matthews, 4 Potts Street, Kingsgrove, giving him complete details—name and address of each successful candidate, awards gained, Certificate Registration numbers, number of packets claimed and eight cents worth of stamps for EACH packet claimed.

Data Sheets: The Victoria Y.R.S. is introducing a very valuable system of data sheets comprising details of constructional projects which Club and Postal Group leaders have found practicable. These are very clearly set out and are worth having. They also set a standard for all members. Information on these can be obtained from Mr. Howard Rider, 232 Cumberland Rd., Pascoe Vale, Vic. A similar system is run by one or two leaders in N.S.W. and this is a case when comparing notes could be advantageous, for it would be a shame to duplicate this labour.

A.W.V. Transistors: Supplies of these have been distributed to Y.R.S. Supervisors in all States thanks to Mr. Schonrock. These are in the form of "Multiflash" cards produced for a Science Exhibition in 1965. Mr. Schonrock and A.W.V. have been strong supporters of Y.R.S. for several years and their kind donations have been a real help in the constructional activities of the Youth Radio Scheme.

Registration of Y.R.S. Clubs in 1967 (N.S.W.): Clubs applying for registration or re-registration for the 1967 session must pay a small registration fee of two dollars to cover administrative costs which have mounted astronomically because of the numerous services available to clubs. This can be paid in one sum or in two instalments depending on the "condition" of the club, the first being payable at registration and the second by 1st July, 1967. Clubs which are unfinancial will not be able to benefit from the packet system or enter candidates for contests, etc. Fees must be paid by cheque made payable to Wireless Institute of Australia (N.S.W.) to be sent with the letter requesting registration to Mr. Don Craig, Y.R.S. Registrar, Sydney Grammar School, College Street, Sydney.

CLUB NEWS

A.C.T.—VK1—Peter Gross, of Kogarah, a member of Roger Davis' VK1RD Postal Group, is the first Y.R.S. member to gain the Elementary Certificate in 1967. He gained 98% and therefore will receive an O.T.C. Prize and an incentive parcel. Peter also won the prize for the best notebook. Stephen Mudge, of this same group, won the prize for the best consistent member. Stephen is helping to promote Y.R.S. interests in his school club at Mt. Colah, N.S.W. Roger is having tremendous success with his members in Canberra and is to be congratulated as he is very short of time because of studies, club duties and now

week-end military activities. Susan Brown, VK2BSI, looked after his postal group correspondence during this time and no doubt had to burn a bit of midnight oil to get everything done, including that for her own Postal Group.

In Roger's Monthly Bulletin he has a section for written articles by his members an any suitable project they have constructed and got to work. He also has listed some suggestions on running a school club which should be of interest.

New South Wales, VK2—Peter Cairns, of Kogarah, a member of Bruce Mitchell's Group, has gained the L.A.O.C.P. and is operating under the call sign of VK2ZXB. Peter is a first year Trainee Technician with the Overseas Telecommunications Commission and by this success has been presented with a Book Prize, donated by the Commission. Ray Carpenter, of Westlakes Radio Club run by Keith Howard VK2AKX, has also gained the L.A.O.C.P. and has received an O.T.C. Book Prize.

Ian Hirst, of Sydney, and Jill Trehwella, of Gosford, daughter of John VK2RF, both gained credits for the Junior Certificate. Ian and Jill were both Postal Group members and are to be congratulated for such good work. They are both intending to proceed with the Intermediate. Jill is the second girl in N.S.W. to gain the Junior. Punchbowl High School Radio Club suffered considerable loss, including two soldering irons, from a burglary committed over the holidays. Consequently the club was very glad to receive a quantity of radio parts donated by Mr. Frank Hine VK2QL which helped to compensate for the losses. It might be an idea for club leaders to look into the details for insuring against loss by fire and theft, especially if there is much gear on

hand. It may not be too expensive and will set your mind at rest.

Victoria, VK3—Collingwood Technical School Radio Club is continuing to flourish under the leadership of Bruce Johnstone with an increasing membership. Bruce took over from Harry Major, who had been leader for ten years before having to relinquish this job because of pressing duties as vice-principal of the school.

South Australia, VK5—Mr. Robert Guthberlet advises that the very worthy project of Y.R.S. aid to paraplegics at Northfield and Royal Adelaide Hospitals is to be undertaken. This is a splendid idea and is certainly one which should catch on as the hobby of radio has tremendous therapeutic value. The Rotary Club of Christies Beach were very interested in a talk on Y.R.S. by Mr. Guthberlet. This will help to spread the good word and among Rotarians there are many licensed Hams who know the value of this work.

Bert Hollebon VK5EQ has been appointed to set the examination papers for the Junior and Elementary papers. These will include 40% multiple choice and 60% conventional type questions. For further information please contact Bert at 26 Nelson St., Port Pirie, S.A.

Western Australia, VK6—I hear by the grapevine that there have been several Y.R.S. members successful in the A.O.C.P. It would be appreciated if you would send me full details.

Please send news to reach me by the last Wednesday of each month. Full address: Mrs. Mona Swinton VK2AXS, P.O. Box 1, Kulnura, N.S.W. It seems Kulnura does not appear on the road maps. However, it exists as a citrus growing district approximately half-way between Sydney and Newcastle and 25 miles west of Gosford.

78s, Mona VK2AXS.

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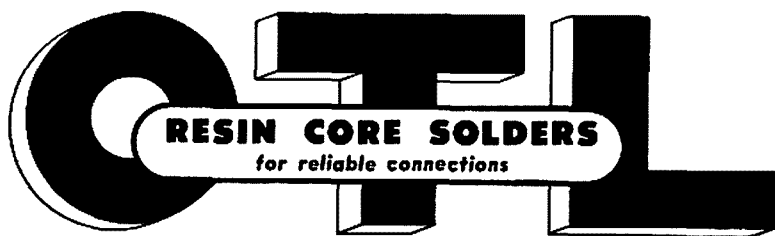
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V.H.F.

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

Well, by the time you all read this most, if not all of the summer v.h.f. activities will be over. I hope that all of you that were heard exchanging cyphers in the Ross Hull Memorial V.H.F. Contest sent in your logs, not forgetting of course the John Moyle National Field Day logs as well. Just before I close please remember that I must have all copy for this page by the 28th of the month, otherwise it will not be in "A.R." Also please TYPE or PRINT CLEARLY all copy. 73, Cyril VK3ZCK.

P.S.—Owing to space limitation in this issue, and other reasons, some of the Interstate notes have been greatly reduced in size.—VK3ZCK.

NEW SOUTH WALES

The only big event of the month was the New Year Field Day. There were many stations active, some very long distances were worked, but until logs have been checked, the longest distance worked won't be known.

The Annual General Meeting of the Group will be held in April. Members who feel they may be able to help run the group and are prepared to offer their services should do so.

However, there is quite a bit of work to be done—even if rumour has it that committee life is an easy existence. All the know-hows and experts never seem willing to take it on, although they prefer to criticise the work that others so graciously partake. 73, Stephen VK2ZSK.

HUNTER BRANCH

144 Mc.—Some fair openings to Sydney have been had over the Christmas period. Some of the boys have spent a lot of time chasing the 6 metre DX, and have not been heard much on the 144 Mc. band.

The New Year Field Day Contest was rather a wash-out as no great distances were worked and as far as this Hunter Branch was concerned conditions were poor and only a few stations were heard.

52 Mc.—The DX Season is nearly over, and the "Weird Mob" on 52 Mc. have been among the DX. Some of the best openings were on December 10, 16, 28, 29, 31 and January 1, 2 and 3, the best opening was on January 1, when all states were heard or worked including ZL Land. The band has quietened down since the Ross Hull Contest finished. 73, Mac VK2MO

VICTORIA

During the Christmas period some excellent DX has been worked on both 6 and 2 metres. The best 2 metre DX being between Birchlip and HOLMDEL, N. Jersey. In Australia was Ray VK3ATN using 150 w. input to stacked Rhombics and in New Jersey K2MWA/2 using a kilowatt and a 60-ft. dish. Total earth distance was 10,417 miles, which is believed to be a new 2-metre record. The contact was made between Ray and K6MYC (Stanford University) on December 29.

Also over the holiday period Melbourne stations have worked the Brisbane and Rockhampton areas on 2 metres. The stations concerned being VK4ZWB and VK4ZAZ in Queensland and VK3ZNC and VK3ZER in Geelong and VK3ZNJ in Melbourne.

There have been some good openings to VK7, VK5, VK4 and N. VK2 on 6 metres but no ZLs and only spasmodic openings to VK6, although the beacon on 52.006 has been heard quite a few times, also the VK6 f.m. net on 52.656 has been heard in Melbourne.

March is the time for the VK3's V.H.F. Group Annual General Meeting and election of office-bearers. So remember the date, Wednesday, March 15, at 8 p.m. 73, Cyril VK3ZCK.

SOUTH AUSTRALIA

Once again the Ross Hull V.H.F. Memorial Contest has come and departed, taking with it the remainder of any v.h.f. activity that may have been available otherwise. Customarily, perhaps somewhat traditionally, the cessation of the contest spells the end of 6 metres for many months.

The latest contest brought a somewhat dismal picture of activity to VK5. Limited and spasmodic openings to VK1, 2, 3, 4, 6 and 7

was the general rule for the contest. With respect to VK8 and ZL the picture was very bleak and dismal. No VK8s worked whatsoever and only a few ZL openings to maintain interest in that direction. Notwithstanding the ZL t.v. was monitored almost daily and the lack of Amateur signals was most puzzling to say the least.

Nonetheless with the aid of cross-town contacts many high scores were being passed around the bands. Of interest in VK5 was the magnificent tally of 600 contacts plus, recorded by Len SZF, a score that started off as a bet with Don 5TM and finished in a determined bid to crack 600, an opportunity afforded on the last day of the contest with a good opening to VK6. Congratulations Len, hope you enjoy those 807s from Don.

On the 2 metre scene it was a matter of frustration for the "old hands" of VK5. To initiate this run of events for the new year on January 1, Brian SZBR copied Peter 4ZPL at R5 S8 calling CQ DX, but signals faded before contact was established. The same morning John 5HP at Mount Gambier copied John 4ZWB, however, conditions were against contact being made. However, compensation was afforded when Mick SZDR worked 7ZAH at Ulverstone on the 4th January. During this opening quite extensive to VK3 and the S.E. of VK5, Mick almost made it two way to John SZDM on 432 Mcs. Although both John and Mick copied each other's signals a contact by definition was not to be made.

On the 7th January Mick SZDR managed a contact to ZRL at Mount Barrow near Launceston at 0650 CST, his second VK7.

Perhaps the most antagonising moment befell C6 5RO on anuary 1 when he copied Rolo 8BO calling DX on 7w. However, despite many frantic answers to Rolo's CQs, Col just could not make himself heard in VK8. At the same time Brian SZBR and Barry SZMW were doing battle with the VK8 two metre beacon, catching an occasional burst as the signal QSB'd in and out of the noise.

Speaking of beacons, the VK5VF 6 and 2 metre beacons have been receiving favourable reports from near and far, especially on 2 metres. However beneficial to Amateurs outside the VK5 the actual VK5 fraternity obtains no real gain from them apart from converter line-up, etc. With the exception of VK6 no other VK State provides a similar beacon or beacons for the benefit of determining propagation into VK5, instead of out of it. Therefore on behalf of the VK5 V.H.F. Group I would like to appeal to at least one responsible and enthusiastic group to make representation to the Department as a start to furnishing at least one more beacon in VK land. With the possible likelihood of F2 propagation in the near future any beacons whatsoever on the v.h.f. bands could only prove beneficial to the Amateurs in that State. Just how many enterprising and rational v.h.f. groups are there in VK outside of VK5? Good question! 73, Colln 5ZHJ.

WESTERN AUSTRALIA

VK6 Beacons. The frequency of VK6VK is 144.198 Mcs./52.006 and 432 Mcs. The beacon is highly regarded by ESops after that elusive VK6 on 144 (there have been only three VK6-VK5 QSO in about 16 years), and bear in mind that from its current QTH it serves as an indicator for the metropolitan area, in distinction to VK6VF—144 Mcs. on Mt. Lofty which, if 52 Mcs. is any guide, has its own private propagation; however, 6ZCN heard it two years ago.

Unfortunately, notice of reports of hearing VK6VF—144 Mcs. from the ES often take a long time to filter back, but they do occur. It is a worthwhile activity to maintain it (and 52 Mcs. and 432 Mcs. for that matter).

Perth News. The main opening to the annual 52 Mcs. DX season in Perth took place on 29th December, 1966, when VK5s and VK3s were worked from 1030 to 2230 W.A.S.T. The season seems to have started later this year than in recent years, though it appears to be lasting longer—last year (1965/66) very little DX work was available after the 1st January. The individual openings have been of about the same duration but the number of signals on the air make it hardly worth while entering for the Ross Hull Contest.

Consistently good signals were heard from 5ZLP, 5ZDR, 5ZDF, 5ZF and 5ZFD, though mostly signals were very poor, with many of the Eastern States boys running between 5 to 30 watts.

144 Mcs. checks to VK5 on a few days during the strongest openings were without reward.

ALBANY AREA DX

December, all times W.A.S.T.

26th: 1700. No Amateurs all day, Ch. Zero Melbourne S9 plus.

28th: 0958-1040 9—VK5, North and City, solid. 1718-1900 2—VK3, 6—VK5, all Mt. Gambier way, good signals.
30th: 1145-1325 12—VK5, 1—VK3; Adelaide and N.E. District of VK3.
1543. Ch. Zero, Melbourne.
1830 ZL T.V., Ch. Zero, Melbourne.
Jan. 2: 0939-1806 Ch. Zero Melb. in and out all day, weak, nothing else.
Jan 3: 1508-1718 L5—VK5.
1737. Ch. Zero Melbourne. S9 plus.
(Reprinted from the W.A. V.H.F. Group Bulletin.)

ANTARCTICA

From Rod VK0CR (VK3UG). Owing to circumstances beyond the control of the designers and builders of the 6 metre beacon, it will not be operating until March. The unit has been thoroughly tested and is working satisfactorily. Its frequency is 52.8025, for further information on the beacon please write to Noel Schruhm VK3ZPQ. 73, Rod.



NEW CALL SIGNS

NOVEMBER, 1966

- VK1ZCW—E. Westerman, 29 Charteris Street, Chifley.
- VK2BJK—J. G. Kaarsberg, 179 Addison Road, Marrickville.
- VK2ZIC—B. P. Carroll, 2/5 Burrawong Avenue, Clifton Gardens. (Licence Revalidated.)
- VK2ZLX—R. W. Walker, Station: Flat 7, 431 Gt. North Rd., Abbotsford; Postal: Box 24, Post Office, Pyrmont.
- VK3ZB—R. J. Hollis-Bee, 16 May Street, Balwyn.
- VK3AIS—R. E. Allengame, The Manse, Mount Street, Wycheproof.
- VK3ZMS—J. M. Bywaters, 30 Queen Street, Nhill.
- VK3ZQI—L. F. Schmidt, 2 Ward Street, Ashburnton.
- VK3ZLJ—A. Blanch, 23 Azalea Crescent, North Dandenong.
- VK3ZRR—C. Kelsinger, 12 Wardale Road, Noble Park.
- VK3ZSK—R. J. Wyllie, 36 Price Street, Essendon.
- VK3ZTZ—D. M. Clancy, 221 Burwood Road, Burwood.
- VK3ZWM—W. D. Moulton, 18 Akuna Avenue, Nottinghill.
- VK3ZXL—M. S. Richards, 11A Clark Street, Reservoir.
- VK3ZYM—J. R. Millen, 99 Ashburn Grove, Ashburnton.
- VK3ZYO—P. S. Collins, 28 Taunton Avenue, South Oakleigh.
- VK3ZYR—S. Rayson, 1588 Dandenong Road, Huntingdale.
- VK3ZYZ—A. B. Hamilton, 11 Victoria Street, Ringwood East.
- VK4ED—E. B. Dearing, Jr., 8 Kianga Street, Gladstone.
- VK4ZUL—J. T. F. Linde, 47 Macalister Street, Park Avenue, Rockhampton.
- VK5ZP—J. McL. Vale, Flat 8, 159 Young Street, Parkside.
- VK5ZNR—G. J. Simmons, Lot 36, Sylvan Way, Glenalta.
- VK5ZTK—T. D. Steinwedel, 17 Amos Way, Seaton.
- VK6IB—G. Chisholm, 21 Cygnet Crescent, Dalkeith.
- VK6ZGA—L. N. Smith, W.A.M.C. Carmel.
- VK7MR—D. A. H. Thorne, 308 Park Street, New Town.
- VK7SS—P. R. Tompson, 12 Richardson Avenue, Dynnynne.
- VK7ZHH—H. F. Hutchinson, Station: Savage River; Postal: C/o Bechtel Pacific Corp. Ltd., P.O. Box 579, Burnie.
- VK8NO—L. H. Vale, Eldo Tracking Station, Gove.
- VK8ZBA—J. A. Cooper, Eldo Tracking Station, Gove.



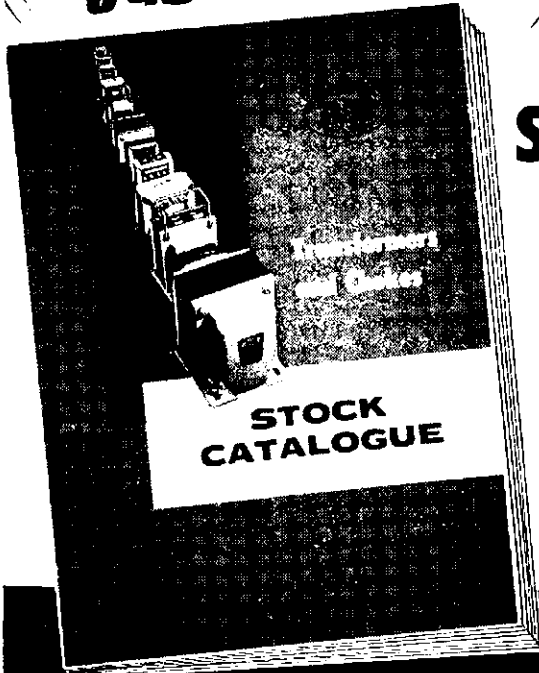
VK RESULTS

P.A.C.C. CONTEST 1966

Station	Contacts	Points	Multiplier	Final Score
VK3APJ	12	36	4	144
VK5M9	3	9	2	18

The 1967 contest will be held over the period 1200 GMT, April 29, to 1800 GMT, April 30. PAVB, the V.E.R.O.N. Contest Manager, asks for greater participation by VK stations in 1967.

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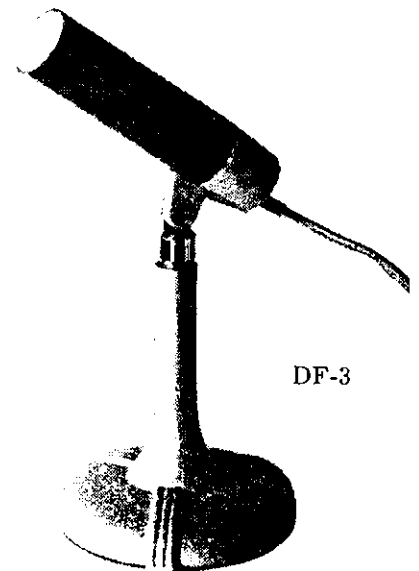
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FEDERAL AND DIVISIONAL MONTHLY NEWS REPORTS

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

FEDERAL QSL BUREAU

With reference to paras in these notes in the December issue, regarding QSL facilities in Holland, further information now received from Mr. R. Stevens, Vice Chairman of the Region 1 Division of the I.A.R.U., clearly shows that the facilities offered by the I.A.R.U. body V.E.R.O.N. are superior to those claimed by the splinter group. All Amateurs are advised to utilise the V.E.R.O.N., P.O. Box 400, Rotterdam. An amalgamation of the two bodies now seems imminent.

Recent visitors to Melbourne included VS6RJ who, under the guidance of Norm VK3NM, visited several stations, and Dennis 9V1NZ who called on Wally VK3MJ.

Bill Conklin (K6KA) and his XYL (WA6VEJ) plan a short visit to Australia in April. They are due to arrive in Melbourne at 1055 E.S.T. on Thursday, 6th April, and leave for Adelaide 355 E.S.T., Friday, 7th April. During their brief stay they would like to meet old and new friends, particularly Snow Campbell, VK3MR. They may be contacted at the Inter-continental Hotel.

The R.E.F. advise the following new address for their QSL Bureau, effective 1st January, 1967: QSL Bureau R.E.F., Boite Postale 70, 75 Paris 12, France.

The A.R.R.L. advise that the QSL Bureau for the 4th call area has been divided to ease a heavy work load. Cards for W4 and K4 calls should continue to be sent to W4AM, Box 13, Chattanooga, Tenn. 37401. Cards for WA4, WB4 and WN4 now go to WA4WIP, Richard Tesar, 2666 Browning St., Sarasota, Florida 33577.

The Israel Amateur Radio Club requests that all cards for Israel should be sent to their QSL Manager at the following address: Shalom Bakalo, 4X4-760, Dityur Amami 16, Hertzliia, Israel.

Cards through the Federal Bureau during 1966 constituted an all time record, no fewer than 79,463 being processed.

—Ray Jones, VK3RJ, Manager.

— —

NEW SOUTH WALES

The N.S.W. Division's Annual Convention took place over the Australia Day week-end (January 27-29) and the President (Tom O'Donnell VK2OD) and his Council are to be congratulated on the overall success of the various functions. Chairman Tom presided over the monthly meeting. During the evening an interesting lecture on video tapes and video tape recorders was delivered by Howard Lilley VK2AYT. Although only a young man, Howard showed that he had acquired a considerable knowledge of his particular field. In addition to a recent trip to the U.S.A. he has recently visited Vietnam and other areas, lecturing to television station personnel on the use of video tape recorders.

The lecture was supplemented by colour slides of various television recording units. Unfortunately, owing to the length of the talk (almost two hours) other slides of Howard's travels had to be left for another time.

The vote of thanks was moved by Syd Moles VK2SG, who, as an expert himself in television technicalities, paid tribute to Howard for his excellent lecture and the knowledge he had displayed.

The following new members were welcomed into the W.I.A.: Full—A. Deans VK2ZTD, G. B. Hart VK2ML, E. L. Lloyd VK2ZV, Wagga District Radio Club VK2WG, J. G. Kaarsberg VK2EJK, Westlakes Radio Club (VK2ATZ, M. Blackstone, VK2BQ; Associates—D. Robson, S. Voron, R. Ellis, G. West.

The Federal Councillor, Pearce Healy VK2AFQ, submitted his annual report, which was adopted. The report dealt with such matters as the revised edition of the P.M.G. Handbook for the Amateur Service, which should be completed shortly; power limitations of s.s.b. transmitters set at 400 watts p.e.p.; revised dates of A.O.C.P. and L.A.O.C.P. exams, which come into force in August next; the proposed Federal Constitution, some contentious points of which are still outstanding; the apathy of a large number of members to the I.T.U. Fund and the danger of frequency cuts; complimentary reference to the Federal Contest Committee for its excellent service and promptness in having contest results finalised;

the Australis I project; the Youth Radio Scheme's progress and the prestige gained by the Institute, as a result of this activity, among governmental and commercial undertakings; Customs duty on Amateur equipment, etc. Pearce concluded his report by thanking Divisional Council and members generally for the support they had given him during the year.

When the chairman called for nominations for the position of Federal Councillor for the ensuing 12 months, Pearce had no opposition and was declared elected.

On the Saturday evening, following pre-dinner "appetisers," about 80 people sat down to the three-course meal. As on the previous occasion, members were encouraged to make this a family gathering, and the presence of so many wives and the resultant social atmosphere indicated that this type of function should continue to be a regular feature of our conventions.

The organiser and master of ceremonies was Bill Lewis VK2YB. Opportunity was taken during the evening to make a presentation of the Adams Trophy to Wal Salmon VK2SA. Prior to the handing over of this handsome trophy by the President, the Education Officer, Harold Burtoft VK2AAH, informed the gathering that this award was made annually to the author of what was considered the best article by a VK2 Amateur appearing in "Amateur Radio." Three articles from VK2 had appeared during 1966, and that by Wal Salmon, "Series Phased Array for 14 Mcs.," had been voted the best by the committee.

In handing over the trophy, the President said that as it was known Wal and Mrs. Salmon would be attending the dinner, news of the award had not been made known, so that it would come as a pleasant surprise to the recipient. Tom extended heartiest congratulations to Wal on behalf of the N.S.W. Division.

The remainder of the evening was spent listening to talks by Harold Burtoft VK2AAH, Bob Black VK2QZ and John Featherstone W5RPL. These talks covered various angles concerning our hobby, or variations on the theme.

After a fairly steady start, Harold meandered off into the realms of fantasy, apparently in search of some elusive signal. Eventually, however, he became so entangled in the web of his own weaving that even at this stage we are not sure if he ever found what he was supposed to be looking for.

Bob Black likewise was knocking on the door of Fantasia with his treatise on the specifications and characteristics of the ideal Ham's wife (purely mythical, I fear). If Bob ever finds this ideal in any number, may we suggest that he advises the Divisional Equipment Store.

As for John Featherstone—well, I've often heard Aussies pulling Yanks' legs with very convincing tales about their huge goanna farms back home, but this is the first time I've heard a Yank turning the tables with a story about his road-runners who, it is said, can spring into the air and then take off horizontally.

The concluding function of the convention, the field day at our transmitter site at Dural, was well supported, there being 96 registrations and a total of 220. Visitors were present from Canberra, Newcastle, Cessnock and Gosford, with possibly others we did not notice.

Councillor Peter Campbell VK2AXJ was chief organiser and he had good support from President Tom O'Donnell and other members of Council. It was pleasing to see such a well-balanced programme, with something of interest for everyone. In addition to the field events for the trophy hunters, there were displays of commercial equipment on which much DX was worked during the day, together with a selection of bits and pieces from the Divisional Equipment Store. The ladies were also well catered for and from

the increased attendance of the fair sex it would appear that they are appreciating attempts to make them feel more at home at our functions. As well as the "feats of strength," such as nail-driving, bursting balloons and throwing the rolling-pin, a floral art demonstration was arranged and this was very popular.

The harmonics, too, had plenty to keep them out of mischief, with pony rides, slippery dips and other attractions.

Something new this year was a display of equipment built by members of the Youth Radio Scheme. Although this had been decided on only after the commencement of school holidays when school radio clubs had closed, the response was beyond all expectations and over-taxed the available space. The range of projects brought in by these lads certainly opened the eyes of most adults, and included many ingenious pieces of equipment, ranging from a television set down to simple oscillators. Unfortunately, two of the leading lights in the Y.R.S., Roger and Andrew Davis, of Canberra, had a mishap with their car when only a few miles from Dural, and did not arrive until late in the afternoon.

During the prizegiving the President announced that items of equipment had been received from the following donors, and the VK2 Divisional Council wished to acknowledge these with many thanks: Messrs. Jacoby Mitchell, Ampex, A.W.A. R.C.A., Mullard, Belco Controls, I.R.C., W.F.S. Electronics, Mosman Television Services, Ducon, Ferris, Electronic Parts, Geo. Brown, Pye Crystals, E.M.I. and O. T. Lempiere.

With the presence of so many young people associated with the Y.R.S., opportunity was taken to present Peter Gross, of Kogarah, a member of Roger Davis' Postal Group, with his prize for gaining 98% in the Elementary Certificate examination. This prize, donated by Overseas Telecommunications Commission, consisted of "Electronics Australia" Basic Radio Course, and it was handed to Peter by the Divisional President, Tom O'Donnell VK2OD.

Over the Christmas holidays, with my family, I had the great pleasure of visiting the stamping ground of my opposite number in VK5, Warwick Parsons VK5PS. Had a short but very pleasant eyeball QSO with him, and in spite of frequent derogatory comments inserted in brackets in the VK5 Divisional notes by "you know who," I found Warwick to be a thorough gentleman. (This should ensure an invitation to dinner next trip!) But then we didn't discuss either editors or black boxes called "Things," so that could have helped. All jokes aside, though, we enjoyed our few days in Adelaide, and would like to compliment our VK5 friend on their beautiful city and the friendliness of everyone we met. (Any opinions expressed in these notes are the authors' and not necessarily those of the publishers.—Ed.)

We were very pleased to hear recently that the VK2/VK4 "Famfest," held at Kingscliff, near the border, last November, was even more successful than the first effort in 1965. Stan VK4SA tells that there were 145 people in attendance and a good time was had by all—which augurs well for a continuance of this very worthwhile combined effort.

URUNGA CONVENTION, 1967

Urunga has been the happy meeting place for Hams over a period of many years, and the committee has been busy organising so that this year will be no exception.

Our old mate, Grafton Bill VK2OE, to the uninitiated, has forwarded us a copy of the programme for publication, and a glance at it will show that everyone has been catered for. One innovation this time is the increased prize money for the 144 Mc. hunt on Saturday, 25th March. The lucky winner will receive \$40 cash. (What about the Amateur status.—Ed.)

Due to the topographical nature of the Urunga district a 144 Mc. hunt can be interesting and intriguing, with the signals being reflected from the surrounding hills. Forest-covered areas abound, with shady fern glades and rain forests. The great number of roads and tracks give easy access to interesting spots and this, with the sub-tropical climate, should assure ideal conditions for this popular convention. In urging our readers to "be in it" at Urunga this Easter, Bill says that everyone will be made very welcome, as usual.

SILENT KEY

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

VK2TY—R. W. Best.



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S.E.E. octal plug-in filters, various frequencies, between 5175 and 5300 Kcs., \$15.

Matched carrier crystals included with all filters, postage extra.

10 active FT-243 crystals, 5385 Kcs., with toroid-wound filter coil, ammonium bifluoride and instructions for etching and matching crystals for filter construction. \$6 the lot!

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9000 Kcs. active $\frac{1}{2}$ " x $\frac{1}{2}$ " crystal blanks, \$0.50.

IN STOCK

Galaxy V and Swan SW-350 all-band s.s.b. transceivers.

Hygain triband Yagi - beams TH3JR and TH6DX multi-band verticals 14AVQ and 18AVQ 40-M. Yagi-beams DB-24A and 402-BA.

Webster Bandspanner all-band centre-loaded mobile radiators.

D.C.-D.C. 300 and 500 w. power supplies and 240v. heavy duty power supply/speaker combinations for transceivers.

500 w. Co-axial Baluns, for multi-band dipoles and proper operation of G5RV's, \$10.

Hard to get transistor tubes 7360, 6HF5, 6GK6, etc.

ON ORDER

(expected April)

Heath HW-32A 20-M. s.s.b. transmitter kits, \$180.

Heath HA-14 400 w. p.e.p. output linear amplifier kits, s.w.r. meter built-in, 1800v. d.c. supply to be added externally, \$175

Gonset 144-148 Mcs. s.s.b. transceivers, \$400.

Jackson Bros. 6/36 duo-vernier dials, \$3.

Sideband Electronics Engineering

P.O. BOX 23, SPRINGWOOD, N.S.W.

Phone Springwood 51-1394, not part of the Sydney exchange!

The programme is as follows:
Friday, 24th March: Get-together. Ocean View Hotel, Urunga.

Saturday, 25th March: 9 a.m. to 10 a.m., Registration (\$2.50); 10.30 to 12 noon, 7 Mc. hidden transmitter hunt; 12.30 to 1.30 p.m., lunch; 2 p.m. to 3.30 p.m., 144 Mc hidden transmitter hunt (transmitter will be hidden within 10 miles radius of Urunga—1st prize, \$40); 8 p.m., social and supper at Urunga School of Arts.

Sunday, 26th March: 10 a.m. to 12.30 p.m., 144 Mc. hidden transmitter hunt; 1 p.m. to 2 p.m., lunch; 2.30 to 4.30 p.m., all-band scramble; 8 p.m., prize-giving, social and 73's at Urunga Bowling Clubhouse.

For the XYLs: Saturday afternoon—pictures at Tasma Theatre. Coff's Harbour, as guest of the management. Sunday, 1.30 to 5 p.m., sightseeing tour of Urunga and Coff's Harbour district by cars. 73, Ivan VK2AIM.

OBITUARY

ROBERT W. BEST, VK2TY

We regret to say that another gap has occurred in the Amateur ranks with the passing during the month of Robert W. Best VK2TY, late of Boronia Park, near Gladesville.

Bob was a transmitter technician with Station 2KY, and collapsed and died while on duty at the early age of 50 years.

Hailing from the Maitland and Newcastle areas, Bob gained his Amateur ticket prior to World War II, and during the war acted as engineer at Station 2HD, Newcastle.

He was active mainly on 7 Mcs., with emphasis on mobile working later in his life. Occasionally he was heard operating on 14 Mcs. s.s.b.

Bob leaves a widow, son and daughter, to whom we offer the sympathy of all members of the Wireless Institute of Australia.

VICTORIA

WESTERN ZONE

Activity in our zone has been quite good, despite holiday time and the busy part of the year for our land-dweller members.

Allan VK3HL works mostly on the DX bands, s.s.b. and c.w. He keeps weekly skeds with W's changing bands to suit conditions during the year.

Harry VK3ZX was present at the W.I.C.E.N. School. He is also active on most of the bands, using his home-brew s.s.b. rig.

Chas. VK3IB has the world at his fingertips with his f.b. Collins set-up.

Herb VK3NN and Garry VK3ZOS work consistently on all bands including v.h.f., a.m., s.s.b. and f.m.

Gavan VK3AEJ at present building his s.s.b. so guess he will be pleased with his set-up when it is finished.

Bert VK3EF, one of the most active on the hook-ups. However, due to his secretarial activities will not be able to spend much time with Ham radio this coming year.

Bob VK3ARM still able to put a good signal on the air when his municipal duties permit him.

Trev. VK3ATR heard when he has some spare time. Guess his Cherokee aircraft is also a favourite so think Ham radio suffers a little.

Sorry to lose husband and wife combination from our zone. John VK3AFU and Brenda VK3KT have left us to reside in the city. However, they will still come in our hook-ups when they get on air from their new home.

Pleased to hear our ex-member, Merv VK3AFO who is now located in Wodonga. Neil VK3AQD although mostly away during our hook-ups still manages to make contact, using his mobile gear. Harold VK3AX works some rare DX on the bands, using c.w. 73, to all VK3AKW.

AMATEUR FREQUENCIES:

ONLY THE STRONG GO ON—
SO SHOULD A LOT MORE
AMATEURS!

MOORABIN AND DISTRICT RADIO CLUB

The office-bearers elected at the Annual General Meeting were:—

President: Bill Yates, 3AHS (phone 95-1987).
Vice-President: Bill Sievers, 3CB (24-4154).
Secretary: Harold Hepburn, 3AFQ (96-2414).
Treasurer: Peter Hebard, 3XK (83-2895).
Asst. Sec.: Alan MacLean, 3ZSL (93-6285).
Committee: David Rosenfield, 3ZOP (58-3184); Col Anderson, 3XV (57-1472).

The club meets at Black Rock on the first and third Fridays of each month at 8 p.m. The first Friday is a "Natter Night" with no formal business, and the third Friday is a General Meeting at which business is dealt with swiftly and is usually followed by a discussion on a technical topic.

The January topic was a panadapter being constructed by Harold 3AFQ, and the February topic a demonstration of R.t.t.y. by Kevin 3ARD.

Club members receive a monthly newsletter "APC" (the title has nothing to do with headaches—it's the club call sign) in which they are advised of the various meetings, transmitter hunts, disposals nights and social events arranged.

Annual membership costs \$2 for seniors and \$1 for juniors, and is open to anyone with an interest in radio.

Honorary membership is granted to any licensed Amateur in the world who has a specified number of contacts with club members. Details are available from any of the office-bearers listed above.

Visitors are always welcome at the Moorabbin and District Radio Club—see you there soon? 73, Alan 3ZSL.

— . . . —

QUEENSLAND

TOWNSVILLE AND DISTRICT

Cannot seem to take a trick since I went on annual leave. On my return missed out twice in sending the notes in time to meet the deadline. So my humble apologies to all the chaps who look forward to seeing their names in print, as I try each month to see that at least the VK4 have a small paragraph in "A.R." to show that at least we are still part of the W.I.A. As I am unable to wish you all the best for the festive season, will compromise and wish you all a Happy Easter and that all your mobile rigs keep perking.

While on leave in the far, far west (VK5), took the opportunity to call on Doug 6ZCD to pick up my 50 Mc. QSL card. Also managed to meet a few of the boys in Perth. John 6GU had to provide the transport as usual in his fine driving style. Didn't even land a traffic ticket. Wonder why?

While in Sydney an opportunity was taken of the mateship of Bill 2AJL to meet all the boys of the Norfolk Island net of a Sunday morning. Phyl did dispense tea to all the gang who did come along. Naturally Zoe 4ZW's better half did the honors in Cairns as we came to the end of a long travel by train. I must patronise the railways—that's my bread and butter.

The local A.O.C.P. classes are coming along fine and it appears that around the dozen will eventually face the barrier. Wish them every success. Peter 4LU trying hard to explain the decimal point to Marj, his XYL, as she studies for the ticket. Eddie 4WH going on leave and passing in the job of secretary of the local club which he has guided for many a long year. It will be hard to replace him as this is the most thankless position in any club.

The boys are trying to get a W.I.C.E.N. net going and from what I hear there weren't enough portables available when they were required to help locate a missing youngster. Glad to say they are now being built and tested out. So will be ready for any further emergency. Good on the Z boys—not the Z cars.

Bert 4LB still in strife with the transceiver, while Ted 4EJ does not seem to have a good signal on his as the old transmitter. Merv 4DV still chasing the elusive D.X.C.C. and slowly getting to the century; has still to get the coveted pieces of cardboard to prove them. Len 4GD still heard plaintively calling from the top of the rock towards east Stateside. 73, Bob 4RW.

— . . . —

SOUTH AUSTRALIA

The monthly general meeting of the VK5 Division for January was held in the club rooms to a slightly below normal gathering of visitors and members—the slightly below normal applies to the number present, not the members themselves—due probably to the fact

that a good number are still away on vacation, or still recovering from being away on vacation. The business for the night, both local and Federal, was speedily disposed of, and to all present it began to look like one of those nights again, when out of the blue the question of the I.T.U. Fund was brought up, and it no longer began to look like one of those nights again. Many and varied were the suggestions brought forward as a means of bringing our \$300 shortage to the Fund up to date in as quick a time as possible. The discussion looked like going on until after the I.T.U. Convention had finished, and in deference to our guest speaker, the subject was adjourned until after the lecture which followed the distribution of QSL cards by George 5RX, and the short smoke-oh.

The lecturer for the night was Peter Russell, VK5ZJR, a design engineer in the electrical control section of E.T.S.A., and titled "U.h.f. Radio Communication for Power Utilities," and to say that it was an outstanding success would be to put it mildly. Having the subject at his fingertips, amply illustrated by slides projected on a large screen, to say nothing of a collection of hardware associated with the radio equipment in use, Peter laid them in the aisles, and how. It has often been said that the number of questions, their variety and sensible nature, are a sure indication of the success of a lecture, and this being so, then Peter should be more than pleased with the reaction of his audience, and the mad rush towards the table when he started to display the aforementioned hardware. Gilbert 5GX proposed the vote of thanks in his usual interesting and inimitable manner, and the response by the members present to the vote of thanks must have been music to the ears of Peter. When I left at 10.45 p.m., he was still surrounded by a swarm of interested viewers of the hardware, not one whit dismayed by the distant baying of the Alsatian hound, nor by the obvious sounds of the loading of the caretaker's 303. What about the discussion on the I.T.U. which was postponed until after the lecture? Well, what about it? There were too many interesting things on the table to be picked up and commented upon, to bother about trifles!!!

One of the business matters brought up early in the meeting was the reading of the reply from VK2 to the letter sent to them by Geoff 5TY concerning the Federal Constitution, or should I say the proposed Federal Constitution. After hearing the reply, and noting Geoff's reaction, I think his next move will be to try knocking his head against a brick wall—not that it will help much, but I understand it feels so nice when one stops!

I also heard that the doyen of the s.s.b.'ers, Phil 5NN, had to rise from his couch of virtue at the unheard of hour of 3 a.m. for the purpose of clearing a choked gutter, with the rain coming down like a couple of product detectors in push-pull parallel. In view of the fact that Phil claimed he had cleaned the said gutter about two weeks ago, plus having a nasty cold, he was by no means amused, but I cannot understand why he was heard later on to say that because of the cold he could not get on the air. After all I have often heard it said that a cold is not necessary for good "luck talk," but it helps!

Have not mentioned Lounce 5LD much in these notes lately, in fact to be accurate, not for quite a long time, but I can quite understand the reason now. Having a browse around the bands at 0415 the other morning, there he was dah-dit-dahing to his hearts content. No wonder I can never get any news about him—blime, at that hour. Anyway he soon had a mate, Johnny 5KO got into the act a little bit later, so apparently this early hour has its attractions. What's that? What about me being up at that hour? Well, at least I get paid for it!

Jim 5TK called into my QTH for his annual Father Christmas act with my grandson, and he was certainly looking in the pink. It appears that he has at last shaken off all of the wogs, but I write this with my fingers crossed, because a couple of my spies who are in the habit of frequenting a certain doctor's surgery, reported to me that both he and his XYL were seen recently having a free read of the magazine in the said surgery—I wonder—No, it wouldn't be that!!!

Not much being heard of Len 5ZF these days. Probably due to Ross Hull activity on the v.h.f.s, but he must have found some time to spare to do some clearing up, because one of my 006 and a half boys reports that he has been offering a lot of items at bargain rates. Sounds like an opposition disposals committee.

Most people do their best to take it quietly over the Xmas season, but not our grumpy old Federal Councillor, Geoff 5TY, who became the victim of the well known "Murphy's Law" because (1) there was a certain water pipe to be attended to on Xmas Day, a burst and a half I believe; (2) his XYL went sick, probably found the cookie jar I have been refer-

ring to lately, and (3) one of his harmonics sustained a broken arm. However, the ray of sunshine eventually appeared when he learned that he had been rewarded for all his studies during the year by a pass, which will entitle him to do some more study during 1967, thus helping him to dispose of some of his well known spare time. Quiet, quiet, there are some juvenile readers about!

Passing the domicile (QTH to you) of Bob 5ZDX recently and could not but notice the construction works on the opposite side of the road. It has been freely rumoured that it is a new shack for Bob, but I would have to have further proof of that before I alluded to it in these notes, which after all have a solid reputation for their veracity and conciseness, especially in VK4 and VK6.

Arch 5XK back from Lord Howe Island and reporting a good trip. He is especially voluble about how the "dog pile" was kept in order by certain W stations, and said that it was a pleasant surprise to hear what went on to facilitate the DX stations working him. The main offenders appeared to be the JA and U stations, and he also commented on the fact of it being no use trying to work on 3.5 or 7 Mc., and he mainly concentrated on 14 Mc. He sneeringly commented on the fact of not having heard me at all, although I offered to bring proof of my having called him several times from the front lawn on my flute, or was it an oboe? Never mind, he would not have answered me even if I had called him on s.s.b.—What am I saying, let's hope that I never sink that low!!

Sorry to note that my old sparring partner Ken 1KM has thrown in the towel owing to pressure of business—not monkey business, I hope. He has been handling the Youth Radio column for some years now, and we tangled early in the piece, and have continued to tangle ever since. All the best Ken, for the future, thanks for keeping the feud alive all these years, and what a typical VK1 final punching—fixing it for a YL to take your place—no offence, Mona 2AKS, but I have never hit a woman in my life—punch them, yes—but never hit them—quite a cunning move, Ken!

Les 5NJ and the family have been spending the opening of the new year at Stansbury caravan park, almost at the water's edge. He took his portable "thing," also his 10 watt "ancient and modern," and teaming up with an old friend of his Harper, 5NV, who has a shack in that area and is a sailing enthusiast with a 20-foot catamaran, they both gaily catamaranned up and down the gulf, eventually reaching Port Vincent, feeling something akin to Columbus when he discovered America. Not the least of the equipment carried was a Type A-Mk 3, stowed on the port side, with which they contacted 5NG/P at Sunny-side on the River Murray, and 5QX at Port Broughton.

Understand that there was a query recently as to who took over the high sounding job of Custodian of the Instruments, recently vacated by me. On being informed that the new Custodian was Jim 5FO, the enquirer then asked what had become of the Custodian's uniform of which I have often boasted, and if it had been handed over with the office, adding, with a certain amount of coarseness that it had been handed over, it certainly would not have fitted Jim, owing to the structural difference. As a matter of fact it had so many badges and medals on it that it used to make me bandy when I wore it, so I never handed it over to Jim, mainly because I felt that his XYL Rae would not want a bandy husband—and same to you Rae.

Had a chat to Len 5YF the other day, an old-timer if ever there was one, and during the conversation he hinted that he might be making a comeback, probably on s.s.b. I will save his feelings by saying that I don't think he realised just how hard he was twisting the knife in the wound as he merrily went on his way expounding the benefits and efficiency of this system to me. Sounded to me as if he had spent about 15 seconds listening to a certain gentleman from Gawler. Anyway Len, we will be pleased to welcome you back any time on the air using any system.

During the rather long period of my being the VK5 scribe for the magazine I have had a shot at various individuals in various Divisions, and at times when I felt in a somewhat devilish mood I even had the temerity to have a shot at a Division or two. The results have been at times very rewarding, but never have I been able to get even a flicker of an eyelid from VK7, presumably I am not read in that Division. My only success was with Greg., a well-known VK7 writer to the magazine, to say nothing of being a dabbler in quite a number of Divisional activities, and what looked like becoming a beautiful friendship was abruptly terminated last month when I read an article concerning a 5 watts s.s.b. rig, under his name

WESTERN AUSTRALIA

Hello again! Well, here it is Convention time again, and there are sure to be some curly ones on the agenda. Good luck to all Federal Councillors as they set about their unenviable task.

"State on the Move," that's VK6 all right. Firstly, Graham 6ZDB shot through to VK3 for a couple of years' duty. Hope all goes well for you O.M.

Then Doc 6AQ flew the coop—also to VK3. I suspect, but cannot prove that the VK3 mob found out what a first-class lecturer and research man Doc is, and pulled a fast one on us!

On the credit side of the ledger, VK6 has gained a member at the expense of VK5. Bro. John Griffin, ex-VK5VG, is now domiciled at Geraldton. Welcome back to the sunny West Giff.

A hearty welcome is also extended to Cliff Waterman, ex-G3NKK, now residing in Perth.

News to hand that John 6NJ has bundled his worldly possessions together and changed QTH to Binnu. "Where's Binnu?" you ask, as well you may. I have been informed on good authority that it is north of Northampton. John has only one small problem, as far as Ham radio is concerned. How does one operate 60 watts of a.m. from bottled gas? I can foresee some hasty research being conducted into the construction and operation of solar cells. However, a word to the wise, keep an eye on your power mower, he may be on the look out for some such small petrol engine.

Kuss 6LY, now that's a rare call these days, recently visited the Radio Centre of the South West. Quiet you Bunbury guys, I'm talking about Waroona! I believe that John 6EZ also sought refuge at this quiet spot. Come to think of it, so did I.

Lionel 6LM was operating portable recently while holidaying at Albany. Keeping an eye and an ear on 6 metres too, hoping for a breakthrough to our eastern neighbours.

A couple of the boys who keep the "one-eyed monster" goggling up Mawson way. Tom 6TR and Brian 6VV have been making their presence felt on 80 metres. At present using a 122, although it is rumoured that the drawing instruments have been carefully dusted and sideband is not far away.

Len 6LG not quite as active on the bands lately, but I know from experience that lawns take a lot of looking after this weather, and Len sure has plenty of lawn. He is also doing more than his share to keep Ham radio alive by numerous c.w. practice sessions with chaps interested in attaining their "full" ticket.

While on the subject of new calls, congratulations to Bob Trepp VK6BT and Glenn Ogg (still awaiting a call sign), just to name a couple. There are bound to be others, too, so congrats all round and welcome to the bands.

It was interesting to hear the dulcet tones of Mac 6MM, taped for a recent news broadcast. Mac, you will remember, is at present in the United States, and his impression of band conditions and activities was very enlightening. Particularly that crack about 6 metres, "At first I thought the antenna must have fallen off, it was just like home." Ho hum!

Sorry to hear that PanSy has been on the sick list, hope all is well with him again and he is soon fit to do battle with "the thing."

One of my "reporters" (he's too old to be a spy) tells me that Clarrie 6CP is a bit like the fiddler's elbow. As far as health is concerned he is up and down! However, it wouldn't surprise me to hear a lusty CQ from him any time now. Cheers O.M.

You've all seen mini-skirts (wow), well the latest craze is Mini Quads—What next, Mini-operators? Who said that?

On the social round during January was the much awaited visit of the Swedish training vessel Alvsnavben on board which were two Hams. Hans SM6CVX and Rolf SM0BRV. They were soon made welcome by Dave 6WT who was on hand to greet them and introduce them to local operators, among whom were Ron 6RS, Jim 6RU (Jack 6TX, Bill 6BA and Neil 6ZDX). The visitors were taken on a visit to Yanchep, to see some real Aussie wildlife. The koala bears were co-operative and photo-whatsname, but the roos and emus couldn't have cared less. These last two breeds are no doubt still a bit down in the mouth about being displaced from the back of our coins.

Ham radio is contributing to our changing skyline. Bill 6BA, on one of his infrequent appearances on 80 metres admitted that he has a commercial beam for triband operation. Add to this the fact that Dave 6WT solemnly promised that, weather permitting, a home-brew beam would grace the top of his tower. Lou 6LU has also threatened to take the

necessary steps to elevate a phased array for operation on 15 metres. Kerry 6CA has fitted action to words and has beams atop of his tower, too. He also tells me that a number of his "Friends" are sitting on the fence waiting for him to make the first move in producing some workable mobile gear on 10 metres. Anyone else interested in 10 m mobile work? Regular travellers through North Perth will have noted the disappearance of a certain antenna which may even now be re-erected at Cyril's new QTH in Applecross.

Well, it looks as though Vic 6VK can chalk up another first in VK6 land. Vic and Harry 6HP have been pioneering the field in RTTY (in VK6), radio teletype to you, bub! No doubt the quick brown fox will get a bit of jumping practice while the boys regain some of their former skill at the keyboard!

Best 73's to all, Ross VK6DA.

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and with suitable comment on its probable effect on me. If he will write this way without a ticket, what will he write when he gets one? As a punishment, I will not mention his name for the next six issues. See if I care!

Working on the assumption that this is a free country and if one wants to "grizzle," then one is permitted to grizzle, then I suppose it is only logical that it works in reverse, and if one wants to praise then one is permitted to praise. Therefore, a big pat on the back to all those associated with the new 1966-7 Call Book for its overall excellence and modern look, to say nothing of the information contained within its cover. I know—I know—"Crawling"—but credit where credit is due, and it does make another paragraph—ahem!

Noticed Doug 8KK at the meeting. Apparently he has become used to the red traffic lights and the dangers of the big city, because when I met him about a month ago he gave every indication of heading back to Alice Springs at the double, he seemed to think that it was too hectic down here.

Struck a fellow this week who used to be always at the general meetings, and on his day was first among the helpers for the Division when needed. When queried as to his absence from the meetings these days he made some quite transparent excuse, and seemed to be somewhat embarrassed. Now me being what I am, we soon got down to tints, and he admitted that he was not getting any younger, and had been having somewhat of a bad trot, and his absence from the Divisional scene was mainly financial. I was quite upset about this, because for years and years the VK5 Division, and other Divisions for all I know, have made special provision for such happenings, and all it requires is a letter to the Secretary explaining the circumstances, and the Division is more than glad to carry the member until things come good, no matter for how long. Don't let any false pride stop you if things are not so good, the whole thing is confidential, and after all, if you have been good to the Division in the past, why shouldn't we be good to you in the future. Don't hesitate for a moment, in fact, I think I will try them out myself. I am having a bit of a bad trot, I am down to my last million—oh, the things I say for a laugh!

While I am on the subject, any member who is called up for National Service is entitled to an adjustment on his subscriptions. So go to it.

Bill 5WV was noticed at the meeting, still looking his young and jovial self—no kidding, Bill—you don't look any different from 30 years ago—you notice I don't say anything about how you feel as to 20 years ago!

Marshall Hider was also at the meeting and seemed a little bit more enthusiastic as to the results of the last exam, although he still has only harsh words to say about the code. Anyway, keep pegging away Marshall, remember Alfred and the seashore, or was it Canute and the cakes, or possibly Bruce and the bells of London—no wait a minute, I've got it—it was Whittington and the spider.

The editor of the VK5 Journal, Brian 5CA, in referring to my little trip to the horse-pistol, said that I was now O.K. again—I quote—"Warwick wishes his many friends AND OTHERS a merry Xmas, etc., etc." I have since been inundated with enquiries from a surprising number of members as to just what category they come under—friends or others. I have been cut to the quick at such a suggestion, I thought I was the friend of everybody, even VK4 and VK6—yes, and if you want to go the whole hog—even of Pincott 3AFJ, although I will be the first to admit that this is stretching my friendship a bit!

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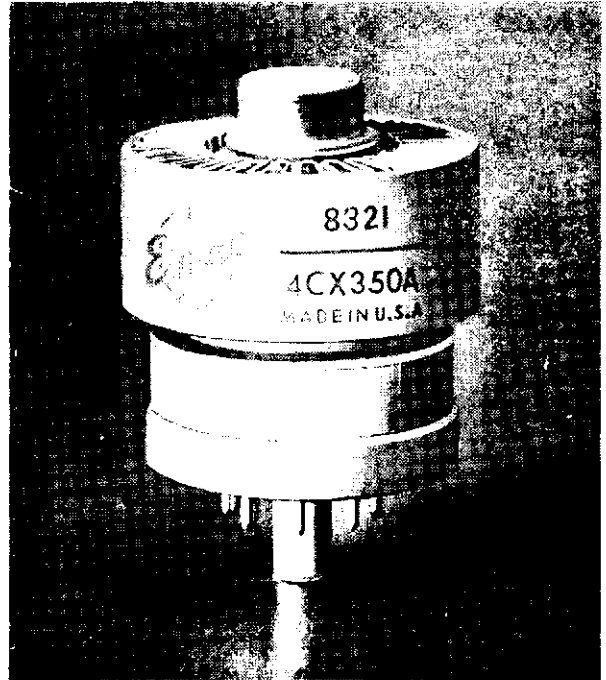
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1K5	50c	6AB7	\$1.00	6J7G	50c, 5-\$2	12AV6	75c	1626	50c
1K7	50c	6AC7	50c, 5-\$2	6K6	\$1.00	12BE6	75c	1629	50c
1L4	50c	6AG5	50c	6K7	50c	12C8	50c	5638	75c
1L5	\$1.00	6AG7	\$1.25	6K8GT	\$1.25	12J5	50c	5763	\$2.80
1LN5	50c	6AJ5	75c	6K8 Metal	\$2.00	12SA7GT	\$1.00	6021	\$1.00
1M4	50c	6AK5	\$1.50	6L7	50c	12SC7	50c	9004	50c
1M5	50c	6AL5	\$1.40	6N7	50c	12SC7	75c	EA50 10c	10-\$1
1P5	50c	6AM5	\$1.50	6R7	75c	12SK7	50c	ECC35	\$2.00
1Q5	50c	6AM6	\$1.00	6S5	75c	12SN7	75c	ECH33	\$2.00
1R5	\$1.90	6AN7A	\$1.65	6SA7	75c	12SQ7	50c	ECH35	75c
1S2	\$1.75	6AR7GT	\$2.10	6SC7	75c	12SR7	50c, 5-\$2	EF39	50c
1S5	\$1.50	6AS7GT	\$2.00	6SF5	75c	16A5	\$1.70	EF66	\$1.85
1T4	\$1.00	6AU8	\$1.45	6SF7	75c	16A3	\$2.10	EY91	50c
1U4	\$1.60	6AU8A	\$2.40	6SH7	50c, 5-\$2	25L6	\$1.00	KT66	\$3.00
1U5	\$1.60	6AV6	\$1.40	6S7G	75c, 3-\$2	25Z6	\$1.00	QVE03/12	\$4.75
2A5	75c	6B6	75c	6SK7GT	\$2.00	35L6GT	\$1.00	QVE04/7	\$2.50
2A7	75c	6BA6	\$1.55	6SL7GT	\$1.25	19	50c	RL18	75c, 3-\$2
2C28	50c, 5-\$2	6BE6	\$1.55	6SN7GT	\$1.00	30	50c	UL41	\$1.00
2D21	\$1.20	6BL8	\$1.80	6SQ7GT	\$2.60	47	50c	UR53	50c
2E26	\$2.50	6BM8	\$1.85	6SS7	75c	57	50c	VCR97	5.00
2X2	50c	6BQ5	\$1.70	6U5	\$1.95	53	50c	VR53	50c
3A4	\$2.20	6BR5	\$1.45	6U7G	50c, 5-\$2	80	\$1.70	VR102	50c
3A5	\$1.00	6BX6	\$1.45	6U8	\$1.70	84	50c, 5-\$2	VR135	50c
3Q5	\$1.00	6BY7	\$1.45	6V4	\$1.14	100TH	3.00	VR136	50c
3S4	\$1.00	6BZ6	\$1.80	6VG7	\$1.75	717A	75c	VR137	50c
3V4	\$1.50	6C6	50c	6X5	\$1.45	807	\$1.75	VR150	\$1.25
5AR4	\$2.60	6CG7	\$1.55	7A8	35c, 8-\$2	808	\$1.00	VT78 (6D6)	50c
5AS4	\$1.45	6CH6	\$2.35	7C5	50c, 5-\$2	809	\$2.00	VT127	50c, 5-\$2
5BP1	5.00	6CM5	\$2.25	7C7	50c	830B	\$1.50	VT501	75c
				7E6	35c, 8-\$2	832A	\$6.00	VU39A	50c
						837	\$2.00		

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"AMATEUR RADIO"

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FEDERAL COMMENT

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COMMUNICATION BREAKDOWN?

Without really thinking, most Amateurs probably agree with the proposition that communications is their hobby. In a sense the proposition is, of course, completely accurate.

Yet a failure of communications is probably a fundamental cause of many of the things that worry Amateurs and cause concern within the Amateurs' organisation. The failure on the part of the organisation to communicate to its members what it has done, or has not done—and why; the failure of the members to communicate to their organisation what they wish to be done—and why; the failure of Amateurs to communicate to non-Amateurs what Amateurs are, what they do and what they can do; the failure of one Division to communicate to another Division sufficient information so that the one can at least appreciate the other's point of view—all these are failures in communication.

Failures in radio communication can occur not only because of transmission failure, but also as a result of a failure in reception. This is also true of the communication of facts and ideas between people. The repetition of incorrect information is also evidence of a communication failure.

On these failures are built misunderstandings, for we criticise and are criticised on the basis of wrong information or insufficient information. From this, resentment follows naturally and tolerance disappears. Misunderstandings, criticism, resentment and lack of tolerance are all factors that result in the weakening of any organisation.

Maybe we, as communicators, should be able to pride ourselves on our communications. Can we?

—JOHN BATTRICK, VK3OR, Federal Secretary Elect.

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W.I.C.E.N. IN TASMANIA DURING THE BUSH FIRE DISASTER

GREG. JOHNSTON,* B.Sc., VK7ZKJ

Date: February 7, 1967; **Time:** about 1215 E.A.S.T.

Location: Hobart area.

Situation: Temperature 100+°F., winds gale force from north. Commercial radio sources calling for volunteer firefighters for many areas all around southern Tasmania. Smoke haze thickening rapidly in city area.

HAVING thus set the scene, it is not remarkable that the 6 metre mobile net frequency was well occupied from about 1215 E.A.S.T. and about two hours later was being used in earnest by several mobiles. About that time the first attempts at organisation were made when, after consultation with Tom VK7AL and after ascertaining that phone exchanges were jammed, lines were down and power off in many suburbs, Dave VK7ZMD was sent into the Fire Brigade Hq. with 6 metre mobile gear to relay direct to them fire reports from mobiles moving around trouble spots lacking telephone communications through fire or exchange overload. When the Fire Brigade personnel realised that they could no longer use the information being relayed to them, due to complete occupation of all their personnel and resources, VK7ZMD was relieved of duty.

At about this time the official P.M.G. station, with the R.I. on the mike, came up on the 6 metre net frequency and informed all stations that they were officially urged to continue to handle distress traffic.

This gets us to the point where but one commercial radio source was still

* 3 Anglis Street, New Town, Tasmania.

on the air broadcasting a continual stream of queries and requests for firefighters. Someone, I don't know who, suggested we put a base mobile outside the studio of this radio station (7HT) and use the mobiles to try and assist them in the job they were doing. One query satisfied after a short relay, due to power lines across the road, concerned the fate of the children from the Taroon Primary School. They had been evacuated to the beach in a timely move by their teachers and were being looked after. No doubt the parents of these children were very relieved to hear this news come back over 7HT after a 6 metre VK7ZKJ to VK7ZBJ to 7HT relay. All commercial communications were out into Taroon area.

At about 1700 hours the President of the W.I.A. (Tom VK7AL) approached the Police and offered our services as a going concern. About two hours after, Tom received a telephone call from the Police asking for help with communications into Huonville. At this stage we were able to inform them that the situation had been taken in hand by our organisation working in conjunction with Civil Defence and that communication should shortly be available.

NETS ESTABLISHED

Also at 1700 hours Lee VK7KC contacted Jack VK7JB on 3590 Kc. with the upshot being that VK7JB went to Civil Defence Headquarters only to find Ted VK7EB in attendance with equipment half set up on 3590 Kc. Shortly after this, at about 1715 hours, VK7KC and VK7EB set up a 3590 Kc. link, with VK7KC also linking through on 6 metres to most of the mobiles from his own mobile. At approx. 1730 hrs. VK-

7ZKJ arrived at VK7KC's QTH with a.c. operated 6 metre rig and installed it as base station for the mobile net on 53.035 Mc. Thus by 1730 hrs. we had W.I.C.E.N. control station linked to Civil Defence Hq. on 80 metres. Civil Defence in turn had facilities for distributing the information W.I.C.E.N. obtained to the appropriate quarters.

Very soon after this, with situation reports coming in rapidly and finding coverage was not up to the mark on 6 metres because mobiles were getting too far out of the city area, a relay station was set up on Mt. Rumney by Barry VK7ZBJ and Ron VK7ZRO at about 1815 hrs. Mt. Rumney was burnt off prior to this, but was dangerous with trees coming down over the road — it is situated east of Hobart overlooking the airport and so situated as to be a highly favoured location for extended 6 metre ground wave communication.

Thus by 1815 hours W.I.C.E.N. had set up 6 metre facilities allowing communication over a radius of about 30 miles from Hobart, had several 6 metre mobiles in trouble spots sending in situation reports, several more mobiles standing by, and a 3.5 Mc. link from W.I.C.E.N. Control to Civil Defence Hq. relaying information coming in on 6 metres for routing to Police or other services.

By 2100 hrs. VK7ZZ, VK7MF and VK7DR were handling traffic on 40 metres in relation to P.M.G. communication replacement requirements.

As the roads were very dangerous in most areas outside the metropolitan area with bridges burnt out and power and phone poles coming down across the roads, all mobiles were recalled at approx. 0100 hrs. Feb. 8 after many



View of burnt out Springs Hotel. Cover photograph shows the remains of the hotel with Mt. Wellington and t.v. mast in background. Hotel was double story, unlicensed, tourist stopping place for morning and afternoon teas half way up Mt. Wellington.



Civil Defence Headquarters, Public Buildings, Hobart.
Rear: Jack Batchelor, VK7JB.
Front left: Crosby Russel-Green, VK7CR.
Front right: Ted Cruise, VK7EJ.

operators had sent in information indicating the situation in most of the disaster areas via W.I.C.E.N. control to the Civil Defence Hq. and thence the Police Commissioner as head of the emergency operations. Communications were not established with Huonville on Feb. 7 as all roads into the area were impassable when our assistance was requested. W.I.C.E.N. Control and Civil Defence link (C.D. link) closed at approx. 0215 hrs.

All links and relays were operational again by 0900 hrs. on the 8th. Several 6 metre mobiles were on standby and several others active, in some cases in areas which had been lacking any communication for 24 hours. Many hours were wasted by three mobiles who were despatched to pinpoint a fire reported in the Carlton area in three separate bogus reports to the authorities who requested us to confirm or otherwise.

in direct communication with W.I.C.E.N. Control at 2300 hrs. Up until this time additional traffic was coming through Mt. Rumney from Mike VK7ZMC who set up a base station with his 6 metre mobile at the Woodbridge relief centre —this was the sole communication service available in the area south of Snug.

Also on the 8th, from 1100 to 1415 hrs., VK7ZZ was handling traffic to mainland VK for the Departments of Social Services and Labour and National Services, broadly concerned with damage and staff requirements.

EXTRA RELAY STATION INSTALLED

The situation continued virtually unchanged on the 9th with the exception that to provide against overloading the 6 metre frequency at the Mt. Rumney relay site, at peak traffic periods an alternate 2 metre link from this site

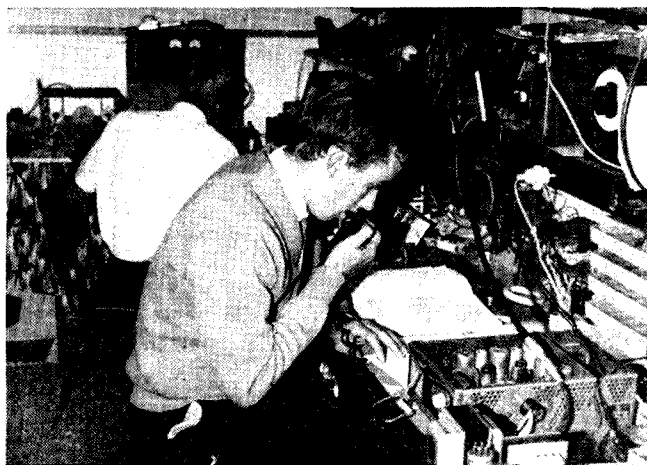
motor driven generating plants. This h.f. link between Richmond and Colebrook was maintained until 1800 hrs. on 14th February.

By Saturday 1100 hrs. (i.e. 11th), this h.f. point to point link was integrated fully into the W.I.C.E.N. system with the installation of a complete station on Mt. Wellington by John VK7ZJG, assisted by VK7ZKJ, at the premises of TVT6 transmitter and we were fortunate to have been able to "borrow" quarters and 240v. a.c. from their emergency generating system. Our thanks are due to TVT6 for allowing us to use their facilities during this period.

Thus was set up a relay station capable of reception on any Amateur frequency up to 2 metres and capable of patching the received signal to W.I.C.E.N. Control and C.D. Hq. simultaneously on 6 and/or 2 metres merely at the flick of a switch.



W.I.C.E.N. Control at the residence of VK7KC. Lee Cordell, VK7KC, at the mike.



Traffic being handled at W.I.C.E.N. Control. Rear: Lee VK7KC; foreground: Ian (Associate).

As fire relief centres were set up in the country centres, mobiles endeavoured to contact their organisers and transmit back any urgent food and clothing requirements they had.

Two mobiles with 6 and 80 metre equipment were set up in Huonville during the late afternoon and while Winston VK7WH was getting set up to relay on 6 after QRM from Amateurs outside VK7 had forced closure of the direct Huon-Hobart 3590 link, Terry VK7CT was passing distress traffic on 3590 per c.w. to VK2AGH who then relayed to W.I.C.E.N. Control VK7KC. Many thanks VK2AGH for your assistance on this occasion

Very satisfactory 6 metre communication via Mt. Rumney relay to W.I.C.E.N. thence C.D. Hq. was established soon after this and a considerable amount of Police and general distress traffic passed. While this was going on further traffic was coming back through the Mt. Rumney link into W.I.C.E.N. Control from four mobiles in the Carlton to Tasman Peninsula area—the first news back into C.D. Hq. from there since the fires cut the telephone lines into the area.

All mobiles were recalled from their areas at 2225 hrs. and the Mt. Rumney link closed as soon as all units were

to W.I.C.E.N. Control was installed, leaving 6 metres for use on inward traffic from mobiles to the relay station only. A second operator then put it down to W.I.C.E.N. Control via 2 metres. This, of course, doubled the traffic handling capability of the Mt. Rumney relay.

All v.h.f. distress traffic units and h.f. personal third party units closed by approximately 0100 on 10th February to allow the operators and gear to cool down for a few hours as traffic had slowed to a mere trickle at that time. All channels were again opened by approx. 0815 hrs. with an extra link, this time point to point via h.f. (3590 Kc.) between Richmond and Colebrook—again to be the sole communication link available. Units at both towns were also equipped with 6 metre mobile equipment which was used to relay via Mt. Rumney back to W.I.C.E.N. Control and C.D. Hq. when QRM or QRN prevented direct reception of 3590 Kc. traffic at W.I.C.E.N. Control. This meant virtually all the time in daylight hours as the h.f. equipment was QRP d.c. operated a.m. gear which was replaced as demand proved the necessity on 13th February by high power sideband transceivers on the 3590 Kc. channel powered by petrol

In view of the predicted high fire risk in Northern Tasmania, the Mt. Wellington link also established a link through to Mike VK7ZMC/M on Mt. Barrow in the north on 53.035 Mc. net frequency, again with patch facilities available to W.I.C.E.N. or C.D., in case it became necessary to use it.

With the sophisticated monitoring and patch relay systems installed on Mt. Wellington, the relay on Mt. Rumney became largely redundant and was closed down, after being almost continuously manned for four days, at approx. 2000 hrs. on 11th. During this time almost all operation was on batteries as the 240v. a.c. supply was cut very early by fire on 7th. D.C.A. personnel did allow our operators to borrow 240v. a.c. from their emergency set on Mt. Rumney spasmodically.

MOBILE UNITS WITHDRAWN

By 1900 hours on the 12th, all mobile units had been withdrawn as their services were no longer required, but the portable units at Colebrook and Richmond were still very active with point to point traffic on h.f., with Richmond now having telephone facilities into Hobart at times. Mt. Wellington remained open until 1800 hours on 13th for relay from these stations should

telephones fail again, as was occurring frequently prior to this.

Thus things drew slowly to a close at 1800 hours on February 14 when all links were closed as services were largely restored and our assistance was no longer required, although an Army unit borrowed much of the equipment on Mt. Wellington for their use in a station they set up there.

Many questions arise at the conclusion of such an operation. Thanks are due to many. It appears to me to be a risky procedure to attempt to single out more individuals than has already been done, however the work of Lee and the team of very willing workers who assisted at W.I.C.E.N. Control (VK7KC) and of Lee's XYL who fed goodness knows how many people each day and put up with so many relative strangers in and around the home for a full week must be acknowledged with thanks.

The key to the entire operational success was the enthusiasm and selflessness of the operators and assistants of the 22 6 metre mobile stations used at some stage during the operation and who proved, for the first time, the extreme versatility and utility of 6 metre net operation in W.I.C.E.N. work, while the whole competence of the communications was rounded off by the support of the 10 or so h.f. mobile and portable stations which did such good work in providing fixed point to point services. The added 2 metre relay and patch facility boosted the total traffic capacity of the system by 100%. Backing the whole emergency operation were many Associate W.I.A. members and

even friends of Amateurs who assisted throughout as scribes and of course the h.f. home station operators throughout Australia who helped wherever they possibly could in every respect.

One hopes that the authorities will now realise and recognise, at least in some part, the high potential value of our mobile "fleet" when coupled with the normal fixed station network already in existence, during any state of civil emergency such as that just past.

LESSONS LEARNED

In retrospect, what did W.I.C.E.N. achieve and how fast once the situation became one of extreme emergency? Well quite spontaneously a 6 metre mobile net controlled first from the Fire Brigade Headquarters and later from near 7HT studios was operative within the hour of the state of emergency being proclaimed. Within a further 3 hours the 6 metre mobile network was under W.I.C.E.N. Control from VK7KC's establishment, using the call VK7ZKJ, and the whole system was integrated into supplying situation reports to Civil Defence Hq. by an h.f. (3590 Kc.) link from VK7KC to VK7EB. Civil Defence in turn had personnel and serviceable telephone outlets for distribution of traffic sent in by W.I.C.E.N. to their Hq.

The speed with which W.I.C.E.N. got so thoroughly organised was a tribute to those Amateurs concerned, and demonstrated once again the need for radio as a back up for line communications. Here the telephone proved to be extremely vulnerable under the circumstances.

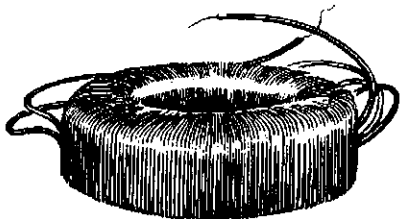
What else did we learn as a result of our activity? First and foremost we found out that the v.h.f. mobiles, assisted by relay stations, could cover the entire disaster area for traffic or situation reporting and apart from the availability at very short notice of so many mobile units (approx. 25) around Hobart, the 53 Mc. net frequency was not subjected to QRM from fellow Amateurs not involved in the emergency. Further, that when backed up by 2 metre portable or mobile, a 6 metre relay station could really handle traffic by using one frequency for inward and one for outward traffic simultaneously.

What did we need? First and foremost direct telephone lines to both C.D. and Police Hq. from W.I.C.E.N. Control, to leave yet another channel clear (i.e. 3590 Kc.) for emergency traffic and as a standby channel should all traffic lines go out. Secondly, and most important, W.I.C.E.N. requires a permanent headquarters on perhaps W.I.A. property with permanent installations of v.h.f. and h.f. equipment; direct telephones as mentioned before; ample space to park up to 25 mobile units on standby; a substantial petrol dump (bulk), and a supply of four-gallon or thereabouts containers for mobiles' use; auxiliary generating set; several battery chargers, and sleeping and cooking accommodation for at least three operators.

Well that seems about the story as I saw it from the very early stages of the emergency and although I hope never to see another such emergency, the experience with W.I.C.E.N. was a most valuable one.

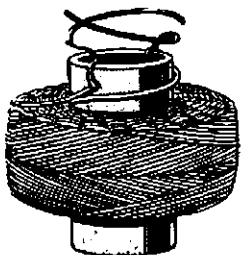
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A.26/2

A SYNTHETIC BATTERY FOR YOUR CARPHONE

(or how to make Transistor Regulated Power Supplies)

PART TWO

RODNEY CHAMPNESS,* VK3UG

As promised, here is some information on a higher current rating 6 to 22 volt regulated power supply. The previous two supplies (described in Part One, "A.R.," Feb. 1967) could produce only up to 12 amps. and this only at an intermittent rating. The supply described in this article will put out 15 to 16 amps. quite comfortably for periods up to half an hour at a voltage output of 13.5 volts, and put out continuously 10 amps. At voltages higher than about 13.5v. the current available is reduced as the average voltage across C6 is reduced as the current increases and vice-versa.

The circuit in diagram one is very similar to the second supply in the previous article with a few circuitry changes. This supply is not capable of such high output voltages (22 volts max.) as the previous one, which will supply up to and slightly over 30 volts at low loads. This previous one is, therefore, possibly more suitable to supply power to quite a lot of mains-operated transistorised gear. These in many cases use in excess of 20 volts.

There are two pilot lights, one to indicate normal operation and the other to indicate an overload condition. The output transistors have been increased by one to four and there are two Ferris 7003 heat sinks with these transistors mounted on them. There are now two output controls, one is preset on 13.5 volts and the other is a variable coming out to the front panel.

* 14 Buckley St., Sale, Vic.

I have shown an amp. meter and a volt meter in the circuit; the amp. meter is possibly not essential, although handy; the volt meter I feel is quite essential if variable output voltage is to be used. It is not always convenient to use an external volt meter for this purpose. The variable voltage output control can, of course, be approximately calibrated and for most purposes would be quite adequate, so please yourself on this.

R19 is an additional resistance, fitted so that a 12 volt battery can be safely charged at a maximum rate of between 10 to 12 amps., which will automatically taper off to a trickle charge when the battery reaches full charge. This I think you will agree is a handy addition to the unit. R19 is a bit of a problem and about the only way out of it is to use four 1 ohm 10 watt resistors in parallel.

The continuous output current of the supply is limited to about 10 amps. (the rating of the transformer), although it supplies 15 amps. with no qualms. To boost the continuous output current rating, a 4 amp. 17 volt transformer of the type used in the smaller power supply in the previous article could be wired in parallel, so giving a continuous rating of 14 amps. The size of R19 could be reduced then to about 0.2 ohm, and would consist of five 1 ohm resistors in parallel.

Now to charge a flat 12 volt battery to a terminal voltage of say 14 volts, at a maximum current of say 12 amps., we will need a resistance in series with

our flat battery to limit the current flow and charge rate, otherwise the overload circuits would most likely operate and the battery certainly would not charge. A flat battery should not be flatter than 11 volts. Now we have a 3 volt difference between the voltage of the supply and the battery, so a resistance is inserted between supply and battery to limit the maximum current. Using Ohms Law: $E \div I = R$, then 3 volts \div 12 amps. = 0.25 ohm. Therefore the series resistance is 0.25 ohm.

At the beginning of the charge the current is 12 amps., but when the battery reaches 12 volts the charge drops to 8 amps.; when the voltage rises to 13 volts the charge rate has dropped to 4 amps., and when the battery voltage has risen to 14 volts (the supply voltage) there is no charge although in actual fact there will be a small trickle charge. We now have a tapered-charge battery charger, and so the motto is "set it and forget it".

As can be seen, the circuit is virtually identical with the previous one. The main differences are in some component values due to the different voltages and currents put out. It would be quite possible to fit an additional 4 amp. transformer into the supply and I have left room in mine for this addition. All the outputs go to 2-pin polarised plugs.

I had said that I would possibly incorporate a more sophisticated overload circuit, but due to circumstances, mostly lack of time, I haven't developed

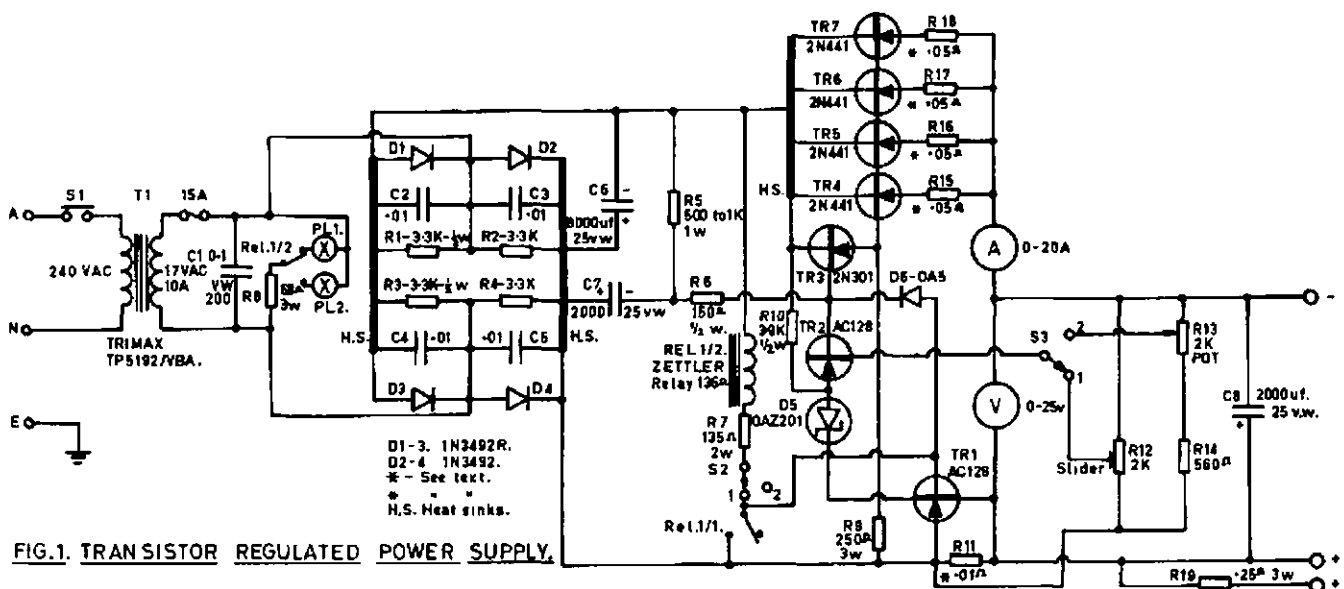


FIG.1. TRANSISTOR REGULATED POWER SUPPLY.

*R11—18 B. & S. enamelled copper, approx. 6 inches long. Adjust length for diode OA5 (D6) to conduct at pre-determined overload current between 15 and 18 amps.
*R15, R16, R17, R18—3 feet of 26 B. & S. enamelled copper wire.

S1—Mains off/on.
S2—Overload re-set: (1) normal, (2) re-set.
S3—Output volts: (1) pre-set volts (13.5v.), (2) variable volts.

When overload occurs, Zettler relay pulls in and changes over pilot lamps attached to Rel. 1/2, and clamps output volts to virtually zero.

these circuits. Diagram 2 will give the general idea of the circuit I had intended trying. TR1 is still the overload control transistor but in its collector lead is just resistor R23 instead of the relay and R7. Until D6 commences conduction, TR8 and TR9 are cut-off. When D6 conducts, current flows through R20 and the voltage drop across R20 causes TR8 to conduct.

In the collector lead of TR8 is a resistor (R21) which will also have a potential difference across it. This voltage is applied to a CR network consisting of R22 and C9. Should an overload occur, C9 will charge up to 63% of the voltage across R21 in about 3 seconds, and TR9 will gradually commence conduction during this three seconds and about this time the collector current will have risen sufficiently high to pull the overload relay in. So with an overload only extending for a couple of seconds or so, the overload relay won't pull in, so saving having to re-set.

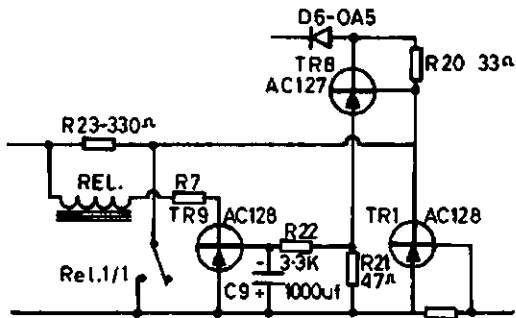


FIG. 2. OVERLOAD CIRCUIT.

Another advantage I can see is that the overload operation of TR1 is amplified by TR8, giving a much sharper overload cut-off characteristic as indicated by my simple graph in Diagram 3. Of course this overload circuit may not work as well as I feel it should, but it is a starting point for experiments. I have seen much more complicated circuits for supplies of this type, using about twice as many transistors as I would suggest and a lot more complication. Note that TR8 is an NPN transistor. I have also been giving some thought to an automatically re-setting overload circuit but have not got to the stage of being able to draw up working circuits.

The emitter resistors of TR4 to 7 are 3 feet of 26 B. & S. enamelled copper wire, and the resistor R11 consists of a few inches, about 6 to 8 inches, of 18 B. & S. enamelled copper wire. The length of this is adjusted until D6 just commences to conduct at the overload point, which in the case of this supply is between 16 to 18 amps. For the fuse holder, don't use a panel mounting type, as I did, or you may find after high current has been drawn for a while that the ends of the fuse melt and boy, you are in trouble. I'm using a screw terminal board with two lugs as my fuse holder.

I feel I may have been in error in my previous article with my supposition as to why equalising capacitors and resistors are necessary across series

connected silicon diodes. I feel the following explanation is nearer the truth.

When the diodes are in the non-conducting state they act as small capacitors. Now say one diode has an effective capacity of 90 pF. and the second in a two-diode train has a capacity of 10 pF. The p.i.v. of each is say 60 volts and the total theoretical p.i.v. is 120 volts. We apply a source of voltage which will give a p.i.v. of 100 volts. The diodes are safe—or are they? No, because the p.i.v. will distribute in inverse proportion to the capacity, therefore we have 90 volts across the 10 pF. diode and 10 volts across the 90 pF. diode. Puff goes number one through excess volts; when it's gone, puff goes number two, as it will probably have to take the whole load. Sounds a lot more feasible than my other explanation. The quoted capacities are not necessarily correct, they are just to illustrate the point.

Another possible explanation I have heard of is that the leakage current across the diodes in the non-conducting state causes the p.i.v. across the diodes to be unequal, so which is actually correct I'm not really sure. Perhaps someone with more knowhow on diodes may be able to enlighten us all, but in the meantime fit the equalising capacitors and resistors to be on the safe side.

Well that is about the lot for this article. I am hoping to write a further article on an a.c. supply for the 122 set. This will include a simpler transistor regulated 12 volt d.c. supply as well as a normal h.t. supply. At the moment I anticipate it will only use one transistor.

I hope that these two articles on transistor regulated supplies have been a starter for those who have always wanted a replacement for the lead-acid accumulator. The ripple at full load with the supply described is between 25 millivolts and 50 millivolts.

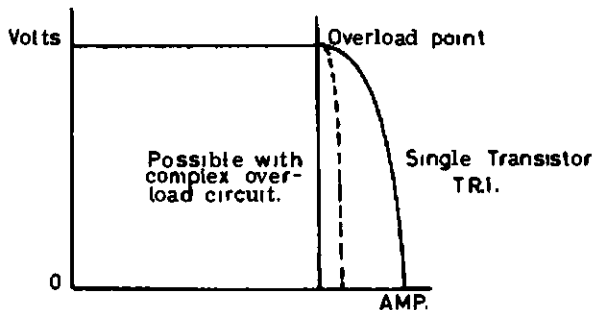


FIG. 3. POSSIBLE OVERLOAD CHARACTERISTIC OF VARIOUS OVERLOAD CIRCUITS.

"SUPERGAIN" ANTENNAE

One of the perennial dreams of most Hams is a high-gain antenna occupying practically no space—something that will give lots and lots of decibels but be no more cumbersome than a weathervane. During the past several years, the theory of such antennae has been pretty well worked out and it is now established theoretically that any desired degree of directivity can be obtained in an antenna array less than a half wavelength long. Antennae of this sort have been termed "supergain" arrays.

No one has built such an antenna. Furthermore, it appears that no one ever will. The painful practical fact is that, considering an array of given small over-all dimensions, increasing the directivity and gain decreases the radiation resistance at a tremendous rate so that the antenna efficiency goes down very much faster than the gain goes up. In addition, the spacing between elements and phasing and amplitude distribution of the currents in them becomes impossibly critical.

A paper in the Proceedings of the I.R.E. (N. Yaru, "A Note on Super-Gain Antenna Arrays," Proceedings of the I.R.E., Vol. 39, No. 9/9/51) treats quantitatively a particular type of array, one having a number of half-wave

elements in broadside with the array length limited to one-quarter wavelength, and comes out with some astonishing answers. With the proper current distribution between elements in each case, the power gain over a single element is almost the same as the number of elements, e.g. with five elements the power gain is approximately 5, with 9 elements the gain is nearly 9, etc., and presumably would continue to increase in the same fashion beyond the nine elements which represent the limit of the author's curves. These gains are not especially high as compared with larger antennae, but it should be noted that the broadside case considered is probably not the most favorable one for small dimensions.

From the practical standpoint, the significant thing is that the analysis shows each element of a 9-element array would have to carry a current of about 14 million amperes in order to produce a field strength, at a distant point, in the most favorable direction, equal to the field produced by a current of 19.5 milliamperes in one element alone! Practically speaking, of course, such a tremendous current would be an absurdity. Further data is given based on the calculated ohmic losses

(Continued on Page 18)

A "CORNER" ANTENNA FOR 7 Mc.

WAL SALMON,* VK2SA

THE success of the "corner" series phased array described by the author in "Amateur Radio," in October 1966 prompted him to think in terms of a "corner" antenna for 7 Mc., with possible harmonic relationship on 14 Mc. A number of letters were received by the author in connection with the article and several Amateurs asked for details of an antenna for 7 Mc.

The author has always held the view that it is most desirable to endeavour to get some added gain in the desired direction when planning a wire antenna and so far as 7 Mc. is concerned, the ordinary Ham living on a suburban lot cannot think in terms of Yagis or Quads for 7 Mc.

However, the shortened centre loaded dipole will fulfill most requirements so far as directivity and DX is concerned on 7 Mc. and such an antenna to fill the bill has been constructed at VK2SA and was erected on 9th October, 1966, as a vertical series array, and on 11th October was re-erected as a "corner" antenna on the 52-foot mast at VK2SA.

The antenna consists of two centre loaded dipoles fed with open wire line and spaced 20 feet apart at the dipole centres. The phasing stub is inductively loaded with 14 turns of 16 gauge enamel wire in each leg, both being wound side by side on a 1½" plastic tube (see Fig. 3). Before connection to the antenna, the stub is shorted at

one end and the free ends snipped until the g.d.o. dips at 7 Mc. The total length of the stub was then 20 feet.

The reader might ask why the stub was shortened by inductive loading. The reason was due to the fact that in order to design the "corner" antenna to fit in with space available, a scale diagram of 10 feet to 1 inch was drawn and the dipoles came out at 42 feet each and the stub 20 feet, so there are

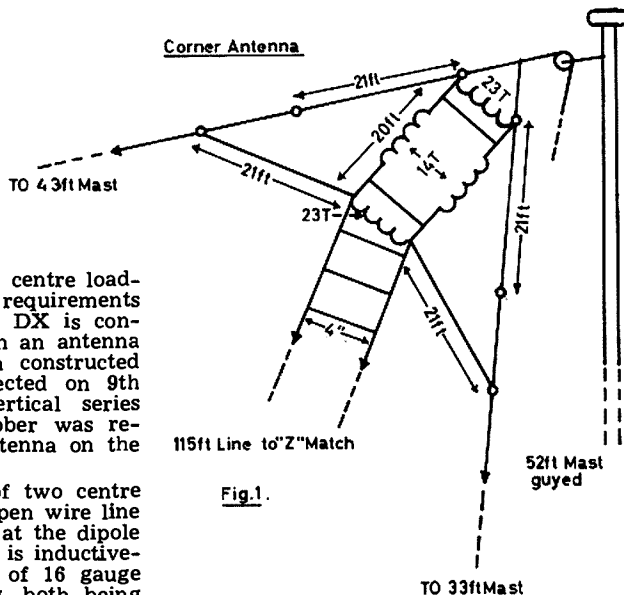


Fig. 1.

now no worries about the 67-foot deal for 7 Mc.

The dipoles were then constructed and it was found that for a wire of 21 feet each side of the coil former, a close spaced coil of 23 turns 1½" diameter was necessary and both dipoles were dipped at 7 Mc. before connection to the stub and feed line.

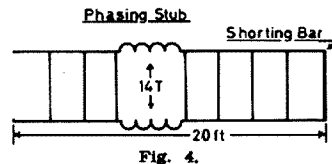


Fig. 4.

Fig. 1 shows the "corner" antenna as erected at VK2SA. Fig. 2 illustrates the centre loading coil in each dipole, and Fig. 3 shows the electrical shunting coils for the 20-foot stubs.

The stub should be dipped at 7 Mc. with one end shorted as shown in Fig. 4. On 7 Mc. the s.w.r. is 1.1 to 1, and on 14 Mc. from 1.3 to 1.5 to 1.

Using the antenna in the favoured direction of North East, S8 reports have been received from W land on s.s.b. and c.w., and s.s.b. S7 from Japan, all on 7 Mc. On 14 Mc. an s.s.b. S8 to S9 report from YV5, S7 from W, S6 from TI2. All reports were over a three-day period commencing 11th October, 1966.

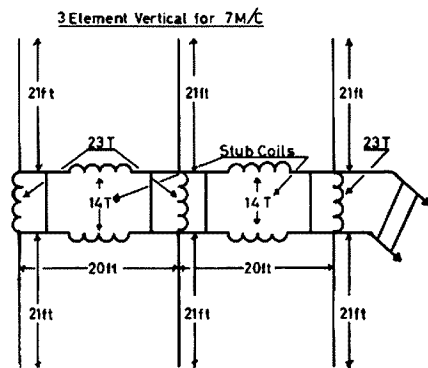


Fig. 5.

Ever heard of a three element vertical for 7 Mc.? I tried the two element for one day, but if you want to give your friends overseas something to think about, turn to Fig. 5. Just hang it from a wire broken with insulators about 45 feet high. If you really want to go to town and do the thing properly, why not use the stub line as the horizontal support between two masts and let the thing hang down in the form of three driven inverted vee antennae for 7 Mc.

Give me a call some time and let me hear the noisy brute!



Fig. 2.—Centre loading coil in each dipole.

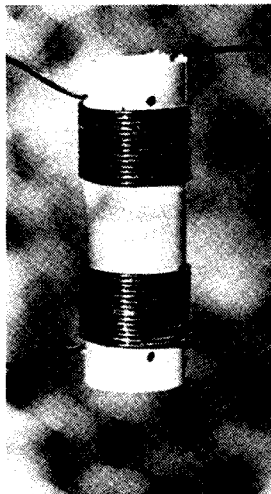
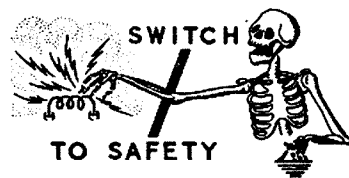


Fig. 3.—Shortening coils for 20-ft. stubs.



* 77 Flora Street, Kurrawee, N.S.W.



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Primary: 12,000 ohms p.p.

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Primary: 25 ohms.

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Supplied with circuit and wiring instructions.

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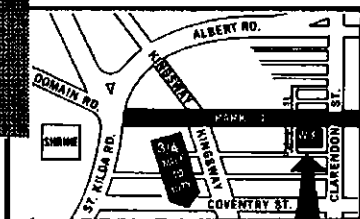
Ask for Polypac No. 9.

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K. A. KIMBERLEY,* VK2PY

PART TWO

IN my previous article ("A.R." Nov. 1966) I outlined a transistorised sideband exciter. A lot of fun has been had playing around with it, as well as learning something about the behaviour of transistors in the practical sense.

The use of a 9 volt battery precluded the chance of electric shocks, but, as in valve (that's a rude word today!) jobs, it is wise to switch off before making adjustments to the wiring. Transistors have an irritating habit of not liking stray a.c. currents originating from the soldering iron. Likewise shorts from the main supply rail to

Direction—All windings wound in a clockwise direction when viewed from below.

T1, T4—Primary: 80 turns, tapped at 14. Secondary: 2 turns wound over primary.

T2, T5—Primary: 2 turns wound over secondary. Secondary: 40 plus 40 bifilar.

T3—Primary: 80 turns. Secondary: 7 turns wound over primary.

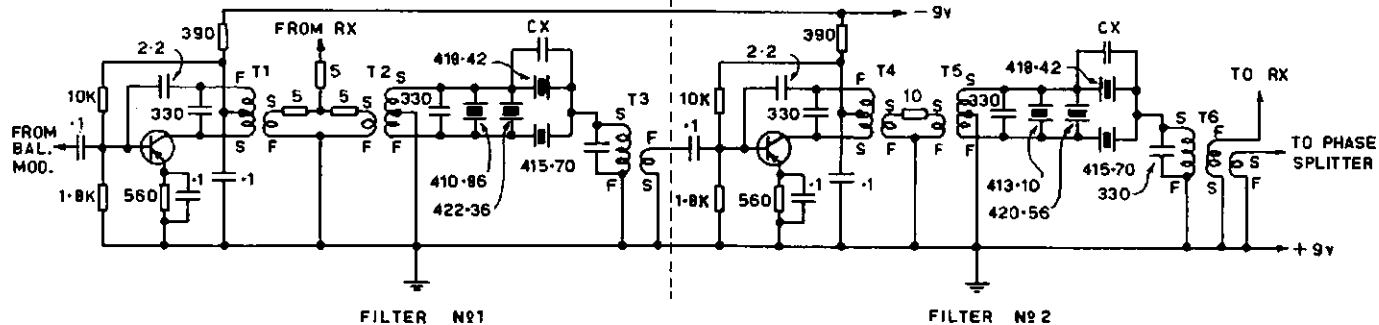
T6—Primary: 80 turns. Secondary (1): 7 turns wound over primary; secondary (2): 7 turns wound last.

Note: Coil data for alignment oscillator will be given later.

90° from the can side and soldered on to the appropriate eyelet.

It will be noticed that the earth (pos.) rail runs down one edge whilst the neg. supply rail along the other. All wiring is done in stretched 20 gauge tinned copper and should be positioned as in diagram. The filter is built into a shielded box 6½" (long) x 2½" (wide) x 2½" (high), open at top and bottom.

The crystals could be mounted in special sockets or metal valve sockets, however these also cost money so I used the hint as shown on the front cover of a back issue of "A.R." (Oct. 1963).

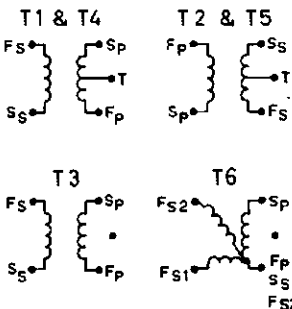


base kills them faster than one can say "B—— it." I know! I found out the hard way.

THE FILTER

I hope the preamble has been short enough as there is a lot of meat to follow. As one would imagine the filter is really the heart of this project so therefore some care should be taken during its construction. Have a good look at the circuit and layout drawings before commencing.

WINDING DATA FOR FILTER I.F. TRANSFORMERS

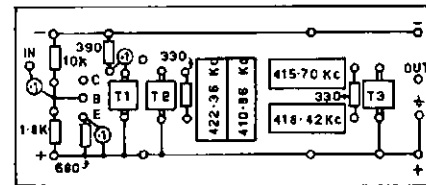


FILTER TRANSFORMER DETAILS

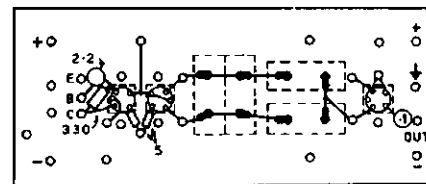
Formers—Ducon miniature i.f. assemblies.
Wire—34 gauge B. & S., posyn covered wire.

MECHANICAL DETAILS

Figs. 2 and 3 are drawn to scale and should be a guide as to the manner in which my filter was constructed. For the base board I used scrap 1/16" laminex. Alternatively, 1/16" bakelite or matrix board (this costs money, however) could be used with equal success.



FILTER N°1. TOP VIEW
FIG. 2



FILTER N°1. UNDERNEATH VIEW
FIG. 3

The base board is drilled and fitted with tubular eyelets where indicated by the small circles. The eyelets serve as component mounts and wiring (solder) points. The mounting tags on the i.f. transformer cans are bent to

ELECTRICAL DETAILS

The filter consists of two identical half lattice sections connected in cascade. The use of this circuit configuration does not imply superiority over others, but rather the limitations of my junk box.

All transformers were wound on Ducon i.f. transformer assemblies, using 34 gauge self-fluxing wire. T2 and T4 are bifilar wound. However commercial transformers could be used if desired, after mods. as follows: Remove tuning capacitor and replace with two series connected capacitors of double original unit. The centre tap so formed now connects to earth in lieu of coil tap as used in my filter.

Coupling between T1 and T2 is controlled by means of the five ohm resistors, as per circuit, and is not critical. These resistors will make up an isolating pad when the proposed receiver section is added.

Transformers T3 and T6 are matching transformers to couple the high impedance filter into the base of the transistor amplifier. In aligning the filter these transformers are purposely tuned away from resonance, thus vastly improving the filter pass band curve. I imagine this comes about as a result of the impedance of a parallel LC circuit reduces as it moves away from resonance and hence reaching a point where an optimum terminating impedance is presented to the output of the filter proper.

As mentioned in a previous article, the amplifier stages may not be needed

* 5 Don Steet, Newtown, N.S.W.

in a straight exciter. However, as they could be required for receiving, it was decided that it would be easier to instal them now than later. The gain requirements here are low, so it could be wiser to connect the transistors in common base rather than common emitter. This circuit configuration has a lower gain and hence reduces the chance of "take off".

The components used are:—

- Resistors— $\frac{1}{2}$ watt 20%.
- Capacitors—All 0.1 uF. are 25v. ceramic (Ducon Redcaps).
330 pF. are 5% 125v. styro-seals.
2.2 pF. are ceramic NPO discs.
Cx gimmicks (approx. 1 to 3 pF.).
- Transformers—Wound on Ducon i.f. transformer assemblies.
- Transistors—PNP germanium types, similar to OC45, etc.
- Base Board—1/16" laminex or bakelite, drilled and eyeleted as required.
- Crystals—Two digit series as per text.

The crystals used at VK2PY are of the two digit series and centered around 417 Kc. Crystals at other frequencies would be equally suited provided that the tuning capacitors across the i.f. transformers were altered accordingly. Unfortunately, the use of crystals one channel apart results in the bandwidth being too narrow and, of course, as "Finnagle" would have it, two channels apart the filter is too wide with a nasty dip in the middle.

This leaves us with several alternatives:—

- (1) Make do with a narrow filter.
- (2) Use crystals from the three digit series conjointly with those of the two digit series.
- (3) Adjust the frequencies of my existing two digit series.
- (4) Purchase a mechanical filter?

Again my "Scotch blood" came to the fore, thereby making alternative number 3 an automatic choice. Later I was pleased with this solution as it enabled me to learn something about shifting crystal frequencies. A short description of this will be found later in the article.

ALIGNMENT

The following procedure is included for those Amateurs who do not have a sweep generator. Those fellows who have one will need no instruction from me in the use of their own equipment. I found mine invaluable and would not now dream of aligning any receiver without it.

The following items will be necessary:—

- (1) Bandsread stable oscillator.
 - (2) Suitable detector.
- It would be highly desirable to have:—
- (3) C.r.o.
 - (4) Sweep generator.
- If you do not have access to (3) and (4) then you will most certainly need:
- (5) Patience.
 - (6) Perseverance.

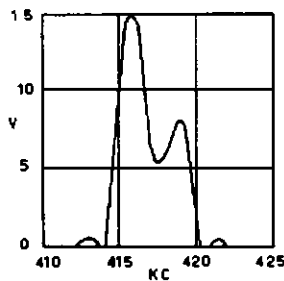
Some comments and constructional ideas will be given regarding items (1), (2), (3) and (4) at the end of this article.

Proceed as follows: Connect the detector at the output of the filter. Set generator to the mid frequency of crystals 1 and 2 and connect to the top of T5. Keeping detector set on most sensitive range, adjust generator output to give small reading. Peak T6, reducing generator output if necessary. Move generator to T4 and peak T5 in a like manner. Proceed backwards towards the input as if aligning a receiver. Beware of overload as this condition can make the pass band curve appear to be far better than it is.

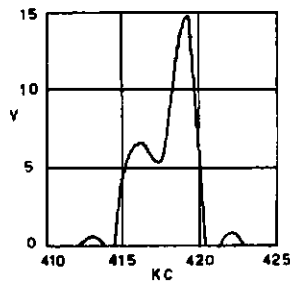
We now have to obtain some idea of the pass band curve. Of course if you have a sweep generator this exercise will be a piece of cake, however failing the ownership of same, proceed as follows: Rock your signal generator backwards and forwards over a range of about ± 5 Kc. from the expected centre frequency of your filter. Whilst doing this keep a sharp eye on the girations of the null detector meter. At this stage don't be alarmed at the variations in meter readings. Remember that a reading equal to half of the peak voltage reading represents a loss of only 6 db.

The reader will be surprised how quickly a mental picture of the pass band shape is built up in the mind. Most probably it will look something like those pictured herewith. Figs. 4A and 4B indicate that you have not aligned the i.f.'s at the correct centre frequency. Note the exaggerated peaks corresponding with (Fig. 4A) the lower frequency crystal and (Fig. 4B) the higher frequency crystal. If you are lucky and have correctly picked the centre frequency, Fig. 4C will be produced, but could have large or small "pop ups" (side lobes). Remember that these curves are voltage versus frequency and will look a whole lot worse than curves expressed in db.

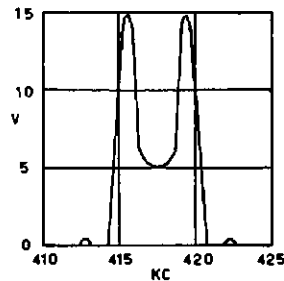
Having so far given a fair exhibition of your patience, you will now need to bring your perseverance to the fore. Disconnect filter No. 1 and feed signal into the base of the second transistor via the 0.1 uF. capacitor. Whilst still rocking and watching carefully, re-adjust T4 and T5 until the pass band looks something like those shown in Figs. 5A, 5B or 5C. Having finally succeeded in making the two peaks symmetrical, I would strongly advise



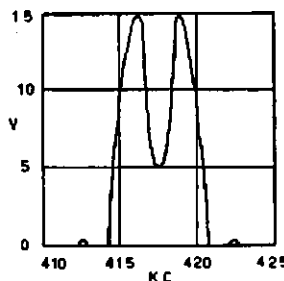
T4 & T5
TRANSFORMERS TUNED BELOW
ACTUAL CENTRE FREQUENCY
FIG. 4A



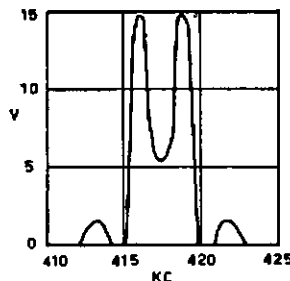
T4 & T5
TRANSFORMERS TUNED ABOVE
ACTUAL CENTRE FREQUENCY
FIG. 4B



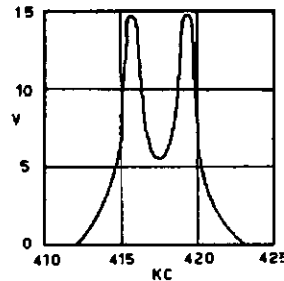
T4 & T5
TRANSFORMERS CORRECTLY TUNED
(NOT T5)
FIG. 4C



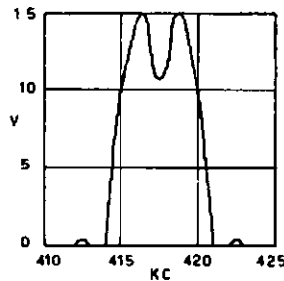
T6 INCORRECTLY ADJUSTED
CX OK
FIG. 5A



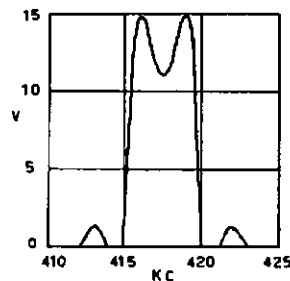
T6 INCORRECTLY ADJUSTED
CX TOO LARGE
FIG. 5B



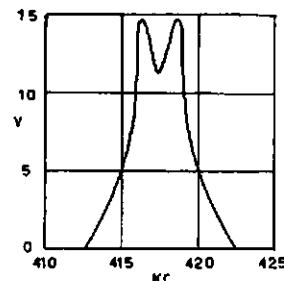
T6 INCORRECTLY ADJUSTED
CX NIL
FIG. 5C



T6 OK
CX CORRECT
FIG. 6A



T6 OK
CX TOO LARGE
FIG. 6B



T6 OK
CX NIL
FIG. 6C

the constructor to give it away for a while. Have a beer and a smoke or even a cup of coffee or some other kind of relaxation.

When fully refreshed, it is time to tackle T6 and this should be adjusted with even more care than any of the previous adjustments. Very small changes in tuning are all that is necessary here. Dramatic changes in the pass band curve will be observed during the adjustment. If an excessive peak becomes evident on either edge of the curve, a slight fiddle with cores in T4, T5 and T6 will soon put things right. In other words you will probably gather that there is a little interaction between adjustments. Eventually everything comes good and the curve should look something like those shown in Figs. 6A, 6B and 6C. The middle dip should be about 0.53 of the peak reading, corresponding to -1.6 db or better, but should not be deeper than 0.79 (-2.0 db).

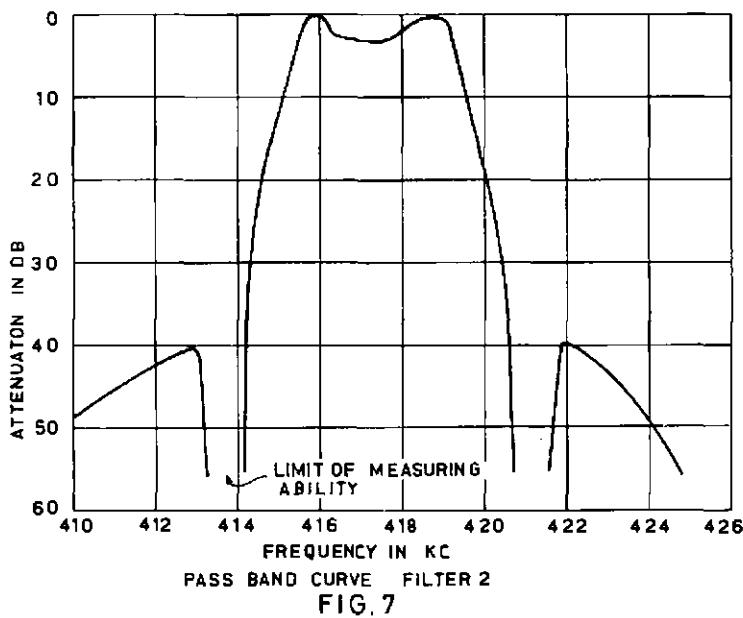


FIG. 7

Please Note that these curves have been exaggerated somewhat to show more clearly how Cx controls the "pop ups" as well as the steepness of the sides. Generally more Cx increases the level of the "pop ups" and at the same time the sides of the filter become steeper.

It is now advisable to draw an accurate curve with the attenuation in db. Fig. 7 is the actual pass band curve of my filter No. 2. Commence by adjusting the detector so that it reads full scale at the peak of the pass band curve and call this the 0 db ref. point. Slowly move generator frequency until the detector output meter now reads 0.71 of full scale and note frequency. Mark this in on your graph as the -3 db point. Continue the frequency shift in same direction until the meter now reads half scale. This is the -6 db point for your curve. Likewise, 0.31 f.s.d. = -10 db, and 0.1 f.s.d. = -20 db. At this point it is wise to change the detector to a range that is 10 times more sensitive than the previous scale

in use. Full scale here is -20 db, 0.31 = -30 db, and 0.1 = -40 db on this scale. From the -40 db point on, measurements become somewhat difficult, however they are not really important. The 0.05 f.s.d. is at -46 db, then guess at 0.01 f.s.d. as this equals -60 db.

So much for the main lobe, keep on with the frequency shift and you will find that the meter reading will show a minor increase. This is a "pop up" and should not be more than 0.15 f.s.d. on the second scale (-36 db). Follow the same procedure for the side of the curve. If intermediate values are required for your curve, the formula to be used for calculating them is:-

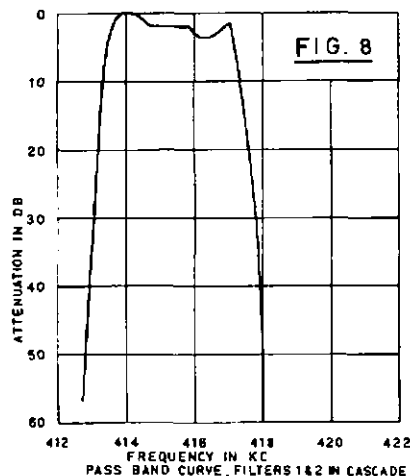
$$\text{db} = 20 \text{ Log } 10 \frac{E1}{E2}$$

where E1 is the full scale reading that you set as your zero ref. point.

If the curve is unsatisfactory a slight titivation of the cores should correct

be okay as the attenuation figures add arithmetically, i.e. the "pop ups" will be down a total of 60 to 70 db. That's a ratio of 1,000:1 or so!

Well chaps, the foregoing certainly sounds labourious as indeed the filter alignment, without a sweep, actually is. For those without the patience or, who cannot obtain the necessary crystals, do not overlook the idea of completing the exciter by the use of a mechanical filter.



There are many suitable mechanical filters on the Australian market and because of their small size as well as electrical parameters should be ideal.

Best of luck and good fun.

SALES POSITION OPPORTUNITY

Amalgamated Wireless Valve Coy. Pty. Ltd., Rydalmere, N.S.W., has a vacancy in the Sales Department and would welcome hearing from those interested.

The Company's product range is among the most comprehensive available in the active electronic device field and is continually increasing.

The position offered entails corresponding with customers and suppliers, also telephone quoting and written tendering.

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The Sales Manager,
Amalgamated Wireless Valve
Coy. Pty. Ltd.,
348 Victoria Road,
Rydalmere, N.S.W.

matters. When everything is okay give filter number 1 the same treatment. This should be a "piece of cake," having been awarded your "Hoppy Badge" for the successful completion of filter 2 alignment.

When both filters are behaving in the required manner, connect them in cascade. More than likely T3 will need some slight re-adjustment. Probably this is due to the fact that the input impedance of transistor 2 differs from that of the detector.

At this stage prepare a pass band curve with the two filters in cascade. Provided the dip in the middle of the pass band has been kept to less than 2 db, the combined dip will be less than 4 db. This is quite satisfactory and the response curve will be similar to mine (see Fig. 8). If the filter is made about 500 c.p.s. narrower than the author's, the centre dip will be almost eliminated.

Note: Don't be overworried if the "pop ups" in each filter are at only -30 to -35 db. The result will still

TRANSISTORISED B.F.O.

The b.f.o. circuit shown here can be used in new equipment, or as an add-on unit to an existing unit. Its main advantage is that no variable capacitor, as such, is used for tuning. Instead, the change in base-collector junction capacitance due to variations in the collector-base voltage is utilised, thus enabling a potentiometer to be used as the tuning control.

As there is only d.c. on the leads to the potentiometer, the oscillator may be fitted anywhere on the chassis, with long leads to the front panel causing no problem. In cases where it is desired to fit it in an existing unit, quite often an existing potentiometer, e.g. audio gain control, can be replaced by a dual concentric potentiometer in the same mounting hole. If it is required, a potentiometer with on/off switch can be used, the switch being used for b.f.o. on/off.

It might be pointed out that the 2N708 transistor was used as it was

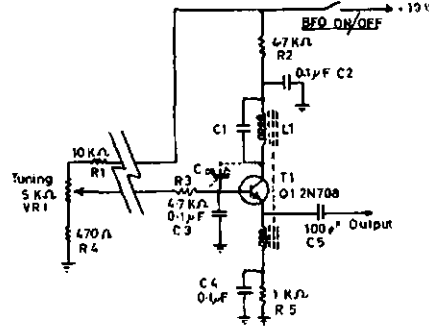
the first out of the junk box. In point of fact, the poorer quality germanium transistors exhibit a greater tuning range due to their higher initial junction capacitance, however ± 3 Kc. was obtainable very easily at 500 Kc. using the 2N708. About the only real re-

quirement is that the transistor chosen will oscillate at the frequency being used. The output amplitude remains constant over the tuning range. Frequency stability is reasonable, excessive ambient temperature causing an increase in leakage current, being the main cause of drift.

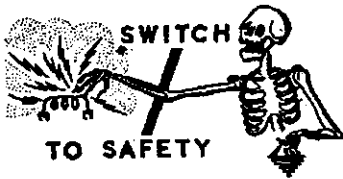
The operation of the circuit is fairly simple. Feedback from collector to emitter via the tuned i.f. transformer causes oscillation, the frequency being determined by the value of L1, C1 and C_{CB} which is effectively in parallel with C1. As VR1 is varied, the change in base voltage causes a change in base current, and consequently a change in the collector current. The change in collector current through series resistor R2 causes a change in collector voltage, and, as pointed out earlier, a subsequent change in the junction capacitance C_{CB}, similar in fact to the operation of a varactor diode.

Further details of this effect can be found in G.E. Transistor Manual, 7th edition, pages 20 and 21, 65.

—Douglas W. Rickard, VK2ZDI



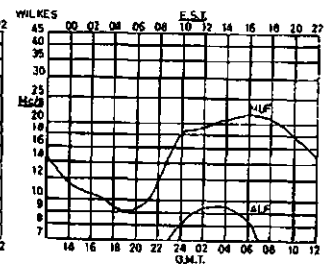
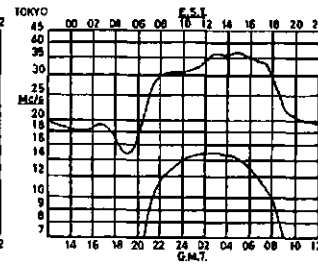
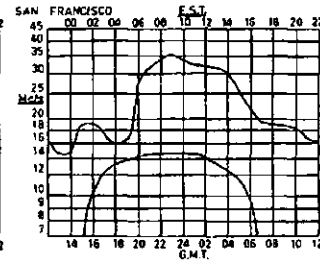
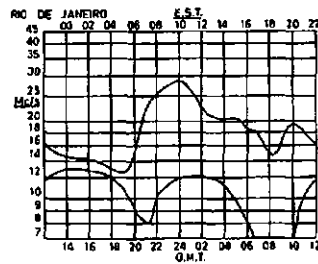
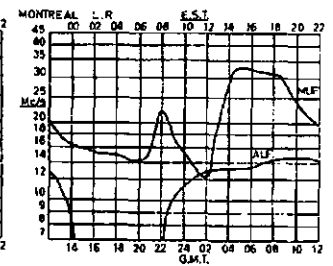
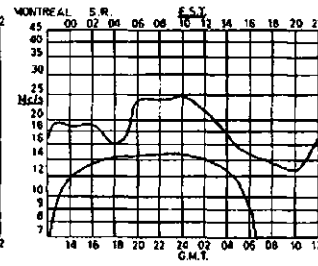
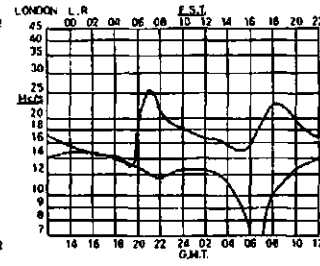
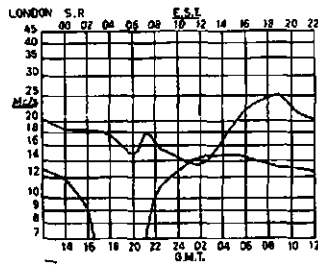
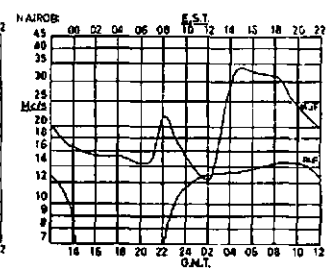
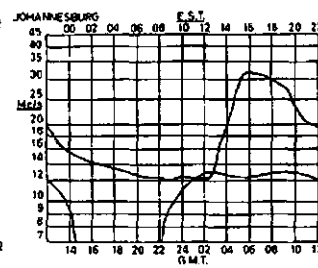
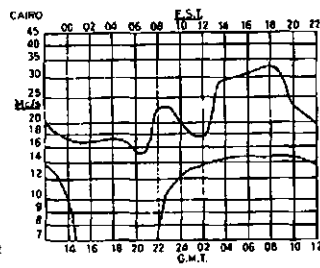
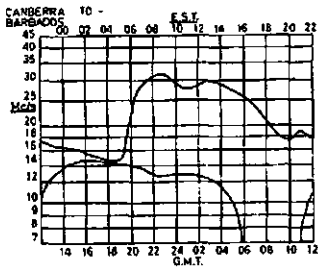
- Q1—2N708 or any transistor similar.
- T1—I.F. Transformer, e.g. 455 Kc. (transistor type). May include C1.
- VR1—5K ohm potentiometer.
- R1—10K ohm, 1/4w.
- R2—4.7K ohm, 1/4w.
- R3—4.7K ohm, 1/4w.
- R4—470 ohm, 1/4w.
- R5—1K ohm, 1/4w.
- C1—May be part of T1.
- C2—0.1 uF. paper.
- C3—0.1 uF. paper.
- C4—0.1 uF. paper.
- C5—100 pF. mica.



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SIDEBAND

Sub-Editor: PHIL WILLIAMS, VK5NN

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DECEMBER 1966

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VK1ZAN—R. C. Elliott, 37 Ingamella St., Garran.
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VK2AHW—A. H. Wass, 1 Cannons Pde., For-estville.
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VK2BNF—J. V. Finnerty, G.F.O. Hostel, Brad-ley St., Cooma.
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VK2ZLP—D. L. Price, 253 Lakemba St., Lakemba.
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VK3ZQV—J. D. Patterson, 33 Calembeena Ave., Oakleigh.
VK3ZSV—D. Chick, 15 Vida St., Essendon.
VK3ZUW—J. O. Lascaris, 1 Narla Crt., Glen Waverley.
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VK3ZYW—G. A. G. Williams, 21 Wilkin-son St., Reservoir.
VK3ZYB—M. W. Alsop, 3 Menin Rd., Nuna-wading.
VK3ZYG—S. R. Goodwin, Postal: P.O. Box 51, Kaniva.
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VK4WN—J. G. Willis, 208 Wardell St., Enog-gera.
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VK8ZFK—R. J. Fether, Lot 12, Hutton St., Osborne Park.
VK7LS—J. A. Cooper, Berrisdale Rd., Berris-dale.
VK7ZRD—R. L. Davis, 746 Sandy Bay, Sandy Bay.
VK8OX—G. D. Griffiths, Station: Portable; Postal: C/o. Mr. A. Smith, 148 York-ton Rd., Elizabeth.
VK9JL—J. Lilley, O.T.C. Cable Station, Madang.
VK9PN—P. Nantes, Station: Angau Dr., Boroko; Postal: C/o. D.C.A., P.O. Box 80, Port Moresby.
VK9SS—S. Silver, Lot 2, Section 4, Minihl Ave., Moroko.

The notes this month will be not very technical, as time for the necessary research has not been available. In- stead, I shall quote some items of in- terest from my reading of overseas periodicals, all relevant on the sideband scene.

ANOTHER U.K. TRANSCEIVER

One transceiver which I did not mention in my review of the salient features of these items 15 months ago was the "Anglian 100" made by Light Electro-Developments Ltd., in Suffolk, England. This has been modified re- cently to increase its power output to the 400 watts p.e.p. allowed by the British licence.

The equipment uses the 2.1 kc. mech- anical filter for sideband generation at 455 kc. Frequency coverage of 500 kc. per band on two selectable v.f.o.'s in the same slide-rule dial permits trans- ceive with U.S. stations operating on different segments of the bands. There are eight half-megacycle sections, the lowest 1.5 to 2.0, and the highest 29.0-29.5 Mc. For c.w. men a half-lattice filter is added for improved selectivity on "receive".

The p.a. has four valves, type TT21, in parallel. These are the transmitting version of the audio tube, the KT88, so popular with the bass-guitar crew in the amplifiers they use to wrench voice coils off the woofer speaker cones. The box is 15" x 8" x 15" of wrap around case construction, a la Collins, with a matching power unit 8" x 8" x 15". This description was condensed from the "R.S.G.B. Bulletin" for De- cember 1966 if you want to read more.

These descriptions are valuable for ideas for home constructors, and I must admit to having second thoughts about a few items for incorporation in my long-minded project, the transistorised s.s.b. transceiver.

FIELD-EFFECT TRANSISTORS

Following on the success of that little handful of receiver, the "Davco," re- cently reviewed in the American mag- azines, there are several small receivers under construction in this country. Small prefabricated modules are avail- able. There is a beautiful little 3 watt audio amplifier little larger than a matchbox which feeds an 8 ohm speaker directly, and is ideal for the project. Integrated circuits—all moulded into the one chip will give all the gain you can use after the main filter, in one stage at 455 kc., and perhaps two stages, gain controlled, at 9.0 Mc. For the front end of the receiver there are quite a number of field-effect transistors suit- able for use up to 30 Mc. with mini- mum cross-modulation with quite strong local signals. With a strong b.c. station (50 kW.) just over my back

fence, the use of transistors requires more than normal selectivity in the input circuits.

A little over a year ago, imported FET's were more expensive than many of us care to contemplate, but now some audio types are available very reasonably in this country. This has had the affect of increasing the duty on imported v.h.f. types which are not, as yet, available from Australian sources. The "customs" should learn to distinguish between various types and applications of equipment.

One can only hope that some v.h.f. type FET's are soon available locally from those who are "protected" by the higher duty rates. The situation should then "right" itself as far as we poor experimenters are concerned.

A FIELD-EFFECT VALVE

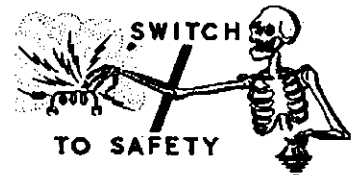
"CQ" magazine draws attention to the development of this device by (I think) Amperex in U.S.A. It is ob- viously in the experimental stage only, but has extremely high power sensi- tivity and linearity, so with a few hun- dred milliwatts from a fully transistor- ized exciter it should be possible to produce a high p.e.p. output of s.s.b. in the single tube amplifier.

I am awaiting more news of this one with anticipation. The very high- powered transistors are not yet, it seems, for Amateurs, except for the lucky ones who have access to the "just outside" rejects. Too much optimism may be unwise, for the price of the F.E. valve may be a shock to the system.

HEATER/CATHODE EMISSION

We have used oxide cathodes in valves for as long as I can remember, back around 1930. These were a con- siderable improvement on previous emitters, and more easily managed than even modern thoviated tungsten emitters in modern tubes. In the Jan. 1967 issue of the "Scientific American" magazine there is a reference on page 59 to work done to improve the emis- sion of cathodes. This refers briefly to the development from fundamental principles, of the dispenser-type cath- ode, in which the necessary barium is not contained in the surface oxide layer, but in a chamber with a porous tungsten "lid". This separates the emit- ting surface from the barium, resulting in higher emission at lower tempera- tures and much longer life of the emitter.

Figures of up to 40 amperes per square centimeter are quoted, with a life of 100,000 hours at 1 ampere per sq. cm. Since high peak emission is one of the features required for linear amplifier valves for s.s.b. p.a. stages, we can look forward to some interest- ing developments.



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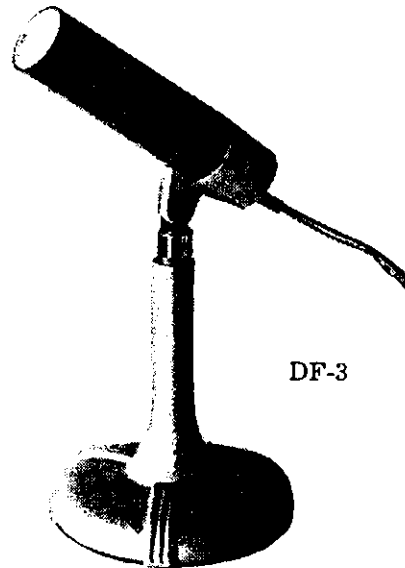
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LIGHT WAVE DX?*

JIM SINCLAIR, VK5ZSJ

I have had an idea in mind for some time that light, being an electromagnetic wave of very short length, may be affected by atmospheric conditions similar to those that cause v.h.f. DX. The experiment described here is an attempt to test this theory.

I am fortunate in choice of QTH in that we have a clear view of a sea horizon and that horizon is over 40 miles away. I selected a fixed point: the head of a bolt on our t.v. aerial in fact, and by measurement and calculation could set up a scale on my tower that would show the relative position of the horizon from time to time. The whole thing acted like a calibrated rifle sight grown to a 53-foot baseline so that one degree was 11.1 inch long and one minute of arc was 0.185 inch approx. I was now able to measure the relative effect from day to day, although I could still not find the absolute size of this bending.

The readings I took did vary although the variation was much smaller than I had expected. Only 10 minutes separated the two extremes that I have recorded to the present time. As one minute of arc represents about the limit of definition of my eyes, the readings I have taken can never be more than a rough guide to this effect. I have also noted long periods when haze on the horizon makes its exact position indistinct. On the other hand the thing I am looking for may exist as quite a large fixed refraction which I cannot measure.

Results so far suggest a correlation with air pressure, but not exactly. It is more that the reading is high while the barometer is rising, but drops as soon as the pressure starts to fall in a rate-of-change manner.

So far I have noticed only one result radio-wise. On the morning after the highest reading I have ever recorded, VK7s were heard in Adelaide and several of the south-eastern boys were worked at quite good strength for the first time in several months.

To test for correlation I would be interested in reports of 2 mx activity in the coming DX season. Apart from the contacts you make, I am also interested in those you hear and also in those times when regular contacts are weaker than usual. Please, however, be honest and accurate with your signal reports otherwise you become just another statistic that does not fit.

While one obvious practical use of this effect is to predict band conditions, there is another point worth noting. If, as I suggest, light is bent by a tropospheric scatter force there is no reason why the effect should not exist on all the frequencies between 100 megacycles and 100 million megacycles; in other words, the u.h.f. microwave, and infra-red bands. 2 metres could in fact turn out to be one of the least active bands in this regard and we may be timidly probing the edge of a vast field.

A VK2 IN W-LAND

Having long had a desire to visit the U.S.A., on July 30 last I took advantage of a discount fare and Qantas Boeing VHEBK started me off towards San Francisco at 600 m.p.h. My first Ham QSO (VK3OP) was made on 1st April, which means I'm still in the honeymoon stage. But naturally I was keen to meet North American Amateurs for some eyeball contacts

Digs were arranged with a friend some 25 miles out from San Francisco. My preliminary QSO with a W6 was with Lee W6PQW who as events turned out, I only spoke to on the telephone. At the summit of a steep hill in Lafayette, where I was staying, I could see two tall masts, complete with Triband and 40 metre beams. I learned that this was the QTH of Ed W6LDD, a tremendously enthusiastic Amateur. Ed is an attorney and plans his contest activity with the thoroughness of a legal brief. His success was apparent as I shuffled through his many awards (three times winner VK-ZL Contest, etc.). His Collins S line enabled me to make a contact with Bill VK2YB in Sydney. In addition to the Collins equipment, for which Ed is local agent, he ran a v.h.f. transceiver, an oldish Navy receiver of sentimental value and a miniature t.v. set. This latter allowed baseball and t.v. to be monitored. At 1.30 a.m., when Ed dropped me off in his Cadillac, we were only half talked out.

One day as I was coming out of Elmar Electronics in downtown San Francisco, I saw a Ford Mustang at the kerb sporting a centre loaded whip and a Ham number plate. As I peered into the cabin at the Drake, the driver lowered the window with a "Hi" (hot day, airconditioned car). K6 Just Doing Fine offered to take me around town and search for some odd frequency crystals I needed. Len gave up after a couple of dead end visits and proceeded to call Harold in Los Angeles on 40 mc sideband. Harold obliged with a phone patch to a local supplier and the crystals arrived C.O.D. a few days later. All done at 60 m.p.h. down the freeway.

Len, during his daily travels as a sales engineer, kept watch with his Drake on the Northern California emergency net. More than once he had been able to direct rescue units to a road accident. I spent two days riding around the San Francisco Bay area in the Mustang, visiting many factories, including Elmac, where I met Bill W6SAL. Evenings, K6JDF was controller on the Golden Bear Net, when upwards of 100 stations would check in. Voice procedure on the Golden Bear and 9 p.m. Western Country Cousins Nets was slick and fast, and an old c.w. man like me was soon lost. Phone patching was commonplace. K6JDF's home QTH was a house trailer at Concord, a Bay area suburb. Parked down in the rear corner of the trailer camp allowed an inverted Vee to straddle the back fence. It was to my advantage that his shack was a little crowded, I came away with a 50 watt portable a.m. all-band tx and rx. This was typical of U.S. Hams generous hospitality. Liners are the rage right now. To run barefoot is old hat. Even the Canadians, I found later, fitted a pair of snowshoes to beat the QRM!

After two weeks around San Francisco, a Qantas Boeing took me up to Vancouver in one and a half hours. A month before my sister had written she would meet me at 10 p.m. on the corner of Twelfth Avenue and Granville. As the airline bus dropped me off on its way into downtown Vancouver, I could see her waiting across the street. I was five minutes late.

K6JDF had asked me to look up VE7AKB. Always Kissing Blondes (Brunettes or Babies) was a real warm hearted character. He had ten kids and a Viceroy IV, on sideband (Scientific Set Back, he called it). He had a rather unique certificate amongst his awards. He'd Worked All States, YL. His only VK2 cards were YLs, one being VK2AOK. He was very proud of his rig, even reckoned his Drake 2B had a W6 filter. I saw a lot of Vancouver and surrounding suburbs as Les took me here and there in the old Chev. wagon.

Beautiful British Columbia, as the car number plates declare, is an apt title for this lovely area. Late Saturday night we called in on VE7BHH. Al soon had us sipping Silver Spring Beer (with a large s.a.b. stamped on the bottle tops). Al had the Drake twins nicely housed in the operating desk, with the r.t.t.y. on his left. He was going for the A.R.R.L. 40 w.p.m. c.w. certificate. When I used his bug to call a few VK2s, I had to push the weights right down to the slow end. Even with the hefty linear (800 watts), the R.D. Contest beat me and I couldn't get a VK2 to answer me on c.w. Al called on sideband and soon I was talking to Don VK2PU.

Sunday we visited VE7BJ in his beautiful home overlooking Vancouver. His KW-1, a kilowatt on a.m. and list price in 1953 U.S.

\$3800, played second fiddle to a whole row of Collins desk-top units. Before I left Vancouver, Les presented me with a small Canadian flag, their new design. He had flown it from his car antenna on numerous field day sorties into the U.S.A. It's on the wall of my shack now.

In 25 hours the Continental Trailways Bus took me back to San Francisco for \$31 U.S. Right down through Washington, Oregon and Northern California the weather held fair and the Hostess plied me with donuts and hot chocolate. I had to leave for Sydney before my reciprocal licence came through, but when it does (there's a 60-day wait!) I'll stick it up here in the shack. Maybe I can use it next year.

Back in the home QTH, the old home-brew 20 watts looked pretty sick by comparison. Still tonight I just got a 579 from W5FTD. But I'd just hooked up my new multiband trap antenna. Where did I get the traps? Well that's another story.

Dave VK2BSJ.

★

"SUPERGAIN" ANTENNAE

(Continued from Page 6)

in copper elements having a diameter of 1 centimeter and operating (ratio of power radiated to power supplied) of the 9-element array would be vanishingly small—something like one billionth of a millionth of one per cent.

The calculation also shows that the efficiency is pretty close to 100 per cent, using the same type of element, when three elements or less are used. With four, it drops to a few per cent, and decreases rapidly thereafter.

Although, somewhat different numerical results are to be expected in the case of the end-fire array, which is a much more common type in Amateur circles, the results mentioned above nevertheless typify the trend as an attempt is made to get more and more gain from more and more elements in a given small space. There is, it appears, no substitute for size if gain is to be secured under practical conditions. For receiving, too, the "effective area" of the antenna must be considered; this depends pretty largely on the physical size and an antenna must be big in order to intercept much of the energy of an incoming wave. As someone once expressed it, the antenna has to be big enough to "get a good grip on the ether".

—T. T. Tatham, VK2TQ

NON-DELIVERY OF "A.R."

If you are not receiving your copy of "A.R." please follow these steps which will ensure the correct procedure is followed; any attempt to short circuit the system will only further delay matters.

Write to your Divisional Secretary advising non receipt of "A.R."; do not write to "A.R." The Divisional Secretary should write to the Circulation Manager "A.R." P.O. Box 36, East Melbourne, C.2, Vic., advising him of the problem. Unless this advice is received before the 8th of the month, a further month must elapse before the member can be re-instated upon the circulation list.

Please ensure that you always advise your Divisional Secretary in writing, verbal advice will not do.

* Reprinted from "The South Australian Wireless Institute Journal," January 1967.

CAMP TECHNOLOGY 1967

For the third year in succession, Camp Technology was held at Mount Victoria in the Blue Mountains of N.S.W., during the Christmas holidays. Camp Technology, an enterprise rapidly growing in popularity, is sponsored by the world wide I.S.C.F. (Inter School Christian Fellowship) movement and is designed to cater for high school boys from 2nd to 5th year who might be interested in electronics or photography as a hobby or a career.

Conceived by a Sydney engineer, Camp Technology is an addition to an

very successful erection and operation of a three element 20 metre beam. Using a Swan 350 transceiver, and operating under the Camp Technology call sign of VK2BCT, excellent contact with most parts of the world was maintained throughout the camp. One of the most interesting contacts was that with Keith VK2AKX, who was holidaying in Japan.

Toward the end of the camp, many of the boys sat for the elementary and junior examinations set by Youth Radio Scheme organisers of the W.I.A.

The first camp held in 1964 attracted 14 boys. For the 1966 camp, 60 applications were received and 14 applications had to be held over till next year.

All the above activities were integrated into a programme which included daily studies in the Christian faith, in which the relevancy of a personal faith in a technological age was demonstrated.

After all, "Man shall not live by bread (or even electronics) alone, but by every word that proceeds from the mouth of God".



Making a DX contact.



"The Grange", the site of Camp Technology.

already well established series of Summer Camps, which each year draw hundreds of teenagers into various types of athletic and cultural activities.

During the recent camp, 46 boys, 14 officers comprising a scientist, engineers and technicians, and a variety of electronic and photographic equipment found its way to "The Grange"—a large property at Mt. Victoria where, for nine days, the boys took part in various projects in the fields of communications, industrial electronics, computer circuits, tape recording, servicing, electronic music, and still and movie photography.

From a communications point of view, a highlight of the camp was the

Technical Correspondence—

ARTICLES ON TRANSISTOR TRANSMITTERS

Equipment Exchange Bulletin,
P.O. Box 177, Sandy Bay, Tas.

Editor "A.R.," Dear Sir,

I am very pleased that there were only few requests for copies of articles mentioned in my letter in Jan. "A.R."; I was dreading the flood of work anticipated. On the other hand, I am rather disappointed by the silence, if it indicates a lack of interest by Australian Radio Amateurs in transistorised circuitry for transmitters. Here, therefore, is a bit more information to spur them to greater interest in this subject.

While reviewing it I was staggered by the amount of reading I am going to have to do in detail if we are to treat it adequately in print. Several articles in the "R.S.G.B. Bulletin" make that thin magazine worth the price of the membership, and of course "73 Magazine" leads the field in America, notwithstanding its remarkable editorials (some of which sound almost reasonable!).

In the following list, I should not take too seriously the plethora of transistor types specified. Items locally available from Philips/Mullard and

Fairchild ought to prove adequate for experimenters willing to study characteristic sheets and prices, not to mention the 2N2991, etc. The AUY10 and SE3035 ought to be of particular interest, but experimenters should note that the very low output impedance of the high power SE3030 will pose some serious problems of peak ratings and power transfer, which should be approached cautiously and competently.

It should be noted that useful material is also available from the "QRP Bulletin" (ref. VK5BS or W9YZE), and that a long and extensive bibliography on this subject appears in the excellent article in October 1966 issue of the "R.S.G.B. Bulletin".

Whew! If anyone knows of any more good practical references, would you please let me know this kind of information about them? In addition, there are Application Notes by Fairchild, G.E., Motorola and Philips, etc., available on request on company stationery; write first for list of titles available.

—R. L. Gunther (VK7RG).

[See opposite page for a comprehensive list of references.]

SUBSCRIPTIONS DUE

All members of the W.I.A. are reminded that annual subscriptions are now due and should be paid promptly to their Divisional Secretary. Non financial members will not receive a copy of "A.R." and back copies may not be available upon request. To preserve continuity of your files of "A.R.," please pay your annual subscription now.

ARTICLES ON TRANSISTOR TRANSMITTERS

Magazine	Date	Title or Information	Final	Input Power	Tr.	Mode	No. of Pages
"Am. Radio"	11/65	Transistor, Transmitter for 144 Mc.	AF102	30 mW.	2+	Ph.	3
"	9/66, 10/66	80 and 40 Mx Special (from "CQ," 4/66)	PADT50	20 W.	4	Cw.	3
"Break-In"	10/64	A Transistor Final Amplifier	AUY10	6.5 W.	2	Ph./Cw.	2
"	9/66	(Debugging Modulated Transistorised Tx's) ..					
"	10/66	The Behaviour of Transistors in Class C Amplitude Mod. Service (a pessimistic view)					
"CQ"	9/61	75 Mx Mobile	2N1046			(Thanks to John Adams, VK3)	
"	4/62	Zener Diode Transmitter!*	1N1605			(Thanks to John Adams, VK3)	
"	1/66	Simple R.F. Output Circuitry Design for Transistors. (good)					
"	6/66	A Compact 40 Mx Transceiver (with a note about silicon versus germanium)	2 x PADT50	29 W.	4+	Cw.	6
"Electronic Circuits Handbook" (Cowan, 1963). Section 3: Four tx projects.							5
"G.E. Transistor Manual," 7th Ed. In chap. 2, "Considerations of the Transistor's Frequency Limitations," and p. 386: Low Power A.M. Broadcast Band Xmitter plus 100 mW. V.f.o. C.w. Tx.							
"Mobile News"	8/64	Proper Pi-Network Design.					2
"	5/66	160 Mx Transistor Transmitter	2 x AUY10	8 W.?	7	Ph.	5
"QRP Club Bulletin": Good circuits appear in this from time to time. Send \$US2.00 to W9YZE for membership; it is well worth it, both in principle and practice.							
"QST"	3/56	"CQ TR" 7 Mc. M.O.P.A.	CK761	QRP		(Thanks to J.L.)	
"	12/61	The Imp Transmitter				(Thanks to J.L.)	
"	5/64	All Transistor 50 Mc. Phone	2N2219 (2 W.)			(Thanks to John Adams, VK3)	
"	8/64	7 Mc.	TI486			(Thanks to John Adams, VK3)	
"	4/66	160 Metre "Solid Status"	2 x 2N1212	36 W.	4	Cw.	5
"	10/66	Low-Priced Premium Transistors for Amateur Applications.					
"	11/66	A One-Watt Rig for 40 Metres	2N697, etc.	1 W.	2	Cw.	2
R.S.G.B.: "Amateur Radio Circuits Book," three transmitters, p. 86, 87, 91. Otherwise mostly valves.							
"R.S.G.B. Bulletin"	3/65	10 W. Transistor Tx for 160 Metres	2 x AUY10	10 W.	5	Ph./Cw.	3
"	3/66	The G3SBA Top Band Transmitter (But see also p. 484 in July issue)	2 x BFY51, etc.	10 W.	4+	Ph.	6
"	5/66	QRP Transmitter				(Thanks to VK3BT)	
"	5/66	Low Power Transistorised Transmitter	AUY10	QRP			2
"	7/66	Low Power Transistorised Transmitter 160 Mx 10 Mx	FSP95	3 W.	4+	Ph.	2
"	9/66	8 W., 160 and 80 Mx Tx by G3BIK	2 x 2N3053	8 W.	6	Ph./Cw.	1
"	10/66	A Layman's Approach to a Simple Transistor Transmitter (excellent general article) ..	2N3053	4 W.	2	Cw.	7
"	10/66	Half Watt 2 Mx Transmitter	2 x 2SC32	0.5 W.	6	Ph.	1
"Selected Semiconductor Circuits Handbook" (Wiley, 1961), chap. 4: H.F. Amps. (theory useful).							
"Transistor Radio Handbook" (Editors and Engineers, 1963), chap. 5. Theory plus ten projects							36
"Transistor Transmitters for the Amateur," by Do nStoner, W6TNS (published by Howard Sams, U.S., No. TTS-1).							
"73"	9/64	Complete 50 Mc. Station	2N2876 (2 W.)			(Thanks to John Adams, VK3)	
"	4/65	Transistor R.F. Power Amp. Design (good) ..					3
"	7/65	2 Metre Transistor Transceiver	AF102, etc.	50 mW.	4+	Ph.	6
"	8/65	Simplified Solid State: 2 Metres	2N1744, etc.		5	Ph./Cw.	2
"	9/65	Evolution of a Transistor Tx	3 x 2N416	1 W.	6	Cw.	6
"	10/65	2 Metre Solid State Walkie Talkie	SYL4221	120 mW.	3+	Ph.	5
"	11/65	6 Solid Watts on 160	2N1907	6 W.	3+	Ph.	3
"	1/66	A 6 Mx Solid State Peanut Whistle (transceiver, self contained)	2N1143	400 mW.	2+	Ph.	4
"	2/66	The Astro Ten (10 Mx)	2 x 2N697	180 mW.	3+	Ph.	3
"	7/66	Designing Tr. R.F. Power Amps. (another good one, with complete design example at 50 Mc. and don't you dare change that to Hertzies!)	2N3553	QRP			5
"	8/66	Another Solid State 2 Mx Transmitter	2N3564	430 mW.	3+	Ph.	2
"	11/66	Streamlined Modulators (series)		1-2W.	2+	Ph.	2

* Author was "Dr. Shorza Gitcagoome" and was in April issue; is it a joke? The only problem is that this is exactly the same idea which was developed independently recently by one of our readers (A. Ohsberg, from VK7), and a prototype was tested successfully. The idea of using the sharp back bias characteristic of a zener to amplify power does sound reasonable, and ought to be investigated further.

Correspondence

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

APPRECIATION

Editor "A.R.," Dear Sir,
I wish to sincerely thank VK4AP, Rick Lake, for his technical and other assistance rendered prior to my Lord Howe Island trip in Nov.-Dec. 1966. Even while there and receiver trouble was experienced, Rick spared no effort to assist. His assistance was deeply appreciated.
—Arch Hewitt, VK5XK.

EQUIVALENT FOR PADT50 TRANSISTOR

Editor "A.R.," Dear Sir,
In reference to your reprinted article, "The 80 and 40 Transistor Special," I have contacted Mr. John S. Hill, the author of the article, and I have enclosed a xeroxed copy of the literature received.
The AUY10 transistor which is the Philips equivalent of the PADT50 is available from Philips. These are in stock in Sydney and may be ordered through any of Philips distributors.
Hoping that this information may be of use to you.

—M. J. (Mike) Groth, VK5ZMG.

[The information referred to above has been retained by "A.R." Anybody interested can contact us.—Editor.]

IONOSPHERIC PREDICTIONS

Editor "A.R.," Dear Sir,
Thank you for publishing in the January issue of "A.R." an excellent article by Frank Hine, VK2QL, on the subject of Ionospheric Predictions.

I have been interested in this subject for quite some time and this is the first occasion that I have been able to find such a wide variety of information under one cover and written in a way that everyone can understand, particularly in the matter of extracting information from the charts.

The amount of research undertaken by Mr. Hine must have been enormous and I should like to congratulate him on a most informative article.

—Warwick Johnston.

PROPAGATION OF AMATEUR SIGNALS

Editor "A.R.," Dear Sir,
Many thanks to Mr. F. T. Hine for the excellent article in January "A.R." I hope you can persuade him to write again in future and would be grateful to see him deal at greater length with shorter distance communication up to 2,000 miles. How does one choose the best frequency, and in particular what are the advantages and limitations of v.h.f.? How does the W.I.C.E.N. net plan for, say, Sydney to Melbourne communication?

Also, I would be very interested in an article comparing the performance of f.m. and a.m. under practical Amateur operating conditions, if ever you have an opportunity to ensnare a suitable author.

With many thanks for producing such an informative journal.

—E. J. Pottage, VK3FG.

"THIS PARADE OF EXPERTS"

Editor "A.R.," Dear Sir,
I see in the March issue (DX Notes) that the back room boys are not painting an over optimistic view of the next sunspot maximum. This is strange, as just last week I was reading of an expert who had just predicted that the next maximum would be the highest on record. But really, as we all know, this parade of experts has been going on for several years now, each predicting something different. There are probably so many different predictions by now that whatever happens, someone will be proved to be a good prophet.

I would suggest Mr. Editor that it would be a good move if you were to insist that any such long range forecasts you publish must come with the odds that the expert is offering for hard cash bets that he will be right or wrong. The professional ionospheric services would probably offer 20 to 1 on next month's forecast and maybe 4 to 1 for a six month's forecast, but decline to bet on anything longer. These odds are just a guess as they would depend on exactly what was agreed on as to the meaning of being right or wrong.

On the other hand if long range forecasts of the next sunspot maximum keep coming in, then the problem of "A.R.'s" finances are solved, if the experts offer better than even money. I am sure you would be happy to put

half your kitty on this week's expert at better than evens and then the other half on next week's expert who predicts the opposite, so that you make money whoever turns out to be right. But if they just offer evens, then save space by not publishing their "forecasts" since they themselves have no confidence in their own forecasts.

Why are there this deluge of predictions? Not because of radio propagation but because at this next maximum men will be going to the moon through the solar radiation. And someone, somewhere, at about now, is having to decide how much radiation shielding they should carry with them. Too little for the solar maximum will cost lives, too much will cost billions of dollars or roubles wasted. I feel sorry for this unknown decision maker trying to decide which experts guess will be best.

—Alan Head, VK3AKZ

NEWS ITEM

Editor "A.R.," Dear Sir,
Morton Brewer, W6JU, and Mrs. Marion Brewer will pay a short visit to Australia in December 1967. The visit will only be for three weeks and he will spend about a week in Victoria.

Morton is second engineer to John Knight, W6YY, who is chief engineer of KNBC Ch. 4, Los Angeles.

John Knight was out here for a couple of weeks just prior to the Ch. 0 allocation on a survey check for one of the applicants for that channel.

—John Murray, VK3AJY.

SUGGESTIONS

Editor "A.R.," Dear Sir,
May I suggest the following ideas for your already excellent magazine:—

(1) A Questions and Answers Column
If a panel of experts cannot be found or co-opted to do the answering, may I suggest the readers of your journal will probably be only to willing to have a go and you can pick the best answers for publication.

(2) Articles Requested List
If your readers are asked regularly to write in and tell you of any particular articles they would like to read about, and if you published a few items requested now and then, I am sure you would find many Hams who would write the articles requested.

I would like to start the ball rolling by asking the following question:

26.96 to 27.23 Mc. is one of the allotted Ham frequencies. Are there any Hams on this band, and if so when do they operate? Would any Ham on this band please let me know?

—Bob Callander, VK3AQ

[It's up to our readers.—Editor.]

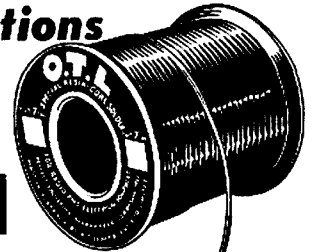
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One of the most interesting events for the Y.R.S. in N.S.W. recently was the exhibition of gear at the W.I.A. Convention at Dural. This was organised by Ivan VK2AIM and was a good example of what success the Y.R.S. is having and augurs well for the future. There were entrants from Postal Groups 3 and 4, Camp Technology, the Kingsgrove High School and Westlakes Radio Club. There were several contests held during the day, which proved very popular. The crystal set wiring contest was won by Jim Mathews in 47 seconds and the memory contest by Clark Gerber. On the construction side, the junior section (under 14) was won by Mark du Cross for his light sensitive relay. The senior section (over 14) was won by Douglas Friend for his television set and c.r.o.

Some of the other projects on display were several 1-transistor sets, crystal sets, Morse oscillators, an electronic "tic-tac-dough" board and a television camera using a mechanical scanning device, photo sensitive transistor, inter-com., the A.W.A. flip flop and an alarm. All in all, it was a mighty effort by the boys and by Ivan for putting everything into excellent order. It was a very hot, humid day but this did not deter the enthusiasm of the boys. The tent was crowded at all times with adults as well as the boys. This is the sort of event which could help Y.R.S. tremendously and it is hoped other States will follow suit in some way.

To help with the training of club members, Y.R.S. has started a programme of supplying electronic kits—as finances become available. To date a Phillips EE/20 has been supplied to Sydney Teachers' College Radio Club, a Phillips EE/8 to Mittagong Training School for Boys, an Eveready Kit to Keith Howard for allocation to a suitable Hunter Valley Club, and a Genacs Kit to Clemton Park Boys' Brigade Club. Of course, this project is severely limited as Y.R.S. is not a very financial organisation. In addition, a considerable number of "home-made" kits have been issued to clubs on a loan basis. For example, audio oscillator kits, crystal set kits, continuity tester kits, simple telephone kits and similar sets of parts have been distributed to many clubs. These kits remain Y.R.S. property and are subject to recall if the clubs concerned fold up.

In addition, many issues of donated gear have been made. For example, Epping Boys' High has received a Geloso v.l.o. transmitter, North Strathfield Scouts have a low powered transmitter (formerly used by Bass Hill High School Radio Club), Clemton Park Boys' Brigade have an old 3BZ transmitter (a.c. operated) and a Type 3 Mk. II., etc. The gear which was being used by the former Illawarra Youth Radio Club has been re-allocated. Scope soldering irons have been distributed to various clubs. This part of the Y.R.S. operation is becoming a special job and a volunteer with plenty of space and time would certainly be appreciated.

In 1961 there were five clubs associated with Y.R.S. In 1966 there were just on 50 in N.S.W. alone. Rex Black, our travelling supervisor, should be congratulated on the tremendous job he has done to instigate the Y.R.S. and then have it gain so fast in a comparatively short time.

Camp Technology was very successful again this past summer with 48 in attendance, two having come from Victoria. Mr. T. Mayne, Smr., has very generously donated a Swan 350 transceiver to the Camp and with the loan of a three element beam from the Amalgamated Wireless, the boys were able to work stations from all over the world. From this standpoint, of course, Mt. Victoria is a very good choice as a spot for DX.

VK1: Len Whyte of the Canberra Youth Radio Club has now received his call sign of VK1LN and is putting out a good c.w. signal on 80 mx. Len passed his A.O.C.P. last April and has been patiently waiting until he turned 18 (early in February) to get on the air. Another Canberra boy, Richard Swan, has just received word that he passed the A.O.L.C.F. at the January examination this year and no doubt is on the air by now.

VK2: Ray Carpenter of Westlakes Radio Club has gained the A.O.L.C.F. and has received a copy of the R.S.G.B. Handbook from O.T.S. and a large box of parts from the W.I.A.

VK3: Howard Rider advises that the Victorian Division of the Y.R.S. has received the club call sign of VK3ANE, and that Don Reid,

VK3EI, is responsible for the station and its operation. Slow Morse broadcasts will be conducted for members in the junior and up group very shortly.

Last month we mentioned that a very attractive lapel badge for those who have gained the elementary certificate or higher would soon be available. I understand that this is to be as of March. Also, there is now an embroidered pocket badge which should enhance a jacket very nicely. This is available now to members who have obtained the junior or higher certificate at a cost of \$1.75.

The S.w.I. Group publishes "Zero Beat" every two months and after the April issue the Y.R.S. Newsletter will be included. Being an s.w.I. is very interesting and an important step in acquiring the ticket.

I would appreciate receiving news about Y.R.S. activities from all States by the last Wednesday of each month or before if possible. Please send to Mrs. M. Swinton, P.O. Box 1, Kulnura, N.S.W. 73, Mona VK2AXS.



Publications Committee Reports

The Publications Committee met a week earlier this month as the normal meeting night fell on a public holiday. It is, therefore, possible that some mail meant to reach us by the second Monday is not included in this report.

Technical articles were received from VKs 1AU, 2ZIO, 3ADA, 3ZKC and 4SS. The story of the Hobart fires was submitted by Greg. Johnston, VK7ZKJ. (VK5PS will please note.)

Correspondence was received from VKs 3AU, 3FG, 3ACM, 3AJY, 3AKZ, 3ZKJ, 5ZIM, VU2GV and C. Christiansen.

Some time was spent discussing the only item on the Federal Convention agenda of direct concern to this Committee. As we have a file on this subject it was decided to make this the basis for our contention that a new method of handling the annual mass deletions is desirable as the present method is an unreasonable state of affairs as far as our circulation manager is concerned.

We were pleased to welcome VK7LL to our meeting, when we had the opportunity to discuss with him a suggestion he made several months back. After we have had the chance to discuss his suggestion with the printer we will give the suggestion further consideration.

CONTESTS

"CQ" WORLD WIDE S.S.B. CONTEST

Freels of Rules

Contest period: 0000 hours GMT, 8th April, to 2400 hours GMT, 28th April.

Frequencies: 3.5 to 9th Mc.

Mode: Two-way s.s.b. only.

Exchanges: RS report plus the usual 001, 002, etc.

Scoring: (i) Contacts between stations on different continents, 3 points; (ii) Contacts between stations on the same continent, but not in the same country, 1 point; (iii) Contacts between stations in the same country, no contact points, but count towards prefix multiplier. Multiplier: One point per prefix worked irrespective of band.

The total score is the total contact points multiplied by the sum of different prefixes worked.

Logs: Use a separate log for each band. Logs to be postmarked no later than May 15, 1967. Address: "CQ," 14 Vanderveren Ave., Port Washington, New York 11050. Attention: W.W. S.S.B. Contest.

Awards: Certificates to highest scoring single op. station in VK for highest score on each single band and for highest all-band score.

N.B.—The full rules appear in "CQ," March, 1967, page 64.



P.A.C.C. CONTEST 1967

Freels of Rules

Contest period: 1200 hours GMT, 29th April, to 1800 hours GMT, 30th April.

Frequencies: 1.8 to 30 Mc. Cross-band contacts invalid.

Mode: Any, but cross-mode contacts invalid. Exchanges: RS (phone) or RST (c.w.) plus 001, 002, etc., for VK stations, PA stations will give the RS or RST plus two letters indicating their province.

Scoring: Two points for receiving a number plus 1 point for receiving confirmation of the number transmitted—thus each confirmed contact scores 3 points.

The multiplier is obtained by adding up the number of provinces worked on each band. The maximum multiplier is 88.

The final score is the QSO score for all bands multiplied by the multiplier.

Logs to be postmarked not later than 15th June, 1967, and addressed to Mr. F. V. D. Berg, PA0VB, Contest Manager V.E.R.O.N., Keizerstraat 54, Gouda, The Netherlands.

Awards: Certificates will be awarded to the highest scorers in each VK call area for both c.w. and phone.

W.I.A. D.X.C.C.

Listed below are the highest twelve members in each section. Position in the list is determined by the first number shown. The first number represents the participant's total countries less any credits given for deleted countries. The second number shown represents the total D.X.C.C. credits given, including deleted countries. Where totals are the same, listings will be alphabetical by call sign.

Credits for new members and those whose totals have been amended are also shown.

PHONE

VK5MS	314/335	VK2JZ	286/281
VK3AHO	313/325	VK4HR	261/277
VK6RU	301/324	VK3TL	254/258
VK5AB	300/314	VK2AAK	233/237
VK6MK	298/315	VK2APK	226/229
VK4FJ	275/292	VK2ADE	223/237

Amendment:
VK4DO 188/180

C.W.

VK3KB	319/342	VK2AGH	279/292
VK2QL	295/315	VK3NC	266/286
VK2ADE	291/313	VK3ARX	262/270
VK3CX	291/312	VK6RU	256/277
VK4FJ	287/309	VK3XB	249/282
VK3AHQ	281/293	VK3TL	245/248

Amendment:
VK4DO 184/201

OPEN

VK2AGH	308/328	VK2EO	285/308
VK2ADE	305/329	VK4HR	279/301
VK6RU	305/328	VK2ACK	276/300
VK6MK	300/317	VK3ARX	274/282
VK2VN	294/309	VK3JA	272/290
VK4FJ	293/315	VK3TL	272/278

Amendment:
VK4DO 208/224

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 - ★ Type F s.s.b. Generator Kit
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DX

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

Many reports this past month give details of openings on 21 and 28 Mc. There is no doubt that Old Man Iono is now being indulgent to the poor mortals who pursue DX via the m.u.f.

15 mx. is now open daily to diverse places; firstly, U.S.A., Central America and northern parts of South America from 2200z. Later, the Js appear and stay audible until well into the night. From 0600, the Asians appear, followed by Europe. The band finally closes here around midnight.

10 mx, although much quieter, has been following the same pattern roughly. Firstly, around 2100, U.S.A. and VEs appear, followed by Js, then Europe between 0730-0930; after this, the band appears dead.

It is very encouraging to say the least, if conditions steadily improve, then our next spring-summer-autumn period may see some real activity on these bands. OTs will remember with drooling anticipation the brisk state of 10 mx immediately post-war.

To verify these reported openings, both from overseas and local, some time was spent on these bands and at this QTH they exceeded expectations. It was possible to QSO Europe nightly 0900z here, on 10 mx; those using the quad antenna were putting in some S8 sigs., such as OH1VR. However, just to prove that QRP gets places when the m.u.f. is at ten, G3TFX has been workable daily, using five watts to a dipole. The coming winter months may take the life out of these bands, but it is anticipated that next spring will bring some promising results. So wind that extra coil and see what you can do.

21 Mc. is quite crowded at 1000z, with Europe easily workable, as well as Africa and Asia.

NOTES AND NEWS

Tristan da Cunha: Alan ZD9BE is active on 14125 and listening about 14260 from 2100z. QSL W2GHK. (LIDXA)

Pitcairn Is.: Tom VR6TC is on every Monday 2000z 21085 c.w. and then moves to 21350 2100z. QSL W4TAJ. (LIDXA)

Gilbert Is.: Paul VRIC QRV 14195 and listening about 15 up. Also on 14185 transceive, from 0400 to 0900z. (LIDXA)

Kermadec: ZL1AI is still active at 0600z. Now seems to stay around 14200.

Branel: Mike VS5MH is reported on every Wednesday, 14190 1230z. QSL WIDGJ.

Crete: Bill SV0WL works around 14200 at 1800z. Also 28600 at 1800z. QSL W3CJ/K.

Maeguarle Is.: Rod WK0CR 14180 0800z, also sometimes 14070 c.w. QSL G. Johnston, Inglis St., Newtown, Hobart, Tas.

LA88BO Operation: This occurred from Clipperton Is. for a period of two hours 1600-1800z. If by chance you did manage a QSO, send the QSL to Bill Rindone, WA8SBO. (LIDXA)

Nicaragua: YN6AV 14200 and elsewhere after 1700z. QSL to Aquileo Vanerio, Chinandega, Nic. (VK4UC)

Salvador: YS1VST 14150 0545z. QSL, Box 585, San Salvador. (VK4UC)

Norfolk: Olaf VK3AH1/9 was active from here for only a few days. His next DX-pedition is to Nauru if he can make it. (VK4UC)

Aleutians: These and more are QRV from here. KH6GPH/KL7, WFAY/KL7, KL7FPF, K17BY. Listen 0700z around 14240. (VK4MY)

Ceeyo Is.: T18JIC 14100 at 1330z. (VK4MY)

Grenada: VP2GHI 14146 0700z (VK4MY). Also VP2GLE on c.w. around 14060 most days at 2030z.

Bonaire Is.: Activity by PJ5BS has now concluded. May be activated again later.

Gibraltar: ZE2AM 14038 at 0730z. (VK4MY). Also activity from this spot on 21 and 38 Mc. 0900z.

Yemen: 4W1K/HB9AAT QRV 14120 1900z. QSL HB9AAT. (G3UGT, "Air Waves")

Thailand: HS3NT 21 Mc. 1100z. (G3UGT)

Gambia: ZD3G 14024 and 14200 2000z. QSL K8ENX. Will be here for a year. (G3UGT)

Garbon: TR8AR 14024, 2100z. QSL Box 3123, Libreville. (G3UGT) Also TR8AG, 14140, 0700z. (VK4MY)

Ivory Coast: TU2AY 21 Mc. s.s.b. QSL P.O. Box 20194, Abidjan. (G3UGT)

Lord Howe Is.: Just another reminder that VK2AVA and VK2EX will be active May 5-15. Original time given was in June. One stipulation is that no calls will be answered on

transmitting frequencies. QSL P.O. Box 323, Springwood, N.S.W.
Tahiti: FO8BR, 14118 c.w., 0600z. (VK4MY)
Also FO8AA almost daily, 14-1500 GMT, mainly 14043 c.w.

Qatar: Ray VS9ARV is ready to begin operations from here, on final approval from the Chief of Police. QSLs via VS9ARV.

Afghanistan: Wolf YA5RG quite active on 14213, 0330 GMT. QSL via DL6ME. (LIDXA)

South Georgia: Dave VP8IE on daily, 14204 0200z. (LIDXA)

Galapagos Is.: HC8FN 21330 0100z. QSL WA-2WUV. (LIDXA)

Kamaron Is.: This trip was cancelled due to political instability. Les VS9ALV will now attempt operation from FL8. (LIDXA)

Malpelo Is.: K4CAH of ZF1EP fame is said to be planning a journey here.

New Hebrides: FU8AG and YJ8BW both very active now. The former 14010 1045z, and the latter on most bands at various times.

Sierra Leone: 9L1JM, ex PA0LI, Sundays mainly, a.m./c.w. 7 and 14, 0900-1300z. QSL 9L1SL. (G3UGT)

Trucial Oman: MP4TBO 21400 1400z, also 14180.

Falkland Is.: VP8GJ 14008 0700z. (G3UGT)

Cape Verde Is.: CR4CB 28 a.m. CR4AJ, CR4BA 14 and 21 s.s.b. CR4AB 14 c.w. (G3-UGT)

Botswana: ZS9D and ZS8L QRV from here shortly. Keep an ear open.

Croset Is.: FB8WV 14140 1800z and c.w. 14050 1300z. (G3UGT)

Pakistan: AP2NMK 14180 1400z. Op. is AP-2SG. (G3UGT)

Madeira: Hal CT3AS very active 14 Mc. c.w. and s.s.b. (VK3TL). Also worked here on 7013 at 1930 and 21 c.w. He is on 28 Mc. c.w. at 0900z.

The following are a few random extracts from George ZL2AFZ, DX Editor of "Break-In," who supplied a very comprehensive DX report:—

Rep. of Algeria: 7X0AH, Harry ex DL7AH, 14 and 21 c.w. QSL P.O. Box 3, Maison Blanche.

Newfoundland: VO1IB, 14150. Also VO1FB 7003 at 1100z.

Samoa: W7DEL/KS6, 14230. QSL to Box 8, Pago Pago.

Cyprus: ZC4CI on 14150.

Cuba: CO2DR, 14195. QSL Box 699, Habana.

Venezuela: YV5AE, 14138. QSL Box 3558, Caracas.

Bahrain: MP4BFF, 14110. QSL to W2CTN.

Hong Kong: VS6FS 14160. QSL Box 22, Hong Kong.

Puerto Rico: KP4CSH, 0625z, 14007.

Tripoli: 5A4TH, 2130z, 14115. QSL Box 850, Tripoli, Libya.

Lloyd and Iris still in California, plans to move to West Africa early March.

Bermuda: VP9WB, 14020. QSL Box 275, Hamilton, Bermuda.

Rhodes Is.: SV0WU, 14040, 1530z.

Marens Is.: KG6IF, 14340. QSL to W6ANB.

Wallis Is.: FW8RC, 14138. Reported active during week-ends.

Turkey: TA2AC, 14050. QSL to K4AMC.

British Guiana: New prefix is HR1.

Tunisia: 3Z6AZ, 14112. QSL to W6BBE.

Greenland: OX5BO, 14030, 2000z. Curtis Carter, Box 2189, 1983 Comm. Sq., A.P.O., N.Y. 09023

Vietnam: K1YPE/XV5 14 c.w. and s.s.b., also all bands and modes.

Indonesia: W0GTA/8F4. All bands, modes.

9JIC (14100), 5N2ABG (14157 2118), YU2CE, FJ5BS, 4K4SW, KH6GPH/KL7, WFAY/KL7, KL7FPF, etc. These were heard on 20 s.s.b.: F77YL, KC6BW, ZCAGB, UC2AA, TR8AG, FO-8BR, VP1AB, 9N1BG, JT1AJ. Mostly around 0700z.

Chas. VK4UC now using a Bruce Array on 20 and finding it an improvement. His score this month using his usual QRP was as follows: YS1VST, TG9EP, TG8RH, TG8IA, F5OC, HA-7LD, HC1MF, KZ5US, DU9FC, FL8RA, XE-11JD, HC1MF, KZ5QH, KP6AZ/MM, FCTXX, HK3AVH, 4X4WN, 4X4YV, HS1JM, LZ2KKZ, QSOed mainly between 0700 and 1200z. (Thanks Chas.)

SOME QTHs

HC1MF-WA8FFL
9M8LE-9VINT
HS1JM-VK6JM.
CT3AS-G2MI or R.S.G.B.
5N2AAF-W7VR0.
3COMY-via VEI Bureau.
KP6AZ-W6FAY.
ZS8L and ZS9D-WABRE.
VK2BRJ/9-W4ECI.
9X5WM-Box 642, Kigali, Urundi.
ZB2AM-Ex G3JFF, via R.S.G.B.
YS1VST-Box 585, El Salvador.
VR1C-Ex ZL2NS, QSL to home QTH.
VU2FN-Embassy of Canada, New Delhi.

SUMMARY

Several letters this month complain of the ever increasing commercial QRM problem. It is only too obvious that it is increasing on all bands, but what can be done or what is being done? How many are legitimate? Who are the bootleggers? Which are operating in Region 3, and so on? Geo ZL2AFZ reports a lot of this type of QRM on the high end of 21 Mc. 80 and 40 metres become simply crammed to the limit as the night progresses. I hear quite a few unidentifiable signals on 20 metres at various times. I notice too that during contest and other periods of high activity many of these stations just disappear. Draw your own conclusions.

My thanks again to the column's supporters. Don't leave me, keep sending in whatever you have please. 73, Al VK4SS.



MP4TBO TRUCIAL OMAN

A familiar voice from the Oil Sheikdom. Roger Baines operates from the state of Sharjah. He is with Trucial Oman Scouts, a member of the Peace Force from the British Government. The gear in use is a KW2000 with an after burner, FL1000, 400w. p.e.p. to TA32. Roger says if you think it's been hot this summer, the temperature at his QTH goes to 130 degrees F. and very humid. He rates Ian VK3MO, who uses a three element quad, as the best signal out of VK.

Give Roger a call, he is always eager to rag chew with Oceania. Send his QSL to MP4BBW or VE1AKZ.



CONTEST CALENDAR

- 8/9th April: "CQ" World Wide S.s.b. Contest.
- 29/30th April: P.A.C.C. Contest 1987 (VERON).
- 13/14th May: N.Z.A.R.T. Sangster Shield (3.5 Mc. only).
- 8/9th July: N.Z.A.R.T. Memorial Contest (3.5 Mc. only).
- 8/9th July: R.S.G.B. 1.8 Mc. "Summer" Contest.
- 12/13th August: Remembrance Day Contest.
- 7/8th October: VK/ZL/Oceanic DX Contest (phone section).
- 14/15th October: VK/ZL/Oceanic DX Contest (c.w. section).

SWL

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

Major activity for many listeners this month was the annual participation in the John Moyle Memorial Field Day. However, this year I feel from the s.w.l. point of view, it was a waste of time. We are only able to score from portable stations and quite right so, but there did not seem to be a great number about and long periods elapsed in which there was little which could be logged in VK2. Nevertheless, there was some interesting operations, and I personally enjoyed the contest. For anybody trying to earn the Elizabeth Amateur Radio Club award, VK5LZ, who was operating in the contest, is the club station and counts for two points. Then too was the activity on 160 metres, and listeners are urged to seek QSLs for these entries, as they may well be valuable at a future date for award purposes.

For the Commercials: Mr. Bob Stokes, the Australian representative for Trans-World-Radio in VK, reports that despite the fact that their programmes are not beamed in this direction, transmissions from the stations in Monte Carlo and Bonaire have been reported from the country areas. These have been heard between 7 and 7.30 a.m. in the 25 mx band, but are not to be confused with a station which broadcasts political and gospel programmes on a channel close to Bonaire. Should anybody hear these programmes and care to drop me a note, I will QSP the information to Mr. Stokes.

DX NEWS

ZL1HW, HA5DKQ, G3VDV, W6WY and YA-1FV can all be reached via the I.S.W.L. Bureau. TAI1AV QSLs via SM0KV, UA0YE in Zone 23. VR4NL/VR1 is reported in "Monitor" as a pirate. CT3AU QSLs via Y.A.S.M.E., Box 2025, Castro Valley, Calif. The prefixes 3C, etc., which have been heard lately are special ones issued to Canadian Amateurs for the Centennial year. 3C replaces VE while 3B takes over from VO.

5A2TS is Box 2219, Tripoli. XE2JZ, A.P.T.O. 142, Laredo, Mexico. TR8AG, G. Valier, BF-157, Libreville, Gabon. VP5BH/MM QSLs per W4OMW if you hear HF prefixes on 10 mx, these are special v.h.f. prefixes issued by the Hungarian authorities, and some of these have permission to use 10 mx. VE8RCS is Zone 2. W7AQB is Zone 3, whilst W0MLY is Zone 4. HC is not an easy country for confirmations, and two possibilities are HC1RC, A.P.T.O. 289, Quito, and HC2EC, A.P.T.O. 1112, Guayaquil.

AROUND THE SHACKS

Mac Hilliard was able to hear the New Year's day breakthrough on 6 mx, more so, he succeeded in logging the ZLs. It is good to note that Mac is striving to improve his c.w. speed, and is now at a speed which enables him to copy much of the traffic on the Amateur bands.

Here at L2022 with the AR7 about to undergo a refit, a Phillips No. 4 is in use. Listening mainly on 20 mx, some good loggings have been made: CR5SP, EP2AX, 4W1H, VS9ARV, EA4JQ (Box 220, Madrid), KG8IJ, VQ9KC, XW8BQ and CR8IJ on s.s.b., whilst 5W1AZ, MP4BEU, EL2Y, UD6BQ and FL8RA on c.w. Some Europeans and many Ws were logged on 40 mx c.w., whilst for the first time at this QTH, signals have been heard on 160 mx: VK3AWI/P, VK3VK/P and VK5KO, on both modes. Inwards QSLs: CT2YA, SV0WT, VP-2GLE and several VKs for award purposes. Score here is 303/157.

Ernie Luff, L5080, is still climbing up the ladder over there in VK5, with QSLs to hand from ID1DIA, YU3LC, YU2NFG, I1ACY, I1AA, ZK1AR, W5FKZ, W0GIL, ZF1GC and VR2DI, and loggings of OZ4OL, UA2AO, HC1ME, OE1FF, UA9WO, VP7NA, VS9MB, VP2HR, Y1AFV, PA0FAB, PY7AEW, VP6EW, PJ2AQ, 6Y3MJ, LX1DE and many others.

Alan Rafferty, L5065, has been pulling in some more QSLs, the latest being from ZK1AR, F8EG, KC4USB, DJ8EG, ZL5AA, YV5BQF, VK0MI, VK6ZDC, DJ4UV, VK3WI (6 mx), MP4TBO, XW8AZ, DL6EZA, XW8AX, V5EK, U88MN and W2IEV/MM. Alan has been hearing some good DX, including two new countries, UL7JA and HRIKAS. His position on the DX ladder 194 heard and 75 confirmed.

By the way chaps, the QSL Ladder will not appear for another two months until I sort out a couple of problems with the Group Secretaries.

Not a listener in the regular fashion, but one of our best known VK9 Amateurs, Arnold VK9AG has asked me to mention to you that he will be pleased to QSL for correct reports sent to his QTH, Box 110, Rabaul.

Reporting in by tape from Northampton in the U.K., my good friend Ray Mosely included a recording of well known DX man, VK2NN, in a 15 mx QSO with a G. If you are ever wondering what Tom's signal is like at that end, rest assured that it is one of the best to get into G-land.

Talking of tapes, another interesting one was received here last week from America, where the chap concerned spoke to me over a 2 mx link into a tape recorder several miles away. Great interest is being shown by overseas listeners, in our activities over here.

VICTORIAN DIVISIONAL NEWS

Any country members visiting the city during the year are reminded that there is a radio constructional night on the second Friday of each month, as well as the regular meeting on the last Friday of the month. Location of these meetings is at headquarters of the VK3 Division, 478 Victoria Parade, East Melbourne. Lectures have been arranged for the first half of the year on a variety of subjects including Project Australia, teleprinters, f.m. equipment and signals between 30 and 230 Mc.

If you have any friends interested in radio, bring them along, and members of the Youth Radio Club Scheme are most welcome. The Group is trying to arrange some technical visits for the next few months and full support is required, as lack of numbers for these visits will mean that no further events will be organised. These notes have been supplied by Ian Woodman, L3006.

AWARDS

There are many awards covered by the general title of "Islands of the Air Awards," sponsored by Geoff Watts' "DX News Sheet". They cover Africa, Antarctica, Asia, Europe, North and South America, Oceania, Arctic, British Isles, West Indies, World, and D.X.C.C. plus a yearly contest and silver cup. For full information on these awards, and lists of island groups, send four I.R.C., or six for an airmail reply, to Geoff Watts' "DX News Sheet," 62 Belmore Rd., Norwich NOR 72T, England, requesting the Directory of Islands. These awards, etc., are available for licensed Amateurs and S.w.l.'s alike, and are a really worthy contribution to the listeners who are anxious to gather some really fine awards.

QSL CARDS

Once again the question of poorly filled out and inaccurate reports has arisen, due in this instance to a number of cards being returned to the Bureau. I do not propose to write a screed on how to report, and I sympathise with a new recruit to the S.w.l. ranks when

he makes a mistake, I certainly made enough, but there are a few points which occasionally need a little further emphasis.

The listener's approach is most important, the polite statement would appreciate ur QSL for "D.X.C.C." will certainly carry more weight than the often used "I want your card as you are a new country."

Another frequent error is noted where a person reporting, as he should, in GMT quite accidentally puts the wrong date on his report. This happens in the case of a report on a transmission made, say, at 2200z 1/3/67, and the QSL written out at once. Very often the time is entered correctly, but the writer takes a glance at the calendar and enters 2/3/67. Needless to say, the busy DX man can find no entry and the card is returned.

One instance which came to my ears from overseas really showed the S.w.l. in very poor light. The listener in question heard a nearby DX operator working a foreign country, but could not hear the other end of the contact. However, being a "smartie", he sent the foreign op. a QSL, marking the mode as s.s.b. which was being used by the other half of the contact. What he did not know was that the man he QSL'd was using a.m. and had been discussing his reasons for retaining this mode for a lengthy portion of the contact. He had not bothered to check the QSO after the initial contact had been made, and as a result not only he, but his local club, heard quite a bit about it after the QSL had reached its destination.

As my desk calendar very aptly puts it, "The smartie soon smarts for his smartness."

It pays to check every QSO which you intend to QSL, for quite often you may be able to add something to your report which will be of help to the station in question. To the newer S.w.l., if there is any point of the subject of reporting on which you are not clear, there are many experienced S.w.l.'s who are only too willing to assist you to the best of their ability and I am sure that any listener whose name appears in the DX ladder will be anxious to pass his experience on, and to do what he can to keep the standard of reporting high.

DX LADDER

As I mentioned earlier, the full DX ladder will not appear for another two months. There are a couple of points to be cleared up. Firstly the question of retaining the names of licensed Amateurs, limited or otherwise, who hold a place in the ladder, secondly the removal of names of inactive or non-reporting listeners.

I have cards made out here for 22 members of the ladder. This month I have heard from only five of them, others I have not heard from for maybe six months or more.

I would be pleased to hear any comments on this matter, and for any possible re-drafting of the contents of the scores.

That winds it up for this month, which, being a short month, forced me to close before all reports had been received. 73, Don L2022.

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VHF

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

News time is here again. Well there is not much to say except thank you to all those contributors who have sent in typed or legible notes this month. In this edition of "A.R." is a list of copy dates for "A.R." for the rest of this year. Just one thing more. Not only I but the other sub-editors and the editor would very much appreciate it if all copy could be typewritten on half a foolscap page and double spaced with a one inch margin at each side. 73, Cyril VK3ZCK.

NEW SOUTH WALES

(The VK2 New Year Field Day results were enclosed but are not decipherable, so I am unable to include them.—Sub-Editor.)

The Field Day distances were checked with a I.C.A.O. 1-100,000 map. Among the notable contacts was one between Eddie VK1VP/P and Alec VK2AAK at Kulnura, a distance of 210 miles, on 432 Mc. Ray VK3ATN at Birchop worked VK2BLR/P at Mt. Conobolas. To all those who participated, the committee wish to say thank you, and if you have not been in a Field Day before, well give it a try next year. Talking of field days, it is felt that the ethics of Amateur Radio are degenerating when a monetary prize is offered for a 2 mx fox hunt at a well known convention.

The VK2 V.h.f. Group certainly counted their blessings when the tragic bush fires struck Hobart. It was most gratifying to see the Amateur services doing such fine work, helping with the emergency communications. To those VK7s who were burnt out, we send our best 73 and our donation of \$10, hoping it will be of some assistance.

The 2 mx Morse session is becoming very popular as we now have four very capable operators in 2ARF, 2AHW, 2PQ and 2ANY. The session starts at 2000 hours most week nights.

Band activity is a little slow, possibly because of the Morse sessions, but will no doubt adjust itself in a couple of months. Fox hunting is not so popular as it used to be. The 2 mx fox hunt is held on the fourth Wednesday in each month and the 6 mx fox hunt on the Sunday following the V.h.f. Group meeting. 73, Stephen 2ZSK.

HUNTER BRANCH

62 Mc.: During the month things have been quiet, the last DX was on Jan. 25 when some VK3 and VK5s were worked; nothing else since, only lots of tuning and calling when Channel 7 was heard.

The big surprise of the month was working Jean Duplat, FK8AB, on this band, maritime mobile on the S.S. Caronte. He was worked many times by the local 52 Mc. gang. He said that he has heard VK signals from his home QTH in Noumea and hopes to have both 144 and 52 Mc. gear when next in these waters. He also hopes to build better gear for home station and work some VKs from Noumea.

VKs 2ZWM, 2AYF and yours truly 2ZMO can usually be heard on the Saturday and Sunday net; a few others join in when they are free to do so. Quite a few are either at, getting ready for, or repairing gear after field days.

We from the Hunter Branch extend our sympathy to the VK7 boys in the disastrous Hobart and district bush fires.

144 Mc.: Some fair openings have been had on this band. Sydney has been coming in well and most of the boys have got among the DX. New ones to break the "sound barrier" to Sydney are Frank 2ZFX and Ian 2ZIO. Most nights this band is rather quiet with odd Sydney stations heard, but a couple of nights each week there are a few locals to be heard usually, 2ZSG, 2ZWM, 2ZMO, 2ZFR and others when work permits.

Barry 2ZUB is now known as the "Bird Trap" because he has recently acquired his c.w. and is awaiting a full call. He is busy building himself a quad, allegedly to catch the r.f. on 14 Mc., but will more than likely trap the birds.

The Y.M.C.A. in Maitland is starting a radio club and guess who is teacher—none other than Kevin 2ZKW. The official opening was on Friday, 24th Feb. Among the official guests were Gordon 2ZSG, Secretary of the Hunter Branch, and Keith 2AKX, of the

CLOSING DATES FOR COPY TO V.H.F. SUB-EDITOR

Correspondents to the V.h.f. Page are reminded that the Sub-Editor must receive their notes by the following dates:—

April 29	August 28
May 27	September 30
June 24	October 28
July 29	November 25

Remember also, all copy where possible should be type written on one side of half a foolscap page (6 x 8 inch) with a one inch margin on each side, and double spaced.

Westlakes Radio Club. I notice that the v.h.f. scribe was not among the official guests, maybe they don't know about v.h.f. in these parts. 73, Mac VK2ZMO.

VICTORIA

Activity in VK3 over the past month has not been to the level where one has to look for a vacant spot on 6 or 2 metres, but the average v.h.f.er could average four or five contacts a night if he wanted.

The main activity of note this month has been the efforts by the W.I.C.E.N. group in Melbourne during the big bush fires on the Mornington Peninsula, which were the same day as the disastrous fires in Hobart. The evening of that day, whilst monitoring 2 Em., 80 and 40 metres, and the 6 mx net, some 6 mx mobiles were heard operating in the Hobart area and the Melbourne mobiles and fixed stations gladly kept the net clear to avoid interference. 73, Cyril VK3ZCK.

QUEENSLAND

At the January v.h.f. meeting our former scribe, Peter 4ZPL, tendered his resignation. We were sorry to see Peter leave Brisbane, but no doubt he has made many friends in Townsville by now.

At this meeting, Roy 4ZRM was elected President, and a hearty vote of thanks was given to the retiring President, Mick 4ZAA. Tom 4ZAL was elected Hon. Secretary and Royce 4ZRH was elected Hon. Treasurer.

It was also decided, in view of the activity on higher v.h.f. bands in the South, that the Queensland group should follow suit and actively participate in similar experiments. Subsequently, a group project was formulated to establish 6 mx men on 2 mx, and 2 mx men on 432 megs. Altogether, 12 units are to be made. Roy 4ZRM has made available his workshop facilities at his new QTH.

At the moment of writing, the 432 Mc. project is under way. David 4ZDF, Ron 4ZCS, Royce 4ZRH and Alan 4ZAE turned up for the initial construction meeting of the project. The project was fully discussed at the Feb. v.h.f. meeting when Roy 4ZRM introduced several suitable circuits to the members. The "Break-In" circuit successfully used by the Christchurch, New Zealand, V.h.f. Group, was chosen for the 2 mx project. This is a three transistor converter using AFZ12s, with a total chassis space of 31 inches square. It is very reasonably priced as well.

Laurie 4ZBL was going into the matter of antennae on behalf of the group. Speaking about antennae, Bill 4ZBD very generously gave four 16 element beams to the 432 Mc. group. It was a case of first come, first served. Bill's stipulation was that the recipients must put a signal on 432.

Forthcoming events, involving the International Scouts' Convention at Jindalee from 28th Dec., 1967, to 6th Jan., 1968, were talked about and this brought back memories of other days. There will not be an Easter Scout Convention as the International Convention is to be the big event. Mick 4ZAA said that we could well expect 4,000-5,000 Scouts from all parts of the world. Mobile and portable rigs will be the order of the day, so what about it mates? Final plans have still to be formulated.

Our attention was also drawn to new stations at Toowoomba, Clifton and the North Coast. A special plea was put in for John 4R2 and Arthur 4FE at Southport and Labrador respectively. They would like to work into Brisbane, so don't forget to point the beam in their direction.

The serious problem of t.v.i. on 6 mx band is still a matter for further discussion. However, in the meantime all Queensland Amateurs are requested to stay off the band during television hours. There are one or two exceptions to this, but for further information please contact the Secretary of the V.h.f. Group. Please remember that your non co-operation in this matter will possibly affect us all.

Dane 4ZAX donated a keyer towards the beacon project and it is now hoped to finalise the practical details in the not too distant future. In his report, the President thanked all those who contributed equipment and parts to the project. It was a good example of the Amateur spirit.

Graham 4ZZG is currently re-broadcasting the Sunday morning 80 mx news on 2 mx. After one or two initial problems were overcome, the news comes over loud and clear and after last Sunday's news quite a few 2 mx stations were on the air. Our thanks go to Graham for providing this facility.

If any Amateur is interested in our v.h.f. projects, he is cordially invited to contact the V.h.f. Group in Brisbane through the Divisional Secretary, W.I.A., Box 638J, G.P.O., Brisbane. We will do what we can to assist. 73, Alan 4ZAE.

TOWNSVILLE AND DISTRICT

Southern DX has decreased rapidly during the past few weeks. An opening occurred on 28th Jan. when FK8AB maritime mobile was worked at 1345 E.A.S.T. Channel 0 stations continue to be heard but no sign of any Amateur signals except for 5ZKW and 2ZGA at 1100 to 1200 E.A.S.T. on 16th Feb.

Northern DX shows promise with early afternoon openings to JA on 9th Feb., scatter was monitored from 1100 to 1900 E.A.S.T. followed by a JA opening at 2230.

On the local scene we welcome Peter 4ZPL (ex Brisbane) to the northern gang. Graham 4ZGJ is back from his annual holidays while Phil 4ZEE is off to Melbourne for a short stay. Phil was recently elected president of the local radio club. Congratulations to Lance 4ZMI, who recently passed the Morse exam. and is kept busy with his A.O.C.F. class.

Ayr.—Ross 4RO and Dale 4ZDG have their new shed almost completed and signals once again are being radiated on 2 mx. Signals on 6 mx have improved since the new beam was put in operation.

Charters Towers.—Bill 4XZ has been heard operating on 6 mx with his dipole aerial. The locals are hoping to work Bill when he puts up his new yagi. Hope it will not be long Bill as we would like to work the 80 miles on both 6 and 2 mx. 73, Bob 4ZRG.

SOUTH AUSTRALIA

The most recent meeting of the VK5 V.h.f. Group took the form of the Annual General Meeting. The report by the retiring chairman, Eric 5ZBJ, was most avidly accepted by those present, as praise and criticism was levelled in the directions where it was correctly right to do so. It was most apt to realise that the state of v.h.f. Amateur activity in VK5 has not been all "peaches and cream" over the last year. However, the majority of the chairman's report concerned the achievements of the Group, namely the re-commissioning of the beacon transmitters and the conduction of another successful picnic outing.

At the conclusion of the mandatory business the election of officers for the ensuing year was duly carried out, and were as follows:—Chairman, Eric 5ZBJ; Vice-Chairman, Garry 5ZK; Secretary-Treasurer, Jim 5ZSJ; Councillors, Barry 5ZMW and Bob 5ZDX. As usual, the election of all officers was most unanimous, primarily due to the lack of numbers that attend the A.G.M.

With respect to band activities, apart from an occasional six or two mx DX opening, it could be said that short of administering the last rites for v.h.f. activity in VK5, there is little that can be done on the matter. Perhaps a consoling thought on the subject can be obtained from the knowledge that television activity on 432 Mc. is on the upsurge with a newcomer to the art. Of late George 5GG has been radiating an excellent t.v. signal of high quality, to the various members of the t.v. group.

In general the outlook is most depressing at the present moment, however next month could reveal an entirely different picture. 73, Colin 5ZHJ.

★

AWARDS FOR TECHNICAL ARTICLES

The awards for 1966 were decided at the February meeting of the Publications Committee. The vote taken at that time resulted in awards being made to:—

Harold Hepburn, VK3AFQ
Roger Harrison, VK3ZRY
Phil Williams, VK5NN

The awards have already been sent to these gentlemen.



FEDERAL AND DIVISIONAL MONTHLY NEWS REPORTS

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

FEDERAL QSL BUREAU

The QSL Manager for Israel writes: "I am asking your help for a human operation. There is a 82-year-old woman in England who lost her son in the Second World War. The gestapo took her son away in Warsaw in October 1943 and since then she lost all contact with him. She heard about the Radio Amateurs, and she is asking our help to find her son. His details are Michael Lieberman, born Nov. 1917 in Moscow, father Boris and mother Sofia Lieberman. We would like to ask you to do all you can to find any trace of him (will you please look in the phone book and directory) and send any information to Mrs. Sofia Balicka-Lieberman, 23 Palliser Rd., London, W.14, England."

The Annual U.S.S.R. DX Contest is scheduled to be held from 2100 GMT, May 6, to 2100 GMT, May 7. All bands 3.5 to 28 Mc. may be used and the mode is c.w. only. U.S.S.R. stations will send RST plus the number of his region, while DX stations RST plus usual serial number. Contacts may be made between any two stations except those in the same city. Contacts between stations in the same continent count 1 point. Contacts between stations in different continents count 3 pts. For scoring only any period of 12 hours' operation will count. Logs to be sent to Box 88, Moscow, by 1st June, 1967, and must indicate the 12-hour period of operation. Awards to the first five highest scores in each country. Further information may be had from this Bureau.

Home-Brew Award. This is a new idea in Amateur awards. To date, only three have been issued to VK stations. For W.I.H.B. Certificate, send direct to W2MEL, the following—a photo of Amateur Station with all home built tx and rx (no kits) and one I.R.C. to cover return postage. Applications to be sent to Al Bry, W2MEL, R.D. 6, Wappingers Falls, New York 12590, U.S.A.

Ref. para these notes, March "A.R." regarding proposed visit to VK by K6KA. Bill Conklin now writes: "It has been necessary to make a new routing, leaving here on 7th March but not going to Australia. This will make it possible to take a more leisurely trip possibly next year. Please advise VK3MR, VK3AHO, VK3NR, VK3GN, VK3ATN and VK3ARV."

Advance information on the 1967 QRP Club's QSO Party from 02z, Aug. 19, to 23z, August is to hand. Further details will be published later.

QSL Traffic through this Bureau continues to increase heavily. Cards handled during the short month of February totalled 10,406, the highest monthly total ever recorded in the 34 years' records. It represented an increase of 12 per cent. over any previous month.

—Ray Jones, VK3RJ, Manager.

NEW SOUTH WALES

The programme of lectures for the VK2 Division's monthly meetings provides that at least one lecture during the year will be given by a member of the V.h.f. Group. And so it came that Keith VK2ZAU told us all about "S.s.b. at V.h.f." at the February meeting, before an audience of about 50.

Before calling on the lecturer, however, the President (Tom VK2OD) announced that a presentation had been arranged for that evening, the recipient being Peter Caerns, a lad who had gained his A.O.L.C.P. while a member of the Institute's Youth Radio Scheme. The prize had been purchased from funds donated by the Overseas Telecommunications Commission and the chairman extended a cordial welcome to Messrs. E. Knowles and R. Baty, representing the Commission, also to Mr. Caerns and Peter and thanked Ivan VK2AIM for arranging the presentation.

In presenting Peter with a transistor manual, Mr. Knowles said that in donating funds to the Y.R.S. the Commission was mindful of the fact that they and other large employers of labour in the field of electronics and communications would reap much benefit in return. It was only by encouraging youth to take an interest in these things at an early age that the necessary man-power would be forthcoming to fill the ever-increasing need for technicians. As a result of the excellent start given him by the Youth Radio Scheme, Peter was doing very well as a junior technician

with O.T.C., and Mr. Knowles offered him heartfelt congratulations and best wishes for a successful future.

Peter made a suitable response, particularly mentioning the work of the Y.R.S. supervisor, Rex VK2YA.

The lecturer, Keith VK2ZAU, began by stating that the most efficient system of transmission of intelligence was c.w., followed by s.s.b., d.s.b., w.b.f.m./a.m. and n.b.f.m., in that order for the purposes of this lecture, however, attention would be given to those systems allowing direct transmission of speech.

Comparing a.m. with s.s.b., it was shown how the latter achieved its superiority by getting rid of the characteristics that swallowed up so much power—the carrier, for instance, with further efficiency being gained by transferring all the intelligence into one sideband.

A further advantage in s.s.b. transmitters was the greater ease of switching power levels for short or long distance working. This was one of the appeals of s.s.b. as the signal may be generated at very low levels, then amplified to the desired output level with linear amplifiers.

For best results on both v.h.f. and h.f. bands, a receiver should have a low noise figure and good stability for any mode. If the use of s.s.b. made some Amateurs realise the inadequacy of their present receiver, then the lecturer considered this to be progress. In addition to drift in tunable receivers, it was amazing how many v.h.f. converters had an oscillator injection which was far from a T9 note.

A considerable part of the lecture was devoted to ways and means of bringing receivers up to the standard required for the reception of s.s.b. signals. In addition, a comparison was made of reception with the standard detector and b.f.o. as against the more common method of incorporating a product detector.

The various points in both receiver and transmitter design were explained with the aid of large circuit drawings. Keith had prepared his lecture thoroughly, in great detail, and at its conclusion the vote of thanks moved by Harold ZAAH was well supported by the audience.

Apologies for non-attendance came from Peter VK2ZPC and Warwick Johnston. The latter indicated that he was willing to continue with the positions of registrar and co-editor of the "Bulletin". Warwick, who has also been acting lately as minute secretary at monthly meetings, is one of a small band of stalwarts without whose help the work of the Division would come to a standstill.

Applications for Institute membership were received from the following, and they were duly accepted by the meeting: Full member—Gordon Cliphsham, VK2SJ; Associates—Milton Moore, Robert Hazelwood, Kevin Hannan, Reginald Connelly, John Brier, Ernest Allard.

President Tom reported that during the month the Federal President (Max VK3ZS) and Federal Secretary (Peter VK3JZ) paid a visit to Sydney and met members of Council and the Constitution Committee. The main purpose of the visit was to discuss various problems that had arisen in regard to the proposed Federal Constitution.

A member of the Constitution Committee, Bill VK2YB, gave a resume of the most contentious matters discussed. As a result of these discussions it was felt that members of Federal Executive would now have a better appreciation of the reasons behind the N.S.W. Division's stand on these matters.

With regard to the bush fires in Tasmania, may we take this opportunity of offering the deepest sympathy of all VK2 members to our Tasmanian friends in their tragic losses, both in lives and property.

The Federal President reported that four Amateurs had been among those whose homes

had been completely destroyed. (One Amateur, Mr. M. K. Koglin, VK7MK, lost his life in the bush fires.—Editor.) Federal Executive had instituted a W.I.A. Bush Fire Fund and it was hoped members would contribute liberally to it. Donations could be addressed to the Federal Executive, W.I.A., P.O. Box 36, East Melbourne. The VK2 Divisional Council had made an initial payment of \$10 towards the fund.

Continuing with the interview, the visitor expressed disappointment at the response to the I.T.U. Fund, particularly by the larger Divisions. Later, when dealing with the future of Amateur Radio, Max stressed the danger to the Amateur Radio movement, particularly in Region 3, by the emergence of Asian countries who were pressing their demands for more and more frequency space. It was a matter of urgency that Amateurs should populate the bands to a greater extent and contribute to the I.T.U. Fund so that we would have representation in the fight to save our bands.

We have already referred several times in these notes to the well-equipped library at Wireless Institute Centre, 14 Atchison St., Crows Nest. This has been installed and built up for the benefit of all members, and it is very disappointing to all concerned that greater use is not being made of it. Keith VK2UE is doing a good job as librarian and he would be pleased to help you with any queries about available books. While on the subject of the library, Adrian VK2HE has donated a complete set of "CQ" magazines covering a period of 12 years. Many thanks, Adrian!

On Sunday, 26th Feb., we donned our skin-diving suits and joined the crowd heading for the Gosford Field Day. Even torrential rain could not dampen our Gosford friends, who have a reputation for turning on one of the most popular field days we know. A change of venue was made from the Racecourse to the Showground, where there was more cover and the programme went on as planned. In spite of almost continuous rain, the attendance appeared to be up to standard, with visitors from all over the place. We noticed Tex VK3AHF, a K2 mobile marine, while Arthur VK2ZP, returning home to Inverell after an interstate pilgrimage searching for steam engines, stopped off at Gosford for the field day and washed the soot out of his throat with a few 807s. 73, Ivan VK2AIM.

HUNTER BRANCH

The Annual General Meeting of the Branch, which was held on March 3, proved to be the usual democratic affair with all positions being filled in record time. Other than for the seizure of several outside election posters and the calling to order of the meeting several times during the two and a half minutes of the election time, everything went very smoothly. Visiting Divisional President (Tom O'Donnell) took the chair during the proceedings and, with the assistance of the meeting, created one new post of great importance to the Branch. The retiring President (Frank ZAPO) had expressed the wish to assist Amateur Radio in any way possible but he had pointed out that the nature of his employment is such that he has not enough time to devote all his spare time energies to Branch affairs. In view of this, some cunning gent, and I suspect that this could have been Gordon Z2SG, suggested that Frank be approached regarding his willingness to become Branch Patron. To this he agreed and was duly elected at the meeting. This new office is one of considerable prestige and it is fortunate indeed that the Branch has such a capable man as Frank to fill the position. With his long record of public service and his deep interest in community affairs, Frank is the ideal man for the job and we all wish him well.

Another Frank, this time Z2FX, was elected to take over the Branch Presidency. Although a relative newcomer to our hobby, Z2FX has shown himself to be intensely interested in the welfare of his fellow Amateurs. A keen v.h.f. man, Frank is a worthy successor to the long line of Branch Presidents who have served our hobby in this area in the past. The company present apparently found the past committee to their liking, because the remainder of the executive were re-elected to a man. Briefly, these are as follows: Vice-Presidents, Bill ZXT and Keith ZAKX; Hon.

SILENT KEY

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

- VK3ADQ (ex VK3LI)—
- C. L. ("Lyle") Rogers.
- VK5OK—Lloyd Brice.
- VK7MK—M. K. Koglin.

QUEENSLAND TOWNSVILLE AND DISTRICT

The time soon slips by. Once again all the correspondents are trying to rake up news for their district. I am no exception. I find it very hard to glean news. Seems that our hobby is sadly lacking in support in the north. I can well remember the time when my notes had to be curtailed so as to fit in with the space available to me.

The local club had its annual general meeting at the local "B" station auditorium and it was fairly well attended by newcomers. The old boys seem to be giving the game away or maybe the band being the way it is up here they are still hibernating in our awful unseasonal heat.

The officers for the ensuing year are: President, 4ZEP; Sec./Treas., Miss A. Doelle (student for the A.O.P.C.); Vice-Presidents, 4BQ and 4ZRG; Publicity/QSL, 4DV.

Quite a lot of discussion took place on ways to try and entice the old members back to the meetings. It was decided to try and raise finance by increasing dues by 100 per cent. to \$2. Methinks if it had been decreased by 100 per cent. some of the older Hams may have turned up. (Will my name be mud once again?)

Merv 4DV was able to escort K2HML/MM around the various snacks and arranged that he would be made welcome in all the towns he visits as he wends his way around our large island. Merv heard speaking to all and sundry, making the necessary arrangements.

It is to be hoped that the new increase in membership fees to W.I.A.: city \$6, country \$5, will not in any way decrease the State membership. Remember, boys, everything is on the up and up, even your wages, so it is time the increase did come about. I did forget to mention that the above rates do include contributions to I.T.U. and "A.R." so I personally think it is still cheap. Do you all agree? (Carried by loud cheers from the gallery!) 73, Bob 4RW.

BUNDABERG AMATEUR RADIO CLUB

After a long spell we are pleased to recommence Bundaberg Club notes. The Club has been very active in spite of lack of publicity. At the Annual General Meeting the retiring President (Roy 4ZWR) gave a run down of the activities of 1968. While the number of financial members was down slightly on the previous year, due mainly to transfers, the enthusiasm was at a very high level. We really are plagued here with transfers of a very high number of our members. Over the last several years, eight of our members with call signs have been transferred or left the district.

The election of office-bearers at the Annual Meeting resulted as follows: Lea VK4FX, President; Don VK4NK, Secretary; Jim Yarham as Treasurer; Aid D. G. Ratray, Patron; Roy VK4ZWR and Rusty VK4JM as A.O.C.E. Instructors; and Bob VK4UD and Dudley VK4TO as Y.R.S. Instructors. Many other positions were filled by various Club members.

During the last ten weeks or so we have had the pleasure of greeting many ex-club members. These included Les VK4XJ, who has been holidaying at Bargara for two weeks; Len VK4LL, who spent several days here; George VK4ZMG, on leave from his job in Brisbane; Bill VK4XZ, from Charters Towers, who spent three weeks here at Bundaberg; Bargara and a week at Elliott Heads with Jocelyn VK4JX and Rusty VK4JM; Alan VK4AD, our ex-Morse instructor, now living at Alice Springs and is on long service leave. John Antella was also home from Sydney. Also had the pleasure of the company of Danny VK4ZDD, who is up on holidays from Gympie. Another Gympie visitor was our old friend, Eric VK4XR. Jeff VK4FK, from Rockhampton, spent several days here also, both in town and at Elliott Heads.

Six of our Youth Radio lads took the junior Y.R.S. exam in December. The Y.R.S. instruction class recommenced on 11th March, 1967.

It is with regret we note that John 4XC has been transferred to Nobby. John has been a stalwart member of the Club and has held down the exacting role of Secretary for the last two years. While we are sorry to see you go, John, we offer you congratulations on your promotion and hope you will soon have your station set up again at the new QTH and are soon back on the air. John took up his new position on 1st March, and a farewell party for John and XYL Iris was held on 11th Feb.

At the March meeting it was decided to build a 1.5kva. portable supply and as some of the parts are available from our many supporters, it looks as though the Club Station VK4BW will be heard a lot more often in future on the many field days which we intend to run this year.

That winds it up for now. 73, Rusty VK4JM.

OBITUARY

CECIL LIONEL ("LYLE") ROGERS, VK3ADQ (ex VK3LI)

It is with regret that we report the passing of Mr. Cecil Lionel ("Lyle") Rogers, VK3ADQ and ex VK3LI, on 3rd March, aged 62 years.

Lionel's interest in radio dated back to the pre-1930 era, and it is believed he had a call sign prior to the issue of VK3LI in pre-war days.

He was the holder of a F.M.G. First Class Commercial Operator's Certificate of Proficiency, and worked as a broadcast technician at 3AK when the transmitter was located at Balwyn. From there he joined A.W.A. about 1937 and went to sea as a marine radio operator prior to and during World War II. Later he was transferred ashore into the Beam Wireless Service operated by A.W.A., and taken over by O.T.C.(A) in 1946.

In 1948 Lionel was transferred to the technical staff at Rockbank receiving station and, after a period of ill health, he spent relieving periods as a senior technician at the old Braybrook transmitting station, where VIM Melbourne Radio was located, and as a radio officer at VIM when it was operating from "Wireless House" in Queen Street. Around 1951, when the Braybrook station closed and the transmitters were transferred to Fiskville, near Ballan, Lionel returned to Rockbank permanently.

Although he was not a member of the Institute in latter years, nor very active on the air, he was a champion of Amateur Radio and the Institute, and gave great encouragement and assistance to many budding Amateurs with whom he came in contact. His son Frank is VK3AAX.

Lionel leaves a widow, daughter and three sons.

LLOYD BRICE, VK5OK

The VK5 Division regrets to announce the death of Lloyd who passed away early in February from a heart attack.

An ex-Councillor and President of the VK5 Division, he was always ready to lend a helping hand on Council matters, and his modest and unassuming manner, plus his courteous approach, won him many friends among the general membership.

To his sorrowing wife and family we extend our deepest sympathy in their sudden and unexpected loss, and can only hope that time will help to ease the blow.

Walker and Mrs. Silk. There was a raffle and many ladies and OMs drew prizes—all carried off with a great deal of pleasure.

The members of the Central Coast Branch look forward to their field day each year and are happy to make others happy. The fact that so many visitors came on such a day is a testimonial of good faith in us and this is heartily appreciated by all of us.

We have regular news from Phil VK2TX, who is in England and is operating as G3VYR. He has been quite ill but is well on the road to recovery now and we expect to see him back home in Australia in the not too distant future.

Barry VK2ZUB has passed the Morse test and is now VK2BUB. Be careful what you call him from now on.

The last meeting of our Club was held on Feb. 19, when Ern VK2EH, who is supervisor of the Morse tape service, gave a very interesting talk on the background and workings of the service and the nightly practice sessions. There are 124 tapes available at all speeds including master tapes and at any one time there are about 70 tapes out on loan. These go to all States and New Zealand, with VK2 being the biggest user. Ern averages two hours a day on this work but when he is making tapes the time involved is greatly extended. This is another good example of the dedication of individuals to the cause of radio. 73, Mona VK2AXS.

VICTORIA

I.T.U. FUND

Latest donations received are: \$5, VK3RC; \$4, VK3s AH, ZFB; \$3.70, VK3XU; \$2.70, VK3ZPS; \$2, VK3s AFD, ZVV, L3295; \$1.30, VK3AJN; \$1, VK3ZNE, L3289.

The Victorian Division is still approximately \$400 short of its quota. If you have not already sent your donation, why not do it now?

Treasurer, Len 2ZFD; Secretary, Gordon 2ZSG; Social Secretary, Bill 2ZWM; Correspondent, Keith 2AKX, with Joe 2ZJO as assistant; V.h.f. Liaison Officer, Mac 2ZMO, and QSL Officer, Stan 2AYL.

Following the election, Tom 2OD gave a lengthy but very interesting discourse on the doings in Sydney with special reference to some of the constitution matters. He also made mention of many items which have concerned Branch members in the past and in general cleared up many points for us all. He was heartily thanked for his efforts by the outgoing President in his report and by the incoming President in his closing remarks.

Then followed the ordinary monthly meeting at which Bill 2ZWM gave a well illustrated talk on the "Gosford" converter. Bill was up to his usual form with copious printed notes to assist those who wish to build the gear described. His most worthy address was heartily acclaimed by the meeting.

The provision of a weekly broadcast has rather fallen by the wayside during the early part of 1967 but Susan 2ESB, now stationed at Seon, has come to the rescue—at least for the present. By kind courtesy of Max 2BWK, she commenced the new series of broadcasts on Monday, 27th Feb. Until a firm roster is decided upon, it is not known what fate the broadcast will have, but after listening to the remarks of Patron and President, it appears that there is hope that the weekly news will continue on some form of roster. Please make it known if you wish to be included in this, since the more that take part, the less arduous the whole thing becomes.

It is said that Harry 2AFA has been working the DX on c.w. This I will have to see to believe, but nevertheless the same gentleman is in very good form and still taking his daily constitutional down Teralba High Street. Jim 2AHT hit the headlines just recently, firstly for coming in third in the "CQ" DX Contest, and secondly because he intends to take a world trip very soon. Half your luck, Jim. Although it was predicted in this column some three years ago that s.s.b. was imminent for the 2ZL household, it now appears as if it really could be true—so watch your product detectors. Stuart 2AYF reports that his new receiver is so good that he can hear signals on top of signals, which is quite something when the narrow, narrow filter is in.

On the v.h.f. front, some stations are still looking for contacts on 148 f.m. Des 2ZDN is on every morning on the way to Kurri after 8, and John 2ZJG will give you a call—but whether he'll hear you or not is another matter. Frank 2AFO still manages to listen and at times makes a QSO, while Ron 2ASJ, who was along to the March meeting, still makes all his usual skeds. But back to v.h.f. again, Kev 2ZKW is the real headline man this month with the opening of a brand new radio club at the Maitland Y.M.C.A. Kevin has really put an enormous amount of work into this venture and his efforts deserve high praise. The transformation of the old building which once belonged to Cappers is nothing short of amazing. Watch out for plenty of activity from 2ZKW/P.

And there it all is again. Don't forget that your attendance at monthly meetings is very welcome, and we have them every first Friday of the month in room 6 of the Clegg Building at Tighes Hill Tech. (new chairs and all). How about we make it a date? Next two meetings are 7th April and 5th May. Ian 2ZIF will be there in April with more news of transistors. See you? 73, 2AKX.

CENTRAL COAST BRANCH

The Central Coast Branch of the W.I.A. held its 10th annual Field Day on Sunday, 26th Feb., 1967, at Gosford. The rain started early in the morning and continued off and on all day, but this did not deter the good spirits of the 220 people who registered. This is very near the number who would attend on a sunny day and we were very happy to see so many. There was a sudden change of location at 9 a.m., so for a little while there was a bit of confusion, but it all got ironed out quick and lively, and the day went off very successfully. No one seemed to mind the rain as the day was quite mild.

The ladies got the kitchen operations going immediately and all meals were served as usual with a minimum of fuss and a maximum of pleasure, thanks to the co-operation and the willingness of everyone. The ladies are to be highly commended for their effort and I would like to thank them all for their help.

Prizes, as follows, were presented by Tom VK2OD (President of W.I.A. in N.S.W.): H.f. mobile scramble, VK2ASZ; V.h.f. Mobile Scramble, VK2ZCF; 40 Mx Fox Hunt, VK2ZCT; 2 Mx Fox Hunt, VK2s ZPJ, ASZ and ZOO; first 2 Mx Pedestrian Fox Hunt, VK2AWZ; second 2 Mx Vehicle Fox Hunt, VK2s ZCF, ZPI, ZOD; Homebrew, small, VK2ZCF; large, VK2ZAH; second 2 Mx Ped. Fox Hunt, VK2s ZPI, ASZ; Ham Quiz, VK2s ZCT, ZRG; Ladies' Quiz, Mrs.

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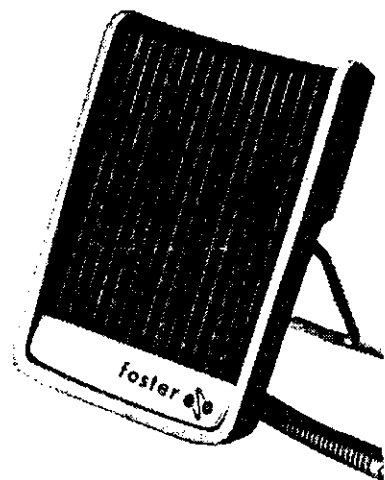
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SOUTH AUSTRALIA

The monthly meeting of the VK5 Division was held on the last day of February, and took the form of the monthly general meeting and the annual general meeting combined. This meant of course that a lot of shrewdies did not turn up, although despite this there were only a few chairs to spare when the meeting commenced. Those of us who had come along for our annual battle with the V.I.P.'s seated at the head table, were somewhat nonplussed to see "Grumpy" Taylor (5TY) take the chairman's seat and open the meeting, only to apologise for the non-appearance of the President (Ross 5KF), explaining that he would be along later in the evening, after he had given an apple to the teacher. Anyway, Ross eventually appeared, "Grumpy" vacated the chair, and the annual general meeting was under way.

Nothing very important disturbed the slumbering meeting, there was no ballot for Council owing to only the required number of members being nominated, in fact the only new member was Treva 5ZIS, who replaced the retiring Past President in Phil 5NN, and the amount of business handled upset nobody, and certainly not their blood pressure. Everybody woke up with a start when the matter of honorariums for the treasurer and the secretary came up, mainly because Harry 5MY, speaking for himself and the secretary, Al 5EK, suggested to the meeting that the sum voted at last year's meeting be reduced. It took some time for everybody to recover from the shock, but when they did, they threw the suggestion out of the window, and had not several of them been restrained they would have increased it without hesitation.

After this burst of unexpected activity had subsided, the meeting sunk back into the arms of Morff—Morfee—Morphee—well, they went back to sleep again, only waking up for the smoke-oh and the distribution of QSL cards, which was the only way they knew the annual general meeting had finished. The next item on the programme was the monthly general meeting which did not last long, and if it had not been for the valiant efforts of one or two die-hards in the audience, it would have died on its feet in a matter of minutes. Nothing of any importance came up and the evening came to a close at 11.50 p.m. with everybody having had their share of talk, and one or two more than their share. The only disappointed person was Ross 5KF, who had been hoping to repeat his feat of last year in closing both meetings by 9.30 p.m. No hope brother, you trapped us last year, but we were on our metal this time! Road metal of course.

Among the visitors at the meeting was Dick 9VILK, from Singapore, accompanied by his son-in-law, Tony, who is a resident of VK5, and a possible future VK5 call sign as well.

One matter that did come up at the monthly general meeting was the matter of the proposed Science Centre for VK5, of which we were quite interested, although from the information supplied in a letter read out by the secretary, Al 5EK, and some verbal information from Phil 5NN, our chances of ever participating in such a venture are somewhat remote, mainly because of finance, or the lack of it.

One of my espionage agents, located right in the middle of the VK5 upper crust, tells me that Wyck 5WM, of ABS2 fame, has left his QTH of Henley South and is now residing among the upper strata of Fitzroy. I say old boy, have to be on your best behaviour now, no blowing the froth off the top on to the carpet, and definitely no more than five peas on the knife at once! Long time no see, Bruder.

Have not heard anything of that old-timer Roy 5AC for a while. Last I heard from him was a letter giving a run down on his latest activities, although very little radio these days. Hope you are keeping well OM.

Had a ring from Claude 5CH who was down on a flying visit to the city from Mt. Gambler. Sorry that I was not home OM, but the XYL gave me all the information. Glad that all is well, and please accept my congratulations. Possibly see you and the XYL one day when you have more time to spend in the "big smoke".

I must be rising a little late these Sunday mornings as I never hear Rex 5DO on the well known sked with that certain gentleman in VK3. Not that I listen to VK3s of course, that is not since they appointed their President without consulting me! Oh that such wickedness should exist.

Several of the VK5 gang are looking sideways at me since I put a paragraph in the local W.I.A. notes in the morning newspaper concerning the student classes being held at the Goodwood Technical Boys' School at night time. The reason? Well, over the following week-end the class rooms were broken into

and several pieces of equipment disappeared into smoke. I know my publicity is considered to be good, but not that good, please!

Had a quick look around 7 Me. the other early evening and sure enough the first station I came upon was Frank 5MZ hooked up with—yes, you guessed it—Carl 5SS, and Frank was doing an expert job of convincing Carl that he should buy a 12-inch stereo 1p. called "Thanks for the Memory". He sounded quite salesmanlike until he said: "I would not buy one myself, but will keep the pamphlet for you." I did not hear Carl's reply as my 74th call to the evening meal was heard, and as it sounded somewhat exasperated, I decided to make discretion the better part of valour!!

Bill 5ZD was heard in QSO with a VK3 who offered to give him a burst of double sideband just to demonstrate, but Bill, who is evidently a man after my own heart, tactfully declined the offer on the plea that his AR7 did not take kindly to sideband of any sort. Stout fellow—I have sent him a membership card for my well known Shun Sideband Association. He looks like a promising member!

Had an exciting ride with 5NG the other evening. He called CQ mobile in Hindmarsh Square, Hindley Street, Morphett Street, back of the Adelaide Oval, and finally landed Murray 5HH at the Light Statue on top of the hill. No, I was not in the car—but I copied him all the way.

Talking of Morse code and student classes, brings to mind the previous instructor in Bruce 5OR, a beautiful fat so 'tis said, who is by now a happily married young man, or so my information tells me, but giving no dates or further information. Anyway, in my unique position of being the happiest married man in VK—she is reading over my shoulder!—it is always my duty to give the newly married Amateur that well known advice, "DX before Dishes". "What's that dear. Yes, I am coming, now. Sorry about that cup and saucer, it seemed to fly up in the air. I think it will be bent a little!"

Did you read the par. in the local paper concerning the outbreak of Xmas walkie-talkie presents and just how the situation became gummed up in Canada with the young Sebastians causing more than 3,000 false alarms until their batteries ran down or the novelty wore off? So bad was the position for a while that the police departments sought the aid of local Radio Amateurs to help them stamp out the nuisance by getting radio bearings on the walkie-talkies. It must be my warped sense of humour, or possibly the results of my mis-spent childhood, but I could not but be amused by the story of the enterprising youngster at a Boy Scout banquet where the waitresses were being directed by an overseer on the tables with a walkie-talkie. The young Scout, with his walkie-talkie on the same frequency, had a dozen extra deserts sent to his table before he was discovered, to say nothing of a few other delicacies. You can't beat em!!

February is always a bad month for Divisional sub-editors. Firstly, the magazine is always late in delivery (circumstances beyond control), which means that the telephone runs hot from irate readers wanting to know where the magazine has disappeared to, and then when it finally appears, especially if the divisional notes are missing (again circumstances beyond control), then the telephones start again and the poor sub-editor is accused of anything from sabotage to making a special trip across to VK3 and tearing up all the little rubber letters that Ron 5RN puts in his stamp pad to print the magazine. This year was no exception because the "Mag" was later than usual, plus no Divisional notes appeared, and the aforementioned irate readers gathered their forces for a definite attack, and all I could say in my defence was that I had sent the notes across as usual, and if anybody thought that I would go to the trouble of writing all those paragraphs in the knowledge that they would not be printed, then I was sillier even than they thought. Anyway, it does one good thing, at least the magazine is not as useless as the odd one would have us believe.

Called into the QTH of Joe 5JO the other morning just to see how he was making out after his recent recurrence of his head trouble. He was sitting up in the sitting room looking at the goggle box, with his XYL Nellie fussing around him as if he was the Rajah of Rongadongabong or something. Personally, after seeing him looking so well, I am wondering if it is all just a racket to get the V.I.P. treatment. Nice to see you Joe.

Many read with interest the write-up in the VK5 Journal on W.I.C.E.N. and its formation in this State. They also read with pleasure the reference as to how Jim 5JK battled long and hard to convince Council that such a set-up would be to the good of Amateur Radio in general. Jim always had the idea of W.I.C.E.N. running around in his head, and for many months was bobbing up and down

at general meetings trying to drive the point at Council, so much so, that it was decided to put the whole matter back in his lap, secure in the knowledge that even he could not surmount all the apparent obstacles in the path of forming such an organisation. Of course where the mistake was made was in not allowing for the persistence and obstinacy displayed when a wild Irishman really gets his back up. Jim really got stuck into the Police Department, the E.F.S., the P.M.G.'s Department, and anybody who did not see him first and duck for cover. It was not long before he had a working policy which he handed to Council, stayed long enough to organise it, and when it was a going concern, backed out in favour of John 5JC, who kept it rolling until it was taken over by the "grumpy one," Geoff 5TY. The moral is of course "Don't monkey with a wild Irishman for fear of being monkeyed with yourself!"

Arthur 5HY is another of the stalwarts to be laid up, although reports to hand indicate that he is making satisfactory progress back to normal health. Understand the main thing he misses is his s.s.b. and his contacts. Fancy missing s.s.b.—did you ever!!

Jack 5LR and XYL are off for one of their tri-yearly jaunts again. This time to Victor Harbour. Usually about this time of the year they move off for the South East, but I suppose a change is as good as a holiday, or should I say a change is as good an excuse for a holiday as any?

Max 5GF should be quite proud of his harmonic, Jeff 5ZGF, these days, in view of the fact that Jeff has recently passed his broadcast ticket and is at the moment taking a shift at the B.B.S. (Best Broadcasting Station in the State). What's that? You don't know the station—you must be kidding—5DN of course!

I cannot help but notice that despite the fact that each February there are no Divisional notes in the magazine, a certain VK5 gentleman from way up in the hills, Phil 5NN to wit, always manages to get his notes on "The Thing" well to the fore. Apparently the rumour that he sends eggs, bacon, pork, chickens, packets of 50 cigarettes, etc., and etc. again, over to the editorial staff might bear investigating, although I often send them my best wishes, what more do they want?

It looks as if something is going to be done for prospective students of the A.O.C.P. with regard to the Morse code in VK5. Council has had several suggestions on the matter and have given it serious thought, but of course the real bug is lack of a cod instructor. Surely there is someone who is willing to give it a go, if only for the students' well-being.

The new Council member, Treva 5ZIS, will be at the Convention in VK7 as an observer, at his own expense, so it would appear that he has his share of keen interest in the doings of the W.I.A. Long may he remain a Councillor. He started the night off well by bouncing the ball with me and informing me in no uncertain terms that his name was spelt Treva, and not Trevor, and judging by his size and physique, that will be okay by me!

Another stranger to me at the meeting was Bob 5FU, this was the first time that I had met him since his return from W. land, and also gave me an opportunity to ask him if the storks that followed him from America completed the job. The answer was that it was a boy, named David John, so there you are, I always get my information, even if a bit late.

Was quite surprised to note that there is no associate members representative on the Council these days. This is no good fellows, what about you all getting together and nominating someone. You cannot expect to get anything without a representative to speak up for you.

Norm 5NM will be relaying 5WI on 20 mx, probably by the time you are reading this. This will serve our members in the Northern Territory, of which incidentally there are quite a number, and will help to keep them informed of the doings of the VK5 Division. Quite some time since we had a relay on 20 mx for 5WI.

Council meetings will be held once again in the "Advertiser" building this year, with a consequent saving of shekels for the Division. There should be more of it, say I, and without doubt the treasurer.

Am sorry, as are many others, to see Phil 5NN leave the Council after all these years. The amount of work and effort that he has put into the Division as Councillor, President and Past President, over the years, has been of untold value, and will be badly missed. We all salute you OM, in fact some of us don't even hold your peculiar beliefs on a certain subject against you. Well, not all the time, anyway!!

Talking of Councillors, we were all shocked at the news of the passing of Lloyd 5OK, especially as it was so sudden. He and I

were on the Council together, and I always found him keen and interested in the welfare and success of the Division. For many years he was not able to be active on the air as he would have wished, owing to his QTH being so close to the transmitters of 5CL and 5AN, but when they shifted he came into his own. Have not seen him of late, but heard him often with his mobile set-up. He will be missed by many.

Well, that is no way to end the notes. They must always end cheerily, and the only cheery thing I know of is that I will be going on my holidays next week, and therefore the notes next month will be written by that doyen of the quack-quacks, none other than Comps 5EF. He does not know it yet, but give it time—and don't believe a word he says about me. He suffers from halloose—hallusion—hallucin—oh dear, oh dear!! 73, de 5PS, PanSy to you.

WESTERN AUSTRALIA

Hi there! Well with Easter out of the way for another year and all Federal Councillors safely returned to their respective States (I hope) we can settle down to contemplate the coming of winter. For many, the winter season is the time to retire to the warmth and comfort of the lounge room. In some cases it is a time of inspiration during which out come drawing board, etc., and weird and wonderful designs go on paper. Many hardy souls brave winter chills and ills and sit for hours in the shack "rag chewing" on 80. Just as well, too, someone must keep the bands alive, because more than ever the old saying applies: "Use them, or lose them." Winter time also affords us a good opportunity to catch up on some of those constructional projects we have been putting off all summer!

Security demands that the central figure in a recent drama of the Ham shack should remain anon—anonymous—should remain unnamed. However, he is easily detected by the red face he is currently wearing. Our scene opens in a not particularly well lit shack—somewhere in VK6. Enter the hero, to stand fiddling, sorry, working at his bench. Suddenly, out of the corner of his eye, he detects the intruder moving with swift, silent, stealth, across the floor. With a deft movement of his well shod foot, he traps the offender under foot. With a slow deliberate twist, on goes the pressure. This is the kind of treatment that any marauding insect can expect. Quickly he steps back to observe the results of his footwork (can't call it handiwork, can we?). With apparently renewed vigour, the "wog" bounds into the air and streaks towards concealment. Seizing his trusty hammer, our hero commences to stalk his quarry. Ah, there it is—neatly coiled up behind the bench leg. Not even pausing to wipe the sweat and steam from his spectacles, he struck with all his might, and the deed was done! But what's this? Burying his face in his hands, the poor fellow moans in anguish as realisation strikes him. "Oh, my gosh, I've gone and killed a rubber grommet!!"

Ah well, we can't all be blessed with bright vision like some of those well known "bird watchers" among the v.h.f. fraternity.

Required

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Those ever-busy Narrogin boys recently conducted another Ham Fun and games were had by all those who attended, although the attendance of "city slickers" was disappointing, to say the least. I believe that attempts to play "heraldic music" (trumpet noises to you) were not fully appreciated by a rudely awakened gentleman from Katanning. This same sonnambulist was the lucky recipient of the booby prize—a fur lined "Gazunda"! Guess you never had it so soft Herb. What's a "Gazunda"? Oh, come, come, now chaps.

Sorry to hear that life member Bill 6WP, has been on the sick list again of recent times, as has been Clem 6CW. Pleased to note that Mike 6QJ has returned to W.A. after a bout of surgery in the Eastern States. To all those on the sick list, we wish a complete and speedy recovery.

Noticed a very nice piece of cubical quad gracing the QTH of Allan 6MO, recently—look to your latrines you DX hounds.

Bill 6DR is very pleased with his present beam, after being unfortunate to lose a three element quad to the forces of nature.

Good luck to Vic 6VK in his new job. Hope that all turns out well for you OM.

One of my v.h.f. gang friends (yes, I still have a couple) tells me that Mick 6FP is making his presence felt on 6 mx these days. By the way, does anyone ever tune above 53 Mc.?

Did anyone hear about the misfortune which befell that chap up in the foothills of the Darling Scarp, you know—Bob 6BT? Well, during the midst of a QSO he had a visitor knock on the door of his shack. Big deal, you say, but get this, wise guys. This visitor was an OWL. Of course, Bob could do little else but let him in. After all, the poor fellow was probably seeking words of wisdom from those two very knowledgeable chaps with whom Bob was in contact. Somewhat overcome by the brilliance of the shack's illumination (which is rumoured to rival that of the Gloucester Park Trotting Track), the visitor flew back and forth causing Bob to cut short his "over". Tut, tut. However, by means of a skillfully cast chaff bag, he was soon forcibly ejected, leaving behind a swag of feathers suitable for mounting inside a cushion. Toward the end of the contact Bob was heard to mutter something about being chased by a polar bear!!

It is understood that among the victims of the fires which swept Tasmania recently were some fellow Hams who lost everything. An Appeal has been launched in this Division and I commend it to your further attention. Let's see if we can help these chaps get on their feet again.

News to hand that VK6CE is again active on the bands after quite a long spell. Watch for this station he is a pirate!

Congratulations to Jim 6RU on attaining his majority. This is Jim's twenty-first year as QSL Manager for VK6 Division. Many thanks from all concerned, Jim, for a job well done. May the next twenty-one years be just as successful.

Another "Thanks for a job well done," to Laurie 6ZEA, our Youth Radio Co-ordinator, who has been tying up a few loose ends before handing over the reins to Jack 6RT.

Well that just about wraps it up for this month. 73, Ross VK6DA.

TASMANIA

This month has been one of the busiest seen by the Institute in Tasmania for quite some time. As well as the usual meetings throughout the State, there was the Annual General Meeting and Dinner and, of course, the bush fire nets.

So much has been said in the recent past about our W.I.C.E.N. network, that I will spend little time on it now. There were roughly twenty mobiles and quite a few more home and portable stations participating, and to all those involved, congratulations on a very fine effort. I believe a report is being prepared at the moment, giving a detailed account of the set-up, and it is hoped that this will be published soon in this magazine.

Because the Federal Convention will be held in Hobart later this year, it was necessary to put forward the date of our own Annual General Meeting and Dinner. This was held in Hobart on 28th Feb. and, as usual, a good time was had by all. Several members from the Northern and North-Western Zones were present, and Ken 3AFJ was an unexpected but very welcome visitor.

The Council for this coming year is as follows: Phil 7ZAX, Terry 7CT, Ian 7ZZ, Ted 7EJ, Tom 7AL, Geoff 7ZYS and John 7ZJG. A new name amongst this list of usual hard workers is Phil 7ZAX who has just completed a law degree at the University and is now back into the swing of things—radio-wise.

The Division has also obtained a new Secretary, Ted 7EB. All the best to you in this

post Ted and our thanks to the retiring Secretary, Crosby 7CR, for a job well done.

In conclusion, it is with regret that we record the passing of the late Merv. Koglin, TMK, who lost his life in the recent fires. Although not active, Merv. had a great interest in the affairs of the Division and in radio generally.

73, 7ZLP.

HAMADS

Minimum 50c, for thirty words.

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HALLICRAFTERS SX111 S.s.b. Receiver, mint condition, best offer around \$250. Also Geloso Tx G222, mint condition, best offer. VK4CP, 4A Phillip St., Toowoomba, Qld.

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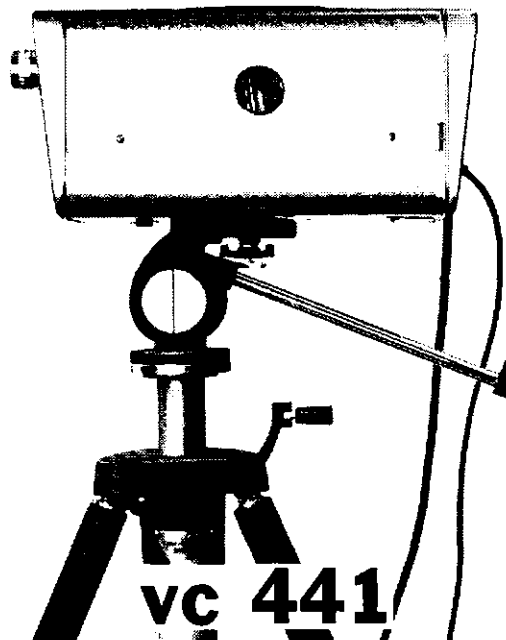
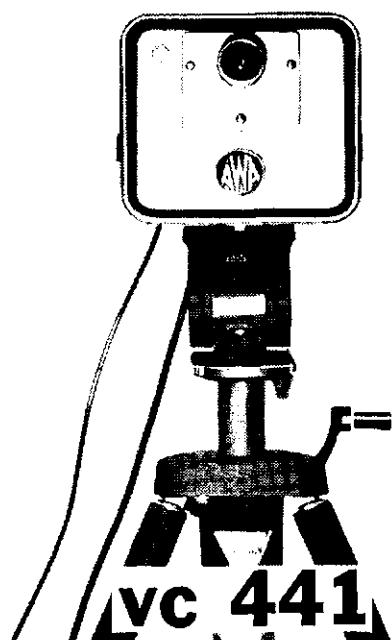
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"AMATEUR RADIO"

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FEDERAL COMMENT

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Another Easter has come and gone and so has another Federal Convention. The 31st Convention held in Hobart from 24th to 27th March is now history and once again a band of men foresook their Easter holidays and families to gather around a conference table to debate the many problems confronting the Amateur Service in Australia and I.T.U. Region III.

Detailed reports of the decisions of Federal Council will appear in this and future issues of "Amateur Radio," but it can be stated here that discussions on Federation went a step further and it is now possible that the Federal Company of the Wireless Institute of Australia may be a reality within twelve months.

Another subject of interest to most Amateurs is the Remembrance Day Contest and Federal Council has re-affirmed its decision to change the rules in line with the proposals put forward in the December 1965 issue of "Amateur Radio". Accordingly, and because of this change, the new rules will be published twice this year.

The exhortation "Amateur Frequencies: Use Them or Lose Them" is often seen in the pages of this journal and there is no reason at all why the higher frequency bands, particularly 21 and 28 Mc., should not be used by more Australian Amateurs—no reason that is, other than apathy of course. Despite the somewhat pessimistic predictions by the experts both these h.f. bands have provided good DX. In recent weeks, the 28 Mc. band has produced openings to Africa, Asia, Europe and North America and 21 Mc. has been even better. In general, the QRM problem is less than on other bands and quite long and enjoyable DX ragchews are available without the interference of the annoying "break, break" practice that is so prevalent on the lower bands these days. Effective antennae are relatively small and easy to construct and a.m. is still used frequently on 28 Mc., although the use of s.s.b. is growing. It will indeed, be a pity if more Australians do not take full advantage of the frequencies we still have remaining to us—whilst they do remain with us.

—D. H. RANKIN, VK3QV, Federal Activities Officer.

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THE VIBRATOR ELIMINATOR

R. L. HARRISON,* VK3ZRY

A UNIVERSAL TRANSISTOR POWER SUPPLY

The toroidal transformers necessary to make efficient transistor power supplies are not too readily available. Generally you have to buy a core and design and wind your own; but this can be an exceedingly tedious process. With a bit of hunting around, I found that one local manufacturer had available a universal toroidal transformer available. It was capable of operation from a 6v. or 12v. supply and delivered 300v. and 150v. at 45 watts. This was just what the doctor ordered for small transceiver purposes, so a transformer and a suitable circuit was obtained.

The transformer came from Aegis Manufacturing Co. and is Type S105A. They are available through normal trade supply channels, or if any delay, direct from the manufacturer.

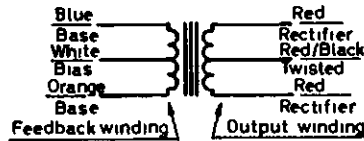


FIG. 2a-2b.

To enable 6v. or 12v. operation, the primary is wound in four sections around the core. The leads are brought out together in four pairs around the core. The starts and finishes of the windings are coloured green and yellow respectively (refer to Fig. 1a). Pick one pair of yellow and green wires—check with an ohm meter and call that winding A. Now, going clockwise around the core are windings B, C and D. The connections for 6v. and 12v. operation are shown in Figs. 1b and 1c respectively. Fig. 2a shows feedback winding arrangement and Fig. 2b shows output winding.

A complete circuit of a 12v. power supply is given in Fig. 3. This is suitable for supplying various a.m. and f.m. mobile v.h.f. transceivers. Table 1 lists operating voltages, currents and efficiency. The two transistors can be any of ASZ17, OC35, OC28, or ASZ15.

Input		Output		Efficiency
V.	I.	V.	I.	
6	8.5	300/150	150	88
12	4.5	300/150	150	83.4

Table 1.

The unit can be built onto a chassis of about 6" x 4" x 2", 18 gauge aluminium. Mount the two transistors at opposite ends of the chassis and insulate them with mica washers and insulating bushes. The toroid, S105A, can be bolted to the chassis in a convenient spot using the two discs of sponge rubber and the bakelite disc for protection. The other components can be mounted on tagstrips. Paint the box black (except around the transistors) to improve heat dissipation.

A complete, ready made, power supply is available from the same firm, Type PS25. It is very similar to the one described above except that it is only 12v. input and no bias is provided. (Circuit similar to Fig. 3).

MR3A CONVERSION

These little devices are very plentiful, but horribly inefficient. They draw 20-odd amps. (on 6v. input) and run a 6J6 in the final, giving only about 1½ watts out. A QQE03/12 in the final and a transistor power supply giving 300v. to the 3/12 would improve things. This was mentioned in an article by Jim Stewart, VK3ZFS (now VK3AS) in October 1965 "A.R."

Some time ago I was approached by Bill VK3AAV, who wanted a transistor power supply installed in his MR3A. Like most small car owners, he was having worries about battery consumption. Also, the fact of having a 6v. battery tended to aggravate the position.

When the unit was presented to me a QQE03/12 had been installed in the final and Bill was desirous of applying 300v. to the driver and p.a. anodes to increase the output. Well, it appeared to me that an S105A toroid was the answer, so one was procured and the

TRANSISTOR power supplies are nothing new. In Amateur circles they are being used quite widely with, apparently, some deal of success. Many (or most) are being used in home-brew equipment or for supplying mobile s.s.b. transceivers of foreign origin.

Now over the past few years there have appeared, from various sources, large numbers of v.h.f. transceivers (both f.m. and a.m.) that have seen service in taxis, tow trucks and the like. The majority of these were designed and built some years ago when vibrators were all the rage. By the standards in those days, vibrators were efficient, economical and solved the power supply problem.

Then along came transistor power supplies with toroidal transformers and 80-90% efficiency. This was a significant increase in efficiency over vibrator supplies; the best efficiency obtainable there being 60% (most were 45-55%). Consequently transistor power supplies were incorporated in the later mobile v.h.f. transceivers. Unfortunately, these are not, as yet, in abundance and many Amateurs have the ones with vibrator supplies.

Now in view of the (possible) W.I.C.E.N. use of these transceivers, they should be made to operate as efficiently as possible. Aside from that, if you own a small car or an automatic, you don't want the battery to run down quickly. For example, a 6v. MR3A carphone junior draws 20 amps. on transmit. All that for only 1½ watts r.f. output is a bit ridiculous.

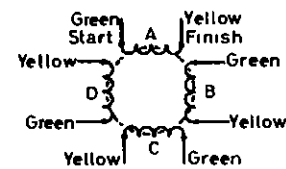


FIG. 1a. PRIMARY WINDINGS.

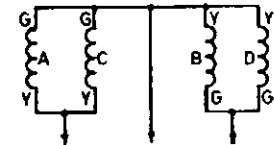


FIG. 1b. CONNECTIONS FOR 6V. PRIM.

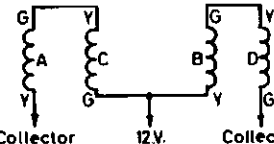
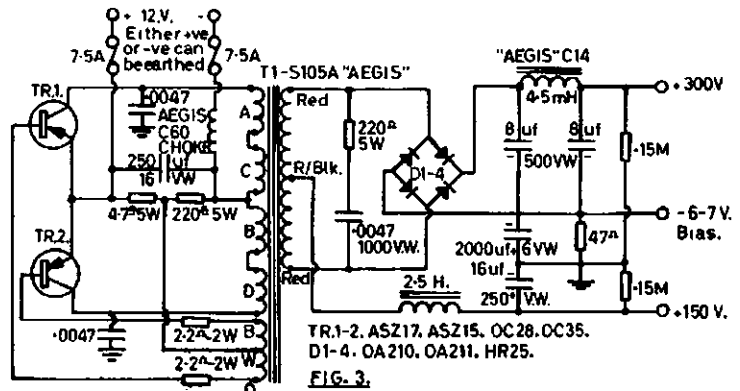


FIG. 1c. CONNECTIONS FOR 12V. PRIM.



TR.1-2. ASZ17, ASZ15, OC28, OC35.
D1-4. OA210, OA211, HR25.

FIG. 3.

* 1 Mary Street, North Balwyn, E.9, Vic.

following conversion took place. (Referring to the circuit in "A.R." for October 1965, pages 14 and 15.)

I found that W1, the selenium rectifier stack, had already been removed and replaced by four OA210 diodes, so I left that as it was. I removed L11 and L12 and the shield. This then enabled me to remove the vibrator and its socket. T19 was then disconnected and removed from the chassis. Don't forget to tag the wires coming from the power switch S1. I then disconnected L10 from the second 24 uF. capacitor and the negative side of the first 24 uF. capacitor was removed from the bias and earthed.

The S105A toroid was then temporarily positioned near the crystal and the 6AQ5 (on top of chassis). I decided to use two 11 amp. SFT265 (Ducon) transistors that were on hand. Any transistors of 10 amp. or more rating can be used, e.g. ADY26, ADZ11, ADZ12, 2N1100 or n.p.n. SE3030-33. Consult Photo 1 and position the transistors so that they fit without fouling anything. Mount them with mica washers and insulating bushes. Drill necessary mounting holes and clean the burrs off. The toroid can now be permanently mounted, using the two sponge rubber discs and the bakelite disc as in Photo 1.

nicely. Most of the underside layout can be gleaned from Photo 2.

When you have everything wired and checked, connect 'er up and switch on. The toroid should "sing"—if it does not, reverse the blue and orange leads on the feedback winding (not while it is on!). The toroid should now "sing" happily when the supply is turned on. It may not be too loud though.

Be sure that you have the battery polarity correct!

Check the voltages with a multi-meter and see that they are something like those in Table 2.

(Continued on Page 9)

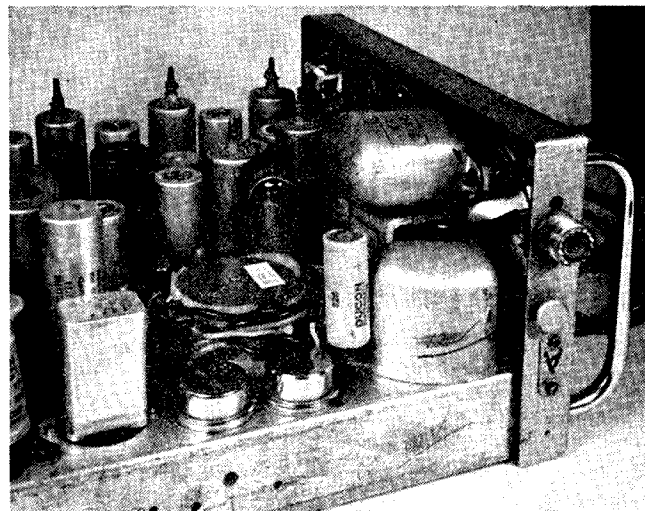


Photo 1

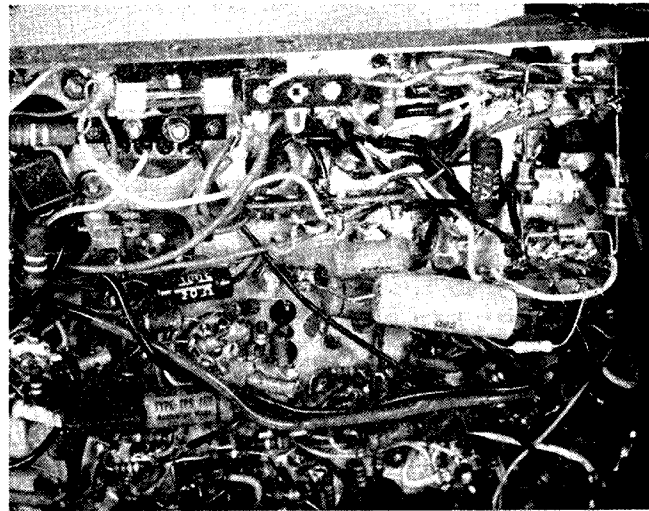


Photo 2

Another relay, Rel.2 (see Fig. 4) was then mounted across the hole where the vibrator used to reside. (See Photo 1, lower hand corner.)

Rel.2 has a set of changeover contacts and a normally open contact (see Fig. 4). The coil of Rel.2 is connected in parallel with Rel.1. The connections to the h.t. changeover contacts on Rel.1 were removed and connected to those on Rel.2. This is to prevent 300v. being applied to the QQE03/12 and driver anodes before excitation. If this is not done, the cathodes of the driver and p.a. suffer damage and shortens tube life.

In Fig. 4 you will notice a choke in the h.t. filter marked C14. This is another Aegis product designed for use in transistor power supplies. I mounted this just behind the speaker. A two-lug tagstrip was mounted under the bolt of the choke L10 and on this I mounted an 8 uF. electrolytic (500v.w.). It is the first filter capacitor and is easily seen in Photo 1.

Now the underside of the chassis was pretty clear after removing W1, L11 and L12 and the other power supply components, so everything was mounted under here. A liberal sprinkling of tagstrips was used and everything fitted

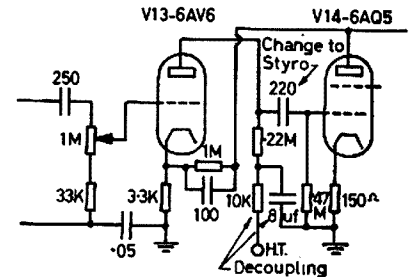


FIG. 5.

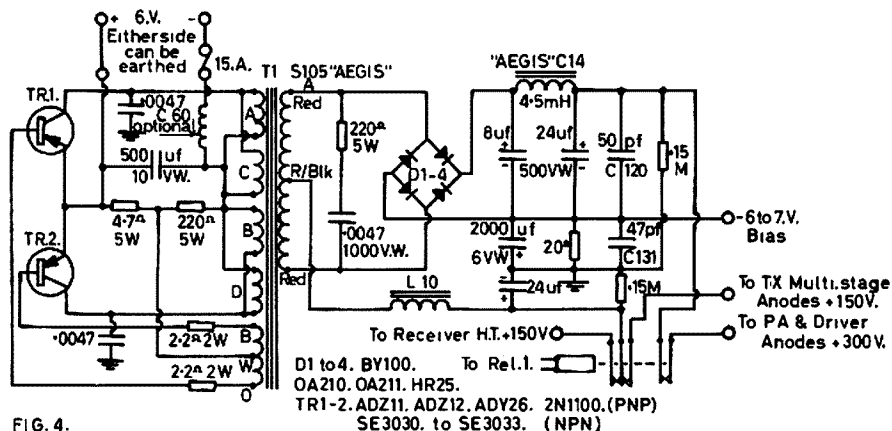


FIG. 4.

	H.T.	Bias Line
P.A. and Driver	284v.	2.3v.
Multipliers, Oscil. and Audio	124v.	2.3v.
Receiver	148v.	1.2v.

Table 2.
Bias measured across 20 ohm resistor in supply.

	Input Current	Input Volts
Receiver only	6.6a.	6
Tx Standby	9a.	6
Tx button down	13a.	6

Table 3.

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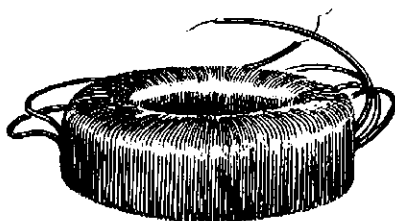
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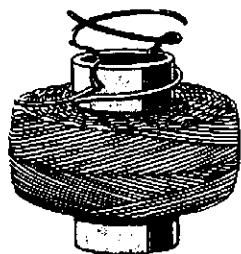
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OVERTONE OPERATION OF QUARTZ CRYSTALS

PART TWO

D. H. RANKIN,* VK3QV

THE first part of this article appeared in the March 1967 issue of "Amateur Radio" and briefly described the nature of the overtone mode of oscillation and differences between plated fundamental crystals and plated overtone units. In Part Two it is proposed to discuss practical limits on frequency and activity for third and fifth overtones, a simple method of approximately measuring the equivalent series resistance [e.s.r., i.e. R_m of equation (3)] of an overtone crystal and finally to discuss good and bad overtone oscillator circuits.

FREQUENCY AND ACTIVITY LIMITS

Third Overtone Crystals are recommended for use between 20 and 60 Mc. although they can be made down to frequencies as low as 10 Mc. and as high as 80 Mc. Third overtones are not recommended below 20 Mc. principally because fundamental crystals are readily available up to (in fact over) 20 Mc. and in general fundamentals are to be preferred for Radio Amateur work when there is a choice. Between 10 and 20 Mc. price is not usually a factor, but above 20 Mc. a fundamental mode crystal will become far more expensive than an overtone. A second reason for preferring a fundamental to an overtone under 20 Mc. is that the e.s.r. or activity of an overtone crystal tends to increase with decrease in frequency. Thus in practice a good third overtone at 15 Mc. would have an e.s.r. of approximately 40 ohms, but a 15 Mc. fundamental would have an e.s.r. in the order of 10 to 15 ohms.

At the other end of the range, expense is once again the main deterrent to using thirds above 60 Mc., but also above this frequency the quartz plates become so fragile that special mechanical and electrical precautions have to be taken to achieve a satisfactory life performance. International specifications¹ relating to quartz crystal units usually require third overtone crystals between 20 and 60 Mc. to exhibit an e.s.r. of 40 ohms or less. This figure can easily be achieved by the manufacturer if the plated area (see photos in Part One) is made relatively large.

As usual though, you do not get something for nothing and if the plated area is made too large the crystal will show a tendency to jump frequency and it is interesting to note that such a jump for an AT will always be to a frequency higher than the correct overtone. To overcome this problem international specifications limit the plated area by specifying the maximum value of C_0 —and remember this is due to the parallel plate capacitor effect with two plated electrodes separated by a quartz disc. For any AT cut crystal, fundamental or overtone, this limit on C_0 is 7.0 pF. This means that in practice, if this 7.0 pF. is maintained, the e.s.r. of a third overtone crystal will

be between 10 and 40 ohms. Any overtone crystals with an e.s.r. of say less than 15 ohms should be viewed with suspicion. Measure the C_0 —a standard 1 Kc. or 10 Kc. bridge is quite satisfactory for this purpose as it is the static capacitance that is required—and if this is above 7.0 pF. carefully check the overtone frequency obtained from that crystal. It may be 60 to 100 Kc. higher than it should be—sometimes—and really, is there anything more useless than a crystal that moves frequency of its own accord?

Fifth Overtone Crystals are best used between 60 and 100 Mc. although they can be manufactured down to 50 Mc. and up to about 125 Mc. Once again the low end of the range 50 to 60 Mc. overlaps the upper end of the third overtone range and the latter types will have a better activity typically 40 ohms at worst compared with the 60 ohms at worst for the fifth overtone units.

Cost becomes the major problem above 100 Mc. and at this time this frequency can be conveniently classified as the top limit for quartz crystals. Besides price, such factors as circuit design and the measurement of e.s.r. become a real problem and unless an Amateur is prepared to spend a lot of time experimenting with oscillator circuits, units above 100 Mc. should not be considered.

International specifications¹ require that fifth overtone crystals have an e.s.r. of 60 ohms or less and a C_0 of 7.0 pF. or less. The remarks made above concerning C_0 in excess of 7.0 pF. apply to fifth overtones also. Any fifth overtone unit exhibiting an e.s.r. of less than 20 to 25 ohms should be viewed with suspicion.

Seventh Overtone and higher order crystal units have been produced, both in Australia and overseas, but because of their specialised nature they will not be considered further here. Suffice to say that overtone units as high as 250 Mc. have been made and it will only be a matter of time before such items become readily available to Amateurs.

DRIVE LEVELS

Calculation.—This is a subject that seems to cause great confusion amongst Amateurs. It is not just the voltage appearing across a crystal nor the current flowing through it, that matters—it is a combination of both. The thing that does matter in fact is the power, i.e. the product of voltage and current, that the crystal is required to dissipate. Further, it must be stated that the voltage and current here are the r.f. values at resonance. The d.c. voltages associated with a crystal are relatively unimportant and unless the quartz breaks down a crystal will not pass direct current. (It is worth noting that d.c. voltages up to 1000 volts may be applied to a crystal without damaging the quartz, but this is not good engineering practice. The insulation in the

crystal base may fail and thus, in turn, cause power supply failure.) Small values of r.f. current, particularly in the v.h.f. spectrum, are not easy to measure directly and thus it becomes necessary to calculate power dissipation from the following formula:

$$P = \frac{E^2}{R_m} \dots \dots \dots (8)$$

where P = Power dissipated in watts.
E = R.m.s. r.f. voltage across the crystal at series resonance in volts.

R_m = E.s.r. in ohms.

A similar formula involving e.p.r. must be used in those cases where parallel resonant operation is involved (E of course would be larger in this case than with series resonance), but because this article is about overtone crystals and this type of operation is not recommended at v.h.f., the variation will not be treated here.

The maximum recommended dissipation for either a third or fifth overtone unit is 2 mW. Consider the worst case for a third overtone, i.e. a very active crystal with an e.s.r. of 10 ohms (it is easier to overdrive an active unit). Applying formula (8) we get:—

$$\frac{2}{10^2} = \frac{E^2}{10}$$

$$\text{i.e. } E^2 = \frac{2}{10^2} = 0.02$$

or E = 0.14 volts or 140 mV.

For a marginally good crystal, i.e. one with an e.s.r. of 40 ohms, E becomes 280 mV. Thus the r.m.s. r.f. voltage across any plated third overtone crystal should be between 140 and 280 mV. If you do not know the e.s.r. of a particular unit you will always be safe if you keep below the lower limit.

The corresponding minima and maxima for a fifth overtone are 220 mV. and 350 mV. respectively, based on a best e.s.r. (or worst case condition) of 25 ohms and a worst e.s.r. of 60 ohms.

If a crystal is subject to mild overdrive the frequency will drift over a period of time. Severe overdrive will result in severe drift and frequency jumps and finally complete failure when the plated material is thrown off the quartz. Better frequency stability will be achieved with drive levels lower than 2 mW., e.g. for overtone crystals in ovens the recommended figure becomes 1 mW. in lieu of the 2 mW. quoted for a "cold" crystal.

All the figures quoted above are for crystal units in metal can type holders that are not evacuated. B7G, B9A and other glass type holders that are normally evacuated must be considered separately because crystals in such holders will exhibit a much higher activity. As a rough guide the voltages quoted above should be halved for the evacuated types.

Measurement.—R.f. voltage can be measured up to 100 Mc. with the average v.t.v.m. although the usual instru-

* 1879 Malvern Road, East Malvern, S.E.5, Vic.

ment with a 1.5 volt f.s.d. on the most sensitive range does leave a little to be desired. A meter with a 500 mV. range would be more useful if available.

Equation (8) stated that the power dissipation is dependent upon the r.f. voltage developed across the crystal at series resonance and the e.s.r. Thus the remaining parameter to measure to allow completion of a power calculation is e.s.r. Fig. 5 shows an experimental set up, the accuracy of which is only limited by the quality of the test equipment used.² The crystal is inserted in a "pi" network and is connected between a signal generator or v.f.o. and a suitable detector, say a v.t.v.m. The signal generator is tuned until a maximum deflection is obtained on the voltmeter. At this point the crystal resistance is at a minimum and for practical purposes can be considered as operating at series resonance.

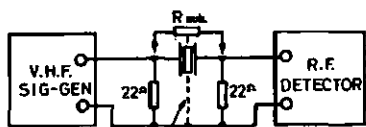


FIG. 5. Experimental setup for the measurement of crystal E.S.R.

If the crystal is now replaced by a non-inductive resistor, R_{sub} , which gives the same meter deflection as the crystal, the crystal e.s.r. is then the same as R_{sub} . Inaccuracies will be caused if the signal generator has a high harmonic content in its output waveform—when R_{sub} is in circuit the fundamental signal plus harmonics from the generator will pass through to the detector and will register on the voltmeter. When the crystal is in circuit only the overtone frequency to which the generator is tuned will pass through to the detector (a crystal filter). This problem can be eliminated if a frequency sensitive or tunable voltmeter is available (a receiver equipped with a calibrated S meter for example), but such devices with a range of 20 to 100 Mc. are not readily available to the average Amateur. Thus in most cases, the answer obtained is only approximate. The best arrangement then would consist of an oscillator with zero or low harmonic output coupled with a tunable v.h.f. voltmeter.

The resistance of the "pi" shunt arms should always be kept below that of the crystal and the resistors used must be non-inductive at the test frequencies. It is recommended that the input and output circuits be thoroughly screened to avoid stray leakage across the crystal.

There are other methods of measuring e.s.r., but they involve the use of rather specialised crystal impedance meters. These units are simpler and quicker to use in practice, but are no more accurate than the technique outlined here.

An arrangement similar to Fig. 5 was used to obtain the curves in Figs. 2 and 4 in Part One of this article as well as the data presented on the respective pole-zero spacing of a 3 Mc. fundamental and third overtone crystal.

OVERTONE OSCILLATOR CIRCUITS

There are a number of ways in which oscillator circuits may be classified—feedback or negative resistance, aperiodic (untuned) or tuned, series or parallel resonant, and so on. The class of circuit required for an overtone crystal is a tuned, feedback type at series resonance. Most of the oscillator circuits used in r.f. work are of the feedback variety and the usual overtone configurations follow suit. The circuits must be tuned because of the frequency spectrum of a crystal as shown in Fig. 4 (Part One). The fundamental and unwanted overtone modes must be suppressed by the oscillator design "picking" the preferred overtone. This is done most easily by a simple tuned circuit—the gain around the oscillator circuit will be very low except at the resonant frequency of the tuned circuit. Aperiodic circuits cannot be used for overtone operation as such circuits will usually oscillate the crystal on its fundamental frequency if it will oscillate at all.

Some simple crystal checkers described in the Amateur literature recently claimed to check crystals up to 30 Mc. This is most unlikely as the higher frequency units examined were probably overtones and the "checker" checked their fundamental properties.

The advantages of series resonance operation have been outlined by J. Nagle³ and this mode is strongly recommended. In point of fact there is no reason why fundamental crystals should not be operated this way either. Experimenters should note then that any of the circuits to be described will operate perfectly well with either fundamental or overtone crystals provided the correct values of frequency sensitive components are chosen. Another interesting point to note about series resonant circuits is that if the crystal is short circuited the oscillator will free run on a frequency near that of the crystal. A parallel resonant oscillator does not possess this property.

Examples of series resonant circuits are the Butler (Fig. 6a), the grounded-grid oscillator (Fig. 6b), and the Squier oscillator (Fig. 6c). There would seem

to be little need to use the Squier configuration these days because correctly made overtones are not hard to start. The Squier used inductive feedback to "kick" the crystal into oscillation on its overtone and this is satisfactory provided the crystal is not momentarily overdriven. Thus the degree of feedback must be carefully regulated or else—poof! and such catastrophes are not covered by manufacturers' guarantees either. The popular "Robert Dollar" oscillator suffers from the same problem and excessive amounts of feedback have caused many complete crystal failures. Sometimes the failure is not complete—the crystal only shifts frequency up by a few tens of kilocycles, but the story is always the same. "The crystal was okay for a start, but one day when I turned it on it went for a second and then stopped." For this reason the Robert Dollar is not recommended for use with plated overtone crystals.

The grounded-grid configuration also uses inductive feedback, but because this circuit is useful at the higher frequencies, a recommended circuit is given later, that will give satisfactory results if the inductor details are followed.

The simpler forms of circuits such as outlined in Fig. 7 are not recommended because they do not oscillate the overtone at series. If the frequency accuracy is not important then a rock calibrated for series could be used in such circuits but it would of course be a few kilocycles off marked frequency. Remember f_1 and f_2 !

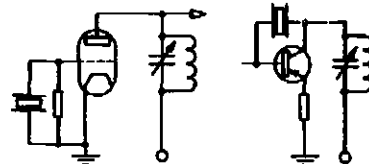


FIG. 7a. FIG. 7b. Schematics of oscillator circuits NOT recommended for use with overtone crystals.

Let us now consider a number of practical overtone circuits.

The Butler or cathode coupled oscillator is perhaps the best known of the series resonant type of oscillator circuit. Basically the circuit is made up of a cathode follower and a grounded-grid amplifier. Maximum frequency stability is obtained when the valves are 180° out of phase, i.e. the circuit is purely resistive. One of the family of double triodes, e.g. 12AT7 or 12AU7, may be conveniently used for this type of circuit. Fig. 8a gives the constants for third overtones between 20 and 60 Mc.

The tuned circuit in the plate of the grounded-grid stage is necessary to ensure that the desired overtone frequency is selected, i.e. for a 46 Mc. third overtone L1C1 must tune 46 Mc. The resistor in the plate circuit of the cathode follower may be replaced by L2C2 shown in Fig. 8b, but this circuit can only be tuned to twice or three times overtone frequency. If L2C2 is made to tune the overtone frequency, then oscillations not under control of the crystal will take place. If a frequency multiplier is not required, use the circuit in Fig. 8a with the resistive load.

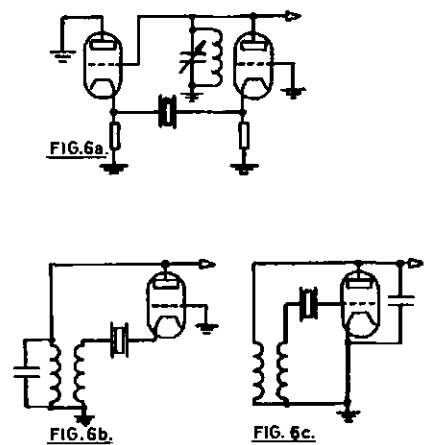


FIG. 6a. FIG. 6b. FIG. 6c. Schematic Diagrams of Basic Series Resonant Circuits.

Fig. 6a.—The Butler oscillator.
Fig. 6b.—The grounded-grid oscillator.
Fig. 6c.—The Squier oscillator.

Low Q coils are recommended as greater selectivity results in a larger phase shift and hence larger frequency change with percentage capacity change in C1, i.e. whilst adjustment of C1 will "pull" the frequency of the crystal this will be minimised by making the Q of L1 low. A useful size of former is 3/8 inch diam. and the polystyrene type should be quite satisfactory up to 60 Mc. If ferrite slug tuned coils are to be used, the slug material must be suitable for operation at v.h.f. Brass slugs would be quite satisfactory, but it must be borne in mind that they have the opposite effect to ferrite types, i.e. the resonant frequency of the tuned circuit will increase as the brass slug is screwed into the inductance.

The cathode resistors are part of the oscillator network and ideally they should be of equal value. The frequency stability is greatest when these resistors are as small as possible consistent with reliable oscillation. Poor activity crystals may be made to oscillate if the value of the cathode resistors is increased, but once values above about 1K ohms become necessary, care should be taken as the circuit may tend to free run.

ate at the desired crystal overtone and in practice adjusted for maximum output from the oscillator. C2 may be adjusted to slightly "pull" the crystal frequency as required. The degree of coupling between L1 and L2 should be carefully watched as excessive feedback may cause crystal failure. The information given in Fig. 9 is quite safe for the 60 to 90 Mc. range.

interested are urged to read the article mentioned in reference 3 to obtain more background in this subject. Another form of the "Impedance Inverter" has been discussed in some detail in "Break In" and "Info," but the important points are repeated here. Refer to Fig. 10.

The adjustment procedure is as follows:—

1. Short circuit the crystal. The oscillator will "free run" at a frequency determined by L_x, C1 and C2.
2. With C1 and C2 as shown, tune L_x until the circuit oscillates near the required overtone frequency.
3. Remove the short circuit. Crystal controlled oscillation at the overtone frequency should now take place.
4. Tune L_x for minimum r.f. voltage across the crystal. This will be series resonance. L_x may be offset from this point if the crystal frequency need be pulled slightly.

Double or triple the overtone frequency may be obtained if the plate resistor is replaced by the appropriate tuned circuit. Switching crystals in this circuit is not particularly difficult, but it is strongly recommended that the unused crystals be short circuited. The switching could be on the crystal side of L_x if all the crystals were close together in frequency—say 200 or 300 Kc. (f.m. nets) or on the grid side of L_x. In the latter case, there would then have to be a separate series inductance for each crystal.

The values for C1 and C2 given have been optimised and provided the ratio is kept about the same as recommend-

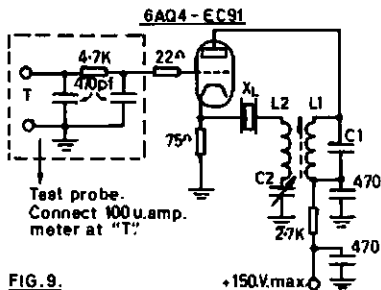


FIG. 9. The Grounded-Grid Oscillator, 60 to 90 Mc. L₂—1 turn 28 a.w.g. at ground end of L₁. C₂—2-10 pF. trimmer.

Tuning Range	L1 close w'nd 22 a.w.g.	C1
60 to 70 Mc.	4 turns	20 pF.
70 " 75 "	4 "	14.7 "
75 " 80 "	4 "	10 "
80 " 85 "	3 "	18 "
85 " 90 "	3 "	14.7 "

The "Impedance Inverter" is another useful circuit and it has one very big advantage over the circuits already described—one side of the crystal is earthed. One form of this circuit has been described by W3JES and those

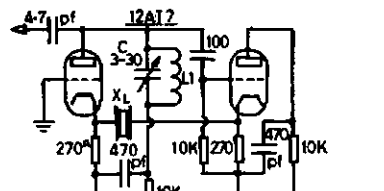


FIG. 8a. The Butler Overtone Oscillator. Output at Overtone Frequency. XL—Overtone Crystal, 20 to 60 Mc. L1—To tune, with 3-30 pF., to frequency of XL.

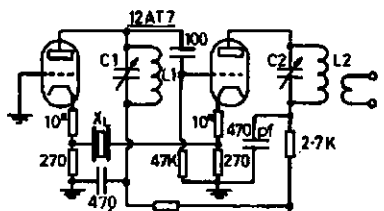


FIG. 8b. The Butler Overtone Oscillator. Output at twice or three times Overtone Frequency. XL—3rd O/T Crystal, 20 to 60 Mc. L1C1—To tune Overtone Frequency. L2C2—To tune two or three times XL Frequency.

Switching crystals in this circuit is rather a messy procedure and consequently the Butler oscillator is usually used where only one crystal frequency is required—a v.h.f. or u.h.f. converter for instance.

The grounded-grid oscillator, unlike the Butler, has not received much attention in the Amateur literature. The circuit is well suited to the higher frequency crystals, particularly fifth overtones between 60 and 90 Mc. The circuit shown in Fig. 9 appeared, in a slightly different form, in some application notes published by Cathodeon Crystals Ltd., of U.K.⁴

The grid of the 6AQ4 or EC91 is grounded for r.f. by the 470 pF. capacitor and consequently this should be a good quality low inductance type, e.g. a button mica. L1C1 should reson-

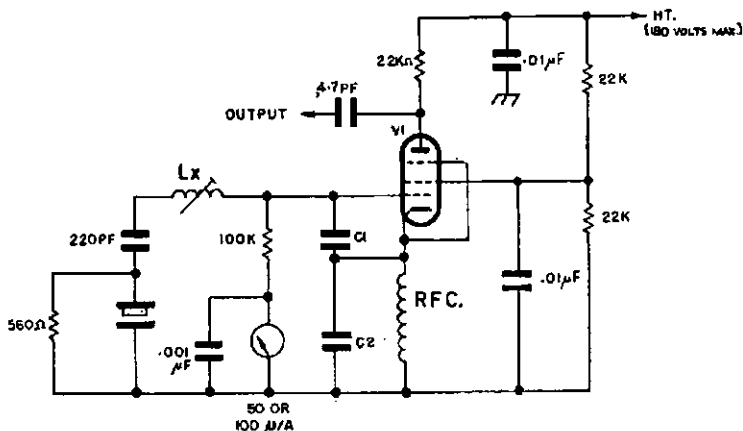


FIG. 10. IMPEDANCE INVERTING OSCILLATOR (25 - 70Mc/s)

- V1:—
- 6AK5
 - 6AM6
 - 6BH6
 - 6CQ8 (pentode section).

- Notes:—
1. f is overtone frequency NOT fundamental frequency.
 2. The anode load resistors (22K ohms) may be replaced with a tuned circuit at 2f or 3f (never at f) to obtain multiplied output.
 3. The meter and 0.001 uF. capacitor as shown are only necessary to check oscillator grid current. If not required, directly earth the 100K ohms resistor.

f Mc.	Lx uH.	C1 pF.	C2 pF.
25	6.7	10	22
30	4.7	10	22
35	3.5	10	22
35	3.5	4.7	10
40	2.6	4.7	10
45	2.1	4.7	10
50	1.7	4.7	10
50	1.7	3.3	6.8
55	1.4	3.3	8.8
60	1.2	3.3	8.8
65	1.0	3.3	6.8



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500K log, 7/8" shaft with slot.
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Less shaft, 100K linear. 10c plus S/T 25%.

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Large type, 1 1/4" diameter:

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Pack and post 5c each or 25c dozen.

TRANSFORMERS

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Primary: 10-0-200-220-240-260v.

Secondary: 190v. tapped at 170v. at 100 mA.; 55v. at 10 mA.; 12v-0-12v. at 130 mA.; 6.3v. at 4a.; 6.3v. at 4a.

Grey metal case with solder terminals; originally made for D.C.A.

\$3 plus S/T 12 1/2%
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Secondary: (1) 150 ohms, (2) 150 ohms. Total 3 watts.

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Originally for outside broadcast use.
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4300 ohms to 600 ohms c.t.

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1 Henry at 80 mA. D.C. resistance 30 ohms.

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AUDIO AMPLIFIER MODULES

Four-Transistor: 1 watt output.
High impedance input: 100K ohms.
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Supplied with circuit and wiring instructions.

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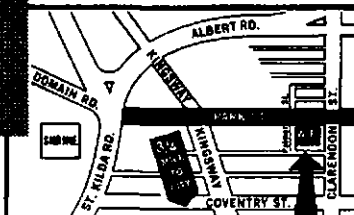
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ed, some variation is permissible. Thus by experiment it is possible to choose C1 and C2 so that only the crystal and Lx have to be switched, say, between 20 and 40 Mc. Alternatively, fundamental and overtone crystals may be mixed together provided the appropriate value of Lx is switched into circuit and compromise values for C1 and C2 found by experiment. The Impedance Inverter could thus be of great use in all-band s.s.b. exciters. Of course if the oscillator valve is being made to operate as a frequency multiplier as well, then the tuned circuit in the plate would have to be switched too if the switched crystals were more than 100 Kc. or so apart in frequency.

of 13 Kc., and experimental units up to 125 Mc. have been produced in laboratories. Thus an interesting and exciting future in the field of crystals and crystal filters is in store for those Amateurs who like to know what goes on behind the panels of their gear.

ACKNOWLEDGMENTS

To Pye Pty. Ltd., Clayton, for the photographs used in Part One, and to Reg. Richards (VK3RR) and John Foster (VK3AFX) for helpful criticism and advice.

FEEDBACK

Equation (2) in Part One should read:—

$$e.s.r. = R_m \left\{ 1 + \frac{C_o}{C_i} \right\}^2$$

The overtone poles and zeros in Fig. 4 Part One should read $\approx 3f_1$, $\approx 3f_p$, $\approx 5f_1$ and $\approx 5f_p$.

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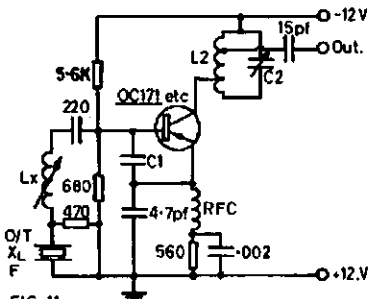


FIG. 11.
A Transistor Overtone Crystal Oscillator.

Freq. Range	C1	Lx
25 to 35 Mc.	56 pF.	See Text
35 .. 45 ..	39 ..	
45 .. 55 ..	27 ..	

L2C2 to be tuned to twice overtone frequency — 2f.

Taps on L2 to be adjusted experimentally for maximum output.

If output at overtone frequency f is desired, L2C2 MUST be replaced by either an R.F.C. or a small resistor.

Fig. 11 illustrates a transistorised version of the "Impedance Inverter" and reference 6 describes another version developed experimentally for 100 Mc. fifth overtone crystals.

CONCLUSION

The way in which overtones differ physically from fundamental type crystals has been described and in addition circuits have been presented that should allow the keen home constructor of s.s.b. gear or v.h.f./u.h.f. equipment get the best out of his overtone rocks. It has become almost a tradition with the v.h.f. men to use 8 Mc. crystals to get on to 52 or 144 Mc. Why not use an overtone on 28 or even 52 Mc. for the lower band and a 24, 36 or 48 Mc. rock for two? Because of the limited power available from the crystal oscillator, a buffer amplifier would almost certainly be a necessity, but the approach is different. Where are the experimenters amongst the Amateur ranks?

The final comment on overtone crystals should probably be on a new development. Some mention is sometimes made of the possibility of constructing a filter with overtone crystals. Yes, it is certainly possible and one day band pass filters with 500 Kc. or so bandwidths may be available at 52 and 144 Mc. Recent American literature has described filters with a centre frequency of 68 Mc. and a 6 db. bandwidth

GOD'S GIFT TO THE HAM: THE XYL*

ROBERT H. BLACK,† VK2QZ

We all know that the Ham is gentlemanly, loyal, progressive, friendly, balanced and patriotic. These virtues are automatically acquired when he passes the examination and gets his licence. A man of such high qualities is hard put to it when the time comes to select a suitable mate for the generation of legitimate harmonics and the other things which go with marriage.

It is a fit thing that there is among the daughters of Eve a select class of women with qualities to match those of the Hams. And so one of these becomes the XYL after a short period of courting between contests with a minimum of reference to the domestic implications of Amateur Radio.

The qualities the Ham admires in his XYL make a very long list and I have selected only a few to talk about tonight.

She, too, is friendly. When the Old Man is away at work she gets the Handbook from the shack and learns all about radio so she can understand what he is talking about. She welcomes the unannounced Ham visitors and always produces tea and scones without a murmur.

She is tolerant. She never calls the Old Man to a meal when he is in the

middle of a QSO. She thinks it right and proper that the shack should look like an overgrown rat's nest because she believes that this is the environment necessary for the creative imagination of the Genius. And she never, never attempts to tidy it up.

She is helpful. No matter what she is doing in the kitchen or elsewhere around the house she will stop at once to help the Old Man with a difficult bit of soldering in the shack. She keeps the log during contests and makes the coffee when the band goes dead. She fills in and sends off the QSL cards, paying for the postage out of the house-keeping money.

She helps the Old Man remember important things which he might forget—like mowing the lawn, cleaning out the roof guttering, all those non-Ham things which keep a Ham balanced. And she puts circles, black circles, around the dates of DX contests on the kitchen calendar.

She keeps the Old Man progressive. She suggests that a neat little transceiver is much better than the rack and panel transmitter, the receiver which weighs a hundredweight and all the junk which goes with it. She offers him a small table in the lounge where the new transceiver will look nice with the t.v. And when the exchange has been made, her ability to plan becomes evident: the shack can now be used for the kids. She thinks that a quad adds so much to the appearance of the place, and she keeps the convolvulus off the co-ax. without having to be told.

She is enthusiastic. She looks forward all the year to the hamfest when she can get together with the other XYLs (and the ants and the flies) and blow about the virtues of her Old Man—how he mowed the lawn last month and fixed her bedside light during his holidays last year.

She is co-operative. She doesn't complain to the R.I. when the Old Man's voice comes through the record player—she just switches it off and makes herself useful washing the car, doing a little carpentry or painting the house—little jobs which God created women to do. She makes a little game out of digging blobs of solder from the carpet.

These qualities, and many more, are what a Ham expects in his XYL.

And all my XYL can add is that a woman must love a Ham a hell of a lot if she can put up with him.

THE VIBRATOR ELIMINATOR

(Continued from Page 3)

By now you would probably have noticed some "whine" in the output. No worries, just change the 250 pF. mica audio coupling capacitor to 220 pF. styroseal and decouple the 6AV6 (V13) h.t. as in Fig. 5. This should effectively remove the whine. No whine was observed on the modulation.

Table 3 gives the currents drawn by the unit. Note that on transmit the current drawn now is only 13 amps. and not 20-odd amps. You are now getting more r.f. out too!

Well, that completes the conversion. One Saturday afternoon's work should see you with a somewhat more efficient transceiver. Don't forget that almost any of the mobile v.h.f. transceivers about can use this rather handy toroid.

* Divertisement at N.S.W. Divisional Convention Dinner, 1967.
† 2 Yerton Avenue, Hunter's Hill, N.S.W.

12 VOLT D.C. SUPPLY

We now come to the 12 volt d.c. supply for the valve filaments, heaters, and relays. This is required to be in the 12 to 13 volt range with good filtering. The effective filtering capacity due to the transistor dynamic filter is in the region of 20,000 to 30,000 uF., which should be quite adequate.

The d.c. low voltage supply is an adaption of the first transistor regulated power supply I described in an article some months ago. Originally I tried this supply using the two 6.3 volt windings of a power supply in series as the source, but found the voltage developed across the capacitor at the bridge rectifier output not quite sufficient to operate the regulator-filter effectively. A. & R. put out a 15 volt 2 amp. transformer (No. 5504) which is not expensive and this gives a peak d.c. output of 21 volts. 15 volts times 1.4, equals 21 volts. When loaded, this transformer should not drop the output d.c. volts across the first filter capacitor below about 16 to 18 volts. At 2 amps. there is a voltage drop of 2 volts across R6, which decreases the output voltage available to the regulator transistor.

R6 has only one purpose, that of overload protection and may be dispensed with if this facility is considered unnecessary. Don't blame me if you do in the regulator transistor through leaving it out! With the 1 ohm resistor in series with 2N441 it can never draw more than 15 amps. approximately if a short occurs in the output. The fuse will blow within a short time as long as it does not exceed 3 amps.

If the idea of having to buy a separate transformer seems foreign to you and you have a transformer with two 6.3 volt windings and a 5 volt winding in addition to the h.t. winding, you are in business as long as you change the h.t. rectification over to high voltage silicon diodes, so freeing the 5 volt winding from the h.t. network. The three windings in series give 17.6 volts r.m.s. and give, when rectified, 24.6 volts peak d.c., which is plenty for the 12 volt d.c. supply to work effectively with.

HT Volts	300	340	380
R4, ohms	5K	8K	10K
R4, watts	3	5	5

Table 1.

In Table 1 is given the values for the various resistors in the d.c. l.t. supply and d.c. h.t. supply for various supply voltages. The l.t. drain is approximately 0.2 amp. receive only, 1.3 amps. standby, and 2 amps. on transmit. The relay in the supply can be any 12 volt relay with about 100 ohms or more coil resistance. No heat sinks will normally be required for the diodes, which have only to handle 1 amp. average current. Possibly 1 amp. diodes might do the job here, but I feel it would be unwise to use the diodes right on their limit, when diodes of 1.5 to 3 amp. rating are relatively cheap.

The zener may need a small heat sink, and the 2N441 will need a small heat sink of a few inches square, about 4 inches square would do. A Ferris 700 heat sink would certainly do the job. The 2N441 will only be dissipating

between 10 and 20 watts although it is rated up to 150 watts.

I have drawn the supply as if I were going to use a modern voltage doubler transformer, such as the A. & R. 2064 or Ferguson PVD105 for the h.t. with the A. & R. 5504 as the l.t. supply source. I have drawn the supply in such a way that it could be used to supply any other normally a.c. operated equipment, as well as its use to supply transistorised gear up to 2 amps. at 12 to 13 volts. In all, a rather universal power supply, which could be used for many jobs around the shack or workshop, as well as for its design purpose of supplying your 122.

The 122 is quite a good set and I see no reason why it should not work well on this supply, giving more output than originally intended into the bargain. The 122 will tune s.s.b., with the netting switch in; with the original b.f.o. it is not brilliant. Most 122s are stable enough to be tuned by product detector bound s.s.b. transceivers. Don't let your 122 rust away—ACise it and use it. I hope to make this supply myself when time permits and I am in a location where I can buy parts or scrounge same. I trust you will find it as good as I expect it to be.

— . . . —

FIFTY AND OVER

"Good morning, Bert. I thought you'd be on this morning. This is VK3ZOM in duplex cross-band contact with VK3ZFC. Yes, Bert, I couldn't switch on the rig quickly enough after hearing the news. I think every Amateur who has a rig working will be on the air this morning. No wonder, since it's been declared a special holiday for all licensed Amateurs, to celebrate the findings of the Royal Commission on Amateur Radio . . .

"Yes, Bert. It's funny you should say that. I can't remember hearing about it before, either. They must have kept very quiet about it. Never mind. The main thing is that all the findings are going to be accepted. You haven't got the paper yet? The front page is full of it. I like the way the report begins. It says, 'This Commission, having decided that educating and helping people is as important as killing them, and taking cognisance of the great need for international friendship, hereby recommends that Amateur Radio be declared a National Service . . .' You know, Bert, I thought these things were run by old fogies and fuddy-duddies, but this mob is really on the ball. Think of it! Three weeks fully paid extra leave each year to attend lectures and conventions and do field and experimental work. And free issue of special equipment to all licensed experimenters.

"How about the new licences? Yes, Bert, there will be a few squeals but personally I think they're a great idea. The paper has all the details. It says here, 'Amateur Radio will henceforth be divided into two distinct categories, the technical and the communication . . .' and then goes on to give all the details. One advantage is that the blokes who like DX and ragchewing and buy commercial gear won't have to go on pretending to be interested in

electronics. As long as they know enough to operate and do elementary repair and maintenance, they'll be right. But the communications requirements are stiff. Fifteen w.p.m. Morse, an elocution test, two hours operation on a simulated international traffic net, and four-hour exam. on regulations, traffic and procedures; and the ability to recognise at least fifty basic words in each of four foreign languages.

"The technical licence? Yes, Bert I'm going for that. I'm not much interested myself in the ragchew side. Of course there's nothing to stop anyone getting both tickets. From what it says here the technical exam. will be a lot tougher. We'll have to do a lot more than just scramble through Ohm's Law. And apart from the exam. we've got to design and build a complete rig and justify it to a board of examiners.

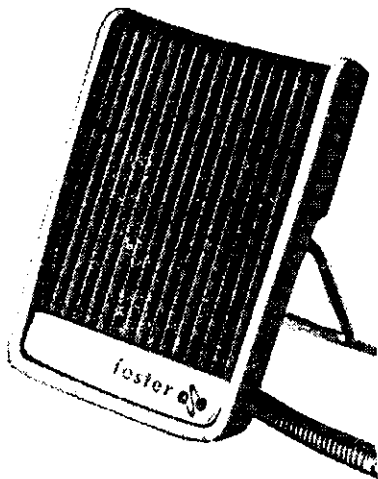
"But, of course, we'll be allowed fifteen watts on all bands so we'll be able to experiment with more transistorised gear. What's that you said? International regulations? Of course we have to be familiar with the Morse Code, but in practice that'll mean being able to recognise the letters and no more. Of course some blokes will scream about the low power, but if they want more they can get a communications ticket. Anyway, we can always get permission to use up to 1 kw. for special experimental projects. But the beginner's licence will do most to build Amateur Radio. The paper here says it won't be very hard but they get a bit of an exam. on everything. And three watts on all bands. After five years they have to get one or both of the other licences, but in special cases they can get a further five-year extension. The special five thousand dollar 'Most Improved Amateur of the year' award will give these blokes a lot of incentive. Of course we can go for it too.

"Did you say how about t.v.i.? We won't have any more trouble with t.v.i., Bert. If the inspectors find the rig is okay, then the person who complains will be prosecuted for being in possession of equipment capable of receiving transmissions not covered by his licence. Mind you, we can't be too hard on the viewers. Some of the poor coots haven't the brains to do anything else. So if anyone with a crummy t.v. set asks me to keep off one of the bands while he watches a thriller, I wouldn't be rough on him or report him to the inspectors.

"Of course, now that we're a national service we'll have to help in all emergencies, demonstrate gear, teach others, help at clubs, schools, scout groups and so on when we're needed. It'll take a bit of our time, but I reckon that's fair enough.

"The first thing I want to do is to put up some new aerals. What's that? Get up the mast? No Bert, I won't need to get up the mast. It's one of those tilting ones. No, Bert, I told you already I won't have to get up the mast. Don't keep on saying 'Get up' . . . Oh crickey!!!! All right, all right, all right! I'm awake now. I'm getting up. Cross? Of course I'm cross! You'd be cross if someone woke you from the best dream you ever had!"

—Roy Hartkopf.



DF-2

FOSTER DYNAMIC MICROPHONES

FOR HAND-DESK USE

SPECIFICATIONS:

Output Impedance 50 ohms or 50K ohms
 Effective output level -55 db. [0 db. = (one) 1V. Microbar]
 Frequency response 200 to 10,000 c.p.s.

OMNI-DIRECTIONAL DYNAMIC:

SIZE: 3" x 2 1/8" x 1"
 Cable: 12 ft. of P.V.C.
 Switch: On-Off.
 Desk Stand. Clip folds for hand use.
 Colour: WHITE.
 Plastic Diaphragm.

Retail Price
 50K ohms
\$5.40
 + Sales Tax 48c

A QUALITY PRODUCT OF EXCELLENT DESIGN

Marketed by **ZEPHYR PRODUCTS PTY. LTD.**
 70 BATESFORD STREET, CHADSTONE, S.E.10, VIC.



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STOCK TRANSFORMERS for Popular Projects!

PUBLICATION	PROJECT	A & R TRANSFORMER TYPE
ELECT. AUST. NOV. 1966	Stereo Public Address Amplifier	PT5891 73239 OT4005 (2 req'd)
ELECT. AUST. OCT. 1966	3 Band Receiver with Switched Coils	PT1992 Suitable Speaker Trans. from A & R Range.
MINIWATT DIGEST AUG./SEPT. 1966.	Electronic Photo Cell Circuits	PT5991
OUTLOOK MAY-JUNE 1966	3 Watt Transistor Stereo Amp	PT5990
ELECT. AUST. JUNE 1966	Regulated Power Supply	PT1940
ELECT. AUST. JUNE 1966	Basic Stereo Amplifier	T1889
		Z3040
		K5-15 (2 req'd)
ELEC. AUST. MAY 1966	A Battery Charger for your Car.	PT5786
ELEC. AUST. MAY 1966	1966 R-C Bridge	PT2150
ELEC. AUST. MAY 1966	THREE Band Short Wave Converter	PT5890
ELEC. AUST. APRIL 1966	Twin 5 Watt Class A Transistor Stereo Amp.	Z3200 (2 req'd)
OUTLOOK JULY-AUG. 1965		Z3212
OUTLOOK JAN.-FEB. 1966	Protected DC Supply	PT5755
ELEC. AUST. APRIL 1966	3 Band Double Change Receiver	PT2150
ELEC. AUST. APRIL 1966		PT2062
		Z3040
		OT E7-15
ELEC. AUST. MARCH 1966	Playmaster 113 Stereo Power Amp	PT5721
		PT1019 (2 req'd)
		PT2150 (for AC Supply)
		PT2150 (for AC Supply)
ELEC. AUST. FEB. 1966	A Four Channel Audio Mixer	PT5890
ELEC. AUST. FEB. 1966	Playmaster 112 Transistor Control Unit	PT5890
ELEC. AUST. FEB. 1966	The 1966 Vacuum Tube Voltmeter	PT1993
ELEC. AUST. JUNE 1965	A Two Band Short Wave Converter	OT E7-15
ELEC. AUST. DEC. 1965	A Simple Public Address Amp.	PT1983
		PT1983
ELEC. AUST. OCT.-NOV. 1965	Playmaster Program Source	PT5890
ELEC. AUST. SEPT. 1964	A Powered Monitor for Radio Systems	PT5890
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AN ALL-BAND CURTAIN ARRAY

AL SHAWSMITH,* VK4SS

The curtain described is for those who have limited yard space, but nevertheless aspire to all band operation. It is an attempt to get the most from the least. Its only extra requirements over a random length flat top of the G5RV type is some copper wire and a few more insulators. Not much to pay for a few extra db. on 14, 21 and 28 Mc.

An array roughly similar to this appeared recently in the R.S.G.B. "Bulletin". It was called a horizontally polarised Bruce Array. This does not seem to fit fully the curtain shown here. Some have called it a Lazy "H" with inverted end sections. Others a Sterba. Give it any name you wish, it is the results that count.

This configuration will take up no more room than the very popular G5RV antenna which has a flat top length similar to this all-band array. This curtain will radiate well on all bands from 160 to 10 metres. While I have called it an all-band array, its operation

coverage, it is almost too sharp for this band.

On 28 Mc. several lobes appear. The array carries some eight wavelengths at this frequency and spacing between top and bottom elements is near optimum, so angle of radiation is low.

SOME PRACTICAL COMPARISONS

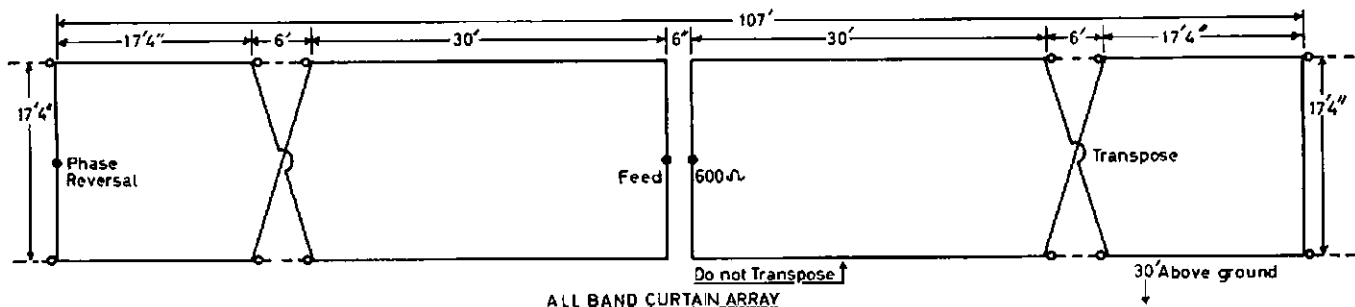
With the curtain only in a temporary position (the bottom elements only 15 to 20 feet above ground), it was not expected that DX could be worked on 80 metres with QRP. However, Europe, Asia and U.S.A. have been QSO'd.

Tried against a four-element vertical Bruce Array on 40 metres, it gave surprisingly comparable results, both on transmit and receive. Signal reports were the same from Europe, Asia and U.S.A. I can only conclude from this that the array performs better than it appears on paper, on this band.

Mc. is 20 feet, and 30 feet for DX on 3.5-7 Mc.

As it performs so well on receive, it should make an excellent stand-by antenna, or be ideally suited for the general purpose s.w.l. who wants improved reception from 1.75 to 30 Mc.

One last comment. No attempt can be made to match the 300-600 ohm feeders for all-band operation. However, with a transmitter using pi network output, and a simple s.w.r. in the co-ax. to the antenna tuner, it was found that the array could be adjusted to a reasonably low s.w.r. on all bands.



ALL BAND CURTAIN ARRAY

on 160 and 80 metres is really that quarter wave and half wave dipole respectively. On 40 metres the curtain begins to have some effect on radiation. From 20 to 10 metres the gain is increased and the angle of radiation is lowered.

In general its maximum radiation is broadside to its length and bi-directional. Being in the main horizontally polarised, its performance increases with its height above ground.

On 40 metres it functions as a two half waves in phase, very slightly extended and at this frequency the curtain configuration begins to have some affect in lowering the angle of radiation. This angle of radiation is progressively lowered through to 28 Mc. Gain over a dipole on 7 Mc. may only be a couple of db.

Operated on 14 Mc., the main lobes on each side of the array appear to have a shamrock-like pattern. This makes it very broad and the gain may be 3-4 db.

In use on 21 Mc., all the horizontal elements being in the main phase, the broadside gain is considerable; quite likely 6-7 db. Off the ends, there is very little radiation, in fact, for broad

Compared against a five-element vertical Bruce Array on 20 metres, the results directly broadside were a little disappointing, about one-half point less. However, this is due to the overall radiation pattern. You can't have it in every direction. On receiving, it is superb.

On 21 Mc., it performs as stated above, as a bi-directional beam. There is a strong lobe broadside and little off the ends.

Used with only 15 watts on 28 Mc., DX is easily workable when the band opens.

GENERAL COMMENTS

If the curtain is erected so that its length is N/NE by S/SW it will throw strong lobes to Europe, Asia and North Africa on one side, and South America and beyond to Africa and Europe on the other side.

Using a good antenna coupler, with provision for both series and parallel tuning, no trouble was experienced in loading on any band. It may be a little reactive on 21 Mc.; also the feeder length may have to be pruned a little, if it is reticent to accept current on any particular band. The higher it can be raised from the ground, the better it will perform. Minimum height of the bottom element for DX on 14-28

Book Review

THE RADIO AMATEUR'S OPERATING MANUAL

The latest of the A.R.R.L. publications, this manual lives up to the reputation set by the other A.R.R.L. handbooks and manuals over a number of years.

Although most of the information contained in this manual has previously appeared in other publications from time to time, this is the first time that the data applicable to the operating of an Amateur Radio Station has been gathered together into one manual.

Well over half of the material applies to subjects applicable only to operation in the U.S.A., such as message handling, national traffic system, and The Amateur Radio Emergency Corps, but the chapters dealing with operating an Amateur Radio Station and general operating practices will be of interest to Australian Amateurs.

Available from Technical Book and Magazine Co. Pty. Ltd., 289-299 Swanston St., Melbourne. Australian retail price, \$1.40, postage 15c.

* 35 Whynot St., West End, Brisbane, Qld.

VK-ZL-OCEANIA DX CONTEST 1966 RESULTS

AUSTRALIA

BAND LEADERS

C.W.		PHONE	
Multiband—			
VK2EO	18455	VK2APK	11270
2APK	18220	2VN	10400
2VN	14225	4LT	9245
10 Metres—			
VK2VN	1685	VK4LT	1610
2APK	900	4PJ	795
2EO	800	2VN	745
15 Metres—			
VK9GN	5765	VK2VN	4140
6BE	4110	3ABA	3635
2APK	4070	6DR	3375
20 Metres—			
VK2EO	9145	VK2APK	8745
4SD	7800	2VN	5515
2KM	7630	6XX	4665
40 Metres—			
VK2EO	4850	VK2APK	1000
2AGI	4850	7SM	935
3AXK	3135	3XB	781
80 Metres—			
VK2VN	690		
3XB	430		
2EO	330		

C.W.

Call	80	40	20	15	10	Total
VK2EO	320	4850	9145	3640	500	16455
2APK	55	2310	6570	4070	900	16220
2VN	690	1310	7525	3015	1685	14225
2GW	55	2930	6040	3680	55	12760
2KM	—	2070	7630	2615	—	12315
2BKM	—	2330	6415	3095	290	12130
2AGI	—	4850	—	—	—	4850
2YB	—	1915	—	—	—	1915
2BIH/1	—	—	685	—	—	685
2BRF/1	—	—	560	—	—	560

VK3AXK	165	3135	5970	2775	—	12045
3APJ	55	1390	5230	3425	55	10198
3XB	430	1600	3695	2185	—	7800
3DQ	—	1000	3425	1930	—	6355
3ABR	—	1590	3925	—	55	5570
3YD	—	—	4485	—	—	4485
3ZR	—	—	3110	—	—	3110
3ABA	—	—	3030	—	—	3030
3AFN	—	2850	—	—	—	2850
3QP	—	—	—	2570	—	2570
3RJ	—	—	—	1955	—	1955
3QV	—	—	275	—	—	275
3QP	—	—	—	—	—	—
3YU	—	—	—	—	—	—

VK4SD	—	7800	—	—	—	7800
4UC	—	2300	—	—	—	2300
VK5FH	—	6580	—	—	—	6580
5FO	2185	3750	—	—	—	5935
5RX	—	3300	—	—	—	3300
5MY	55	1845	450	—	—	2350
5WI	—	1015	590	—	—	1605
VK6BE	—	300	4110	—	—	4410
VK7SM	—	2675	4740	2450	—	9865
7DK	—	1675	2675	—	—	4350
7RY	—	315	785	—	—	1100
7LJ	—	—	550	—	—	550
7ZZ	—	—	215	—	—	215
VK8HA	—	3850	1870	155	5875	—
VK9GN	—	490	4715	5765	—	10970
9CJ	—	2950	2120	350	5420	—
9BJ	—	—	635	1715	—	2350
9XI	—	—	3645	35	—	3700
9DR	—	—	55	2385	—	2440

PHONE

Call	80	40	20	15	10	Total
VK2APK	—	1000	6745	3055	470	11270
2VN	—	—	5515	4140	745	10400
2AUS	—	—	3765	1335	—	5100
2AOU	—	—	755	—	—	755
2AKV	—	—	630	—	—	630
VK3ABA	—	—	—	3635	—	3635
3LW	—	—	3430	—	—	3430
3XB	—	780	1485	—	—	2265
3QV	—	320	1325	—	—	1645
3HL	—	—	—	3635	—	3635
VK4LT	—	—	—	—	—	—
4FA	—	—	4835	1330	680	6825
4JM	—	—	3075	1445	695	5215
4SF	—	—	4540	—	—	4540
4AL	—	—	2610	575	—	3185
4DO	—	—	3420	—	—	3420
4PJ	—	—	1070	155	795	2020
VK5WO	—	—	2095	920	376	3390
5ZZ	—	—	—	1655	—	1655

VK6XX	—	—	4895	3010	525	8430
6DR	—	—	—	3375	—	3375
6BE	—	—	850	1780	—	2630
6KK	—	—	2205	—	—	2205
VK7SM	—	935	2845	1245	—	5025
7DK	—	—	2470	—	—	2470
7KH	—	—	1175	—	—	1175
VK8DI	—	—	2330	1710	—	4040
VK9GN	—	410	2775	3265	—	6450
9XI	—	—	2070	1585	—	3655
9DR	—	—	1410	1635	—	3065

LISTENERS' SECTION

W1A-L2022	6956
W1A-L8021/2	745
W1A-L3042	7400
W1A-L3118	Check
W1A-L4144	7600
JWR/VK5	2820
W1A-L5065	1165
GCA/VK6	12430
RA2793	1725

NEW ZEALAND

BAND LEADERS

C.W.		PHONE	
Multiband—			
ZL4BO	14875	ZL1KG	15560
1DV	12730	4BO	2770
1HW	12385		
10 Metres—			
ZL1DV	480	ZL1KG	480
15 Metres—			
ZL1HW	3215		
1DV	3135	1HW	2760
4BO	2920		
20 Metres—			
ZL1HW	8715	ZL1KG	10225
1DV	7630		
4BO	6815		

40 Metres—			
ZL1ACW	4215	ZL4BO	2525
4BO	4025	1ACW	2363
2BDA	3965	1KG	800
80 Metres—			
ZL4BO	1115	ZL4BO	245

C.W.

Call	80	40	20	15	10	Total
ZL1DV	—	1465	7560	3135	480	12730
1HW	—	435	8715	3215	—	12385
1IL	—	—	6150	2580	—	8740
1AMQ	—	—	6150	—	—	6150
1ACW	—	—	4215	—	—	4215
ZL2BDA	—	3965	5820	2390	—	12175
2CD	—	685	4475	1705	—	6875
2GX	—	1550	—	—	—	1550
ZL4BO	1115	4025	6815	2920	—	14875

PHONE

Call	80	40	20	15	10	Total
ZL1KG	—	800	10225	4055	480	15560
1HW	—	—	—	2760	—	2760
1ACW	—	2365	—	—	—	2365
ZL2GX	—	645	—	—	—	645
ZL4BO	245	2525	—	—	—	2770

LISTENERS' SECTION

ZL190	10695
ZL149	10445
ZL1113	4760

OVERSEAS

C.W.

North America	
W1EVT	7192 pts. WB6PGK
W2GKZ	3524 " WB6LEX
W3VKD	2080 " W8LCK
W3CBF	10 " WA8GLD
W4NWB	5616 " WA7BOA
W4ORT	470 " W8ZCT
K4RDU	288 " W9QD
W4HOS	50 " KB8UG
W4MMD	Check WA0KDI
W5RRD	3058 pts. K0FCR
W5BRK	1824 " KH6IJ
W5EQT/5	675 " W0FAN/KH6
W6EPQ	10920 " KL7FRY
W6EWN	7465 " HI8XAL

Europe

DL7AA	1050 pts.	OK1ALG	72 pts.
DL8KJ	840	OK1UY	36 "
DJ3WU	238 "	OK5KEU	24 "
DJ1UL	30 "	OK1AIU	20 "
DL2LY	18 "	OK3CEX	8 "
DM35BM	252 "	OK3KFV	2 "
DM3YYA	12 "	OK2BCI	—
DM4PKL	8 "	OK1ADH	2 "
DM4UJZ	2 "	OK1ADM	Check
DM3VTG	Check	OK1ALZ	Check
F3AT	370 pts.	OK1AHZ	Check
F8TM	90 "	ON4XG	360 pts.
F9OE	48 "	OZ1LO	432 "
G3HDA	1890 "	OZ4FM	144 "
G6XN	1620 "	OZ4H	48 "
G2DC	969 "	OZ3IB	12 "
G5RF	658 "	PA0BRA	8 "
G3JAG	80 "	PA0JPC	8 "
G3WP	Check	PA0MUG	2 "
HA3MB	90 pts.	SP3AIJ	742 "
HA1VE	50 "	SP8AJK	320 "
HA8NC	12 "	SP8ABQ	60 "
HA3KNA	2 "	SP7GH	50 "
I1LAO	256 "	SP8MJ	30 "
OE1RZ	1652 "	SP2KAC	24 "
OH2TI	3312 "	SM2CTY	259 "
OH1XX	1140 "	SM2DPE	4 "
OH2AC	930 "	SM3AGD	1199 "
OH5UX	528 "	SM3BUS	256 "
OH5UQ	280 "	SM3CXS	24 "
OH3MK	210 "	SM4CLR	20 "
OH8WD	45 "	SM5API	488 "
OH9QV	30 "	SM5BEU	54 "
OH5WF	20 "	SM5BDY	30 "
OH1TN	30 "	SM6PF	2 "
OH25J	16 "	SM7ANB	1280 "
OH6UX	8 "	SM0CCE	2451 "
OH2YV	Check	SM0BNX	744 "
OK3OM	304 pts.	SM0BYG/0	660 "
OK1AEZ	182 "	Y0SFR	80 "
OK1AFN	140 "	YU1BCD	708 "
OK2QX	80 "		

Asia

EP2BQ	978 pts.	JA5BIA	60 pts.
OD5EJ	16 "	JA8AD	4416 "
KR8IM	1364 "	JA7FC	3718 "
KA9AK	2200 "	JA7FS	1404 "
JA1VK	1870 "	JA7KE	21 "
JA1THL	948 "	JA8GR	306 "

Ross Hull Memorial Contest 1966-67 Results

PHONE

North America

VP2AC	240 pts.	W6LCX	820 pts.
H8XAL	3108	K8OVF	432
H8LCL	308	WB8CCV	204
HR1CP	482	W8YGR	20
TG8CJ	1040	W8YQD	114
KP4CL	540	K0FCR	259
W2GKZ	70	K0UKN	126
W4NBV	2424	KH8J	14904
W4RLS	854	KH6FO	14144
W4MMD	Check	W0PAN/KH6	7436
WA5ALB	1065 pts.	KL7FRY	636
WA6EPQ	3726		

Asia

JA1VZM	140 pts.	JA6ATL	814 pts.
JA1RZN	132	JA7JH	1275
JA1OCA	21	JA7MA	913
JA1YIB	18	JA7CQE	225
JA1NEZ	18	JA8AIP	468
JA2HMH	320	JA8BB	38
JA2DDN	258	JA8ASQ	540
JA2BYW	224	JA9BMG	8
JA3CXN	174	JA0AC	184
JA4BJO	10220	EP2BQ	585
JA4FK	380	ZC4CN	460
JA4AQR	18	VS6FS	4508
JA6AFL	2178	KA9MF	3633

Europe

DJ8FC	3808 pts.	I1LAO	228 pts.
DL9KRA	3581	OE1RZ	2316
DL7AA	1260	OK1ADP	980
G8KG/A	1955	OZ4FA	2130
G8UML	1750	OZ8CR	8
G8XN	1728	OZ4MN	Check
OH2TI	3366	SM1CXE	8 pts.
OH2BC	3024	SM3AGD	1200
OH1VT	540	SM3BUS	60
OH2XA	182	SM5API	96
OH2AC	52	SM7SK	12
OH2BEF	48	SM0BYG/0	228
OH3XZ	Check	PA0HBO	1632
OH5UQ	Check		

Africa

CR6BX ... 2 pts.

U.S.S.R.

UA1IG	1320 pts.	UC2BF	72 pts.
UA1ZJ	100	UP2OK	378
UA3KBO	304	UP2NV	30
USARTEK	550	UH8BO	30

Oceania

KG6ALW	1680 pts.	FK8AH	245 pts.
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South America

HK3BAE	55 pts.	PY2SO	1232 pts.
OA4PQ/4	1344	YV5BPJ	2180

LISTENERS' SECTION

North America

VE3-7554	Check	WPE8YL	210 pts.
WPE6GFZ	418 pts.		

Asia

K1QHP/3W8	216 pts.	JA5-231/8	40 pts.
JA1-3112	320	JA0-1320	1974
JA2-1885	1280		

Europe

DE15487-K21	1484 pts.	HE9FMO	588 pts.
SH-DL-15	585	OK3-14290	120
DL-SWL-H/T	80	OK2-6901	80
REF17735	196	ONL383	324
NL819	50	OE9CZI	32
GW7796	Check	SM2-3708	1144
HA5-146	60 pts.	SM5-2735	522

U.S.S.R.

UA1-74512	48 pts.	UA9-9721	176 pts.
UA9-2847/3	1300	UP2-21069	24
UA3-12804	960	UP2-21061	16
UA3-12982	338	UB5-5382	860
UA6-85208	504		

CONTEST CALENDAR

13th/14th May:	N.Z.A.R.T Sangster Shield (3.5 Mc. only).
8th/9th July:	N.Z.A.R.T. Memorial Contest (3.5 Mc. only).
8th/9th July:	R.S.G.B. 1.8 Mc. "Summer" Contest.
12th/13th August:	Remembrance Day Contest.
7th/8th October:	VK-ZL-Oceania DX Contest (phone section).
14th/15th October:	VK-ZL-Oceania DX Contest (c.w. section).
14th/15th October:	R.S.G.B. 21/28 Mc. Telephony Contest.
28th/29th October:	R.S.G.B. 7 Mc. DX Contest (phone).

The Federal Contest Committee presents the results of the 1966/67 Contest. Again this year we saw a very poor response to a National Contest. When only 0.7% of licensed Australian Amateurs participate in a contest, perhaps it is time to either re-write the entire set of rules or discontinue the contest.

Comments received with the logs were most welcome. As many spoke favourably of the rules compared to previous years' rules, it is difficult to understand the apparent lack of interest and apathy on behalf of the other 99.3% who did not enter the contest. Attached to logs were comments received from VKs 2ZFB, 3ZCK, 4ZLO, 5ZF, 5FD and 5ZHJ. In brief, below are some of the entrants' remarks.

(1) Wants points score eliminated to 50 miles and a consecutive period of days for scoring purposes.

(2) Scoring table, 51 to 100 miles on 6 metres to be 5 points, and the 432 Mc. table to be 2, 5, 10, 15, 20, 25, 50, 100, 200.

(3) Criticises the 1,000 mile scoring table, due to Brisbane and Adelaide being on the 1,000 mile mark. (Shall be changed for next contest.—F.C.M.)

(4) Anyone who operates in the Contest and submits a log with over 100 contacts should be given a certificate or some form of recognition.

(5) Thanked the Committee for running the Contest, and thought the scoring system much better, and no G.M.T. excellent.

(6) Rules and scoring quite acceptable and wants them retained for next year. Although there was a reluctance to exchange numbers locally, it does help to stimulate interest when there is not any DX.

(7) Offered constructive criticism, in that the 101-200 mile on 6 metres is a difficult path and should be worth 10 points, in fact 15 points would be more suitable he suggests.

(8) And finally a very helpful letter from the VK5 V.h.f. Group, giving their viewpoints on the Contest.

To these people who did enter the Contest we say, hope you enjoyed it, and met some new call signs. To the other 99.3%—how about entering the Contest and helping to make it more popular than it is now.

Now to the results:—

TROPHY WINNER

VK5HP—J. Lehmann

AWARD WINNERS

Section A—Transmitting Open:

VK6LK—C. Kosina	1427	621
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Section B—Transmitting Phone:

VK1VP—E. Pinikis	829	637
VK2ZFB—A. F. Birch	1362	679
VK3ZGZ—R. Ferguson	695	320
VK4ZPL—P. J. Lindsay	1076	592
VK5HP—J. Lehmann	2352	1004
VK6ZDS—R. Graham	1594	760
VK7ZAH—K. J. Hendricks	2291	775
VK8ZMR—M. Richardson	186	160
ZL3AAD—G. Alderson	700	

Section C—Receiving:

W1A-L2022—D. Grantley 40

Highest Two-Day Score:

VK7ZAH—K. Hendricks 775

OTHER ENTRANTS' SCORES

Section A: Nil.

Section B:

Entrant	Total Score	2-Day Score
VK1ZCG	829	637
VK2ZCF	789	437
VK2ZCT	658	290
VK2BCC	421	312
VK2TR	165	80
VK3ZCK	416	189
VK3ZVW	245	154
VK4ZAZ	1030	615
VK4ZLO	967	524
VK4ZRG	882	297
VK4ZFR	810	330
VK4ZMG	702	377
VK5ZMW	994	317
VK5ZF	848	299
VK5ZEJ	833	321
VK5FD	577	244
VK5ZMJ	525	275
VK5TN	466	215
VK5ZGF	250	—
VK5ZHJ	215	55
VK5ZNN	205	—
VK5ZKG	165	57
VK5CL	84	65
VK6ZCD	860	681
VK6ZAS	590	230
VK6ZAL	404	—
VK7BQ	280	—
VK7ZKJ	183	123
VK7ZMW	171	57

Disqualified Log: VK3ZER

Breach of Rule 9, late entry.



Remembrance Day Contest

Following a decision of the Federal Convention, the new rules and scoring system will be used for this year's contest. Full details will be included in the June issue of "A.R."

The following extract from the rules indicates the method whereby the winning Division will be decided.

The Division to which the Trophy will be awarded shall be determined in the following way:

By using the equation,

$$S = \frac{P + 175(N - E)}{1000}$$

where S = State's trophy tally points.

P = Total score of State.

N = Total log entries received.

E = Entrants from State concerned.

VK1 scores will not be included with VK2, nor VK8 with VK5.

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IN ADDITION . . .

to the latest Galaxy V. Mark II. all-band S.S.B. Transceivers, we carry stocks of the following items:—

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- CRYSTAL FILTERS, plug-in type, 5165 to 5325 Kc. Sets of 5385 Kc. FT243 Crystals, etc., for filter construction. 8 and 9 Mc. FT243 Crystals, and 1/2" x 1/2" Crystal blanks.
- EIMAC 3-400Z zero-bias linear amplifier tubes at equivalent American prices. \$35
- AC Power Supply/Speaker Units, extra heavy duty, matching to and for use with Galaxy and Swan Transceivers.

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COMPETITIVELY!

ENQUIRIES INVITED

FREQUENCY COVERAGE: 3.5-4.0, 7.0-7.5, 14.0-14.5, 21.0-21.5, 28.0-29.0* Mc. (*optional crystals for other 1 Mc. ranges)

SOLID STATE VFO: Tunes 5.0-5.5 Mc. at all times, without any switching for best stability, and doubly temperature compensated and voltage regulated.

GENERATION SCHEME: 5.0-5.5 Mc. VFO mixed with 9 Mc. filter oscillator 80 and 20 metre operation, using sum-difference selection. 40-15-10 metre operation by pre-mixing VFO with correct crystal controlled oscillator, then into 9 Mc. I.F. system.

TUNING: Illuminated, two-color dial scale system with adjustable hairline fiducial. Two speed vernier reduction system of 12:1 allows fast tuning and 72:1 slow-precise tuning. Also includes new, precise dial logging calibration on tuning knob with adjustable hairline fiducial for high resetability resolution. Primary calibration 5 Kc. markers with 100 logging scale divisions each revolution of knob. Over 8 linear inches of dial calibration.

STABILITY: New solid-state VFO circuit has double temperature compensation and double voltage regulation for utmost stability. Drift is less than 100 c.p.s. in any 15 minute period after nominal warm-up; less than 100 c.p.s. change for 10% change of primary voltage on our power supplies.

CONTROLS: (1) Main VFO dial, illuminated; (2) A.F. gain; (3) R.F. gain; (4) Mic. gain; (5) Exciter tuning; (6) P.A. plate tuning; (7) Bandswitch; (8) Load control; (9) Sideband selector; (10) Function selector—PTT, VOX, CAL., TUNE, CW. Rear: Final bias set. Inside: "S" meter zero, VOX (if accessory installed), Gain, Anti-VOX, Delay.

TRANSMITTER: SSB 400 watts p.e.p. input; manual keying for SSB or CW, and also automatic "break-in" keying with VOX accessory on phone or CW; generating audio sidetone into speaker at all times in TUNE or CW functions; selectable sideband operation with illuminated USB-LSB indicators showing SB in use; shifted carrier CW operation to minimise "leap-frogging"; shaped grid-block keying on CW to suppress clicks and chirps; carrier suppression of 45 db. or more without frequent re-adjustment; unwanted sideband suppression of 55 db. without frequent re-adjustment; bandpass of 2.1 Kc. nominal with 1.8:1 shape factor, and nominal response of -6 db. at 300 and 2400 c.p.s.; ALC control for maximum "talk-power" without "flat-topping"; TUNE position for reduced power adjustment and longest tube life; high impedance microphone circuit (microphones should have -50 to -60 db. output for best results) with PTT control; adjustable pi-network output matching nominal 50 ohms and 40-100 ohm resistive range; compact size 6" high, 10 1/4" wide, 11 1/4" deep and 13 lbs. net weight.

RECEIVER: Coverage same as transmitting; preselection coupled with exciter tuning control and does not require separate adjustment; sensitivity better than 1/2 uV. for 10 db. S+N/N; selectivity nominal 2.1 Kc. with internal 6 crystal lattice filter (or may be reduced to nominal 300 c.p.s. with optional filter—peaked at nominal 800 c.p.s.); full AGC on received modes with fast attack, slow release, and less than 6 db. output change for 60 db. input variation, using audio derived system; nominal antenna input impedance of 50 ohms; audio response -6 db. at 300 and 2400 c.p.s. points; audio output impedance 8 ohms; audio power output 1 watt nominal.

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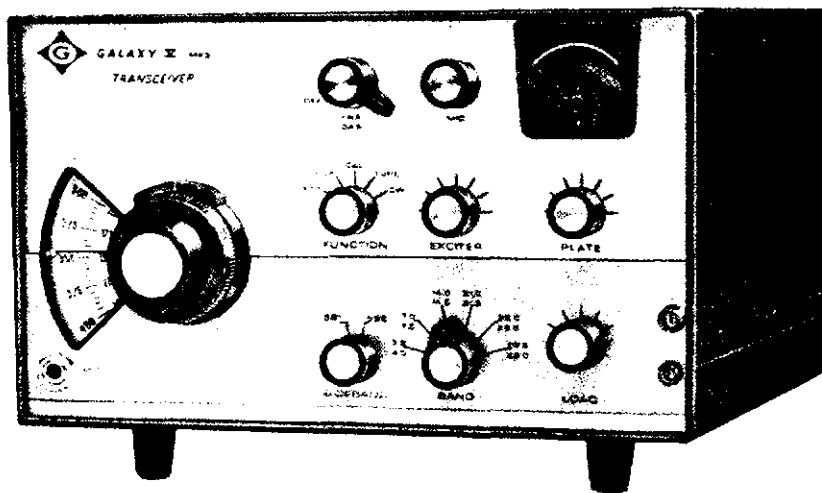
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- STABLE SUPPRESSION (45 db. carrier and 55 db. unwanted sideband without need of a panel control and constant adjustment) — HOTTEST RECEIVER — BAR NONE!
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- BREAK-IN (with VOX accessory). CW with Adjustable Delay!
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- NEW HYBRID CIRCUITRY with solid state VFO, AVC, VOX, audio!
- OUTSTANDING AUDIO DERIVED AVC "virtually block-proof"!
- NEW CW FILTER ACCESSORY FOR 300 C.P.S. BANDWIDTH (the only transceiver with this feature at any price!).
- DUAL VERNIER TUNING (12:1 fast tune or 72:1 slow tune!).
- EXTREMELY HIGH STABILITY with drift less than 100 c.p.s. in any 15 minute period after warm-up!
- E-Z VIEW VFO DIAL—most convenient mobiling!
- NEW STYLING with an Improved, wrap-around, perforated, antique black cabinet. More rugged and lowered component heating. Also, attractive, 4-color brushed aluminum panel.
- PLUS THE MOST COMPREHENSIVE LINE OF MATCHING ACCESSORIES in any product line with a transceiver.

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W.I.A. FEDERAL PRESIDENT'S SPEECH AT CONVENTION DINNER

The Official Dinner of the 31st Convention of the Wireless Institute of Australia was held at the Shoreline Motel-Hotel, Hobart, on Saturday evening, 31st March, 1967. When proposing the toast to the Wireless Institute of Australia, Max Hull, VK3ZS, Federal President of the Institute said:—

"It gives me great pleasure to propose the Toast to the Wireless Institute of Australia, particularly on this most auspicious occasion when the Federal Convention of the Institute is being held in Tasmania for the first time since 1935—a period of 32 years.

"To me the Wireless Institute of Australia has always stood for something of which I have been justly proud; something for which I have always been proud to wear its badge.

"It is true to say that since the early days of Amateur Radio, when the Amateur pioneered the bands and proved to the commercial world that short wave frequencies were something which could be used to advantage by countries all over the world, that the Amateurs' part in technical progress has been somewhat downgraded by the financial ability of big companies to pursue investigations, generally beyond the capabilities of the Amateur.

"Nevertheless, I have always been most conscious of the fact that Amateurs, world-wide, can do so much for a country, that it is disturbing in this day and age to find that we are in danger of losing the valuable and already foreshortened frequency assignments which we have held for so many years, by virtue of the fact that the developing countries in the poorer regions of the world—are today growing aware of the value of communications facilities as a great asset to them. For this reason they will be requiring the use of frequency bands just as all other well developed countries already use—sometimes to our disadvantage.

"The economic growth of the world is something we cannot stop, but it is something we should be very conscious about since it will effect our hobby, and here in Hobart at this Convention we have been speaking at some length about these problems.

"The Amateur can still play a most vital role in the affairs of the countries in which he resides. This has been proven in big countries like America, England and European countries in Region I. It has been well established internationally that we are recognised as a service, but in being recognised as a service we have to contribute something for the good of the people of our country.

"It has also been firmly established that Amateur Radio—which some people downgrade as a hobby and which I agree is a hobby but a very technical hobby—has been the means by which, to quite a large extent, many western countries have progressed economically, sociologically and technologically.

"What we are afraid of today is that the new developing countries—particularly in Region III, in which Australia is located—that these people who are suddenly becoming conscious of communication facilities and the advantages of these facilities, are unaware of what Amateur Radio can do for them.

"It is true to say that throughout Australia—and I am sure, Mr. Munro, here with us representing the Postmaster General, or any other member of the Government Services which utilise frequencies, will agree—that a very high percentage of the staff carrying on the communication service of Australia are Amateurs.

"Amateurs are people who, their XYLS may call all sorts of unusual things, but they ARE people who once having taken an interest in Amateur Radio, become a technological asset to their country, because they think, eat, sleep and dream Amateur Radio.

"Some people say that, generally speaking—women are generally speaking—but in the case of Amateur Radio the OM can certainly compete with his wife when it comes to speaking, and while some people will say they speak a lot of nonsense they are also all the time adding to their technical ability. It is also true to say that a reasonably high percentage of Amateurs are engaged in other pursuits in life, all sorts of occupations outside the technological services. These Amateurs contribute to the economical and sociological growth of a country.

"I feel very strongly that Amateur Radio has a vital part to play in Australia. We have had many demonstrations of the ability of Amateurs to provide communications during times of emergency. This has been currently the case in the State of Tasmania, the host Division for this Convention.

"I will not dwell on this. I believe there were many problems and from what I have heard, all communication services were somewhat in a state of chaos in an emergency which befell people on an island of the Commonwealth of Australia where it was entirely unexpected that a disaster of such magnitude could possibly happen.

"I am proud to know that the Amateurs played a role in the communications during these times of distress and I extend, on behalf of the Federal Executive, the Federal Council and the Victorian Division, to which I also belong, the sincere sympathy to those who lost their homes and to the friends and relatives of those who also lost their lives.

"In toasting the Institute I would like to point out, mostly to the younger people—the younger Amateurs—that the problems besetting the Amateur Service world-wide are not the figment of somebody's imagination. It is something very real but I am afraid, that in Australia, Amateurs generally adopt a rather complacent attitude—well you know we are a big continent, we are isolated from the rest of the world, the Postmaster-General's Department and the Government of Australia support an Amateur Service, so we are quite safe'.

"This is a fallacy. It is so far removed from the realistic conditions which exist, I can only point out with severe sternness that the Amateur frequencies are indeed in peril world-wide. Not so much because of the big countries where Amateur Radio is a recognised service and supported by the governments of those countries, but by virtue of the fact that the developing nations of the world are those requiring communication services and because of this they will be the people at future international conferences where the frequency spectrum is allocated on an engineering basis. These people are going to be the ones who will have a vote—an equal vote—along with the countries who support an Amateur Service.

"If you look at the number of these countries which will have this vote—and therefore the same power as the bigger countries—you will realise that they could very quickly vote Amateur frequencies out of existence. Not because the countries supporting the Amateur Service will vote them out, but because the developing nations who can vote them out—or use the frequencies irrespective—they make the bands so untenable to the Amateur Service world wide that the frequencies will be quite useless even to the Amateurs who are licenced to transmit by their own administrations. This is the danger as we see it and the so called exclusive section of the 7 Mc. band is an example of it.

"Gentlemen, I hope the Wireless Institute of Australia encourages more and more Amateurs to join its ranks, because it is only by a voice which is recognised by the administration that the problems besetting Amateur Radio can be placed authoritatively before a government.

"I wish the Wireless Institute of Australia every success in the future. I have great faith that the Australian Administration will continue to support an Amateur Service when it comes to discussing the assignment of frequencies for I believe Australian Amateurs have capably demonstrated their worth in this country.

"This applies also to other westernised countries where Amateur Radio is supported and where Amateurs have had the opportunity to demonstrate to their people how they can conduct emergency operations and provide other useful services in the national interest.

"I ask you to charge your glasses, be up-standing and drink the toast of the Wireless Institute of Australia."

AMATEUR FREQUENCIES:

ONLY THE STRONG GO ON—
SO SHOULD A LOT MORE
AMATEURS!

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The Institute can now offer annual subscriptions to the following Amateur Journals:—

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W.I.A. FEDERAL PRESIDENT'S REPORT

MARCH 1966 - MARCH 1967

Gentlemen! It is again a pleasure to present my report to the Federal Council, this time on the occasion of the 31st Federal Convention of the W.I.A. being held in Hobart, Tasmania, for the first time in more than 30 years.

The Federal Officers you appointed to the Executive at the conclusion of the 1966 Convention have carried on the good work of the previous year and it has been my pleasure to work with them as Chairman and President.

The use of the Headquarters Division's rooms and facilities in Victoria Parade, East Melbourne, has been a great asset, providing a more central meeting place for the Executive where all records are to hand when required and generally proving to be more suitable than the past system of meeting in the homes of Executive members.

The arrangement this year, too, of sharing the services of an office stenographer with the Headquarters Division, in addition to the Division's Administrative Secretary, has been most helpful in dispensing with a lot of routine work, leaving the Officers free to carry on with more important tasks. The cost of this arrangement has not been great and has certainly been worthwhile. However, it is an additional drain on Executive funds and the experimental period will need to be watched closely so that value will be gained from the arrangement.

MEMBERSHIP

Costs being met in the overall operation of the Institute have risen in most directions and have had to be watched closely by the Divisional and Federal Treasurers. As I have stressed so many times, membership is the vital factor controlling what the Institute can do and what it can't do. Without a growing membership we will meet difficulties in dealing with increased running costs. Over the last twelve months there has been no spectacular rise in membership except in the VK3 Division where full members rose from 902 in 1966 to 1046 in January 1967, an increase of 144 on the figures available.

Some Divisions have not been complying with Federal policy regarding membership returns, a matter I trust will be rectified from now on, particularly if the proposed Federal Constitution is agreed upon where accurate figures will be important in the financial involvement. However, although not absolutely accurate, the following figures will indicate some interesting points in relation to the membership position:—

	Full	Assoc.	Total
VK2	877	396	1273
VK3	807	239	1046
VK4	303	174	477
VK5	388	205	593
VK6	237	66	303
VK7	151	81	232
	2763	1161	3924

The following is the total of VK licensees:—

	Full	Limited	Total
VK1	66	11	77
VK2	1283	385	1668
VK3	1114	482	1596
VK4	445	148	593
VK5	474	198	672
VK6	261	121	382
VK7	124	63	187
VK8	13	4	17
VK9	59	7	66
VK0	3	-	3
	3842	1419	5261

Of the 5261 current licensees in the Commonwealth and Mandated Territories, 2763 are members of the W.I.A. This represents 52.5%, which shows a small increase in favour of the W.I.A. compared with previous years, but, I believe, and I have said this many times before, that the Federal Council should evolve a membership drive process as a continual part of this organisation to encourage Amateurs to become members of the Institute which protects their interests, even if it means spending money to achieve the required results. The Amateur Radio brochure mentioned previously could be considered step one in a project of this nature.

It is interesting to note that the licensee figures have shown a steady increase of around the 400 mark each year for some years past.

I believe that this can be substantially increased by the introduction of Novice licences and a wider activity with the Youth Radio Scheme outside of N.S.W.

The minutes of the 1966 Convention held in Brisbane were completed in record time again this year and circulated to Federal Council in a little over one month. I would like to record my thanks for the assistance given by Federal Vice-President Harold Hepburn in making this possible.

The Federal Secretary and other Federal Officers have taken action on most of the items arising although, as anticipated by the Executive, there are a few directives of the Federal Council each year which must, of necessity, take more than a year, in fact sometimes several years to complete.

The "Australis" Satellite Project agreed to last year has not progressed quite as fast as expected, due to a number of delays for technical reasons, but as at the time of writing I believe the major problems have been overcome and we can expect arrangements for the "launch" will be completed in the near future. A further report on this project will be presented during the proceedings of the Convention.

The "Amateur Service Brochure" agreed to last year (Item 3.3) has not been completed but should be available to Divisions shortly after the work of preparing for, and producing the minutes of, the 1967 Convention. Two members of the VK4 Division forwarded some rather worthwhile suggestions for improving the draft submitted to Federal Council last year and I can only state that the delay is due entirely to my own lack of time to complete the introduction of these suggestions.

REGION III. PROBLEMS

A considerable amount of ground work has been covered in relation to Region III. problems as embraced last year in Items 4.2, 4.3 and 4.4. The Federal Council received a report during the year prepared by Federal Vice-President Hepburn which estimated the cost of holding a Region III. Conference. This matter will receive further attention during this Convention and the Federal Council will be brought up-to-date on current thinking. I believe the W.I.A. must make up its mind in the next twelve months which way it is going to move, whether a Region III. Conference is a practical possibility or whether other means should be found by which to enhance the Amateur Service in this part of the world. As New Zealand points out, there is the danger that a Region III. Conference could consist of countries who are already in liaison with each other and fully understand the problems the Amateur Service is facing on a world wide basis, in which case the finance involved would be better spent where it will achieve more. On the other hand, I believe a Region III. Conference would be well worth while if it could be anticipated that the majority of Region III. countries where Amateur Radio is permitted could attend.

In response to Item 4.5 of 1966, several Amateurs were given letters of introduction to overseas Societies in Region III, and quite important information has been collated as a result of these visits abroad. I have personally been corresponding with Harry Burton, ZL2APC, the President of the N.Z.A.R.T., as a result of which I believe our two Societies are moving closer together. A further report by the N.Z.A.R.T.'s Overseas Liaison Officer, Tom Clarkson, ZL2AZ, will be discussed during the proceedings of this Convention.

40 METRE BAND

The case for the submission for the restoration of the segment of the 40 metre band between 7.15 and 7.3 Mc. has been given some attention. It is a most difficult assignment and not easily resolved, and I believe it unrealistic to anticipate that the Australian Administration would change the conditions of its signature to the minutes of an International Telecommunications Conference unless such a change was made by Australia at the next I.T.U. Conference dealing with this section of the spectrum. The matter will be further discussed during the proceedings of this Convention.

Referring to the matter of the new Handbook for Guidance of Radio Operators in the Amateur Service, I can only express my disappointment that this is not yet available. Matters reported at the last Convention as still requiring

resolution were dealt with to the satisfaction of the Institute shortly afterwards. The delay is reported to be due to the necessity of having to change certain sections of the Wireless Telegraphy Act which can only be done by an Act of Parliament. I am currently advised that this has been completed and the matter is now in the hands of the Parliamentary Draftsman.

FEDERAL QSL BUREAU

The Federal QSL Bureau continued to function throughout the year in its usual quiet efficiency under the management of Ray Jones, VK3RJ. However, it is with sincere regret that I have to report that the Executive received Ray's resignation after 34 years' service in the capacity of Federal QSL Manager. This, to my mind, is an exemplary service deserving the commendation of the Federal Council, the Divisional Councils and members alike.

I wish to take this opportunity of saying "thanks" on behalf of the members of the Executive, past and present, for an onerous task carried out with an unexcelled devotion. Although Ray is prepared to carry on until such time as other arrangements are made, the report from the Federal QSL Bureau presented to this Convention is the last under the penmanship of VK3RJ. We wish him well in his retirement and that the continued good health enables him to enjoy Amateur Radio to the full.

At this point I would also like to express my appreciation for the work carried on during the year by the Federal Awards Manager, Alf Kissick, VK3KB; Federal S.w.I. Officer, Eric Trebilcock, W1A-L3042; and the Federal Contest Committee under the management of Nell Fenfold, VK6ZDK. Reports from these Officers will be presented to Federal Council.

PUBLICATIONS COMMITTEE

The Publications Committee of the Headquarters Division has again done a remarkable year's work, maintaining the now traditional high standard of the Institute's magazine, "Amateur Radio," to which, again, have been added some changes in format resulting in improved reading for members and non-members alike.

The Australian Radio Amateur Call Book was produced in a new format for the 1966-67 edition and this excellent publication has earned high praise already from operators, who find it an asset to be able to lay the book flat down and open at any page without the inconvenience of it springing shut as did the earlier octavo-sized editions.

A full report and balance sheet will be presented to the Convention by Mr. Ken Pincott, VK3AFJ, who will be attending on behalf of the Publications Committee. I would like to take this opportunity of expressing, on behalf of the Federal Council and the Executive, my appreciation for the immense amount of work carried out by the Committee in maintaining the Institute's publications, and to all those who contributed the articles and notes which made the publication of "Amateur Radio" possible.

YOUTH RADIO SCHEME

At the time of writing this report I am unable to say whether there will be a report from Rex Black, VK2YA, Federal Co-ordinator of the Youth Radio Scheme. Rex and his XYL have gone abroad to the U.K. for an undisclosed period and it was my pleasure to give him a letter of introduction to the R.S.G.B. and other overseas Societies. However, in a letter I received recently, Rex advised me that Y.R.S. has had steady progress and developing interest during the year; a number of licensees have been gained from the ranks of Y.R.S. students and considerable development has taken place in N.S.W. with the Postal Group system of training. I am advised that the N.S.W. Government is offering \$20,000 subsidy to youth movements and the N.S.W. Division is currently applying for this for the further development and expansion of Y.R.S. in that State.

Rex Black has always been an advocate for Novice licences and he is of the opinion that without these Y.R.S. cannot achieve its maximum effectiveness. On the other hand, he is uncertain that the American system meets the requirements of Y.R.S. and that possibly an "instructional" type of permit with far greater supervision by acceptable licenced Amateurs

and close scrutiny of the construction of transmitters, installation and operation, should be considered.

Leave of absence has been granted to Rex for the period of his stay abroad and it will be necessary for the Federal Council to appoint someone to replace him during his absence.

The matter of duty and sales tax applied to equipment specifically for use by Amateurs has been progressing slowly and this will be discussed with delegates during the "open session" of the Convention proceedings. Valuable co-operation with this and other matters is being given by the Hon. Allen Fairhall, M.H.R., who has regularly been in touch with the Executive. He is also currently operating s.s.b. after some years of inactivity and this is enabling him to regain an up-to-date knowledge of the advancing Amateur Service which will be of great benefit to the Institute, during future negotiations in relation to these problems.

W.I.C.E.N.

The Wireless Institute Communication Emergency Network (W.I.C.E.N.) has accounted well for itself over the past year, particularly in Tasmania during the disastrous Hobart fires when Amateurs again showed their merit in providing communications during an emergency where normal communications were severely handicapped or non-existent.

The full story of the VK7 Amateurs may never be told in its entirety for individual acts become just part of an emergency of this magnitude. Part of the story will be told in the pages of "Amateur Radio," a story where once again Amateurs played a leading part in demonstrating to the public and the Government the value of Amateur transmitters.

In Victoria the W.I.C.E.N. organisation has been granted the use of two motor vehicles by the Victorian Government for use in conjunction with State Emergency Organisations. These are currently being equipped by the Victorian Division and will include telephone patch facilities along with modern v.h.f. equipment, power supply equipment, operating tables, antenna equipment and other devices which from experience are required for emergency communication work. I believe this to be ample evidence of the high regard placed on the W.I.C.E.N. organisation by the authorities and is a tribute to those members of the Victorian Division who have worked so hard to achieve something so worthwhile in the public interest.

TRIBUTE TO AMATEURS

It is not possible in a brief report of this nature to write in detail the various activities of Amateurs which do justice to the hobby of Amateur Radio. But before concluding this section of my report I would like to pay a tribute to a few Amateurs who have been involved in record breaking activity.

On November 28, 1966, Ray Naughton, VK-3ATN, created a moonbounce record by working K2MWA/2—a distance of 10,400 miles on 144 Mc. Nine months of planning and hard work went into this effort and Ray is to be congratulated on coupling Australia at the top of the list in this most advanced field of communication. A second contact was made on December 29, 1966, with K6MYC over 7,000 miles.

Another fine achievement was a record 402 miles between I. F. Berwick, VK3ALZ, and M. J. McMahon, VK5ZDR, on 432 Mc. between Melbourne and Adelaide.

There has also been some experimenting going on at 1296 Mc. and although not a VK3 record, a contact was satisfactorily completed by VK3ALZ and VK3AUX/3 on 10th April, 1966, over a path of 25.6 miles.

At the other end of the spectrum, I find some most interesting work has been carried out for the last three or four years with trans-equatorial long haul DX in the 160 metre band by Jack de Cure, VK5KO, since his retirement from the P.M.G. Department. 120 watts into a 50 ft. vertical ground plane has resulted in six European QSOs, 6 Asian QOs, 2 African QSOs, and 61 North American QSOs on 1820 Kc. over paths of up to and over 6,000 miles. A very fine effort and I trust Jack obtains a South American contact to obtain his W.A.C. on 160 metres.

With the approach of the peak of the solar cycle, conditions on the DX bands have been excellent. S.s.b. is really showing its merits and countries rarely heard during the dip of the solar cycle are now frequently heard. This condition increases Amateur activity which capably illustrates the potential of Amateur Radio to the world at large.

In step, the conditions have also improved on the v.h.f. bands with good JA contacts on 52-54 Mc. in the northern part of Australia; contacts between VK3 and VK4, and VK2 and

ZL on 144 Mc. over paths in excess of 1,000 miles; and an incidence of a growing use of transistorised equipment in the 432 and 1296 Mc. bands. I believe the next year will provide even better conditions and this will be a good time for encouraging complete use of the Amateur Service frequency assignments.

It is activity like this which has built up the history of Amateur Radio, and talking of history leads me to record my appreciation of the work carried out by the Federal Historian, George Glover, VK3AG, who has compiled a précis of his work for presentation to each Federal Councillor. These documents are not chronologically complete and I would request Federal Councillors to make an effort to unearth old records which will assist in bringing our history up to date.

Whether intended or not, in this day and age contests are the most effective instrument we have for encouraging Amateurs to use the bands. Unfortunately, statistics indicate that, despite a growing licensee figure, participation in contests is falling. There must be a reason for this and I strongly suggest that Federal Council give this matter serious attention. Aspects of various contests will be discussed during the Convention proceedings.

In general, the Institute has had an active year. Its membership has grown, the overall licensee figure has increased despite the sad passing of a number of the older licensees which have been recorded in the magazine; and overall I believe we can look forward to a prosperous era in Amateur affairs generally.

INTERNATIONAL SCENE

Turning now to the international scene of the Amateur Service.

It is gratifying to note a concerted action by the International Amateur Radio Union (I.A.R.U.) to promote Amateur Radio on a world-wide basis, particularly in the under-developed countries, and a consciousness of the grave dangers confronting Amateur Radio from the countries which, technically, are awakening to the advantages of communications but know little or nothing about the Amateur Service and its advantages.

Two years ago the A.R.R.L. contracted with the Stanford Research Institute to conduct an overall appraisal of the Amateur Radio Service. This extensive report was recently completed and circulated to all Societies through the I.A.R.U.

I have a copy to present at this Convention and, although I must confess some disappointment that the report predominates in Regions I. and II. and not very much in Region III, it is indeed one of the most powerful documents I have ever read supporting Amateur Radio. Its intention is to explain to government officials around the world the advantages of having and maintaining an Amateur Service. A spare copy has been made available to be presented to the appropriate head of communications, and limited additional copies are available.

The I.A.R.U. is now 72 Member Societies strong, including six new members during last year—Algeria, Cyprus, Czechoslovakia, East Africa, Liberia and Nicaragua. Robert W. Denniston, W0NWX, was appointed President of the A.R.R.L. and the I.A.R.U. last May, Wayland M. Groves, W5NW, continuing as Vice-President, and John Huntton, W1VQ, as Secretary.

Part of the programme of I.A.R.U. and the Headquarters Society (A.R.R.L.) has been personal visits by staff members to Europe, the Middle East, Latin America and the Far East. President Denniston was scheduled to visit Australia about the time of this Convention and I was hopeful that he would be able to include Hobart in his itinerary. Unfortunately the Executive received advice of the trip being temporarily cancelled due to Mrs. Denniston being ill, but we are looking forward to meeting him later in the year.

This programme of travelling is to encourage the growth of Amateur Radio world wide, particularly in countries where it is unknown or not yet firmly established, by liaising with Amateur groups and clubs, and with individuals in various countries, providing and distributing literature and providing various items of basic training equipment for groups who are sponsoring training classes for new Amateurs. I see in this activity a kind of "International Y.R.S." and I believe it to be a step in the right direction towards the essential preservation of Amateur Service frequency assignments. However, there is a limit to what the Headquarters Society and the I.A.R.U. can do and both organisations are asking for help from other Societies, particularly in areas where the training materials must be in a language other than English, and suggest that other Societies could "adopt" a particular country and work vigorously toward promoting the growth of Amateur Radio. I believe

that the W.I.A. and the N.Z.A.R.T. should give serious thought to playing their part in Region III.

A few evenings prior to this Convention, members of the Executive entertained Harry Yoneda, JAIANG, who was travelling in Australia on business and had been "commissioned" by the President of the Japanese Amateur Radio League (J.A.R.L.) to make contact with the President and Executive of the W.I.A. to discuss the Amateur Service in Region III. The meeting was duly arranged by Allan Elliott, VK3AL, who acted as an ambassador of the W.I.A. during a trip abroad last year and had been entertained by the members of the J.A.R.L.

Harry Yoneda speaks perfect English and the discussions with him will go a long way towards breaking down the language barrier and providing an avenue for "talking" with Japan on the problems confronting the Amateur Service and the desirability or otherwise of holding a Region III conference.

It was surprising to find that the general membership of the J.A.R.L. are blissfully unaware of the problems arising by virtue of developing countries in this Region having no knowledge of or consideration for, the Amateur Service.

I am of the considered opinion that whilst there is danger of the loss of bands within countries where Amateur Radio flourishes, making it necessary for Amateur Societies to maintain close liaison with their respective administrations, the real danger is that of developing countries who are unaware of the advantages of an Amateur Service—

- Eventually gaining substantial voting power at I.T.U. Conferences;
- Using frequencies within the bands allocated to the Amateur Service because they are not signatory to I.T.U. Conference agreements; and
- That because of the indiscriminate use of frequencies by developing and non-signatory countries, the effective use of the bands in countries supporting an Amateur Service will be severely curtailed by inconceivable interference if not rendered completely useless.

I believe therefore, that whilst a Region III conference initially is a laudible enterprise in order to bring the Region III Societies together for the purpose of mutual understanding of the problems involved, we must also determine how we can assist the I.A.R.U. in developing Amateur Radio in the countries which in the future will be an extreme danger to the hobby of Amateur Radio world wide.

In conclusion, gentlemen, I welcome you all to this, the 31st Federal Convention of the Wireless Institute of Australia. This year I trust will see the introduction of the proposed Federal Constitution which I believe will be a turning point in the overall administration of the W.I.A. to make it a more effective organisation to represent the Amateur Service in this part of Region III.

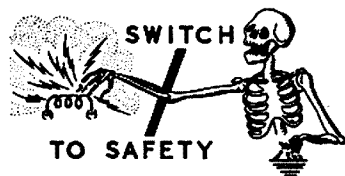
I thank you for re-appointing me as Federal President for the year 1967-68 and I will continue to devote the working time of the Executive to the task you have given it.

By the end of 1968 I will have been an active member of the Federal Executive for 18 years and I regret I will not be standing for election at the conclusion of this year's term of office. It has been a pleasure to me all these years to see the Institute and the Amateur Service grow to its present status, and I am sure that this growth will continue in the capable hands of younger and more energetic people. The Institute has an important role to play in the future affairs of the world's greatest hobby. With men of calibre and broad thinking at the head of its administration, it will carry out its function for the preservation of that hobby. In this I have great faith.

If my years of experience can be of any assistance to the Executive of tomorrow I will be most willing to be co-opted for specific duties.

Thank you, gentlemen,

—G. Maxwell Hull, VK3ZS,
Federal President.



WIRELESS INSTITUTE OF AUSTRALIA—FEDERAL EXECUTIVE

BALANCE SHEET

as at 28th February, 1967

1965/66		1966/67
	CURRENT ASSETS:	
6013	Commonwealth Savings Bank Federal Executive Account	\$6600.28
280	Publications Account	037.11
75	Sundry Debtors	552.72
310	Stock on hand—at lower of cost or market value	381.72
	Prepayments—Convention	49.00
		\$8200.83
6678	FIXED ASSETS:	
984	Furniture, Fittings and Equipment—at cost less depreciation	1209.81
		\$9410.64
7662	LESS—	
	CURRENT LIABILITIES:	
572	Reserve Fund	\$752.00
3373	I.T.U. Fund	4222.03
	Australis Project	87.76
	Prepayments—Publications	13.20
		5044.99
4125	ACCUMULATED FUNDS:	
3106	Balance, 1st March, 1966	\$3536.52
431	Add Surplus of Income over Expenditure	827.13
		\$4365.65

AUDITORS' REPORT

We have examined the books and vouchers of the Wireless Institute of Australia (Federal Executive) for the year ended 28th February, 1967. In our opinion the accompanying Balance Sheet is properly drawn up so as to give a true and fair view of the state of affairs of the Federal Executive as at 28th February, 1967, and the attached Statement of Income and Expenditure is properly drawn up so as to give a true and fair view of the results for the year ended 28th February, 1967.

Melbourne, 21st March, 1967. Hebard & Gunning, Public Accountants.

STATEMENT OF INCOME AND EXPENDITURE

for Year ended 28th February, 1967

1965/66		1966/67
	INCOME:	
1130	Interest Received	\$148.68
1017	State Contributions—per capita	1115.70
285	Profit Publications and Subscriptions	495.31
		\$1757.69
1432	EXPENDITURE:	
532	Audit Fees	\$31.50
—	Advertising	36.00
134	Depreciation	136.00
—	Entertainment Expenses	81.80
—	Federal Awards Committee	5.56
66	Federal Contest Committee	29.05
52	Federation Expenses	12.00
—	Floral Tributes	5.00
21	Gifts	32.00
6	General Expenses	73.38
16	Insurance	18.07
—	Oscar Project	12.51
2	P.M.G. Licence	2.00
48	P.M.G. Submission	—
30	QSL Bureau	54.00
46	Repairs Office Equipment	12.70
6	Subscriptions	10.40
299	Stationery, Printing	189.71
173	Telephone, Postage	70.86
—	Wages, Office	100.00
70	Youth Radio Scheme	20.02
		\$930.96
1001		
		\$431
	Surplus of Income over Expenditure for year	\$827.13

STATEMENT OF MOVEMENT OF FUNDS

for Year ended 28th February, 1967

1965/66		1966/67
2328	INTERNATIONAL TELECOMMUNICATIONS FUND	
	Balance, 1st March, 1966	\$3372.85
	Add Contributions:	
572	New South Wales	\$300.00
—	Victoria	70.00
—	Queensland	453.00
256	South Australia	96.18
16	Western Australia	—
200	Tasmania	—
		849.18
3372	Balance Carried Forward	\$4222.03
	AUSTRALIS PROJECT	
	Contributions:	
	New South Wales	\$80.00
	Victoria	70.00
	Queensland	72.00
	South Australia	50.00
	Western Australia	70.00
	Tasmania	20.00
	Donations—VK6 V.h.f. Group	25.00
	Other	10.00
		\$397.00
	Expenditure	339.24
	Balance Carried Forward	\$57.76

CONVENTION FUND 1966

1965/66		1966/67
	RECEIPTS:	
—	Bank Interest	\$2.20
	Amounts from Divisions and Others—	
869	Recovered	2030.33
—	Recoverable	277.20
		\$2309.72
869	EXPENSES:	
351	Fares	\$1258.80
81	Accommodation	285.50
124	Official Dinner	150.73
102	Other Meals	228.41
—	Freight and Other Sundries	89.55
158	Typing Minutes	247.50
53	Postage, Telephone and Stationery	43.64
—	Tapes	11.59
—	Rental Convention Room	24.00
		\$2309.72
869		\$2309.72

PROJECT AUSTRALIS NEWSLETTER

We must apologise for the lack of newsletters about the progress of the Australis satellite. In the future, these newsletters will be published approximately every two months, with special, additional ones being prepared as the need arises.

Australis has not yet been shipped to Project Oscar headquarters in California. While it had been hoped that the satellite would be in the United States by this time, a number of technical difficulties have arisen, which have delayed the completion of the satellite.

The most serious problem was in the satellite's command receiver. The re-

ceiver had to be re-built, and this, together with troubles in both the h.f. and v.h.f. transmitters, caused several months delay. However, we are pleased to be able to report that these difficulties have now been overcome, and that it is expected that Australis will be sent to California during the second half of May. Results of electrical and environmental tests will be published in later newsletters.

Electrical tests conducted so far, with the 29.450 Mc. and 144.053 Mc. transmitters indicate that the h.f. transmitter has an overall efficiency of 60% at 15 volts, and the v.h.f. transmitter, an overall efficiency of 32% at 15 volts. It is expected that h.f. transmitter will have an average power output of about 250 mW. and the v.h.f. transmitter

approximately 100 mW. The satellite should operate for two to three months.

We wish to stress to recipients of these newsletters that although Australis will be sent to Project Oscar in May, it may be several months before a ride into orbit can be arranged by Project Oscar, with the launching authorities.

Project Australis has received correspondence from interested Radio Amateurs in many countries, including England, New Zealand, Ireland, Japan and the Netherlands, expressing a desire to participate in tracking the Australis satellite. This interest is most welcome, as it is only by the participation of Amateurs throughout the world that the project can be a success.



PRINTED CIRCUITS AID AUSTRALIAN INDUSTRY!

Applications for printed circuits from Precision Windings in industry are growing daily . . . it's simply amazing how many leading electronic and design engineers specify "Precision Windings" boards. PW's photographic process does have many advantages . . . small numbers may be manufactured economically . . . definition and detail are crisp and clear . . . negatives are readily available for alterations . . . and tarnishing is prevented by a protective over-coating. Above all the PW process offers quality control at every stage of manufacture. This is why more and more industrial organisations are coming to Precision Windings for up to the minute technical advice and prompt, dependable deliveries.

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Don't worry . . . we're not neglecting our many friends who want a single circuit board. Send for our free folder on "How to prepare artwork" and for our price list. It matters little if you want one or a thousand boards . . . PW's price is most attractive. Many "Electronics Australia" designs are kept in stock and delivery is immediate. Special printed circuits are normally despatched within 7 days of receipt of your artwork. Artwork aids in the form of Solder Lands, Black Crepe Tapes, Clear Film and Transfer Letters are also available from Precision Windings at low cost. Write now!



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ARE YOU FAMILIAR WITH "73"?

"73 Magazine" was founded in 1960 in an effort to provide the Amateur with up to date reading material on the state of electronics. As most of you know, most of the Amateur journals are full of operating news, DX columns, and "who did what to whom." On the other hand, "73 Magazine" is devoted to the credo that Hams like to build, like to experiment and are interested in trying out new circuits. If you look through the last five years of "73," you will find over 2,000 technical articles. Right now "73" averages 35 technical articles per month; more than most of the other Amateur magazines put together.

It doesn't matter whether your primary interest is in SSB, RTTY, VHF, microwave, valve, transistor or integrated circuit, every single month the staff at "73" tries to have something for you. In addition, many electronic developments were first introduced to the Ham fraternity from the pages of "73," including field effect transistors, UHF transistors and integrated circuits.

If you haven't seen a copy of "73," write to us here in New Hampshire, we'll be glad to send you a free sample. If you have seen "73," you are probably thinking that a subscription is expensive. No, it isn't. Why? Because we want you to try it and become addicted. \$5.00 U.S. per year world wide. VK Amateurs may subscribe direct to "73 Magazine," Peterborough, N.H. 03458, U.S.A., or through W.I.A., P.O. Box 36, East Melbourne, C2, for \$A4.50.

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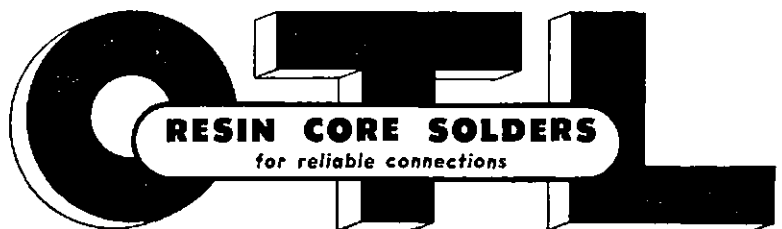
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SWL

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

What is this S.w.l. thing all about? This question was asked of me by an Amateur some time ago and coupled with several rather elementary queries which have arisen from time to time, I thought that maybe a few words in this column may be of interest to newcomers, and others who are not fully aware of what the S.w.l. does.

The Short Wave Listener (S.w.l.) derives his interest from searching around the various bands in order to hear as much as he can of the particular section he is interested in. There are three major sections of the bands, the Amateur Radio operators who operate within certain segments of the spectrum allotted to them for that purpose; the commercial broadcasting stations; and those providing communications or associated transmissions. The Wireless Institute of Australia, which publishes this magazine, caters for the needs of the group of Amateur Radio operators and listeners to the Amateur bands in this country, and has its counterpart in every country of the world. The facilities of the W.I.A. do not cover commercial broadcasting, and anybody interested in listening to these stations are advised to contact one of the clubs catering for this section of the hobby.

Briefly, the bands allocated for world-wide Amateur use are 160 metres, which is a medium frequency band, 80, 40, 20, 15 and 10 metres known as high frequency bands, and the very high frequency bands of 6 and 2 metres. As well there are several ultra and super high frequency bands which are not normally of interest to the listener. The aim of the S.w.l. is to listen to these bands for new and interesting calls, each of which has a special "prefix" allocated to its country of origin. Thus Amateurs in Australia use the international prefix VK, followed by a number representing their State, and two or three letters to complete the call sign, which is allocated by the P.M.G.'s Department.

A log showing all stations heard is kept; this shows date, time (in G.M.T.), station transmitting, station which he is working, band and mode of operation as well as details of signal strength, readability, and in the case of a Morse c.w. signal, the tone. These are given numerically, in the case of readability this is graded from 1 to 5, the high figure representing the best signal in all cases. Signal strength is given in a range of 1 to 9, as is the tone of c.w. signal. Thus a 5 by 9 signal report would mean that you could read the "contact" at maximum possible strength, in its entirety.

In order to obtain proof of reception, the listener then sends a report to the station which he heard. This can be in the form of a letter, but is usually in the form of a specially printed card. These cards can be sent direct to the station or for a small fee, the W.I.A. will forward it through their QSL bureau to the bureau of the country concerned. They in turn will arrange for it to be passed on to the operator.

Many awards are available for the collection of these cards, for instance the W.I.A. issues a Century Club award for proof of reception of 100 countries, and the I.S.W.L. in London makes available to their members awards for hearing all American States, 50 European countries, ten stations in each of the six continents, 50 British Commonwealth countries, and finally one for each of the 40 Zones into which the world is divided for Amateur Radio.

There are three ways in which Amateurs can communicate, by Morse code (c.w.), ordinary speech (a.m.) or single sideband (s.s.b.), the latter requires at least a very stable beat frequency oscillator in the receiver before the transmission can be "resolved".

What do we use for reception of these signals? Well, every listener has his own likes and dislikes in this matter. It is quite possible to get extremely good results on c.w. from a small regenerative receiver, but for serious listening, a good quality communications receiver is needed. This can be one of the several medium-priced Japanese receivers now on the Australian market, maybe one of the more expensive American ones, or as most of us do, try and get a good wartime receiver such as the AR7, SX28, BC342, BC348, H.R.O., etc. These are reasonably priced and regularly advertised by members through the advertising columns of this magazine.

A good antenna is advisable, height being more important than length. I normally try for about 50 to 40 feet of height and 60 to 100 ft. of length. To the newcomer to this hobby, should you have any query about the W.I.A. or services available in your State, contact me at the above address, and if I cannot answer your query myself, it will be passed directly to the Secretary of your State S.w.l. Group.

I hope our senior members have been patient, but I feel that quite often we go along with our notes, talking about what we have heard and done without giving a thought to the young fellow who picks up a copy of "A.R." and wonders what it is all about.

NEW SOUTH WALES

The annual meeting of the VK2 S.w.l. Group was held on Friday, March 17, and the following officers were elected: President, Gerard Gilet, L2264; Secretary, Chris Middleton-Williams; Publicity Officer: Mac Hilliard; QSL Officer, D. M. Grantley, L2022. The offices of Vice-President and Liaison were held over until the April meeting.

VK2 S.w.l. QSL Bureau: The new format for card handling will be thus: Upon the appointment of a new QSL Manager for VK2 Division, I will immediately contact him and arrange for him to send all S.w.l. cards to me at Box 222, Penrith. As it has been pointed out, I live 70 miles from Sydney and regularly work until 8 p.m. on Friday night, making attendance at meetings rather difficult. However, in order to provide a better deal for S.w.l.'s, all inward cards will be mailed direct to members every week without need of an envelope. However, non-members of the W.I.A. will be required to leave a s.a.s.e. if they want their cards forwarded on. Country members' cards will be mailed regularly free of charge. Arrangements are in hand for cards from two major overseas S.w.l. sections to have all cards mailed direct to me for distribution, thus avoiding double or in some cases triple handling. Full information will be given when this eventuates. It is possible also, that an outwards bureau will be made available free of charge to interested VK2 listeners. More anon.

BAND CONDITIONS

March has given us some of the best band conditions experienced since the boom years of the late 1950s. Ten metres has been heard wide open here in Sydney at 11 pm local time, working into Europe, whilst 15 mx usually has some good DX 20 of course is never closed, and whilst 40 is marred by commercials, 80 and 160 are far too noisy, although occasionally an early morning European is logged on 80 c.w.

AROUND THE SHACKS

Bryan Prosser of VK6 is about to take off on a six months' working trip of the eastern States, and thus our last link with that State is broken. How about a word or two from L6003? Thanks to Bob 6BE for a QSL on behalf of one of our I.S.W.L. colleagues. Bob by the way will answer all S.w.l. reports.

Doug Head, of South Yarra, who has been on several of our Round Robin tapes, had the misfortune to be robbed of his record collection during the recent heat wave in Melbourne. This is a big loss to any record collector, but more so to the tape enthusiast, who uses recorded music as a background to his messages.

Warwick Smith was fortunate in receiving cards from the following on his return: 9J2GJ, 4X4JU, LA4DJ, HB0ABS, 5ZAJW, ZC4CI, YU-3LC, HK5YS, DL9OH and SV1BI. His current score is 215/154. Letter to hand from Bob 6BE in answer to an SOS from one of the I.S.W.L. S.w.l.'s for a Zone 29 QSL. Bob is one of the small band of Amateurs who always acknowledges an accurate S.w.l. report. Mac Hilliard has been getting good results on 15 and 10 metres, with good openings to Europe on the former. His score is now 250/102.

L2022 has seen very little activity over the past month. Restricted to 20 and lower, the loggings have been average, with an odd ZS being heard in the late afternoon and some of the rare Central Mediterranean calls being logged with some North African ones at about 4 a.m. local time. Most of the gear here has been disconnected and packed preparatory to being moved and at the moment a Philips No. 4 and an AR7 set on 20 metres are in use. Score here is 303/157.

Ernie Luff over in VK5 is still hearing most everything which is to be heard. Unfortunately his report to me for this month has been mislaid in the rush, sorry Ern, but this sort of thing can happen.

TAPE NEWS

As mentioned recently, the Newark News Radio Club have re-opened their tape section and all interested are urged to contact Bob Fowler, 155 Baldwin St., Bloomfield, New Jersey, 07003, U.S.A., for further information. The number of S.w.l.'s who are in regular contact by tape from various countries is surprising, many of them being anxious to have VK contacts.

I.S.W.L.

In response to several queries about the International Short Wave League, here is a brief run-down of this Society. Founded in 1946 with the object of bringing together those in various countries with the common interest of radio, whether S.w.l., Amateur, commercial, tape, or any allied field. The Society has now grown and there are members located in every major country. Upon being received as a member, the person concerned, regardless of whether he is a licence holder or not, is issued with a call prefixed by his own call area and followed by a number. The QSL bureau is unique, report sheets can be attached to QSL cards and the bureau is cleared weekly and all inward cards are mailed regularly to members, free of charge.

Services available are: Tape, translation, commercial identification, broadcast station identification, as well as stationery, blank QSL cards and a stack of awards and contests for members. The services are particularly good for those interested in commercial DX, and the monthly magazine, "Monitor" contains a wealth of Amateur DX information, as well as full details of commercial goings on. All services are free, members are expected to remit return postage on any queries, and the annual sub. of 35/- stg. is extremely good value. For further information, contact Mr. Bernard Brown, 60 White St., Derby, England.

Following the poor response from members with information for this column, I make the following suggestion. If you are an active S.w.l. on the Amateur bands only, I will be pleased to hear from you by letter, tape (twin track two speed), or by phone to Penrith 20660. All letters will be answered and there is no need to enclose a s.a.e. for return letter. Unless we have a better response I suggest that the faithful few combine their news with the DX notes to VK4SS and assist him. 73, Don L2022.



Publications Committee Reports

Publications Committee met on Monday, 10th April, and considered correspondence from VKs 2QL, 2QZ, 3IB, 3RN, 4SS, WIA-L4017 and WA0KKC. Technical articles were received from VKs 0CR, 3AJP, 3ZKC/T and 5WD.

The Committee also considered decisions of the Federal Convention as they affect the Committee.

Our Circulation Manager reported having completed a wrapper check against the new addressograph stencils and having made the necessary corrections with the mailing service. A very few mistakes were found, mainly deletions that had been missed by the mailing service.

Our financial position was considered in conjunction with the annual report submitted to the Federal Convention. Our financial position is satisfactory and it was agreed that the Chairman of the Committee would prepare a budget for the ensuing year and that he should seek assistance from the Victorian Division's Treasurer.

The 1967/68 edition of the Call Book is in course of preparation and it was decided to prepare suitable circular letters seeking advertising and orders for this publication. It is anticipated that we will adhere to the plan to have this publication available late August or early September.

There was some discussion on the matter of using reprints from overseas journals. Whilst the Committee was in agreement that these should be used, it was felt that so long as we have an adequate supply of original material supplied by Australian Amateurs we should use a minimum of reprints.

The proposal to publish a v.h.f. issue was considered. This matter has been held in abeyance for nearly six months waiting on material promised by the V.h.f. Group. Some has already been received and it was decided that this should be used as it is unreasonable to hold the type for this material any longer.

NEW CALL SIGNS

JANUARY 1967

- VK1DL—D. L. Stevens, 91 Atherton St., Downer.
 VK2SC—S. M. Waters, 22 McCallum Ave., East Ryde.
 VK2ABL—W. A. Easterling, 279 Forest Rd., Kirrawee.
 VK2BCM—A. C. McGrady, 45 Dover St., Summer Hill.
 VK2BFO—B. E. Cloudeley, Flat 7, 431 Gt. Nth. Rd., Abbotsford.
 VK2BKK—K. Khuen-Kryk, 16/17 Kings Cross Rd., Potts Point.
 VK2BLD—D. B. Lyddleth, "Idahoe," Bells Rd., West Gosford.
 VK2BND—Nepean District Amateur Radio Club, Station: Civil Defence Hdqrs., St. Marys; Postal: C/o. R. Lopez, 40 Desborough St., St. Marys.
 VK2BST—S. J. Lloyd (Surgeon Cdr.), Station: 10 Sycamore Rd., Nowra; Postal: C/o. H.M.A.S. Albatross, Nowra.
 VK2BTR—T. Roberts, C/o. Commonwealth Hotels Ltd., Bunnerong Rd., Matraville.
 VK2ZHQ—M. J. Caratti, 7 Evans St., Wollongong.
 VK2ZHU—A. J. Hughes, C/o. Hornsby Hospital, Hornsby.
 VK2ZIE—I. J. Parker, 17 Olive St., Asquith.
 VK2ZJO—J. A. J. Waugh, 4 Astley St., Waratah.
 VK2ZJV—J. R. Burnell-Jones, 16 Oxford St., Gladesville.
 VK2ZLE—P. L. Boekenstein, 39 Wilburree St., South Tamworth.
 VK2ZSO—S. G. D. Martin, 6 Freeman Ave., Oatley.
 VK2ZVG—M. J. Vellnagel, C/o. 42 Higgenbotham Rd., Gladesville.
 VK2ZWN—E. W. A. Norquay, 39 Jackson Cres., Pennant Hills.
 VK2ZWQ—W. M. C. Quinlan, 27 Stuart Ave., Normanhurst.

- VK3BU—R. E. Goulet, 7 Drew St., East Kellor.
 VK3UN—K. E. Pole, 5 Alvena Cres., Heathmont.
 VK3ALI—G. J. H. Dunkley, Flat 2, 20 Victoria St., Box Hill.
 VK3AVC—Caulfield Grammar School, 217 Glen Eira Rd., East St. Kilda.
 VK3AVQ—H. S. Voake, 17 Halg Ave., Coburg.
 VK3ZEJ—J. K. G. Rositer, 23 Springvale Rd., Nunawading.
 VK3ZVT/T—D. S. Thomas, 24 Albert St., Mt. Vaverley.
 VK4CJ—J. W. Marley, 179 Newnham Rd., Mt. Gravatt.
 VK4DJ—B. J. Davey, 140 Goodwin St., Curragong.
 VK4ED—E. D. Eveslage, Apartment 2, 327 Hume St., Toowoomba.
 VK4JU—J. M. Joughin, Station: Mayfield St., Buderim; Postal: P.O. Box 18, Maroochydore.
 VK4NZ—N. Williamson, C/o. Peoples Palace, Sheridan St., Cairns.
 VK4ZGB—G. L. Bell, 24 Colton Ave., Lutwyche.
 VK4ZIM—L. J. Merrill, 269 Agnes St., Rockhampton.
 VK4ZMV—M. J. Vincent, 105B Fernvale Rd., Tarragindi.
 VK5FV—V. Clemence, 8 Robins St., Elizabeth Downs.
 VK5MB—J. Mackison, 23 Shillabeer Rd., Elizabeth Park.
 VK5ZIW—I. B. Werfel, Price.
 VK5ZXL—K. D. Roper, 19 Stephens Ave., Torrensville.
 VK6BT—R. L. Trepp, Lot 33, Waterfall Rd., Wattle Grove.
 VK8HE—S. G. Upperton, C/o. Bank of N.S.W., Perth.
 VK6ZEL—B. J. Arbon, P.O. Box 37, Borden.
 VK7ZKJ—G. C. Johnston, 3 Inglis St., New Town.
 VK7ZRO—R. W. Brown, 5 Woolton Place, Sandy Bay.

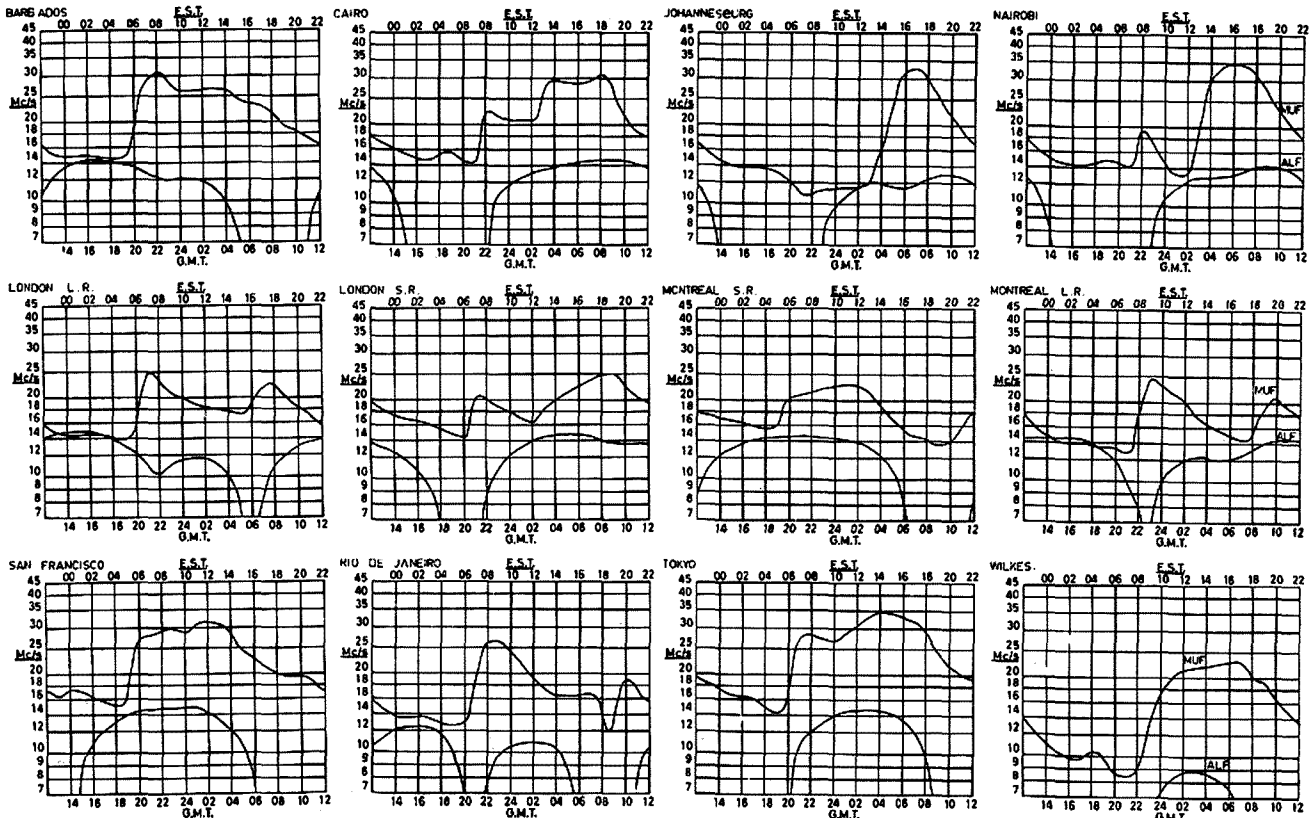
W.I.A. D.X.C.C.

Listed below are the highest twelve members in each section. Position in the list is determined by the first number shown. The first number represents the participant's total countries less any credits given for deleted countries. The second number shown represents the total D.X.C.C. credits given, including deleted countries. Where totals are the same, listings will be alphabetical by call sign.

Credits for new members and those whose totals have been amended are also shown.

PHONE		
VK5MS	314/335	VK2JZ 266/281
VK3AHO	313/325	VK4HR 261/277
VK6RU	301/324	VK3TL 254/258
VK5AB	300/314	VK2AAK 233/237
VK6MK	298/315	VK4TY 226/230
VK4FJ	275/282	VK2APK 226/229
Amendment:		
VK3HL	219/225	
C.W.		
VK3KB	319/342	VK2AGH 279/292
VK2QL	295/315	VK3NC 266/286
VK2ADE	291/313	VK3ARX 262/270
VK3CX	291/312	VK6RU 256/277
VK4FJ	287/309	VK3KB 249/262
VK3AHQ	281/283	VK3YL 246/263
New Member:		
VK4TY	124/133	
OPEN		
VK2AGH	308/326	VK2EO 285/306
VK2ADE	305/329	VK4HR 279/301
VK6RU	305/328	VK2ACX 276/300
VK6MK	300/317	VK4TY 276/286
VK2VN	297/312	VK3ARX 274/282
VK4FJ	293/315	VK3JA 272/280
Amendment:		
VK3HL	245/253	

PREDICTION CHARTS FOR MAY 1967



(Prediction Charts by courtesy of Ionospheric Prediction Service)

DX

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

Talking point at the moment seems to be the wide open state of 21 and 28 Mc. At this QTH 15 mx has been workable from early morning till past midnight almost daily and 10 mx, although quieter, has been letting lots of signals through from all continents here. On either band it's only necessary to press the button or key to work DX. Both these bands have Europeans on them from 0700z and there also appears an odd African about this time. For the newcomer to DX, all this activity must be a new and pleasant experience. For the OT it revives the memories of the immediate post-war years when 10 mx was wide open and DXCC a piece of cake.

As stated before, I imagine the winter months will knock some of the life from these bands, but it is hoped that next spring and for a year or two more a great amount of DX will be worked on these frequencies.

So have a listen chaps and draw off the cream while it is there.

NOTES AND NEWS

St. Lucia: VP2LT on 14 s.s.b. now. QSL via VE3EUU. Duration of activity not known. (VK4VK)

Palmyra Is.: K0ZCN/KP6 is said to be on 14212 around 0900z. (LIDXA)

W6FAY, who is at present operating/MM, says he too will be active from Palmyra Is. anytime now for a good stint.

Cook Is.: ZK1AR has a good signal here, often around 14210 at 0500z.

Andamman Is.: Still going strong is VU2DIA. Now uses 14080 at 2300z or later.

Malagasy Rep.: 5R8BC on regularly 14220 at 0400z. Transceive. (LIDXA)

St. Helena: ZD7KH on 14235 2300z. QSL K2HVN. For the c.w. men, ZD7IP is a regular on both 7 and 14 Mc. Mainly near low end—1930-2030z.

Easter Is.: Dick K00XV/CE0 now does most of his operating on 21 s.s.b., 1500-1700z. QSL K8EHU. (LIDXA)

Botswana: A report of activity by ZS8G and ZS8L on 14 s.s.b. 1700z, not other info.

K6KA and YF: These two prominent DXers are at present embarking on a world tour and intend to operate from these rare places as they go: 9M6, 9M2, 9M8, 9V1, HS, VU, 9N1, YA, U8, EP2, OD5, YK1, SUI, 524, 5X5, SV0 and others. Frequencies to be used are 7004, 14044, 21044, 7194, 14104, 21404 and 28544. QSL K6KA. (LIDXA)

Rio de Oro: EA9EJ uses a.m. and stays around 21200 kc., 1800z. Sometimes however he can be found 28490. (LIDXA)

Mariana Is.: K6GSL is on Saipan daily 28600 and 15 mx 2100z. QSL W4FR0, P.O. Box 714, Eau Gallie, Florida.

Brunei: VS5MH is on mainly Wednesdays, 14190 1230z and listens 14205. QSL WIDGJ.

Aden: Remember Ray VS9ARV, a very active DX-peddler on all bands who operated from various islands as VS9 PRV, KRV, HRV and elsewhere? Ray is now QRT and having a well earned rest back in U.K. Write to 15 Street Godersham, Canterbury, Kent, England.

Macquarie Is.: Rod VK0CR writes to say that the 52.9 Mc. beacon needs a few finishing touches before it goes into operation. Any report on its operation would be greatly appreciated. His QSL manager is Greg Johnston, Inglis St., Newtown, Hobart, Tasmania, or you can send your reports to Garfield North Rd., Garfield, Victoria. Rod says he operates mainly on 14180 s.s.b. or thereabouts, mostly 1000z. However he also tries 80 and 15 if conditions are right.

Other activity from Antarctica is as follows: VK0CS at Mawson on s.s.b. VK0TO and VK-0GP at Wilkes. Most work between 14150 and 14180. 0700z or later.

Mauritania: 5T5KG QRV 14040 approx. Worked here at 2230z. This is Iris and Lloyd, ex-W6KG now DX-peddler in Africa. QSL YASME.

Yemen: 4W1K/HB9AAT is said to be still active on 14120 s.s.b. at 1900z.

Falklands: VP8IE reported as active daily 14198, 0500z and 2000z. (ZL2AFZ)

Vatican: HV3SJ 14150 0530. QSL Box 9048, Vatican City. (ZL2AFZ). Also heard here on 14010 and 21 c.w. at 0600z.

Kermadec: ZL1AI has been reported active on 7 Mc. Neil says this is a pirate as he does

not use 40 mx. Cards for ZL1AI now go to K6UJW, 4825 Regalo Rd., Woodland Hills, Calif.

Hong Kong: VS8BJ, who was on the island for the past 17 years, is now ZL1TZ.

Uganda: 5X3AU, FS and JK are all on at the moment. Both 14 c.w./s.s.b. No calls beyond the 5X5J series have been issued.

(G3UGT) East Carolines: KC8BW 14240, 0600z. QSL W7TDD.

Amsterdam Is.: FB8ZZ 14135, 1700z. Uses a.m. but will answer s.s.b. Also active is FB8YY now on 14020, 0700z.

Tchad Rep.: HK1QQ/TJ8 has been active as TT8QQ. He will go to TL8, TN8, TR8. He works 14 c.w./s.s.b. QSL to W4DQS. (G3UGT)

Fanning Is.: VR3C said to be on 14 s.s.b. at 0800z. (G3UGT)

New Hebrides: YJ8BW has now extended his operations to 21 Mc. c.w./a.m., 1130z.

Antarctica: Norm ZL5AC at Scotts Base workable here around 2200z on 14 c.w. Says they are settling in for the polar night. We may now hear more of his S9 signal; be patient, he will attend to the QSL situation when he returns in October.

Clipperton, Cocos, Malpelo and others: Starting early in May, Bill Rindone, WA6SBO, will set out expediting that will last over a period of a few years. 1A6SBO is one on his list. Modes, c.w./s.s.b. More info later. (LIDXA)

Uzbek: U1KAA/K6KA and U1KBA/K6KA; this activity is expected to occur late April and early May and run for a period of a couple of weeks—s.s.b./c.w.

Qatar: MP4QAL, 14125, 1830z. QSL to Box 58, Doha.

Cocos-Keeling: ZC2T said to be 14200 at 0230z. Says to QSL via K2AES. Is he legitimate?

Madagascar: Chet 5R8AS, 28494 listening 10 up at 2000z. Also 14282 0500z. QSL W6ZPX. (LIDXA)

ACTIVITIES

Geoff VK3AMK supplies some f.b. info about the state of 15 and 10 mx. He also has worked some nice ones mainly around 28600 between 0700-1000z. They are 5A1TV, OH0NH, SM-4AIQ, OZ3WK, XW8CC, DJ8XI, F8CS, 9J2DT, ZE1J, G3RFE, YA1HD, 11PGL, G13JM, G2IC, G3MCG, ZL1APZ, ZL1JN, SM7ASA, UA3WD, VK8AU, HM9DL, U8ACR, U8BAE, DL1CF, ZC4CN and a variety of others. On 15 mc: HS1BC, OH2OI, UH8AE, HL9KB, LA2TA, 11MKC, UC2AA, OZ4KY, VK9BS, LX1FH, PA-0HTR, GM5AFF, GW3VJV, SLOCB, KV4CX and lots of other European prefixes mostly between 1200 and 1300z.

Alf VK3LC reports on openings on 14 Mc. The short path to North U.S.A. and Canada is improving as winter draws near in the Southern Hemisphere. Alf reports hearing many 3C calls around 0600z. DX worked were FB7Y, G3VBE/MM, 11CWK, DJ1BJ, DL1EO, DL8EZA, H18AL, HK3LT, JASKEM, ON5DF, SP9ANN, DT5HC, T190JV, JEA1XAN, V8PTV, YS1HMH, ZC2JK, K0UTO/KL7, etc. Also KG6AQE, 9M-2EF, and G3MVG were worked using a station-ary mobile whip antenna.

Merv VK4DV reports from North Queensland that 20 and 15 has been good but 10 has fallen off a little. He lists a variety of countries worked on these three bands which include all continents. Says East Coast W8s are very strong up there in early evenings on 20 mx.

Barry VK5BS has been doing some receiver modifications so has not been too active, but did manage these on QRP c.w.: KX8EQ, OA-4UA, OA4VE, SMOCEE, G2ATM, VU2DIA, HS1EM, UW9OA on 14 Mc.

(Barry is QRP officer for the Club in Oceania so please send him any elegant cws you can. Like me, he needs all he can get.)

Bruce VK3BM, from Quambatook, writes a very informative letter on the state of 10 mx generally, part of which I include here. He says, "I have been operating on 10 (around 28575 approx.) since early November and in all that time only on three occasions have I not been able to QSO U.S.A. and the surroundings. I am on daily, week-ends excepted. The band is usually wide open between 2200z and 0000z. I seldom get on between 0900 and 1100z, but when I do Europeans are usually QSO'd. I have now contacted G3FPQ on five bands." (This makes you eligible for FBTC Award, Bruce OM.)

Bruce also says that he is working Europeans on 40 mx also. He also reports a phenomena on 10 mx which I think is experienced by many from time to time. On odd occasions when working DX on the short path it is found that a better signal results when the beam is pointed in a direction other than the direct route. (Had this experience with a KH6 recently. His signal was best when pointed to JA and mine to the north. Thanks OM, some more information whenever you can.)

Dud VK4MY has been QRV on 14 and 21 Mc. and sends in some nice ones this month. 14 s.s.b.: VP2VV 0610 14108, 5A1TV 0700, 5W1AA 0720 14150, YA1FB 1315 14182, ZL1AI 1737 14024, ZB2AK 0705 14118, FO8BS 0932 14115, CT1SQ 2045 14106, 1T1AU 2058 14106, KP4AST 2119 14228, 9M8RS 1034 14150, VK0CR 0605 14158, ZP3AL 1017 14122, ZC4AK 1400 14128, SV1DL 1412 14128, 5N2AAK 0848 14187, 3CIARM and 3CIARB 0600 14119. Worked on 14 c.w.: F8UAG 1016 14020, KV4AM 14012, UF8BD 0700 14059, UQ2AN 0615 14022, UY5LF 1325 14068, 6Y5JB 0747 14036, FL8DY 1938 14080, CT1DJ 0736 14080, SL8BU 1620 14024, 9M2LO 1022, VE1TG 1106 14007, ZB2AM 0729 14004. Dud lists these that got away: GC8HT, DU-ODM, UD8CE, CT1BT, TA2AC, ZETJK, ZP5JB, UNIBK, HM1DM, SV0WFF.

Peter VK4PJ reports 10 mx as hot but 15 not far behind. He is not too active but lists these good ones on s.s.b. 10 mx: SM2CTV, KR8TAB, SM7XA, DL8OT, SV1BL, LA5YE, SM7CEB, ZE1JJ, KR6LS, DL8SQ, ZS2AF, ZL-2JK, ZS5FF, ZS5AD, 9J2VX, VK80X, U8-6ACR, UC2AA, GW3MFV, DL8FG and many Js and Ws, etc. On 15: OZ3KE, SM5HK, HB-9KX, DL1DC, G3CAZ, ET3USA, GDR3RFK, GM3POK. Peter says that on his QSO with GM3POK he received him best with his beam pointing some degrees off normal. On 14 Mc.: 9G1JM, VE3IG, VE1AHG, 5R8AZ, 7Q7LZ, LU-9DAH, KC6JG, HK3AXW, HK3AVI, ZS4SD, TF2WKE, OZ3KB.

Reg KV4VX has been able to work 10 from early morning till near midnight. He lists some 40 countries worked in the past couple of weeks. They are 28 Mc. s.s.b.: HR1JM, HR-15O, YV5AXT, DU1FH, 9M2LO, W7VPL/KL7, PJ2CR, HB0L, MP4TBO, XE1YO, OA4EM, KZ5JK, HP1JC, U8AKR, VE7ZD, U82EK, ZP5OF, E16AS, VS6FR, OH1VR, DL9PU, UC-2BO, F8DL, DL2TM, UH8EG, SM5CO, UA3TU, SM0AA, UC2BO, F9BO, ZE1JJ, DJ4GR, G3JOC, KH6BI, KR6LS, Z8EJN, KB8CZ, ZS1FH, ZS-3HT, ZS4OI, ZS5V, ZS5FF, ZS2AF, ZS6CN, ZS1NN, ZS9QU and lots of the more common European prefixes. Also all G, ZL, VK and W districts.

Bert KV5BB advises on the following: Bert KV4CX on St. Thomas, Virgin Is., is on 21340 most nights around 1030z. He is seeking VK QSOs and QSLs 100 per cent 9G1DY and 9G1KT are working VK on the l.p. on 21320 around 0400-0600z. The latter is the Ghanaian QSL Manager. YV1CT also on 21320. Name Josie/YL. She is an avid stamp collector. Listen for her around 0630z. Bruce KP4BL daily looks on the s.p. for VKs on 21 s.s.b. On quite often. Gives QTH as San Wan. Tony VQ9AR has returned to the States. Sends his 73 to all the VKs and reports that their activity can be expected from the Seychelles.

Chas VK4UC still getting among the 20 mx DX with his QRP and Bruce array. On 20 c.w. he landed CE1FF 0745, HA1SB 0630, F3ZU 0830, KV4AM 0740, XE2SS 0800z, OA6W 0950, JH1AFW 1340, KM6BI 1400, 6Y5JB 0815, SL7CA 0730, U05KBR 1350, ZS4JU 1400, Z8EJN 1420, KP4CRT 1215, DK1HP 0800, TU2BK 0812, VE-MBK 0810, LA8CJ 1320, EA1BC 0750, TA2AC 2100, VP7DX 0500, 5N2AAF 0810, ZD7IP 0750, ZS5UW 1410, YS1O 1330, CR1TZ 1430, CN8FC 0820, UP0L15 North Pole, ZS5EY 1430, plus lots of 3C's during A.R.R.L. Contest. On 14 a.m.: ZP5CF 0600, VE1PL 2130, LU9DAH 0900, HS4AK 1054, KG6IF 1100, 9M6JP 1000, HM1BB 0945, EA4CR 0930z. Chas reports that VK8OX is QRV in North. QSL to G5UG. The QSL for KV4AM goes to Box 717, Christiansted, Virgin Is. KG8SN says QSL to Box 341, Saipan, Marianas 96950.

All times are G.M.T.

George VK3ZCQ writes and asks would I give JA9AFS a mention in the column. Masa is looking for c.w. VK QSOs on 14 Mc. (should be easy). He QSLs direct 100 per cent. His QTH is 2 Nachinachi Kaigandori, Toyama-City, Toyama, Japan. He has already worked VKs 2IC, 5ZE and 3APO.

AWARDS

Alf VK3LC sends the following award for those avid collectors of wallpaper. The virtue of this one is that it is FREE. It is issued by the LCRA DX Club—A.P. 584, Bogota, Colombia, S.A. It is the "73" Certificate.

Work ten members of the club, after 1/1/86 (7 in HK3 Zone and 3 in other zones, or work 10 members in HK3 Zone). Any modes. Send QSLs to the members QSO'd and log data of QSOs with dates to the above address. No I.R.C's required. Some members at 1/8/86 are HK3ABH, 3APC, 3API, 8AJV, 3ASJ, 3AUE, 3AVK, 3BAE, 3HY, 3KN, 3LT, 3RO, 3UA, 4AJC, 5ACI, 8A0H, 5SL, 4BQ.

It might be a good idea, space permitting, to feature an award each month. There are some 2000 odd on the market. Some very f.b. More info later.

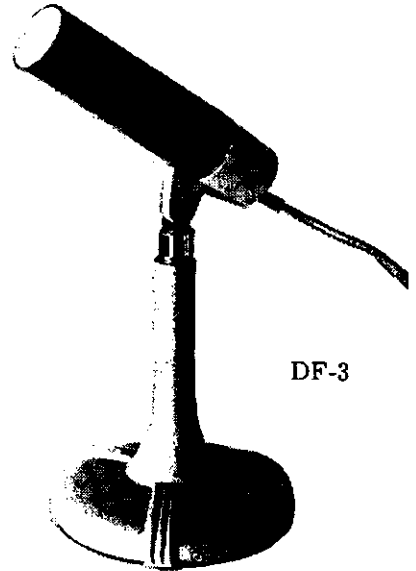
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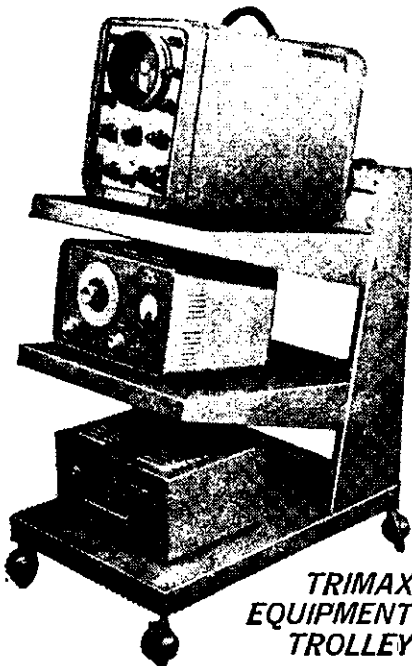
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L37/A

VHF

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

VK0CR BEACON

Amateurs hearing the Macquarie Island automatic beacon VK0CR are requested to log the following information:

Time, strength, readability, beam headings (there could be more than one direction in which the signal peaks. If so, note each bearing and each signal strength).

The beacon is an automatically keyed c.w. beacon with the call sign being repeated twice a minute, the keyer takes approximately eighteen seconds to send VK0CR followed by a short key up, a short key down, a short key up, the whole sequence taking thirty seconds.

NEWS FROM J.A.R.L.

From 1st April, 1967, the A2 emission from JA1IGY has been altered from the 50.5 Mc. frequency to 51.990 Mc. This has been done specifically to allow VK stations observe band openings to Japan. J.A.R.L. are aware of, and have publicised in their country, the Australian allocation of 52-54 Mc.

JA1IGY, JA6IGY, JA8IGY and JA9IGY continue to operate A2 on 50.5 Mc., and all beacon stations are on the air 24 hours a day.

NEW SOUTH WALES

Furber River Branch.—52-54 Mc.: This band has been very quiet with only three openings since the Ross Hull Contest closed, and these openings were small at that. The local net which is held on Saturday and Sunday mornings has also been very quiet with only a couple of active stations at the most. The weather has not been the best—only wet and cold, typical N.S.W. weather.

144-148 Mc.: Some fair openings have been had in Sydney during the month. Barry ZUB is now 2BUB and is making good use of his Swan. Kevin ZKW managed to get the Y.M.C.A. Radio Club going with some twenty odd members at the official opening. Local Amateurs seen at the opening included VKs 2AKX, 2ZSG and yours truly ZZMO. Gordon 2ZSG is building a skeleton slot, so that he can make a loud noise in Sydney town. 73, Mac ZZMO.

VICTORIA

Activity over the past month has been very poor on both 6 and 2 mx. A couple of DX openings were reported, these being to northern VK7 and eastern VK5.

The March meeting of the V.h.f. Group was the annual general meeting and election of office-bearers. After nominations were received for members willing (?) to be office-bearers, it was found that there were more names than vacancies and it was decided that it would be the right thing to have an election. We did, and we found that the following persons were given some work to do between the dinner dishes and bedtime:—

Chairman and president, Peter 3ZPA; vice-chairman, Jack 3ZJF; Council rep., Jack 3ZJF; past president, Cyril 3AEE; secretary, Neville 3ZPN; treasurer, Trevor 3ZTU; publicity officer, Cyril 3ZCK; QSL manager, Bill 3ABP; equipment officer, Peter 3ZAV; assist. equipment officer, Robert 3ZPX.

The treasurer of the Group stated that the Group's finances are in a very healthy state, even though large quantities of coffee and biscuits are consumed after each meeting.

Other activities of the Group include 2 mx fox hunts held on the fourth Wednesday of each month, 2 mx scrambles held on the second Sunday, and the V.h.f. Group meeting which is held on the third Wednesday. During the summer season the Group holds field days and conventions. 73, Cyril 3ZCK.

Eastern Zone.—52-54 Mc.: Ch. 0 t.v.i. spoilt many a fine QSO in Gippsland over the Christmas period, even though vertical polarisation and working above 53 Mc. Most of the t.v. antennae to the west of me are of the older type and are rather inefficient on Ch. 0. Late December 5ZBR and 5ZDR were received throughout the La Trobe Valley on t.v. sets tuned to Ch. 0, so I came on six to warn them of the t.v.i. that they were causing, also the QRM from Adelaide t.v. Ch. 2. The

P.M.G. promptly rang me and told me to keep off six whilst Ch. 0 Melbourne was on the air with any sort of transmission at all. So it looks like the midnight to dawn shift for me with six metres.

On the DX front there has been plenty but for reasons just stated all I could do was listen in envy. I have noticed that when there is a heat wave with the possibility of thunder storms, six opens. Is there any connection between the two?

Over the past few months the m.u.f. has been increasing, the highest so far for this sunspot cycle with the 26 Mc. broadcast band opening each evening and reaching a climax on 12/3/67 when European t.v. caused severe interference to Rhodesian t.v. reception. This piece of info was reported to me by Reg 3AWV who obtained it from Charlie ZEIJJ, of Bulalayo, via 28 Mc. The same day several African and Middle East stations including Zambia and ODSEY of Lebanon were worked by VK3AWV who was using a simple G5RV. Reg has also been working VK0GP at Wilkes and VK0CR at Macquarie Island.

144-148 Mc.: This band has been open to all parts of VK3 over the past couple of months and activity has been at a very high level. 73, George 3ZCG.

TOWNSVILLE AND DISTRICT

The main news from the tropical north (apart from severe floods) is the continuing daily northern DX from Japan. Since early Feb. until the end of March, two openings per day have been heard in Townsville. Openings occur between 1330-1800 and 1800-2300 hours E.A.S.T. The Townsville gang of 4ZGJ, 4RO, 4ZPL and 4ZRG have had a great many QSOs in working all call areas on 52-53 Mc. Band conditions have been good with 5 and 9 signals both ways, but QRM high. As well as JA signals, other calls to date have been JH, KA and KR8.

To date we believe that 8KK, 8ZMR, 6WG, 6ZCN, 4ZAZ and some Brisbane stations have also worked the JAs. A feature of the conditions is the reception of Russian television as well as many Asian f.m. and a.m. stations as high as 60 Mc.

Closer to home we find Peter 4ZPL balancing a Clement long Yagi above his roof, and working his first JA. Graham 4ZGJ back and forth to Rockhampton, while Phil 4ZEB now has his 6 mx tx on the air. 73, Bob 4ZRC.

WESTERN AUSTRALIA

On Sunday, 12/3/67 I heard Bob 6BE mention on the news that the JAs were through that afternoon. I erected a ground plane and hooked up a converter and heard JAs 1, 2, 3, 6, as well as JA1IGY, JA6IGY and JA9IGY. They were all transmitting m.c.w. on approx. 50.5 with VVUVE preceding the call sign. On the ground plane, signals were 5.5 to 5.9, the band being open from 1600 to 2130. I also heard some very wide band f.m. on 49.1 and 49.3 and video on 49.75 all at very good strength.

On Monday evening the story was the same and I even heard a JAI calling CQ on 52.2. I decided to get the tx going and was on the air at about 1700. A call immediately brought results with JAs transmitting on about 52.2, and I worked 10, including JAs 0, 1, 2, 7 in an hour with signals up to S9 plus. 73, Andy 6ZCN. (Reprinted from the W.A. V.h.f. News Bulletin.)

★



From all indications the Y.R.S. is growing steadily and I am very glad to be able to report the formation of another club at Maitland, N.S.W. This is in the Y.M.C.A. and the club is very fortunate to start off with a lecture room 41 x 12 ft. complete with theatre seats, blackboard and a motion picture screen with an addition to come of a projection room. The club has also taken over an adjoining room 24 x 38 ft. which is being made into a workshop, store room and tx department. What a "shack"! The class meets every Friday night at 7.30 p.m. but very shortly the time will be extended to include Saturday afternoon for practical demonstration, etc. The club starts with a membership of 25 including 7 adults.

There will even be a s.w.l. group started later on.

A good deal of local interest was shown in getting the club going with Dr. Colvin performing the official opening supported by Aid. Uncomb, Deputy Chairman of the Shortland County Council. Among the official guests were Mr. G. Sutherland, VK2ZSG, Sec. of the Hunter Branch of the W.I.A., and Mr. G. Ward, Sec. of the Maitland Aero Modellers, as well as Mr. Keith Howard, VK2AKX, Pres. of the West Lakes Radio Club, who gave a very interesting talk on the operation and meaning of the Y.R.S. After the opening ceremony there was a short programme of sub-technician films and supper.

The club leader is Mr. Kevin Watson, VK-2ZKW, and Treasurer, Mr. Ian Goodman. Anyone wishing further information should write to Maitland Y.M.C.A. Radio Club, 264 High St., Maitland, N.S.W. 2320, or Phone Kevin at 33-7286.

Congratulations to Kevin and his helpers for the good spade work with regard to your new radio club and we wish you many successes and hours of good fun.

As the boys work steadily through the different certificates they naturally have an interest in radio telephony and wireless telegraphy. There are certificates for these sections but they are not compulsory and are available to satisfy the keen interest of the Youth Radio Scheme'ers. The purpose of the certificate is to provide an operating efficiency based on the requirements of the P.M.G. Handbook and to teach the highest standards of Amateur Radio operating practices. Anyone interested in the syllabus for the radio telephony and wireless telegraphy certificates should write Mr. M. Hooper, 182 Melville St., Hobart (large s.a.s.e. please) plus two 4c stamps for each copy required. Local tests for Morse sending and receiving for the W/T award will be held at the Scout Hall in Bestic St., Kyeemagh, on Tuesday evening by special arrangement with Mr. J. F. Scougall, VK2BXX, C/o Kyeemagh Y.R.S. Club, 23 Caroma Ave., Kyeemagh. Mr. Scougall will also arrange for inspection and assessment of the radio log-books submitted by candidates, and for a trainee to work with a nominated licensed Amateur. Mr. Scougall is also the source of "Multiflash" project cards and club leaders. State supervisors and postal group leaders need only contact him for same but be sure to include two 4c stamps for each card ordered.

Here is another address for the Y.R.S. lapel badges. Those who have gained the elementary are entitled to this and to get a badge you should send a postal order for 50 cents plus s.a.s.e. to the Secretary, Y.R.C.S., Mr. M. Plummer, 71 Kernan St., Strathmore, Vic. This is a very attractive badge and will look very smart on your lapel.

CLUB NEWS

Australian Capital Territory, VK1: Roger Davis' bulletin is full of interesting details as usual with some very good articles. As a matter of interest, Roger also produces the newsletter for supervisors and leaders. For P.G. members, Roger has a supply of component parts at very reasonable prices.

New South Wales, VK2: Camp Technology held in the Blue Mountains last summer had several successes for the Junior Certificate—Paul Zucker, Bruce Evans, Graeme Bryan, Nell Reynolds, Philip Drummond and Martin Farleigh, B. K. Boardman, D. R. Ashton and Philip Wait all of Sydney Grammar also gained the Junior as did Peter Dalglish of the 1st Kyeemagh Sea Scouts and David Truskett of Kiama High.

N.B.: I am in the market for as much news as possible and it would be appreciated if club leaders in all parts of Australia could have news of their activities, certificate successes, field days, etc., sent to me by the last Wednesday of each month. Only the barest details are required but I must have the information to make the column interesting. The address for news is Mrs. M. Swinton, VK2AXS, P.O. Box 1, Kulnura, N.S.W. 73, Mona VK2AXS.

★

SOME QTHs:

VP2VV—Via KV4CX.
5A1TV—QSL via W7WQR.
5W1AA—P.O. Box 498, Apia, W. Samoa.
YA1FB—U.S.A.I.D., G.P.O., N.Y. 09668.
ZL1AI—QSL via K6JWU.
ZB2AK—C/o Sub Cable Co., Gibraltar.
F08BS—P.O. Box 374, Papeete.
9M8RS—Telecomm. Hdg., Kuching, Sarawak.
ZP3AL—P.O. Box 512, Asuncion, Paraguay.
5N2AAX—P.O. Box 3380, Lagos, Nigeria.
FL8DY—QSL to R.E.F. only.
CP1CZ—P.O. Box 2964, La Paz, Bolivia.

Correspondence

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

CLUBS FOR HANDICAPPED PEOPLE

Editor "A.R.," Dear Sir,
I am writing to enquire whether any of your readers who, being physically handicapped and have an abiding interest in radio, would be interested in forming a National Radio Club or Union especially devoted to their interests. I know many handicapped persons who are interested in radio and cannot fully participate in it because their disabilities prevent them from doing, say, intricate wiring or even general construction work, e.g. paraplegics, spasitics, etc. Therefore if a National Radio Club or Union were to be formed, it would require some assistance of Hams and S.W.'s to help these disabled persons to construct their own gear.

If, on the other hand, there are clubs already in existence, would they be interested in a National Union of Radio Clubs for Handicapped People?

Those interested in this matter may contact me at the following address: 5 Helen Street, Newstead, Launceston, Tasmania.

—Robin L. Harwood, S.W.L. 7022.

PREDICTIONS

Editor "A.R.," Dear Sir,
I cannot let the letter of VK3AKZ pass without replying to one section. In this he quotes: "the maximum would be the highest on record." I wonder what was the date of the article he read.

In my article in January issue I also mentioned (col. 1) this prediction had been made but that particular reference was before the new cycle commenced.

If Mr. Head refers to September issue of "A.R.," he will find a table listing sunspot numbers since 1954 and a simple interpolation will show how the present cycle is progressing. To enable him to bring himself up to date, I have received from the "experts" in Zurich, through the I.P.S., Sydney, the additional smoothed monthly figures for 1966:

Jan. 27, Feb. 30.6, Mar. 33.6, Apr. 36.4, May 39.5, June 43.3, July 48.8, Aug. 56.4.

These figures are actual and not predictions. These figures are available to the magazine from I.P.S. and I have recently suggested they be obtained and printed each month as I do in the VK2 Monthly Bulletin.

—F. T. Hine, VK2QL.

THAT S.P. ABBAY

Editor "A.R.," Dear Sir,
Reference to a letter by Wal. E. Salmon, VK2SA, "A.R." Feb. '67, in which he states that he would not subscribe in any way to statements made by me in a letter, "A.R.," Jan. '67, dealing with the Series Phased Array. Well, bully for him. It's his right if he so pleases, in this great democratic country of ours to disagree, and say so, with whom ever he wants to, be it the P.M. or for that matter H.R.H. herself.

I have, as suggested by VK2SA, re-read my letter, especially that part he refers to, which I take to be (there was a word or words missing from the text of his letter) where I stated, and I quote, "The only point to remember is that the array radiates towards the feed point, not away from it." To VK2SA I suppose this sounds like a one way ticket to nowhere. But nevertheless it is a fact. After all, I was talking about an array, so naturally this is with reference to the array length. It means quite simply that the direction of maximum radiation is along the length of the array toward the feed point, not from the feed point along the length of the array.

Regarding performance, VK2SA is upset because, to use his words, I did not in one instance give any practical results on the operation of my array.

I did say in my original article, "Series Phased Array, Mark 7?" "A.R.," Feb. '59, that I had a 4 element array operating on channel 2 and quite good results were being obtained. My series phased arrays have long since bitten the dust and their remains are on the scrap heap. They were, as I stated in "A.R.," Feb. '59, designed for use at this location to receive the Melbourne t.v. stations, prior to the advent of country t.v.

No actual measurements of gain were made, but from comparative tests against dipoles, I think it would be safe to say, their gain was about on a par, with what could be expected from an end fire array, with the same quarter wave spacing and 90 degrees phase difference between the elements. Which for a 4 element (¾ wavelength long) array is about 5 to 6 db. I also mentioned in my letter, "A.R.," Jan. '67, gain figures to be expected from end fire arrays with the above spacings, etc.

Unfortunately for Wal Salmon there is one point on which we agree and this is that these arrays are strictly one-band affairs.

If VK2SA or any other person for that matter still does not want to subscribe to my statements, but are still interested enough to find out for themselves, I suggest they refer to the following:

1. "Short Wave Wireless Communication," Ladners and Stoner. John Wiley & Sons, 2nd Edition, 1934.
2. "Admiralty Handbook of Wireless Telegraphy," 1938, Volume 2, Section R, Paragraph 47.

3. "QST," Dec. 1945, p. 62. "The World Above 50 Mc." E. P. Tilton.
4. "Amateur Radio," May 1948, p. 3. "Series Phased Arrays," by H. K. Love, VK3KU.
5. "Amateur Radio," January 1950, p. 14. "The Lentos Series Phased Array," by Len Jackson and Col Gibson, VK3FO.

My letter to "A.R.," Jan. '67, was intended to clear up some misunderstanding by VK2SA with regard to statements made in my Feb. '59 "A.R." article, and at the same time to point out that he had incorrectly referred to his antenna, "A.R.," October '68, as a "Series Phased Array." Here some might say "What's in a name?" Quite a lot really, as the name sometimes goes a long way towards describing what is under discussion. Those of us who are or have been actively engaged in the art, should make every effort to use the correct terms when describing something, and thereby prevent a lot of confusion.

—Colin A. Mackenzie, VK3ACM.

[This correspondence is now closed.—Ed.]

VK2 DIVISION

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TAPED LECTURES

No. 30—T.V. Station Antenna Design, Part 2; gain, patterns, power dividing and cabling. 67 mins., 19 slides. John Vanderley.

No. 31—Communication Receiver Design. 60 mins., 21 slides. Keith Woodward, VK2ZAU.

No. 32—As it was in the Beginning. 90 mins., 26 slides. Joe Reed, VK2JR.

No. 33—Prince Phillip's Dunrossil Lecture (1965).

Details from the Education Officer, Wireless Institute Centre, 14 Atchison St., Crows Nest, N.S.W.

CRYSTALS

Some of the frequencies listed between 3540 and 6450 Kc. are now out of stock. Details of those no longer available will be given in the near future.

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FEDERAL AND DIVISIONAL MONTHLY NEWS REPORTS

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

FEDERAL AWARDS

RECIPROCAL AWARD JUDGING WITH THE CENTRAL RADIO CLUB OF THE U.S.S.R.

Commencing forthwith, detailed check lists appertaining to the awards offered by the Central Radio Club of U.S.S.R. may be submitted by W.I.A. members direct to the Federal Awards Manager (VK3KB) for certification. Sufficient postage should be included to cover cost of returning the QSLs, registration being added if so desired. Central Radio Club advises that applications will be dealt with free of charge.

NEW SOUTH WALES

Owing to Good Friday falling on the fourth Friday of March, the annual general meeting and March monthly meeting were both held on Friday evening, March 31. The retiring President (Tom O'Donnell, VK2OD) occupied the chair and there was an attendance of between 40 and 50. Ken VK4OF was the only visitor.

The main interest centred around the ballot for the election of Divisional Council, as there were eight nominations for the seven positions. Ivan Agar (VK2AIM) was appointed Returning Officer and P. Doman (VK2ZPD), J. Young (VK2OY), W. Treloar (VK2BPZ), P. Carter (VK2ZPC), R. Milton (VK2ZMM) and S. Kuhl (VK2ZSK) acted as scrutineers. With the Division's honorary legal officer, Bill Clark, this team retired from the meeting to examine the voting papers.

There were two features about the ballot that did not reflect at all favourably on the members generally. Firstly, the ballot papers received totalled only 336, indicating that many of our members apparently do not care two hoots what happens in the Division, at least when it comes to voting for candidates who will be looking after our affairs for the next twelve months. Secondly, the high percentage of informal votes—86 in number—was ridiculous. Most of these resulted from adding signatures and call signs on envelopes containing ballot papers or omitting these details altogether from the outside envelopes. In future ballots we suggest that all members take more notice of the instructions that go with the ballot papers.

Those successful in the ballot were as follows: P. W. Campbell (VK2AXJ), S. Dogger (VK2ZRD), K. L. Finney (VK2KJ), C. Henderson (VK2CFH), D. Jeanes (VK2BSA), W. J. Lewis (VK2YB), C. J. Wilkins (VK2ALB).

At a short meeting of the new Council later in the evening, Ken Finney (VK2KJ) was elected to the position of Divisional President, with Bill Lewis (VK2YB) Senior Vice-President and Charlie Wilkins (VK2ALB) Junior Vice-President.

The annual report presented by the retiring chairman was taken as read, and several complimentary references were made to Tom's work during his term of office, the general tenor of the remarks being that a year's good work had been brought to a close with an excellent report.

It was a matter of some regret that one of the retiring councillors, Hebe Grouse (VK2AOK), did not nominate again this year. As the Division's first lady councillor, Hebe had acquitted herself very well and, according to many reports, was the most popular VK2WI broadcaster among those who carried out this job.

Copies of the report and balance sheet submitted by the auditor (Mr Rowan) were available at the meeting. The favourable financial balance indicated that the retiring Council had kept a tight rein on expenditure during the year.

The March monthly meeting opened with an interim report by the Federal Councillor (Pierce Healy, VK2APQ) on the Federal Convention held in Hobart over Easter. This report (which will be published in our monthly Bulletin) was a favourable one in many ways, especially in the matter of the proposed Federal Constitution, as it would appear that we could be within sight of agreement in the few remaining problems. Pierce was accorded a vote of thanks for his report.

The President reported that Mrs. Betty Gerdes, who had carried out the combined

duties of Secretary and Treasurer for some time, had found it necessary to tender her resignation because of increased domestic duties.

A vote of thanks to Mrs. Gerdes for her efforts on behalf of the Division was carried by acclamation.

A good deal of discussion ensued over the appointment of a successor to Mrs. Gerdes, following a motion by Alan VK2ZAX that a paid Secretary-Treasurer be appointed. Several speakers spoke against the motion. It was agreed that such an appointment would be highly desirable if it could be financed, but to do so would inevitably result in a steep rise in subscriptions. In any case, it was felt that a better resolution would be one that requested Divisional Council to investigate the possibility of appointing a paid Secretary-Treasurer, and eventually an amendment along these lines was carried unanimously.

The following new members were admitted to the Institute at the March meeting: Lloyd Davies (VK4ZLO), Kenneth Duncanson (VK-2ZDU), David Coutts (VK2ZDX), Arthur Heckenberg (VK2AHL), Graeme Hough (Assoc.), Alan Nutley (Assoc.), Ian Parker (VK-2ZIE), Lawrence Peasley (A.O.C.P.).

Items of business in brief at the meeting were: A request by Alf VK2ZIW for three more volunteers for the V.h.f. Morse practice roster; thanks to Mrs. Peell, widow of the late John Peell, for a donation of two textbooks to the Divisional Library; and a report by Keith VK2AKK that David Fraser, a school-boy member of the Youth Radio Scheme, had passed his A.O.L.C.P.

We regret that we have to record the passing of yet another member, word of which was received only at the end of March. John Bonnington (VK2AKB) passed away suddenly on 18th February. John had not been very active for the past 12 months on account of frequent illness, but often listened on the bands. He was a former airline pilot and businessman, and when active on the air was keen on 28 Mc. working. Our retiring Divisional President (Tom O'Donnell) reports that during the Geophysical Year observations, John provided him with 28 Mc. propagation details. To Mrs. Bonnington we extend the sympathy of all members of the N.S.W. Division.

URUNGA CONVENTION

From Bill VK2OE we have details of this popular Convention which from all accounts was very successful. Among the 29 Amateurs and 11 XYLS who registered, there were quite a few who made the trip from Sydney, in spite of the distance, and a glance at the prize list will show that they made their presence felt, too.

The programme went off smoothly and the weather was good. While the OMs were tearing around the countryside looking for those elusive hidden transmitters, the XYLS were well catered for with afternoon tea at Coffs Harbour on the Saturday and a scenic drive to Dorrigo on Easter Sunday.

At the prize-giving, Noel VK2AHH supplied the music on a Hammond organ and Jack Gear, of Bellingen, gave a bracket of songs. Both were well received and the committee extends appreciation for their efforts. Pity we cannot get Noel and Jack down to Sydney for our annual Convention; they would be a welcome acquisition on the entertainment side.

Next year will be the 20th anniversary of the Urunga Convention and the organisers are making plans already to make it an occasion to remember. They urge all those who think there is any chance of attending to start making their plans right now for Easter 1968.

Results of the field events: Saturday—7 Mc. Hunt: Bob VK2ASZ, 1; Allan VK2ASI, 2; Bill VK2ZCV, 3. 144 Mc. Hunt for \$40 prize: Paul VK2ZPV, 1. Sunday—144 Mc. Hunt: Bob VK2ASZ, 1; Paul VK2ZPV, 2; Tony VK2ZCT, 3. Urunga Scramble (all-band): Bill VK2XT, 46

contacts; Bob VK2ASZ, 38; Harry VK2LX, 25. 73, Ivan, VK2AIM.

HUNTER BRANCH

The advent of the transceiver has made the working of DX on the h.f. bands a commonplace event and s.s.b. seems to be the order of the day. Imagine the surprise then of one of our well known operators who erected a dipole on 15 metres and then fired up the old faithful a.m. rig into the feeder. Expecting very little he had a reply from a W7 who gave him 5 and 8. So overjoyed was he that he decided to call another station and wind the wick up a bit further. The meters went hard over as I am told, and all the gear went up in a cloud of prettily coloured smoke. Such is the price of success.

Seriously though, there are plenty of opportunities to work some quite good DX on 15 and 10 metres just now and some of the local boys are getting amongst them. At times the band is wide open for a few minutes and then dead again as 15 can be. This applies also to 52 mega, where DX should improve as we get towards the sunspot maximum. So, whether you operate your single 807 on a biscuit tin chassis or wrap your new transceiver in a plastic bag, get with it and use some more of the bands. After all, two of the hf. regulars, Col VK2YJ and Les VK2RJ have given at least 10 days to the others by being absent cruising around the Pacific. What a shame they could not take the gear with them—or perhaps that was the idea, to give the other boys a chance.

The activity on v.h.f. used to be the thing a year or so back and this may still be so but this rash of r.f. certainly does not apply to the 146 f.m. channels where one may call oneself hoarse any day of the week and get no replies whatever. How about you fellows with carphones using them, say once a week. It would be a real change to hear a signal.

Sherwood, our old friend from the coaly city, is on the air at last. The only qualification needed for this statement is that the air is that which holds up his aircraft and the r.f. type air is as far away as ever. I doubt if VK2AJF will ever be heard. His aeronaut companion, Bones VK2ZQB is also more on the air type air than the other sort and so pleased is his instructor that he says he's a perfect pupil. What the gentleman fails to realise is that Bones had plenty of practice at low flying before he ever took to an aircraft and this puts him several streets ahead of his nearest rival.

On the more youthful side still, we have another young member who soon expects to be on the air with a Z call. He is David Fraser, who lives in Kotara. David, who is 16, is a student at Tech. High and he passed the January examination, his first attempt. Already he is preparing to convert his "P" licence to a full call and his Morse speed is almost there. He has made use of the facilities at Westlakes Radio Club, where the Morse trainer is now fully operative.

Cool autumn nights are conducive to many forms of activity and as far as Amateur Radio is concerned this is so, for I heard Chris VK2PZ in a QSO on 80 metres just recently. He was telling a VK4 friend of his 4-gallon honey tin. The honey, you must know, is used to sweeten tea consumed in large quantities at the PZ ranch. You'd never believe it, but the VK4 thought Chris was pulling his leg. The heavenly beverage gives Chris the strength to keep the boys hard at it at VK-2AXC, the Cessnock Radio Club, where there are now three Z calls busy on the brass. Latest addition is Kent Scott, or "Scotty" to you blokes who know him by his abbreviated handle.

New calls must soon be the order of the day where the black diamonds used to be. Kevin VK2ZKW is making a very definite impact on the populace of Maitland with the new Y.M.C.A. Radio Club there. He has students from school age to several times that figure and all who attend are profiting by Kevin's expert instruction. It takes considerable time and effort to run a radio club efficiently, especially with a large helping of young fry, and help with lectures, administration and the like are welcomed. If you have some free time, please make some of it available to your local club, you'll be very welcome.

SILENT KEY

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

VK2AKB—John Bonnington.

Des VK2ZDN and Neil VK2ZCU are favourite calls at the Westlakes club where they have given some of the boys a chance for real success on v.h.f. This is just the thing to keep the ball rolling and make the best use of the materials available. Varley VK2SF had a clean out of the shack recently and, of course, the clubs benefited again. You can't imagine how useful books, magazines and components can be. I'm not sure if Jim VK-2AHT has yet departed on his global fit, but departure is imminent if not actual—half his luck!

And while on the subject of fits—a not quite global one to Urunga by Tony VK2ZCT and Bill VK2XT resulted in prizes in two contests, despite difficulties. Bill made the grade in the legendary scramble and scored 46 contacts, while Tony came in with a place in the transmitter hunt.

Not everyone has success first time though. Jan the man (VK2BJO) is having all sorts of strife with his gear and has not radiated a signal for weeks, while John VK2ZIG is suffering from crystal sets in the front end which explains the lack of gain. Gordon is making boasts about the efficiency of the new VK2ZSG beam and claims it gives a 4 dollar gain—but to whom he didn't say. Our overseas members, Ron VK2ASJ and Alyn VK2ZAX, are just as active as ever, Ron on the air and Alyn in the Holden—there's rumour that he's going to fit a carphone—rust and all.

I hope nobody had any difficulty in contacting the two zulus early in April. If you did, see me at the next meeting, that's May 5, and I'll explain the finer points. The venue is the usual, Room 6 of the Clegg Building at Newcastle Tech. I'm told that there'll be a film as well as the lecture, so see you, 73, VK2AKX.

BLUE MOUNTAINS BRANCH

The annual general meeting of the Blue Mountains Branch was held at Lawson on Friday 17th March. Twelve members were present. Officers for the ensuing year were elected as follows: Chairman 2NR, Vice-Chairman 2NK, Secretary 2HZ, Treasurer 2ZFZ, Publicity Officer 2TM, Catering Officer 2ZFZ, and Construction Committee: 2ASZ, 2ART, 2TM and Dan Clift.

Bob 2ASZ brought along the 2 mx tx he is constructing for the club station. It is progressing very well, so should not be long before 2AUX is disturbing the ether on 2 mx. The club's 6 mx net is partly airborne and should not be long before it is in full swing.

Don 2ART has moved QTH to the Liverpool area, but his KYL still allows him out to the club meetings. Incidentally, Don has acquired a 18-foot boat with 40 h.p. outboard and intends to go maritime mobile—so wait for the big splash.

Ron 2ADA was absent due to a working holiday in VK5, so yours truly missed out on his usual discussion (?) with Ronald, but will make up for it when said Ronald returns. He is a little stubborn at times, but after a few months of persevering can usually be made to see the light, especially on a certain type of antenna.

Worked Sid 2AVK on 40 mx d.s.b. the other day and he did not swear once or even try to tell a joke. Keith 2ABK had an organ recital the other night so I suppose the township of Lawson had free entertainment that night. 73, 2TM.

CENTRAL COAST BRANCH

The annual meeting of the Central Coast Branch was held on Friday, 17th March. Lindsay 2ON gave his report for the year as President, outlining lectures and activities. The highlight of the report was the annual field day held in February. Despite bad weather and the resultant change of venue, the day turned out to be a great success. The Treasurer, Ern 2EH, gave a most satisfactory financial report for the year.

The office-bearers for the year are: President, Lindsay 2ON; Vice-Presidents, Alec 2AAK and Barry 2BUB; Secretary, Bill 2TS; Minute Secretary, Frank 2AFJ; Treasurer, Les 2AKL; Public Relations Officer, Gordon Procter. As no one felt they could do justice to the job of Publicity Officer, Bill 2TS is to fill in, while Mona 2AXS has a temporary but well earned rest. 73, Bill 2TS.

VICTORIA

VICTORIAN DIVISION STATE CONVENTION As Visited by "Naomi"

The Victorian Division State Convention was held at Paynesville on Saturday and Sunday, 11th and 12th March. Favoured by typically beautiful Victorian weather, those who attended thoroughly enjoyed every aspect of the function. Between sixty and seventy folk

attended the gathering, among them being little Jennifer Owen, complete with pink hair ribbon, and aged just three weeks, while another noticed was Mrs. Horwood (mother-in-law of Bill 3CB) and just ninety-one years young, and marvellously active and interested in everything.

Saturday evening was taken up by the State Dinner, a most enjoyable repast served (with all the trimmings) at the Paynesville Hotel-Motel. After the dinner, the business part of the Convention was completed in probably record time, enabling all to enjoy the rest of the evening in a friendly "Get Together".

For Sunday, an all-day Lakes Trip on the "Tambo Princess" had been arranged, but in spite of the trip having been arranged some weeks in advance, and the arrangement having been confirmed as recently as Saturday, 4th March, our organisers were shocked when they were told (on Saturday evening) that the trip was declared "off" by the owners of the "Tambo Princess". This meant some considerable "racing round," particularly by Ken 3AFJ and Michael 3ZEO, and after some difficulty a substitute trip was arranged.

In the morning, we boarded the "Bluebird" at Paynesville and went first of all to Ocean Grange, where we went ashore for a picnic luncheon. While this was being prepared, some of us made our way over the sand dunes to the ocean beach, where some of the younger, and harder, of the party did a bit of surfing, which appeared to be just what they wanted. On our arrival back at the picnic spot, we found that preparations for our luncheon were well advanced. Considerable credit is due to some of the ladies of our party for the help they gave to the caterers in getting ready the cold chicken, ham, etc., that formed the lunch, and which all hastened to enjoy "to the full".

During the afternoon we were taken for a cruise on the Lakes, and all agreed that this trip was very well worth while. Perhaps the highlight of the afternoon's doings, as far as the youngsters were concerned was when each in turn was allowed to steer the boat all by themselves.

Sincere thanks are due to all the organisers and helpers who made the Convention such a memorable and enjoyable one. I am sure that all who took part were well pleased that they had been to this year's Convention. "Naomi" was, anyway!

EASTERN ZONE

We should have some new Hams on in the future when some of our s.w.l.'s pass their tickets. Gavin Kuch and Ray Malcome are doing the W.I.A. correspondence course at Maffra. Albert Cash is going to sit again later this year, also Trevor Gregory and Bob Stewart hope to have a go soon. Bob has just moved to a new QTH in Moe, but not much room in the new house for s.w.l. receiving equipment, so Bob will spend some time out on field days with George 3ZCG.

14, 21 and 28 Mc. have been giving the boys quite a thrill this season with Reg 3AWV, David 3DY and John 3JW (of Bairnsdale) working many world wide 10 mx stations using s.s.b.

Our 2 mx f.m. channel A network is becoming quite busy during the day and evenings, and the latest two to join the net are John 3AOJ of Sale and George 3AOD of Warragul. This channel is slowly becoming the Zone's v.h.f. net frequency on Friday and Sunday evenings with 3DY Maffra, 3ZPD Sale, 3ZCG Morwell, 3ZPL and 3AWV Yallourn most active.

Reg 3AWV is making a trip to VK4 and VK9 during April to attend a conference and reunion with his children up there.

The most active members on our 80 mx Zone hook-up are 3DY, 3AWV, 3AED, 3JW, 3CJ, and 3APT. We would like more to join in on Friday evenings, so put aside that evening to have a chat with your local Hams. 73, George 3ZCG.

QUEENSLAND

TOWNSVILLE AND DISTRICT

At the last meeting of the local Radio Club, quite a lot of discussion centred around a letter to the City Council with regard to a vacant piece of land on which to erect a club house to be the means of housing station VK4TC and where the members can meet in comfort. Presently, the local studio of the "B" class radio station will be undergoing renovations and the room now used will be required for other uses. This means that the present members will have a hard row to hoe to look for the necessary finance to erect a

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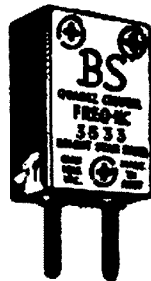
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building, presuming that they are lucky to obtain the necessary building site. I can only wish them every success in their efforts. With youth on their side, the present club members can eventually make their dream come true.

It also appears that one of the local high schools is interested in the Youth Radio Club, the principal being a very keen listener to the Amateur bands, and would like to see some of the students interested. So maybe the local club will be able to help this along.

I can certainly run into strife in trying to glean news of local interest. One of my news spies informs me he heard a local on the air referring to the writer as a nit-wit and a imbecile. Ah well, as Pansy would say, "sticks and stones, etc." so I'll just think how the Amateur Code of being a "Gentleman" seems to be slipping. Forgive and maybe forget the incident.

No news to hand how the two Amateurs in Ingham fared during the recent record flooding of the district and if they require any assistance in getting gear together again.

Glad to read that there has been an increase in the VK4 membership again, even though they have raised the fees. Pity some of the old timers are no longer members and not interested in the I.T.U. See that the Division has to look to ways and means to increase the income. Also finds it hard to fill the executive positions.

Wonder how the recent break-through of the JA stations on v.h.f. affected the t.v. in the fringe areas of channel zero? They certainly romp through when conditions are favourable. 73. Bob 4RW.

BUNDABERG AMATEUR RADIO CLUB

I feel that this time I should give all readers a run down on the club here in Bundaberg. We have a membership of about 30, of whom 20 have call signs. Our constitution requires all to be members of the Wireless Institute of Australia. We have our own club rooms at Avoca St., West Bundaberg, which is divided into class and meeting room, workshop and transmitting room, which houses the h.f. and v.h.f. gear. The club operates under the call sign of VK4BW. A.O.C.P. classes are held each Thursday night and a Y.R.S. class for about 20 lads is conducted each Saturday morning. General meetings are held the first Wednesday of each month at 1930 hours and all visitors are welcome.

During March, club activity in various fields has been high. Bob 4UD, Bob 4ZZE and John 4ZJP are busily engaged in building the club entry in the Centenary Year Raft Race up the Burnett River. As it is the first time a radio controlled raft has ever been seen in this fair city, it should prove a most novel event and invoke much interest among the locals. Work is progressing satisfactorily on the emergency 1.2 kw. alternator. Our sincere thanks to Alby and Jim for their sterling effort here. Also to Reg, Pete and Ian Fry for the trailer. To Bob 4UD for the transformer and to any others who helped with the project. There is still a fair amount of work to do to rig it up, so it may be some time yet before it is completed.

Several of our v.h.f. members travelled to Tewantin at Easter week-end for a v.h.f. field week-end cum convention. The boys really enjoyed themselves and came home with glowing reports of a marvellous week-end. Don 4NK put his first signal out on 6 mx on Sunday, 26th March. With a few more adjustments, etc., Don will be a regular member of the 6 mx net which is running hot these nights organising the VK4 Convention. The chaps on this net would like to hear more callers. What about it, you chaps with 6 mx gear lying idle!

A tape lecture night was arranged for Wednesday, 29th March. The tape on cubical quads, complete with slides, is from VK2 Division, and as there are three quads in various stages of construction in town, it proved to be an enjoyable and instructive night.

Visitors to Bundaberg at Easter included Les 4XJ, George 4ZMG and Ian Binnie, one of our ex-Y.R.S. boys who is now with D.C.A. Roy 4ZWR is home from his recent trip through VK3. Roy made many 6 mx contacts. He also met members of the Moorabbin Radio Club and inspected the transistorised rx recently featured in "A.R." His trip was the subject of a talk given at the April meeting. 73. Rusty 4JM.

SOUTH AUSTRALIA

For some unknown reason PanSy to you, 5PS, the Logie Ham Author, has to have a holiday at this time each year, and hands over this task to "the Gawler gang". And what is 5PS doing whilst away? None of us have been able to find out exactly, but he is likely to

bob up on some frequency or other on a.m. and try to work some of his many friends on s.s.b. The strain must have been too much for him this year in spite of constant monitoring 40 there has been no sign of him. Could it be that he has gone s.s.b.? For we did not look for him on that mode.

Some recent happenings noted at this QTH (5EF) include an interesting cover of mobile operating by Les 5AX from the 6th to 27th March. Les' journey extended from Gawler to Port Lincoln and return, thence to Ballarat and return, during which time skeds were kept on 7074 kc. and at no time was the signal from him other than "loud and clear". Demonstrating a better distance and direction cover for 40 than provided by frequencies used by 5WI for weekly broadcasts at present. The only blot on Les' travels was the mutilation of his whip antenna by some vandals whilst at Port Lincoln. This caused some problems to rectify; he being aided in the task by Lance 5XL, also holidaying there. A lesson is to be learned from this experience, that is, never to leave a whip mounted on the car, particularly when parked unattended. All mobileers please note.

Lance 5XL and his trusty KWM2, whether at Clare or the portable location at Encounter Bay, puts out a potent signal on all bands, enabling him to keep in touch either locally or on the DX.

A contact with the "noisy gang," Frank 5FJ, Athol 5LQ, Lionel 5LB and Jack 5LN, recently uncovered some diverse actions of those gentlemen. Frank informed us that he was to lay carpets in his shack, of the solder-absorbing quality presumably, and that he was engaged in pole climbing for feed line matching and antenna matching, he being determined to have that for a 1 to 1 s.w.r. Jack has been searching for a suitable 100 foot tower at bargain prices (no trade in) and on one occasion took Athol with him. The inspection site turned out to be on the side of a very steep hill, Jack made it, but Athol was restricted to half way up and a distant view only. Come on Athol, more PT and less coffin nails, for when Jack makes the deal he will need assistance to remove it, and we cannot have you going "that-a-way" whilst the rest go "this-a-way". By the way, the floor of Athol's shack is polished dance floor boards, that is how he gives us that reverb effect on his modulation.

It is very seldom these days to get on any DX band and not find Lester 5LC dragging them in in great style. He seems to have a consistently good signal that attracts the distant parts. I agree with you, Lester, that big nets should not be worked other than with vox.

Remember Dud 2DQ? Heard him on the other night after a spell of quite some time. He was talking to Bill 5XB. Come on chaps, dust the gear off and join in more often. For those interested, Dud has a sparkling new 144 meg. converter and awaits a 2 mx signal in his direction. Over to you, Mick.

Al 5MF has his new beam operating on 10 metres and now picks off the DX as he pleases.

Bob 5RI recently heard on 80 metres. Bob was a regular to these parts many years ago and indicates to be active again on both the d.c. bands and on v.h.f. He should have more scope with the latter these days for with the activity at Clare, Port Pirie, etc., to aid the programme, it will be a change from the old days when Bob trod the path on his own from those parts to the city area.

A good test for the linearity of Brian 5BI's gear was to hear a recent contact from him to Vern 5VE, when Brian allowed Dave 5DS to use the mike! Yes Brian his real Scot voice came through first class, no excuse now Dave s.s.b. will carry you.

Have not heard Ron 5KS about much lately. Does Council work keep you too busy Ron, or are you building another super-super?

Excuse me for the following, but this is the only month of the year it is likely to be quoted, you know, "The Thing and all that" but at date the number of Siebenders in VK as listed at this QTH is 931, of which 113 are in VK6 and still they grow. This covers both the 80-10 bands and 6 and 2. For further information on this matter, see May 1968 notes. Hi!

Each year there is a fair sprinkling of VK6s in the Sig. Section of R.A.A.F. in the Anzac March, and Ray 5RK is usually among them. This year, however, his post of President of A.F.A. will take him to the head of things where he will lead the R.A.A.F. By the time you read this all will have happened, but it is mentioned in case you wondered why Ray was not with the boys, but up front.

A certain VK5, whom we will leave nameless, but who mobiles quite a bit, found himself with a flat set of batteries after a long session at the mike whilst stationary. This, in

spite of the fact that he has an auxiliary battery wired into the car circuit. The sight of such a calamity, with XYL querying the wisdom of it all is quite distressing. The solution? Wire in a couple of diodes as per "QST," Dec. 1962. It takes a long time for some people to learn.

Our old friend, Joe 5JO, has had a spell in hospital. Reports at time of writing indicate that he is doing all right and should soon be about again.

Son of a gun, Geoff 5TY has returned from the Easter Convention held this year in Hobart and is looking fitter than ever. Geoff has been doing battle at the Convention for some years now and never lets the opposition put it over sunny South Australia. One of those jobs we members take for granted, but which involve lots of time and effort, particularly in getting answers to the many letters sent or are things a bit different these days?

Had a few words with Max 5GF holidaying at Encounter Bay where he combines hamming with a spot of fishing. Did you find time to make the modulator behave, Max, or were they biting too well?

Lance 5XL, at the same spot over Easter, took the boat out for a run and came ashore with two small fish, while the professionals were hauling them up with great gusto. Anyone tell you Lance you're suppose to hang a worm on that hook thing?

Ran into Brian 5CO, of Port Pirie, in the course of my rambles and was introduced to his two recent additions to the family. No, nothing like that. A member of Rotary, Brian and his wife are looking after two Asian nurses who are doing their training at Port Pirie Hospital. Half your luck, Brian; Lee and Kay are two very charming young ladies.

Several car loads of v.h.f. enthusiasts recently journeyed north to the Hummocks and south to Cape Jervis complete with gear for 52, 144 and 576 Mc. Can't think who they all were, but Bob 5ZDX was at one end and Garry 5ZK the other. Signals on 6 mx were 5 and 5 from whip to whip, which is not bad for 120 miles or thereabouts. On 2 mx, of course, communication was 9 plus, but on 576 Mc. no new records were established. Carriers were heard but no QSO completed. Keep trying and who knows next trip it will be easy.

Youth Radio has its ups and downs. The latest in the field seems to be on the up and up. The Elizabeth Radio Club has eighteen junior members which is all the facilities can handle at present. However if present enquiries are any indication it will not be long before another class is started. In addition to 26 enquiries from juniors, thirteen adults have sought instruction in the gentle art of Ham Radio. The Elizabeth group tackled this extension of the Youth Radio Scheme by implementing an Adult Home Study group which is functioning very well indeed. Club members directly concerned with the running of the classes are Trevor 5ZMT, Allen 5FD and Bob 5ZIA with help from Phil Chamberlain, Steve Johnston and John Eastaif. The ether is certainly going to be congested down Elizabeth way when these all qualify. Good show, fellows.

If you have missed 5EF from some of the frequencies it is only because he is busy doing a 1,000 hour overhaul. A model shack at any time, it will surely be the B.E.S.I.T.S. when finished (sorry, PanSy, I know that's your line, but seeing is believing).

Congratulations to Colin 5ZJH on his recent engagement. Heather, it must be clearly understood, "DX before dishes".

Hardly VK5 news, but of general interest I feel sure. While in VK3, paid a visit to the site of 3MH to have a look at the Sterba curtains on Tomboy Hill (Ballarat), only to find the Sterba relegated to the past. An S.E.C. pylon in course of construction will carry a 3 element on 40 at the 108 ft. level, a TH6 on 20 above that, and surmounted by Yagis for 144 and 432 Mc. Eric 3ZL, who was my guide and is assisting John with the erection, told me there was 7½ tons of steel in the tower alone with goodness knows how many yards of cement to hold the whole thing down. Sorry I missed you, John, but I'll sure be listening for you. 73, from Gawler, 5EF and 5AX.

WESTERN AUSTRALIA

Well here it is, time to waffle on for a few more lines again. What shall we start with? Anyone would think we were embarrassed with a surplus of news items instead of the reverse being the case.

By the time this reaches your tired old optics, the Annual Meeting will be over and a new Council will be at the reins. Perhaps by then sufficient time will have elapsed and a suitable applicant will have been sifted from the forty or fifty volunteers to write "A.R."

notes. To each of the new councillors, we wish good luck and hope that their suggestions will be a guide and a benefit to this Division.

A busy call sign on the bands these days is 6WG, Wally. Apart from regular skeds on 80 and 40 mx, Wally has been active on 6 mx, getting among the JA and KR6 stations.

Inhabitants of the southern portion of the State may be excused for their mutterings about the Loch Ness Monster appearing on local waterways. It would appear that Pat 6PH has been sporting himself behind the controls of a fast marine craft. That in itself is enough to make some of the locals raise an eyebrow or two, but imagine the comment when Aub 6KY got into the act by being towed along behind with a couple of floor boards tied to his feet! Aub tells me that water skiing is great fun, but he would not consider my suggestion that he go mobile marine. Apart from motor boating, Pat is currently building an all-band sideband transceiver—he's a tiger for work.

Heard Tom 6MK operating on 80 mx the other night. Not very often do we hear this call on the lower bands for local rag chews, but it certainly makes for a nice change.

One of my spies reports having heard Mike 6QJ making a re-appearance on the bands after his recent bout with the medicos.

News to hand from Ron 6RS that he was recently visited by K4TML, Dan Summers, and his XYL who were on a six weeks' vacation. Dan would like to hear more VK6 calls at his home QTH in Florida.

Weather satellites are still claiming the attention of "Australians" co-ordinator, Don 6HK, who has recently completed a new helix antenna system.

If any member of the VK6 Division requires confirmation of a QSO with the late G. F. Lucas, VK5LL, please forward particulars of the QSO, together with a stamped addressed envelope, to: VK6DC, 80 McDonald St., Como, and Henry will be only too pleased to complete a card for you.

Peter 6ZEP has graduated from commercial radio and virtually "got with the strength" in the world of t.v. Good work, Peter.

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Our Federal Councillor Roy has returned from the Federal Convention full of praise for the organisers of the Thirty-First Convention. After hearing a run-down on the menu for the Convention Dinner, I'm inclined to agree. I wonder who was responsible for the following gem which rounded off a very cleverly worded menu and toast list?

"You are requested to have a HULL of a good time, so call a CHAMBERLAIN, PIERCE the cork and even if we do get PORTLEY we can take a CRUISE without OWEN anything and RANKIN will have a TAYLOR to PINCOTT your BATTRICK if you HEPBURN it." Wow!

Roy also brought to notice the fact that one VK7 Amateur actually lost his life in the disastrous Hobart fires and others lost all their possessions. A tarpaulin muster at a recent meeting will go to help these folk. If you would like to help, it is not too late to send your donation to the Secretary.

Bill 6WY, his XYL and second harmonic, left Perth about a week before Easter to travel overland to Sydney. The occasion was the venture into matrimony of Bill's first harmonic. Bill suffered a back injury shortly before departure and was in some doubt about the possibility of making the journey. However, I think he was spurred on by the vision of some new sideband gear reclining on the shelves in VK2. I wonder just what will have to be jettisoned in order to bring home the bacon.

There was a possibility that Bernie 6KJ might have to adjourn to the big city for some medical treatment, but at the moment, smoke signals from the southern area are a bit wind-swept and I am not too sure of the position. Hope nothing too serious is in the offing for you OM.

Despite spirited efforts from many directions to dispose of him, old man stork continues to hover above someone's chimney top. One such lucky QTH recently visited was that of Neil 6ZDK and his XYL. Congratulations to you both on the arrival of a baby daughter.

Lucky Tom Provan, 6DP, off on a trip to England and the United States. Business of course, but what a great opportunity to see how the other half lives.

Well, that just about wraps it up for now. 73, Ross 6DA.

TASMANIA

During Easter, the Federal Convention of the Institute was held in Hobart. This is the first time it has been held in VK7 since about 1935, and I'm sure everyone in the Division hopes it is not another thirty-two years before the Convention is held here again. On the Saturday night the dinner was held and on Sunday an all-day trip was arranged to Port Arthur, an old convict prison, near Hobart. In addition to many mainland visitors, a number of Intra-state observers were present. We may well say that the Convention was, at least socially, a success.

The slow Morse practice on the 6 mx net frequency has begun again for this year. If the present rate of Z calls dropping the Z continues, the State will soon have none left.

My spies from the north tell me that Harry 7BR will soon be moving from his present QTH of Evandale and will live in Launceston. Apparently the new QTH has not yet been decided, but it will be a good spot for DX, I'll bet.

That appears to be about all I can think of for this month. Either news is getting scarce or I'm getting forgetful in my old age. 73, 7ZLP.

HAMADS

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FOR SALE: Apache Tx, 150w. a.m./c.w., 110v., time sequence keying, final can be switched to AB1 linear, \$150. Geloso Tx G222, 65w., a.m./c.w., mint condition, \$140. Frequency Meter, LM, with power supply, \$70. Type 3 Mk. II, \$30. Deceased Amateur's equipment. Contact Russell Bradshaw, VK3SX, Phone 82-2152 (Melb.).

FOR SALE: AR68D, \$100; Pye Mk. III., 12v./6v., 53.032 Mc. Rx/Tx, \$40; Type S Power Sup., \$10; Furzehill CRO, d.c. to 4.0 Mc., \$80. VK3AXL, J. A. Ferguson, 594 Plenty Rd., East Preston, N.13, Vic.

FOR SALE: Com. I.F. Receiver, professionally finished, 9 valves, 6 semi-conductors, dual power supplies, xtal u.s.b. and i.s.b. b.f.o., automatic N/L, S meter, selectable gated a.g.c., high stability v.f.o., tunes 3.5 to 4.5 Mc., \$58. Matching 3 tube xtal locked 2 mx converter, \$10. Matching xtal locked 160 mx converter, \$6. Three units together, \$70. Eddystone 898 dial, new in original carton, \$20. Battery tape recorder, new, in original carton, \$11. Several boxes of crystals, 1, 2 and 3-gang ceramic insulated variable capacitors, valves, i.f. transformers, relays, switches, gear driven dial mechanisms, etc.: will sell separately or the lot, \$20. VK3ARZ, 48 Orchard St., Glen Waverley, Vic. Phone 232-9492

FOR SALE: Professionally finished table-top transmitting units; fully metered and switched. 2 mx Tx, broad-banded driver stages, complete with xtals, \$20. 160, 80 and 40 mx bandswitched Tx, complete with v.f.o. and xtals, \$20. 25w. modulator, negative cycle loading, mixer input, together with mike, \$20. Fully switched and fused dual power supply and relay supply, silicon diodes, \$20. All units together, \$75. VK3ARZ, 48 Orchard St., Glen Waverley, Vic. Phone 232-9492.

FOR SALE: Pye Reporter Mk. I., wired for a.c. or d.c. supply, 3 channel operation, \$42. Low band A.W.A. FM Base Station, final pair 2E26s, complete with handset and power supply, \$36. 85 Kc. i.f. strip with six new "Command" type i.f.'s, \$20. Pye Power Supply, 600v. 250 mA., \$24. Radio and Hobbies, 1947-1949, few missing, \$12 the lot or yearly lots \$1.25. 5BP1 CRT, \$1. Many octal valves, 50c each. VK3ZKA, 28 Fiander Ave., Syndal, Vic. Phone 232-7480.

FOR SALE: Pye Reporter Mk. III. Converted to 53.032 Mc. net. Complete with crystals, carrying cradle, power supply and mobile antenna. Unit wired for 6 volt operation. Simple conversion to 12 volt. Excellent condition. \$50. 30 Clarks Rd., East Kellor, Vic.

FOR SALE: Two Pye Reporter Radio Telephone Sets in fair condition; also one Transmitter-Receiver, Type TR1196A, brand new with plugs and wiring diagram. First offer takes. O'Brien, Edgar Road, San Remo, Vic.

SELL: Bendix Frequency Meter, complete, a.c. power supply, book, etc., \$75. VK3SM, Phone 36-4406 (Melb.).

SELL: Hallcraft HT37, c.w., d.s.b. u.s.b., i.s.b., 80-10 mx, good order and condition VK4CK, 72 Canning St., Warwick, Old.

SELL: Heathkit GC1A transistorised 5-band communications receiver, incl. handbook, exc. cond., \$160 o.n.o. Gonset "Super 12" mobile tunable converter, cal. 80 to 10, neg. earth, exc. cond., \$35 o.n.o. 122 Transceivers (2), with handbooks, good working order, \$40 each VK4LU, Peter Long, 63 Eyre St., North Ward, Townsville, Old.

SELL: 122 Set, P.M.G. Rack, Geloso VFO, Valves, Transformers, V.h.f. Parts, at prices to suit beginners. Back copies "OST" also available, VK3ASW, 5 Pippin Ave., Syndal, Vic. Phone 232-5440.

WANTED: Contact with any other Ham trying out sweep generator on high frequency xtal filter circuits (Galaxy). VK3AQ, 383 Warrigal Road, Burwood, Vic.

WANTED: Prop. Pitch Motor or heavy duty Rotator in top condition. Details, weight, price, to VK9BS, P.O. Box 405, Port Moresby, Papua.

WANTED: Transistorised Receiver, Transmitting Equipment, suitable for non a.c. area. Send details to VK6NJ, John Cox, Government School, Binnu, via Geraldton, Western Australia.

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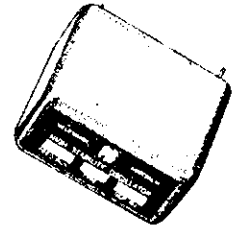
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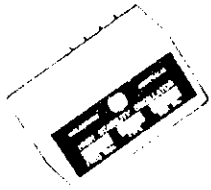
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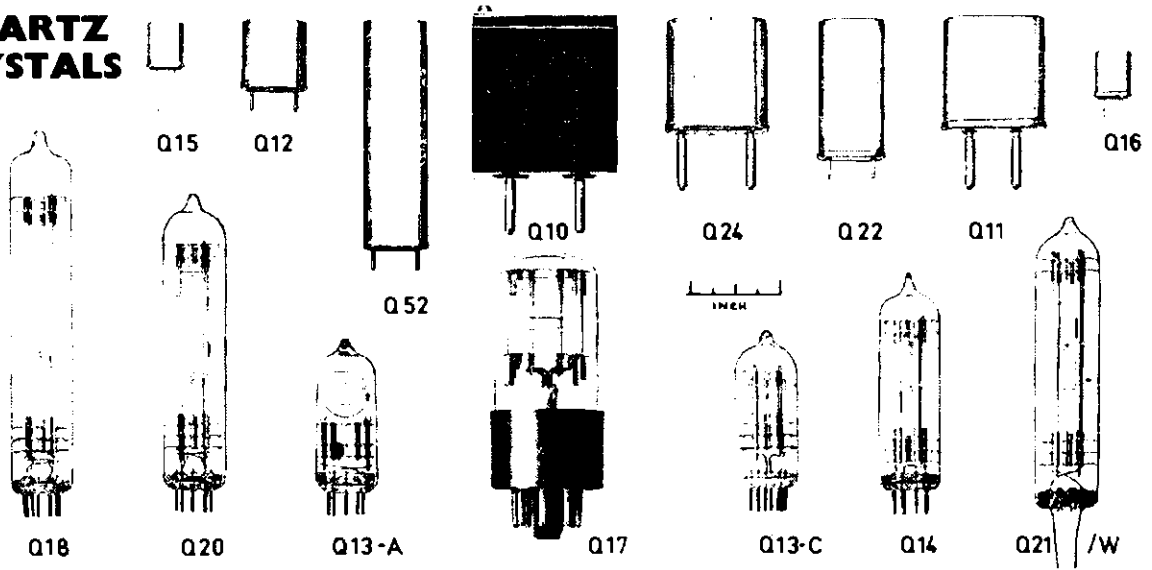


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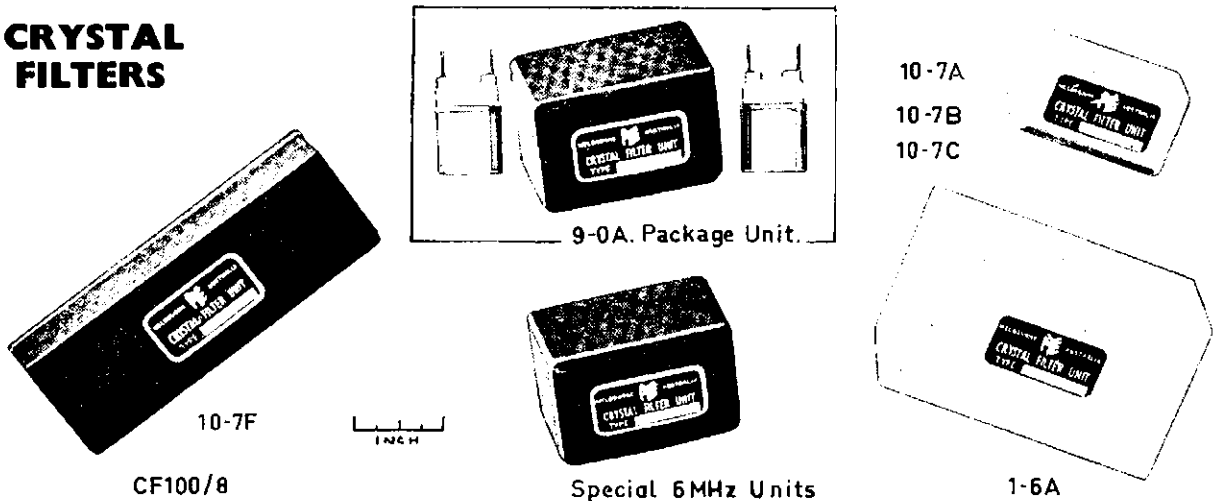


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amateur radio

Vol. 35, No. 6
JUNE
1967

Registered at G.P.O., Melbourne, for
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25c

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"AMATEUR RADIO"

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FEDERAL COMMENT



Listening round the bands these days, one is impressed with the increasing number of interfering signals. Some are speech in foreign languages and some are strange noises that might be teletype, pictures, or anything else. If they go on increasing there will soon be no space for legitimate Amateur traffic.

Listening round the bands, one is also impressed with the attitude of despair displayed by the average Amateur on this subject. When faced with interference he merely moves to a clear spot—if there is one—and makes no attempt to do anything else. This is natural because he does not know what he can do that will be effective.

Listening round the bands, one hears quite a number of Amateurs who obviously have nothing else to do. They may be disabled, ill, or merely retired. But they all represent a great potential in the battle for the frequencies.

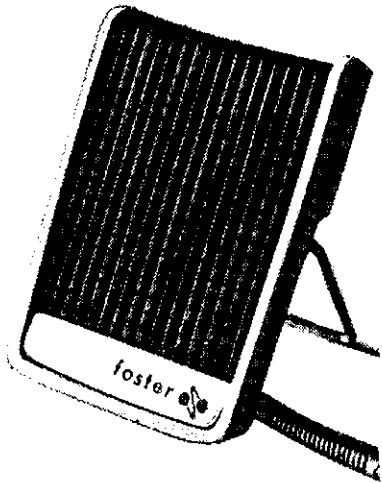
Overseas "Intruder Watches" are organised, expressly to identify these intruding signals. When identification has been ascertained, a report is made to A.R.R.L., R.S.G.B. or other authorities, and real success has been achieved in having these intruders removed from the bands. Australia has no such organisation; but it soon will have! By the end of this year it will be active and will need identifications.

When the Institute calls on the service of Amateurs to man its "Intruder Watch" you will have the correct form to use. Your assistance will be the means by which the Australian Amateur Service will play its part in keeping the Amateur assignments for the Amateurs. If you want to be in it, let us know NOW!

—GEORGE FITHER, VK3VX, Federal Liaison Officer.

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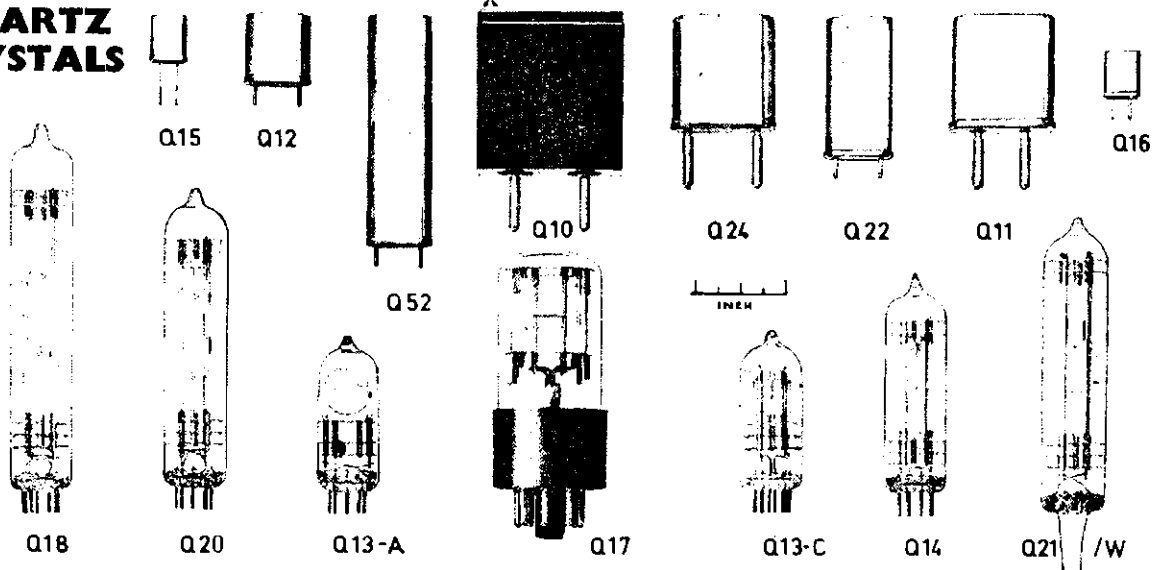
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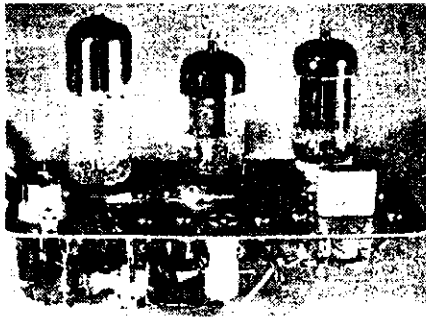
THE VK3ABP SIX-METRE CONVERTER

W. M. RICE,* VK3ABP

THE acceptance by Amateurs all over Australia of the writer's two-metre converter ("Amateur Radio," Nov., 1962) has been most gratifying, and certainly most unexpected. Judging by the letters received, and discussions on the air and in person, it appears that several hundred of these devices are now in service, and in most cases their users are quite satisfied. Possibly one reason for the popularity of the two-metre model was its mechanical simplicity, which enabled practically anyone to build it with a minimum of tools and only a few hours' work.

The commonest query received by the author on the subject (apart from those regarding the few "bugs" sometimes met with the two-metre converter) has been, "When are you going to bring out a six-metre model?" So eventually, to overcome the poor sensitivity and stability of the old home-brew tuneable front-end receiver on six, a six-metre converter was built, even simpler than the two-metre model, and designed specifically to minimise the Channel 0 i.t.v. problems of which Melbourne Amateurs often complain.

It might well be asked in 1967, much more than in 1962, why should we not be "with" the current trend and use transistors? There are good reasons



though for using valves in this particular application, and the presence of a good stock of valves and not too many transistors in the VK3ABP shack was only a minor consideration. The main factor to be considered at this location, even though it is 30 miles from the t.v. transmitters, is that a six-metre beam aimed at ZL will feed at least 20 millivolts of r.f. on 51.75 Mcs. into the converter r.f. stage, and correspondingly more into the mixer. From previous experience with transistors it was known that cross-modulation tends to appear at over about 30 millivolts. In defence of solid state devices it must be admitted that field-effect transistors should be at least as good as valves, but f.e.t.'s are not yet cheap, particularly types having good v.h.f. noise figures.

* 54 Maidstone Street, Altona, Vic.

Most of Melbourne is closer to the t.v. stations than this QTH, and even using valves many of the Melbourne operators on six have cross-modulation troubles. Fortunately, by use of a few simple techniques it is possible to improve on the usual converter circuits very substantially. The important thing is to give the valves the best possible chance, by choice of circuit and operating conditions, to maintain linear operation in the presence of the strong unwanted signal, thereby minimising the extent to which its modulation can be transferred to the weaker, wanted, signal.

several less components, and in the case of the remote cut-off or variable-mu type, is probably the best solution. This implies such types as the 6BY7 or 6BZ6, rather than the sharp cut-off 6EX6 and 6CB6, while the higher gain 6EH7 will probably be worse, and its sharp cut-off version (6EJ7) should not be considered at all!

(3) Do not use high-resistance grid circuits. The r.f. grid must be connected directly to the tuned circuit, the other side of the latter being earthed. This applies even more strongly to the mixer, which should be cathode-biased. The aim here is to

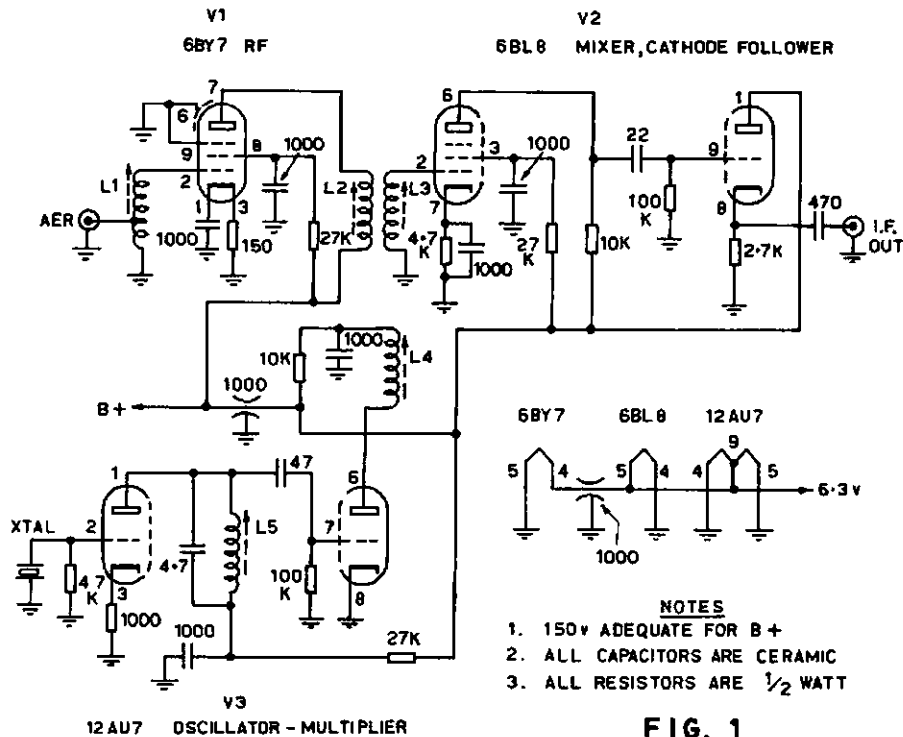


FIG. 1

ANTI-CROSS-MODULATION TECHNIQUES

The following four measures are recommended to minimise cross-modulation, and their implications discussed:—

(1) Do not build in more r.f. gain than is necessary to make mixer noise negligible. Once this aim has been achieved, the proper place to provide gain is in the i.f. system, where the selectivity of the preceding tuned circuits progressively attenuates the unwanted signal.

(2) Use for the r.f. stage a valve and circuit capable of handling large signal voltages without overloading. The cascode circuit is good in this respect, but on six metres, where external noise is often the limiting factor there is no real need for the low-noise cascode. A pentode amplifier requires

prevent the strong unwanted signal from producing grid-current bias, which will of course aggravate any tendency towards cross-modulation. Incidentally, this advice was not followed in the two-metre converter, but cross-modulation is not usually a problem on that band (except in the Sydney-Wollongong Channel 5A area!).

(4) Do not use capacitive coupling between r.f. and mixer stages. This more or less follows from the previous recommendation, since if a tuned circuit must be used in the grid, it is appropriate to use one in the plate also and inductively couple them. A pair of tuned circuits, at around critical coupling, will give a steeper-skirted response than a single circuit can provide, and therefore discriminate more against strong out-of-band signals.

CHOICE OF INTERMEDIATE FREQUENCY

The next point to consider is what intermediate frequency should be used (i.e. what band on the associated receiver should be used as the tuneable i.f.). In practice, for any band, this involves selection of a suitable tuning range so as not to necessitate band-switching to cover the Amateur band concerned, bearing in mind that the receiver frequency stability will be best near the low end of its range, but that converter image and spurious responses will be less troublesome the higher the chosen i.f. Quite likely, the final choice may be determined by what crystals are available!

However, in the six-metre case, there are two other factors which must be taken into account. Firstly, the oscillator frequency should not fall in Channel 0 (45 to 52 Mcs.), unless the nearest t.v. set is several hundred feet away. It is quite surprising how much t.v.i. a few milliwatts of r.f. in the channel can produce! This means that for forward tuning (increasing i.f. means increasing signal frequency, i.e. oscillator below signal), the i.f. cannot be lower than 7 Mcs.

at all. The results of analysis along these lines are summarised in Table 1, which shows what crystal frequencies are necessary in all cases.

I.f. for 52-54 Mcs.	Crystal frequencies using		T-v. channels	
	3rd X2	overtone X3	T.v.i. to	QRM from
2-4	8333	5555	0	0
3-5	8167	5444	0	0
4-6	8000	5333	0	—
5-7	7833	5222	0	—
6-8	7667	5111	0	—
7-9	7500	5000	0?	—
8-10	7333	4889	—	—
9-11	7167	4778	—	—
10-12	7000	4667	—	—
11-13	6833	4555	—	—
12-14	6667	4444	—	—
4-2	9333	6222	1?	1
5-3	9500	6333	1	1
6-4	9667	6444	1	1
7-5	9833	6555	1	2
8-6	10000	6667	1	2
9-7	10167	6778	1	2
10-8	10333	6889	1?	—
11-9	10500	7000	2	—

Table 1.—Crystal frequencies needed for various i.f. tuning ranges.

feedback circuit was not required. In fact it was found with this particular crystal that fundamental oscillation persisted until the 12AU7 was "throttled back" by use of an unby-passed cathode resistor.

It must be explained that fundamental oscillation will not stop the converter working, but is highly undesirable if the i.f. tuning range includes the crystal frequency. Also the presence of more crystal harmonics than necessary will increase the risk of spurious responses.

The layout of the converter is similar to the two-metre version, with the mixer socket in the centre of the chassis plate (3½ in. x 5 in.), the r.f. stage on the centre line near one end, and the oscillator towards one corner. The underneath view (Fig. 2) should make all this clear.

All the coils are wound on small slug-tuned formers of 5/16 in. diameter, which as obtained from a disposals source already had windings on them of 25 or 26 turns in ½ in. length. It was necessary only to strip off turns as required for each tuned circuit. Full details are given in Table 2. The r.f. plate, mixer grid, and multiplier plate coils are inductively coupled by mounting them side by side with their axes parallel at a centre-to-centre spacing of ¼ in.

Coil	Function	Winding data
L1	Aer.-r.f. grid	9 turns tapped at 1
L2	r.f. plate	12 turns
L3	Mixer grid	9 turns
L4	Multiplier grid	12 turns
L5	Oscillator	25 turns

Table 2.—Coil data.

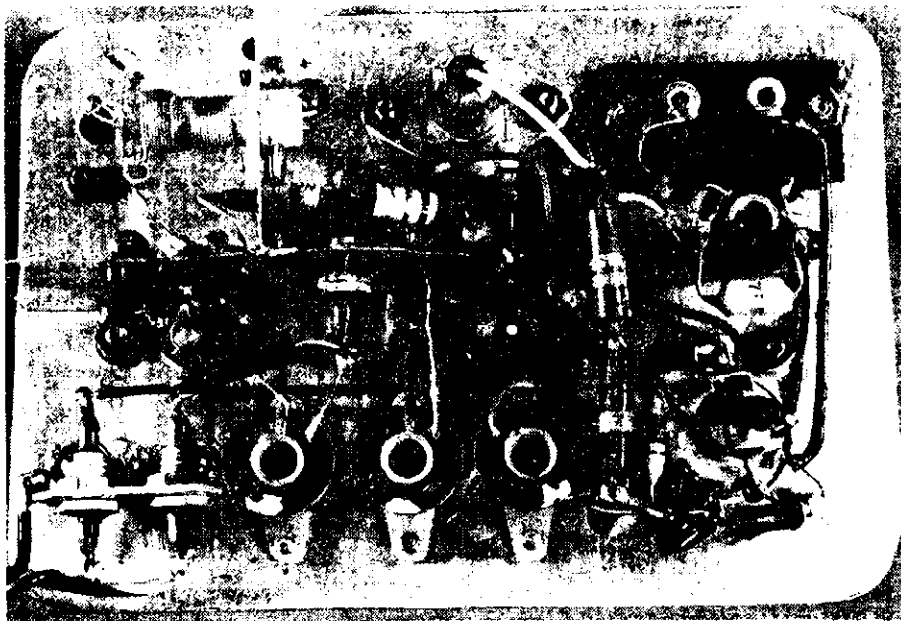
All coils wound on slug-tuned plastic formers 5/16 in. diameter, 28 s.w.g. e.s.c.c. close wound (approx. 50 turns per inch).

Shielding is provided exactly as in the two-metre unit, i.e. a tinplate partition 1½ in. deep which bisects the r.f. socket and finishes at the centre spigot of the mixer socket. Another shield at right angles to the first serves to "wall off" the aerial circuit from the rest of the chassis. It is convenient to mount the aerial coil on this second shield so that its axis is at right angles to the other coils, thereby minimising stray inductive feedback. Socket orientation is such that pin 5 of the r.f. socket is nearest the mixer and earthed to the shield, while pin 4 of the mixer socket faces towards the r.f. stage and is likewise earthed. Heater supply to the r.f. stage is brought in to pin 4 via a feed-through capacitor between the aerial coil and chassis. The r.f. plate supply is bypassed by a feed-through capacitor through the shield near the mixer socket. Plate supply for the mixer and oscillator is taken from the other side of this feed-through. The rest of the layout is virtually identical to the two-metre converter, and is in any case not critical.

ALIGNMENT AND PERFORMANCE

The only part of the alignment process which may give any trouble, and it should be tackled first, is to obtain proper overtone operation of the oscillator. Depending on the type and activity of the crystal used it may be necessary to delete the oscillator

(Continued on Page 15)



Secondly, even if the risk of t.v.i. is accepted, a forward-tuning i.f. below 3.5 Mcs. will cause the image of the Channel 0 signals to appear in the Amateur band. It is this fact which has caused many Amateurs to blame Channel 0 for producing "spots" on the six-metre band when in fact the fault is in their choice of converter i.f.!

We may conclude, therefore, that if it is necessary to use a low i.f. for reasons involving the i.f. receiver calibration or bandswitching, then this can only be achieved by accepting reverse tuning and using an oscillator frequency above 54 Mcs. This only applies of course to areas served by a Channel 0 t.v. station. By similar reasoning, where the local station is on Channel 1 (56 to 63 Mcs.), it is found that reverse tuning should not be used

CONSTRUCTION OF THE CONVERTER

The foregoing discussion should serve to explain most of the features of the converter circuit (Fig. 1) as regards the r.f. and mixer stages. As in the two-metre model a cathode follower is used for i.f. output; there are some differences in the oscillator-multiplier circuit however. Since the multiplier is only required to double or triple (depending on the choice of crystal) there is no need to use a high-gain stage here, and a 12AU7 was found to be quite adequate. The crystal used was a highly active miniature type (unlike the FT243 in the two-metre converter) and no extra feedback was necessary to obtain third-overtone operation, so the capacitive ("Robert Dollar") or tickler-

A TRANSISTORISED TWO METRE CONVERTER

H. L. HEPBURN,* VK3AFQ, and K. C. NISBET,† VK3AKK

THE converter to be described in this article is the first in a series of articles on converters intended for use with the Moorabbin and District Radio Club transistorised 80 metre receiver.

Initially work was commenced on the basis that it would be possible to produce a simple converter using, say, four transistors. Such a converter was in fact produced using an AF186 r.f., an AF114N mixer, and two AF114Ns in

The crystal oscillator chain consists of an oscillator and a multiplier. The fifth harmonic of the crystal is first mixed with the incoming signal after it has been amplified in Q1 and Q2. This brings the first i.f. down to around 27 Mc. This is then mixed with the fundamental of the crystal to give the required output frequency.

In Fig. 1 an incoming signal of 144 Mc. and an output frequency of 3.5 Mc. have been instanced.

required to match the base of Q1, the SE5020 first r.f. amplifier. A common emitter configuration has been used here and provision has been made for application of external a.g.c. if required. The 5K potentiometer across the supply rails acts as an r.f. gain control.

Output from Q1 passes through a second band pass coupler (L3/L4) and C8/C9 reduce the impedance of the tuned circuit to a suitable value for feeding the base of Q2, the AF186 second r.f. amplifier.

A third band pass coupled pair (L5/L6) and capacitive divider (C13/C14) feed Q3, the AF114N first mixer. Output from Q6, the AF114N multiplier, at about 117 Mc., is fed to the emitter of the first mixer.

A single slug-tuned circuit (L7/C17/C18) on about 27 Mc. is used in the collector circuit of the first mixer.

This 27 Mc. signal is fed to the base of Q4, the second AF114N mixer, which also receives injection voltage at the crystal frequency in the emitter circuit.

The resultant output on about 3.5 Mc. is taken from Q4 collector through a fixed pi-coupler (L8, C19, C20).

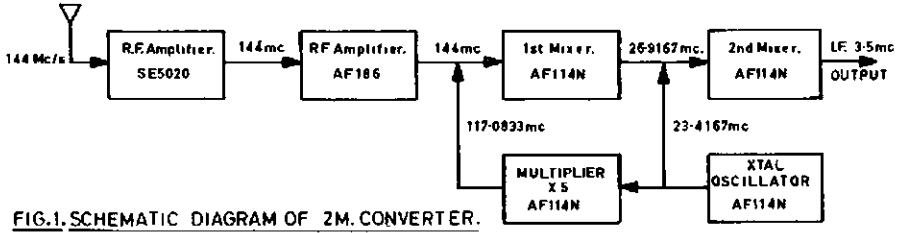


FIG. 1. SCHEMATIC DIAGRAM OF 2M. CONVERTER.

the injection oscillator chain. While this prototype did indeed work, the overall gain of the converter/receiver combination was low and most of the "signals" received were either images of various sorts or "birdies" from the various oscillators. In spite of the fact that some overseas journals had featured articles on simple 2 metre converters of the type originally envisaged, the results obtained were not truly satisfactory. Accordingly a new design was evolved to overcome the problems encountered and Fig. 1 gives a schematic representation.

For other i.f. output frequencies the crystal frequency can be calculated from the expression:

$$\frac{\text{Signal Freq.} - \text{Output Freq.}}{6}$$

Adoption of a double conversion process effectively eliminated images and break-through.

Fig. 2 is the detailed circuit diagram of the converter.

Signals from the antenna at the 50/75 ohm impedance level are fed to a tap on L1 which is tuned by C2 to the signal frequency. L1/L2 form a band pass coupler and L2 is tuned by the C4/C5 combination which also transforms the impedance to the low level

COILS

All coils are wound on Neosid Type 722/1 bakelite formers fitted with F29 iron slug cores. The formers associated with the mutually coupled pairs L1/L2, L3/L4, L5/L6 and L10/L11, are mounted on Neosid 8-lug base plates Type 5200/PLD, while the remaining coils (L7, L8 and L9) are mounted on Neosid Type 5027/PLD four-lug bases.

L1, 2, 3, 4, 5, 6, 10 and 11 all consist of 4½ turns of 22 gauge wire spaced (Continued on Page 11)

* 4 Elizabeth St., East Brighton, Vic.
† 25 Thames Ave., Springvale, Vic.

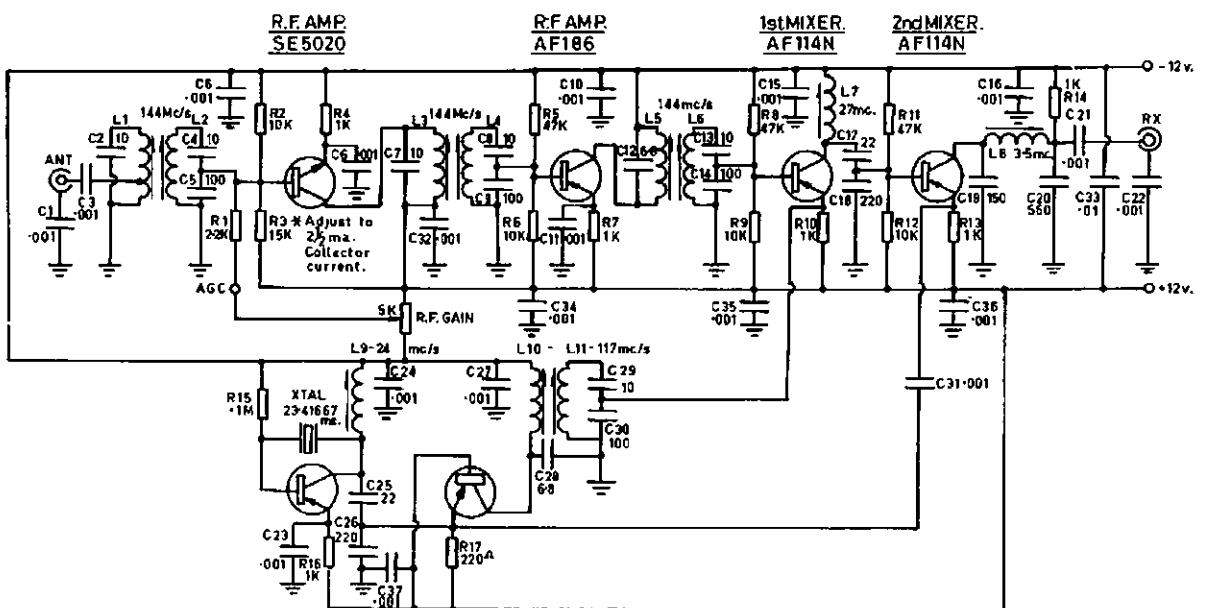
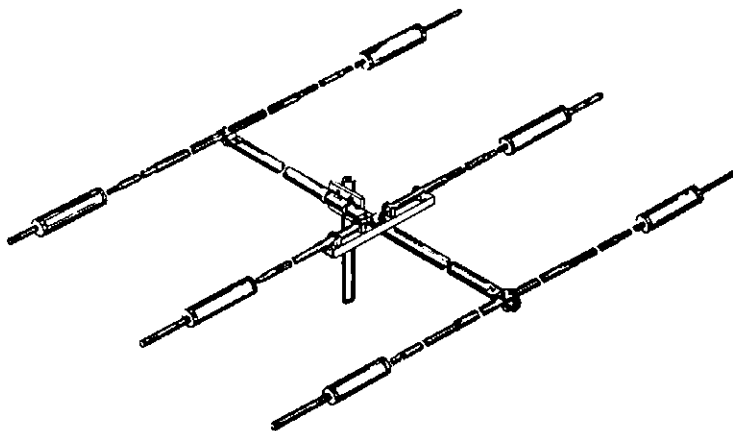


FIG. 2. CIRCUIT FOR 144 Mc/s CONVERTER.

TA-33Jr by Mosley



THREE ELEMENT TRI-BAND BEAM

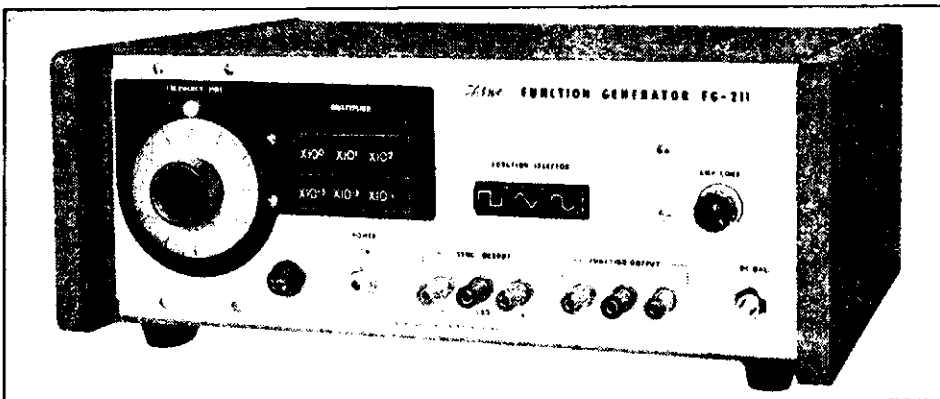
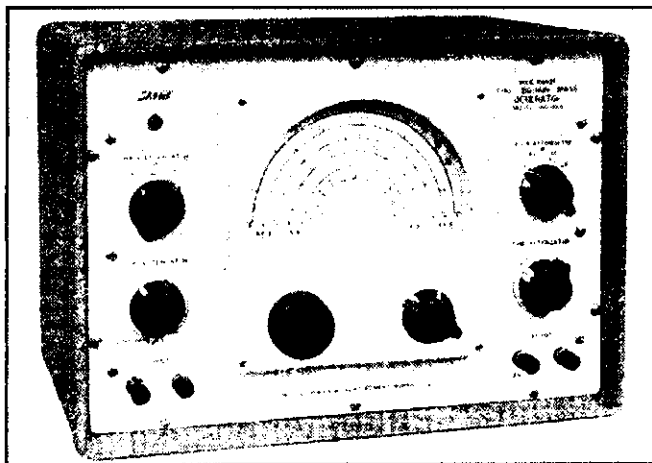
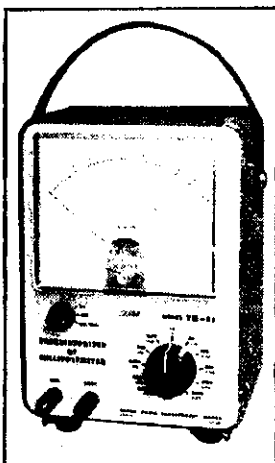
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SPECIFICATIONS AND PERFORMANCE DATA

Forward Gain, up to 8 db.	Wind Surface, 4.3 square feet.
Back-to-Front Ratio, 25 db.	Assembled Weight, 20 lbs.
Max. Element Length, 26 ft. 8 in.	Shipping Weight (Air), 30 lbs.
Boom Length, 12 feet.	Single Co-ax Feed, 52 ohms.
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LONG QUADS FOR 144, 432, 1296 Mc.

I. F. BERWICK,* VK3ALZ

THERE are a number of reasons why the quad yagi is superior in performance to the linear yagi—particularly at the higher frequencies. The writer has been able to demonstrate that the long quad yagi has the following advantages over the long linear yagi:—

- (1) Cleaner, sharper field pattern.
- (2) Less critical matching.
- (3) Better gain-bandwidth characteristic.
- (4) Less affected by adjacent conductors (beams on the same support, etc.).
- (5) Less critical in adjustment.

The dimensions of the 144 Mc. quad are given below. These dimensions should be divided by 3 for 432, and by 9 for 1296.

Element material is $\frac{1}{8}$ " aluminium wire.

The booms for 144 and 432 Mc. are $1\frac{1}{2}$ " dural tube; for 1296 Mc., 1" wood dowel. The elements are supported on top of the boom by clamps.

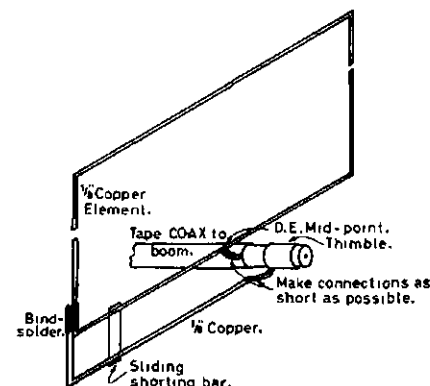


FIG. 1. General arrangement of Gamma-Match.

DIMENSIONS OF 144 Mc. QUAD YAGI

Element	Length inches	Spacing inches
Reflector	87	18 $\frac{1}{2}$
DE	83	
D1	79	7
D2	79	7 $\frac{1}{2}$
D3	79	7 $\frac{1}{2}$
D4	79	16
D5	79	32
D6	"	"
D7	"	"
D8	"	"
D9	"	"
D10	"	"
etc.	etc.	etc.

Two eight-director models have been built for 144 Mc.—one for tropospheric work—the other on an el.-az. mount for Oscar tracking.

Two 24-director models have been built for 432 Mc. The first has circular elements—is used for tropospheric—the second, with square elements, is fitted to the tracking mount. A 10-director model is used on 1296 Mc.

The pattern in both planes was fully explored using the signal from Oscar IV.

An important component in the success of these antennae is the gamma matching system herein described. It is strongly recommended in preference to other systems.

GAMMA MATCH

Fig. 1 shows the general arrangement of the gamma match, while Fig. 2 shows the co-ax. termination at the gamma section.

The gamma capacitor consists of the capacity which exists between inner conductor and the brass thimble through the polythene dielectric—it can be varied by pruning the thimble.

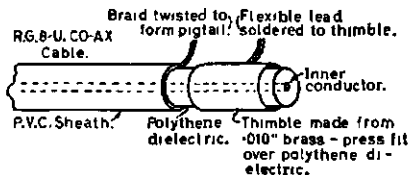


FIG. 2. Termination at Gamma-Match section.

A monimatch reflectometer is used for s.w.r. measurements to 1296 Mc. and is satisfactory for the matching process.

The brass thimble is approximately: 3" long at 144 Mc.

1 $\frac{1}{2}$ " " " 432 "

$\frac{1}{2}$ " " " 1296 "

It is not particularly critical at the lower frequencies.

The gamma rod spacing is:—

1 $\frac{1}{2}$ " at 144 Mc.

$\frac{3}{4}$ " " 432 "

$\frac{1}{2}$ " " 1296 "

A field strength meter should be used in conjunction with the reflectometer during matching—maximum field strength should coincide with minimum s.w.r., if not either your final is incorrectly loaded or reflectometer is inaccurate.

ELEMENT CLAMP

The element clamp is shown in Fig. 3. When the mounting screws are tightened up the clamp should clamp the element tightly.

ARRANGEMENT OF THE ANTENNA

Fig. 4 is the general arrangement of the 144 Mc. antenna, and Fig. 5 shows

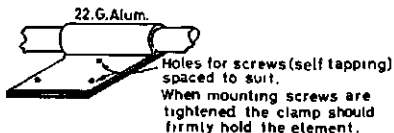


FIG. 3. Element clamp.

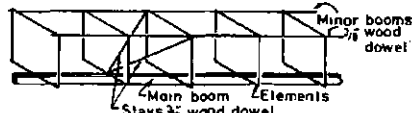


FIG. 4. Antenna & Boom arrangement.

the circular elements for the 432 Mc. model. For 1296 Mc. no minor boom is needed.

MAKING THE ELEMENTS

The driven elements should be of copper or silver-plated brass; the parasitics may be any of the usual materials. If aluminium wire is used, the ends must be joined by the bronzing process described in an earlier issue of this magazine.

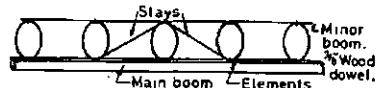


FIG. 5. Circular element 432 Mc/s antenna. (No minor boom for 1296 Mc/s needed.)

FURTHER NOTES

An improvement in front to back ratio can be obtained if so desired by increasing reflector length by about 1%. A reduction in minor lobes and increase in bandwidth can be achieved by tapering directors by up to 1%.

The antenna is horizontally polarised with the gamma section horizontal.

The only limits to increasing performance (with increasing size) with this antenna are the mechanical ones—backlash in rotating system, sway of the supporting structure, etc.

★

Correspondence

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

BEHAVIOUR OF A ZENER DIODE

Editor "A.R.," Dear Sir, In reference to R. L. Gunther's Technical Correspondence in the April issue of "A.R." where mention was made of a zener diode "transmitter," I would like to add a few observations of my own.

Disregarding the rather doubtful origin of the article referred to, an analysis of the behaviour of a zener diode in this circuit suggests that it cannot possibly amplify. In order to achieve amplification, a two terminal device such as a tunnel diode must exhibit negative resistance over its operating range. As far as I am aware, although I have not seen the characteristics of the diode referred to, a zener diode acts as a positive resistance, generally very small dynamically.

Examining the behaviour of a zener diode in a series configuration reveals the possibility of producing class C type current waveforms but unfortunately no power gain is possible. By considering a.c. components, the load current is identical to the input current, while the output voltage is less than the input by the a.c. potential drop across the diode. A similar analysis can be applied to the parallel case and in both instances the power gain is less than unity. Even if zener diodes did exhibit negative resistance, which would impair their regulation abilities, they would be very inefficient since the zener offset voltage contributes nothing to the output and only serves to increase diode dissipation.

I would be interested to hear from anyone who can prove that the transmitter would work or has evidence of one operating successfully, excepting of course "Dr. Gitchagoomie's" device.

—D. O. Clarke, VK5ZKY.

(Did you check publication dates?—Ed.)

* 107 Loongana Ave., Glenroy, Vic.

TWO-METRE TRANSISTORISED CONVERTER

A 144 Mc. Transistor Converter is described, with a noise figure of about 5 db. This is of the same order as a vacuum tube converter using an E88CC in the r.f. stage.

Both the mixer and r.f. stages use AFZ12 transistors. Ground base operation of the r.f. stage avoids the need for neutralisation, while the mixer stage is connected in common emitter with emitter injection of the local oscillator.

The oscillator chain uses two NPN transistors, the first is an oscillator on 35.00 Mc. and the second quadruples to 140 Mc. This gives an output of 4 Mc. to the receiver. Note that no external feedback is required with the crystal oscillator stage using an overtone crystal.

For best noise figure, the antenna tap on L1 should be adjusted with the aid of a noise generator. Since the required source impedance of the AFZ12 is about 30 ohms for best noise figure, the antenna tap need only be slightly higher on the coil than the emitter tap. The 3 db. bandwidths of the output tuned circuit (L3 and C) is about 1 Mc., but quite satisfactory performance

is obtained up to 148 Mc., the drop in gain not being serious.

The types of transistors used in the circuit are not critical and better types may be available than those given. Minor changes in the d.c. parts of the circuit will, however, be necessary if a transistor of opposite polarity is used.

LAYOUT

A copy of the layout used is reproduced here and should help in duplicating the construction of the converter. The "chassis" used was a piece of 18 gauge brass, about 5½ x 3 inches. This size could, however, be considerably reduced, and simply by reducing distances between all components, the original layout could be used on a much smaller chassis.

COIL DATA

- L1—6 turns, 0.3 in. diam., 0.5 in. long, 18 B. & S. Emitter tap: 1½ turns from ground. Antenna tap: Approx. 1½ turns from ground.
- L2—As L1, but base tap 1½ turns from "cold end".
- L3—70 turns, 32 B. & S., 0.3 in. diam. former with slug.
- L4—12 turns 28 B. & S. around "cold end" of L3.

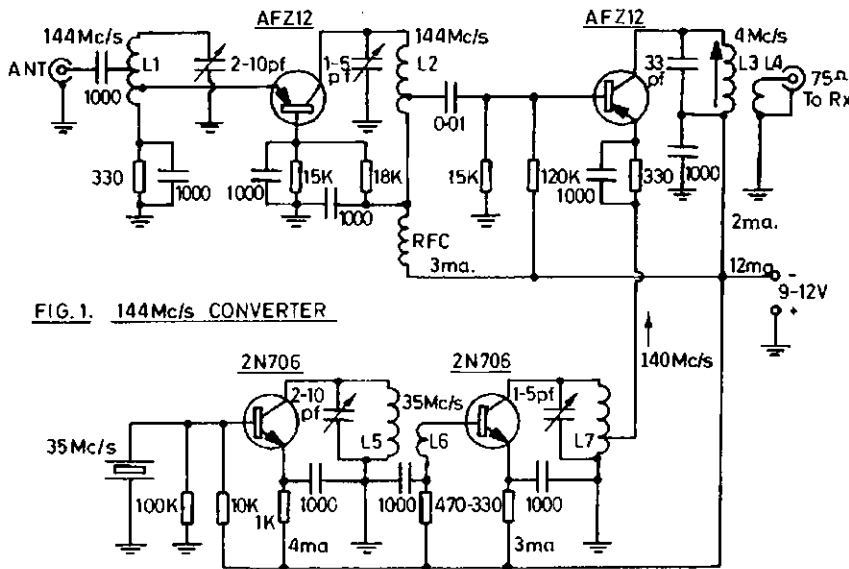


FIG. 1. 144Mc/s CONVERTER

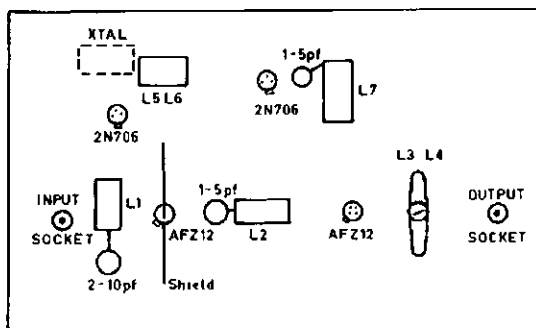
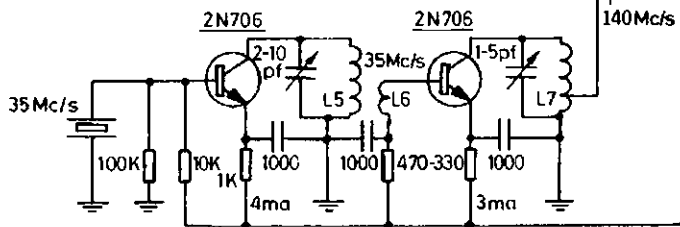


FIG. 2. CHASSIS LAYOUT.

- L5—20 turns 24 B. & S., 0.35 in. diam., close wound.
- L6—2 turns 28 B. & S., interwound with L5.
- L7—As L1, emitter tap 1½ turns from ground.
- RFC—Ferroncube bead around supply lead.

☆

Publications Committee Reports

The committee met on 8th May when correspondence from VKs 3ALZ, 4SS, 5ZYK, 5JT, '73' Magazine and the P.M.G. Department was received.

Technical articles were received from VKs 3AFQ, 3AMK and Paul Rodukoff. The committee considered a suggestion that copy date be advanced to the first of each month in an endeavour to have "A.R." in the hands of the mailing service before other publications, one of which has a circulation of 400,000. After a full discussion, it was decided to try to streamline an already tight schedule to save the few days needed in the preparation of "A.R." and get priority at the mailing service. The matter is to be reviewed in three months' time. Much will depend on the various correspondents getting copy to us on time.

The effect of the heavy increase (25 per cent.) in postal costs was considered, but as it will only affect us for portion of the year, it was agreed the result would not be very great this financial year and the position can be reviewed during the last quarter of our year.

The supply of technical articles on hand was reviewed and found to be satisfactory for our immediate needs. Advertising support was reported as being ahead of budget for the first three months, enabling us to publish three 32-page issues instead of our usual 28-page issues.

W.I.A. D.X.C.C.

Listed below are the highest twelve members in each section. Position in the list is determined by the first number shown. The first number represents the participant's total countries less any credits given for deleted countries. The second number shown represents the total D.X.C.C. credits given, including deleted countries. Where totals are the same, listings will be alphabetical by call sign.

Credits for new members and those whose totals have been amended are also shown.

PHONE

VK3AHO	314/326	VK2JZ	278/293
VK5MS	314/335	VK4FJ	277/294
VK6RU	303/326	VK3TL	255/259
VK5AB	300/314	VK4TY	243/244
VK6MK	288/315	VK2APK	234/237
VK4HR	281/297	VK2AAK	233/237

New Member:
VK3AKS 109/109

Amendments:			
VK4KS	164/178	VK3SM	130/132
VK3TG	140/144	VK2AGH	110/120
VK4PX	139/140		

C.W.

VK3KB	319/342	VK3AHQ	281/293
VK2QL	295/315	VK3NC	266/286
VK2ADE	281/313	VK3ARX	262/270
VK3CX	291/312	VK6RU	258/278
VK4FJ	290/312	VK4HR	256/278
VK2AGH	281/294	VK3XB	249/262

Amendments:			
VK2APK	248/255	VK4TY	236/247
VK3TL	248/251	VK4KS	109/114

OPEN

VK2AGH	310/328	VK2EO	295/316
VK6RU	307/330	VK4FJ	294/316
VK2ADE	305/329	VK4TY	286/298
VK2VN	300/315	VK2ACK	276/300
VK6MK	300/317	VK3ARX	276/284
VK4HR	296/318	VK3TL	275/279

Amendments:			
VK2APK	267/275	VK4PX	169/174
VK4KS	188/205	VK2AXK	111/114

A PARABOLIC ANTENNA

CYRIL EDMONDS,* VK3AEE

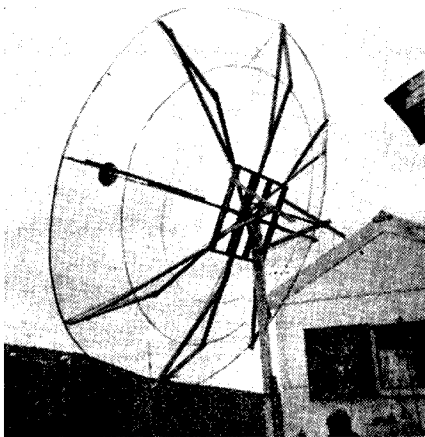
THE building of a "Dish" has been contemplated by the author on many occasions in the past and always postponed due to the difficulties and problems of construction. A start was eventually made on a 15 ft. dish and on completion it became very apparent that, as with many other things, the difficulties are mainly in the contemplation rather than the execution.

The 15 ft. dish was constructed from materials on hand and the final results were so gratifying that an immediate start was made on a 30 ft. version which would have sufficient gain for "Moonbounce".

In the case of a theoretically perfect parabolic reflector which would give a parallel-sided beam, i.e. infinite gain, there are three main requirements:—

- Point source, illumination of the reflector.
- Even illumination of the whole of the reflector surface.
- Perfect parabolic shape.

In the practical case one must use an illuminating source, such as a half-wave dipole. This in turn does not have a radiation pattern which is the same strength in all directions (even illumination). Also it is desirable that all radiation in the desired direction come from the reflector and not from the exciting dipole direct.



The exciting source was therefore chosen to be a dipole with a disc reflector firing into the parabolic reflector.

The focal length of the parabola was chosen for the best compromise between this and the theoretical considerations of (a) and (b).

Certain departures from perfect parabolic shape can be tolerated before degradation of the beam and minor lobe structure becomes too severe and a consensus of opinions seems to indicate an inaccuracy limit in the order of one-tenth wavelength which, in the case of 432 Mc., becomes nearly three inches. As one-inch construction toler-

ance is quite easy to maintain, this was not considered a problem.

By the same consideration, $\frac{1}{2}$ inch mesh chicken-wire was chosen as the material with which to cover the reflector. In the final results these points seemed perfectly justified and judging by the experiences of others would probably be quite suitable for 1296 Mc. Basic measurements and parameters of a parabolic reflector are:—

- Diameter,
- Shape,
- Focal length.

The diameter is chosen to suit the particular requirements and/or limitations, in this case 15 ft. and later 30 ft. The shape can be derived from the formula $Y^2 = 4AX$, once the focal length has been decided (see Fig. 1).

- Y is distance along Y axis.
- X is distance along X axis.
- A is focal length.

Example: Focal length is 8 ft., find point P.

$$Y^2 = 4AX \therefore Y^2 = 4 \times 8 \times X$$

$$Y = 6 \text{ ft.} \therefore 6^2 = 32X$$

$$\therefore X = 36 \div 32$$

$$= 1 \text{ ft. } 1\frac{1}{2} \text{ ins. along X axis.}$$

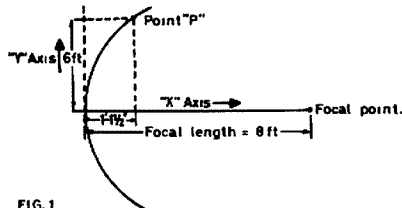


FIG. 1.

Calculations and measurements indicated that a half-wave dipole with a disc reflector spaced one quarter wave would have a 6 db beam width of approximately 105 degrees. On this basis the focal length was made 8 ft. Illumination 6 db down at the edges of the parabolic reflector was chosen as the best compromise between even illumination and "spill-over" (power lost because it misses the reflector).

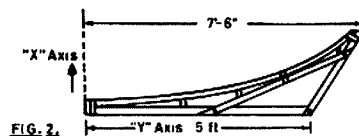


FIG. 2.

CONSTRUCTION

The first step was to work out the X and Y co-ordinates for the focal length of 8 ft. (see Fig. 3). The constructing materials were 2" x 1" oregon (an old wooden mast in the junk box), $\frac{3}{8}$ " doweling (local hardware), $\frac{1}{2}$ " mesh chicken wire, wood screws, 1" nails and tying wire.

The parabolic curve was marked out on a piece of level ground. Three pieces of 2" x 1" were then made into

a triangle and a length of $\frac{3}{8}$ " dowel (which bends easily) was then fastened to the triangle by means of straps and spacing pieces (see Fig. 2) to have the required shape.

This is the frame for the radius of the dish, eight are required and are fastened together as the spokes of a wheel.

Y Axis	X Axis
1'	$\frac{3}{8}$ "
2'	$1\frac{1}{4}$ "
3'	$3\frac{3}{8}$ "
4'	6"
5'	$9\frac{3}{8}$ "
6'	$1' 1\frac{1}{4}$ "
7'	$1' 6\frac{3}{8}$ "
7' 6"	1' 8"

Figure 3.

A wooden framework 3 ft. by 3 ft. is made of 3" x 1 $\frac{1}{2}$ " timber and is the hub to which the eight spokes are fastened, by means of wood screws and brackets (see Fig. 4).

The pivoting and rotating arrangement is fastened to the underside of this frame.

A 15 ft. diameter ring was then made of $\frac{1}{2}$ " dural tube and fastened to the outer ends of the spokes.

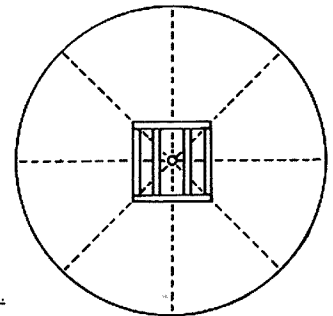


FIG. 4.

The chicken wire, which is 3 ft. wide, is then laid across the dish tightly, but without stretching, and tied to the shaped dowel with tie wire. Adjacent lengths should butt each other at the centre of each run and overlap slightly towards the edges to allow for the curvature of the reflector. They are then joined together with more tie wire. The twisted joins in the chicken wire were run in the same plane as the feed dipole.

The feed dipole is mounted on a tubing mast in the centre of the dish, of such a length that the dipole is at the focal point, i.e. 8 ft. The coax. cable (72 ohms) runs up the inside of the tubular mast and the mast itself is guyed in a central position by means of four nylon guy wires which are fastened to the edge of the dish.

The s.w.r. at the design frequency, after adjustment, was better than 1.2 to 1.

(Continued on Page 15)

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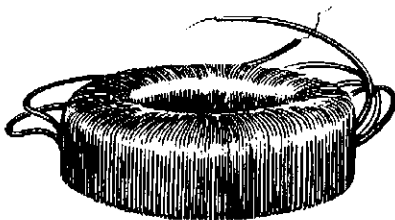
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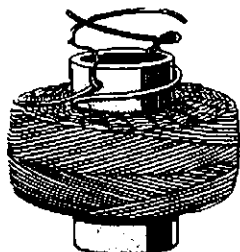
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A TRANSISTORISED RECEIVER—FURTHER IDEAS

HAROLD HEPBURN,* VK3AFQ

IN the March 1967 issue of "A.R." it was mentioned that modifications could be made to the Moorabbin project receiver to cover frequencies other than the design range of 3.5-4.0 Mc.

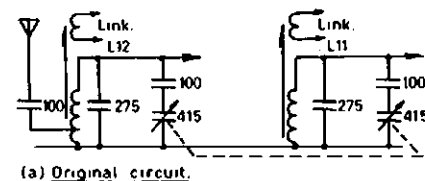
Ced Smythe, VK3ACH, has evolved a very simple and worthwhile system along these lines and I am indebted to him for permission to pass it on to interested readers. When modified, the receiver will tune 1.6 to 5.0 Mc. in five (unequal) bands, thus allowing reception of the 160 metre Amateur band, fire, C.F.A., oil rig, small ships and fishing fleet frequencies as well as the Sydney University station VL2UV.

In addition, one switch position gives a clear megacycle coverage which is very suitable for use with v.h.f. converters, while another gives the original design range of 3.5-4.0 Mc. By using the local oscillator 455 Kc. below the signal frequency an additional range is obtained.

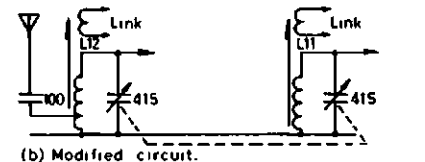
Table 1 details the approximate ranges available after the modifications have been made.

Switch Position (See Fig. 2)	Coverage Kc.
5	1600 - 1900
4	1900 - 2250
3	2200 - 2850
2	(a) 2800 - 4100 (b) 3700 - 5000
1	3500 - 4100

Table 1.



(a) Original circuit.



(b) Modified circuit.

FIG. 1. R.F.-MIXER STAGES.

R.F./MIXER STAGES—MODIFICATIONS

L12 (the r.f. coil) and L11 (the mixer coil) are rewound as shown below. In both cases the original Ducon Q2 pot cores are used. The pin connections given are those used in the project instructions.

L12—R.F. Coil:

Pin 3 to Pin 2—5 turns, 29 B. & S.
Pin 2 to Pin 1—20 turns, 29 B. & S.
Pin 5 to Pin 4—2½ turns, 29 B. & S.

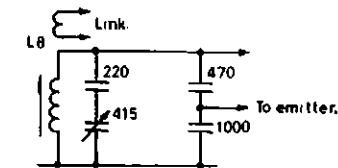
* 4 Elizabeth St., East Brighton, Vic.

L11—Mixer Coil:

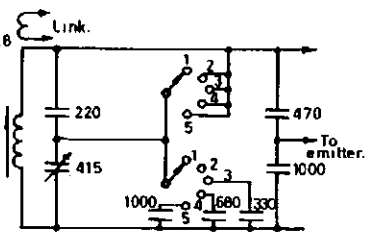
Pin 3 to Pin 1—25 turns, 29 B. & S.
Pin 4 to Pin 5—1½ turns, 29 B. & S.

Reference to Fig. 1 will show that, in addition to rewinding the coils, the two 100 pF. series condensers are removed and replaced with a "jumper" and that the two 275 pF. condensers have been removed completely. Each section of the two gang condenser is thus connected right across its associated coil.

With these simple modifications the front end will cover 1.6-6.5 Mc. Such a wide coverage calls for some form of reduction drive. One of the small 1½" diameter Japanese types having a 0-100 scale will do admirably and fits the space available without interfering with the layout of other components. It is of course essential to provide an insulated coupling between the drive and the spindle of the two gang condenser.



(a) Original circuit.



(b) Modified circuit.

FIG. 2. LOCAL OSCILLATOR.

LOCAL OSCILLATOR STAGE—MODIFICATIONS

No modification is made to the original oscillator board but a small 2 pole 5 way wafer switch and three condensers are added. Fig. 2 shows the circuit before and after modification.

The switch is mounted centrally above the r.f. and a.f. volume controls on the left hand side of the front panel. The three extra condensers (which are preferably 2½% silver mica components) are mounted between the switch contacts and a common bus wire anchored to the variable condenser frame. The extra leads from each side of the 220 pF. series capacitor must be of stiff wire to ensure mechanical stability. The lead from the junction of the 220 pF. series capacitor and the tuning condenser is best taken from the stator terminal on top of the tuning gang.

Position 1 of the switch leaves the added components out of circuit and thus the original frequency range is not altered.

Position 2 of the switch short circuits the 220 pF. series capacitor and thus increases the coverage in the low frequency direction.

Positions 3, 4 and 5, besides keeping the 220 pF. series capacitor shorted out, also progressively add parallel capacity to the circuit and thus extend the low frequency coverage still further.

When in Position 2, the range of the oscillator is 3255 Kc. to 4555 Kc. If the oscillator is used on the high side of the signal the resultant signal frequency range will be 2800-4100 Kc. If, however, the oscillator frequency is used on the low side of the signal the resultant signal frequency range will be 3710 to 5010 Kc. Since there is plenty of selectivity in the front end either of these ranges can be chosen simply by the appropriate setting of the r.f./mixer dial.

As a guide to the setting of the r.f./mixer dial, 5 Mc. appears at a reading of about 25, while 1.6 Mc. appears at a reading of nearly 100.

TWO METRE CONVERTER

(Continued from Page 5)

over 1". These eight coils are first wound on a 5/32" drill shank, the termination bent over to enter the lugs on the base plates and then sprung over the coil forms and soldered in place.

L1, the aerial input coil, is tapped one turn up from the earthy end for the antenna connection.

Screening cans may be fitted to the coils after completion but were not needed in the prototype.

L8, the pi-output coil, consists of 55 turns of 36 s.w.g., while L7 and L9 consist of a 20-turn winding of 32 s.w.g.

Fabrication of the coils is made easier if the enamel covering is the pink tinned polyester type sold under various names, but which takes solder without the need for scraping away the insulation.

The complete unit is constructed on a 5½" x 3" printed circuit board using the "maximum retained copper" technique. The positive and negative supply rails are kept as separate entities and all d.c. returns, i.e. emitter, base and collector resistors, made to these rails. All other earthy terminations, i.e. ends of coils, condensers, etc., are made to the main mass of copper which is earthed directly. Both supply rails are liberally decoupled to earth with 1000 pF. ceramic discs and thus the converter can be used with either pole of the supply earthed.

It is the intention of the Moorabbin Club to assist those interested in making this converter and within a week or so of this article appearing in print a complete kit of parts will be available. It is estimated that the price will be \$29.75 including a crystal to give output on 3.5 Mc.

Queries should be addressed to the Hon. Secretary, 4 Elizabeth St., East Brighton, Vic.

GETTING STARTED ON 6

A. F. BIRCH,* VK2ZFB

THIS article is intended to assist and advise, not only the new-comer to 6 metres, but also the class of operator who, through no fault of his own, has had little or no experience in building equipment of his own.

DESIGN

Some thought must be given to the purpose of the unit to be described, the user's requirements and his specifications, shape and size, circuit design and lastly component layout—the last named being the function which will eventually greatly assist the operator in getting into and servicing his equipment with the least inconvenience.

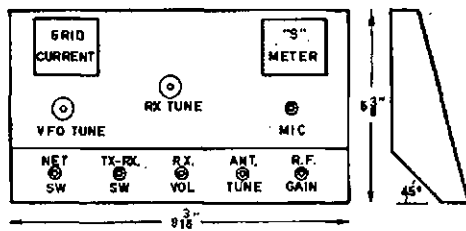
It is relatively easy work to prepare a circuit which will include all functions to meet the user's specifications and then build a cabinet around it, but somewhat harder work and thought must be given to the task of having a cabinet of a certain size and shape available and putting all desirable functions inside it. It is sincerely hoped that the following article will assist in this way.

METALWORK

There is no doubt that metalwork is the greatest bugbear to about 90% of all home constructors, however I found my fellow Ham to be a very helpful and friendly person, and would advise that you seek assistance if you cannot do it yourself.

For this type of unit there are several types of cabinets available, from the Playmaster to the several varieties of Taxiphone units, which can be used as a case for your unit. The author has used successfully the Pye "Ranger" cabinet, a beautifully made unit, adequately ventilated and shielding the equipment inside.

The panel is from the original cabinet but has the complete front cut out, leaving a 3/16 inch flange all around, to which a new front is fitted of 18 gauge mild steel or brass. After spot welding or soldering, the joint is filled with nitro-cellulose stop-putty and finished off to give a roll-over edge.



The new panel is cut out to take the controls shown in Fig. 1.

The chassis measures 12 1/2 x 8 1/2 in. outside (including flanges) and is 1 1/2 in. deep. It is fitted with side brackets, which are attached to the panel by eight mushroom-head chromium plated

* 74 Morris Street St. Marys, N.S.W.

screws (1/8 x 1/4 in.), at the points marked "X" on the panel layout.

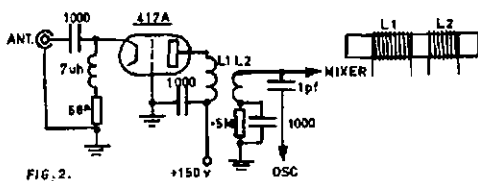
Apart from shielding around the v.h.f. converter section, and drilling and socket mounting, your metalwork is finished.

Careful layout of sections and placement of components has resulted in no further shielding being found necessary, i.e. between stages in the tuneable i.f. or between modulator and r.f. sections, etc.

Later in this article full details of chassis layout, circuits and placement of major components and switching will be given.

THE CONVERTER

A number of features were considered in the choice of the r.f. amplifier, the main features being simplicity, ample gain, freedom from cross-modulation and a reasonable noise figure. The tube chosen was a single 417A in grounded-grid configuration (Fig. 2), this being followed by a conventional 6U8 pentode mixer and triode as a cathode follower output.



Of all the u.h.f. triodes designed for grounded grid service, the 417A has by far the highest transconductance and above all the most ideal pin connections.

A capacitive connection to the input cathode was chosen, not only because of its simplicity, but because it was a case of matching 72 to 200 ohms and with capacitive coupling the main point is that the value of C should be such that X_c at 52 Mc. is as low as possible, X_c of 1,000 pF. at 52 Mc. being 0.3 ohm approximately.

R.f. chokes must be inserted in both heater leads, one being earthed, the other to the heater supply voltage and by-passed at the supply end. The other is shown in the cathode circuit and all are of 7 uH. They are wound on a high value resistor, 5/16 in. diameter, and consist of 44 turns of 30 g. B. & S. wire, close wound.

L1 and L2 are wound on a length of Aegis coil former, 5/16 in. diameter, with 26 g. B. & S. enamelled wire. L1 is 16 turns close wound, L2 is 10 turns close wound with a separation between the two of approximately 1/4 inch. Resonance is very easy to attain with the iron dust slugs inserted from the outside ends.

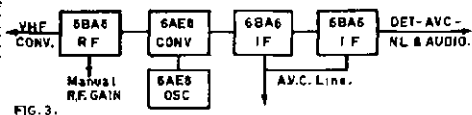
The 6U8 stage is the conventional circuitry and the oscillator is one half of a 12AT7, using a 43 Mc. crystal.

THE TUNABLE I.F.

A range of 7-10.5 Mc. was chosen, the full 4 Mc. could be used if so

desired, provision being made for tuning down to 50 Mc. for JAs and ZLs.

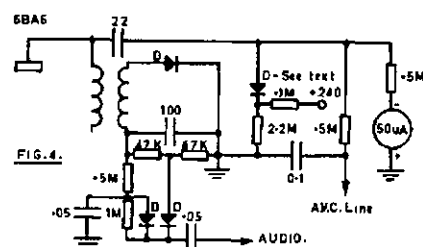
These stages are quite conventional and there are a variety of circuits available to suit the particular builder's requirements. Note, however, that delayed a.v.c. (as shown in Fig. 4) is applied only to the two i.f. stages and that manual gain is derived from a 5K potentiometer in the cathode of the r.f. stage.



A.v.c. is left on all the time, because of the QSB on distant signals, there being no need for switching here.

Although the author has one of the lowest noise QTHs in Sydney, the noise limiter is also left in circuit all the time as an added precaution against those unwanted disturbances, no loss of signal being noticed.

All the diodes shown may be either OA200 or OA202, and the noise limiter shown was used with great success on a BC348 communications receiver.



THE MODULATOR

For the microphone pre-amplifier there are a number of low noise tubes that may be used, but the E83F happened to be on hand.

The modulation gain control is a pre-set potentiometer and may be run flat out without over modulating. It is a separate control from the receiver audio gain, so that the 0.5 meg. isolating resistors from the grid of the first voltage amplifier are necessary to prevent interaction of the two controls.

The driver stage is a self-balancing paraphase p.p. inverter, R-C coupled to the 3/10 modulator, which Mullard recommend the use of a limiting value of 100K in the grid circuit in class AB1 operation.

Minus the E83F (Fig. 5), by looking at the switching arrangement, the 12AX7 and the 3/10 become the receiver audio frequency output. This switch performs the tx/rx function and apart from the net switch, is all the switching necessary within the unit.

The unit is designed to run off a d.c.-d.c. converter or from an a.c. source power supply, hence no standby position is desirable in the unit, particularly when operating from a tran-

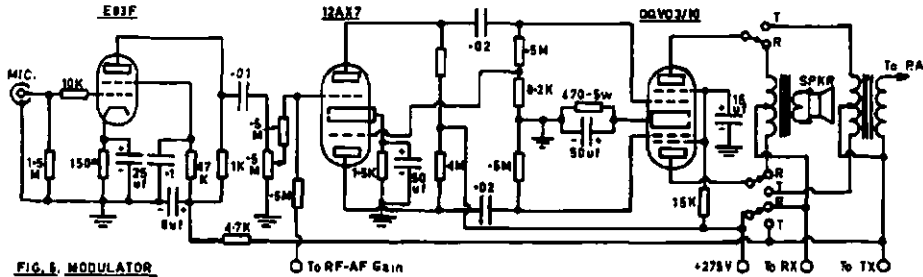


FIG. 6. MODULATOR

sistor supply. But when running on an a.c. supply the standby position can be incorporated in the power supply, by breaking the centre-tap of the transformer secondary. Also by incorporating no standby position in this switch, the voltage can be left connected to the plate of the 3/10 and 12AX7 all the time.

The modulation transformer is a 522 type, which is a close match for the 3/10 modulator to a 3/10 parallel connected final amplifier to be described next. The speaker transformer is a 10,000 ohms p.p. load type with any desirable voice coil impedance.

(3) The final tank, a pi-network, is set for maximum output at 52.300 Mc.

Final grid current was found to vary very little either side of 2.5 mA. and the r.f. power output was measured with a commercial type meter at 12 watts.

The reason for paralleling the 3/10 and using a pi-tank circuit was that the unit is used as a home station rig as well as a mobile unit, and this allows for matching the output to the load with a range of different impedances, as in a vertical whip or a yagi antenna.

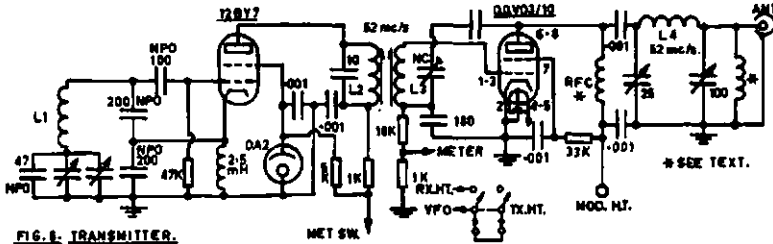


FIG. 8. TRANSMITTER.

THE TRANSMITTER

The oscillator employs the Clapp v.f.o., operating on a fundamental of 17.333 to 17.555 Mc., giving a range of 52.000 to 52.600 Mc.

In the interests of stability, which has been very favourably commented on, zero temperature co-efficient capacitors have been used throughout the v.f.o. tank and, further, the screen of the 12BY7 has been voltage regulated at 150v.

The plate circuit is on 52 Mc., with a slug tuned coil and a 10 pF. capacitor across it. The grid of the paralleled 3/10 is also tuned to 52 Mc., the two coils being wound on 3/8 inch formers with about 1/4 inch spacing between the coils, which are both mounted vertically from the chassis. They are pre-set and staggered to about 100 Kc. either side of 52.300 Mc. and in actual operation tests have shown that with the v.f.o. tuned through its full range, the final grid current and incidentally both final plate current and r.f. output will only vary by a very small amount.

Alignment of tuned circuits is as follows: Firstly, the v.f.o. be calibrated in terms of the operating frequency.

(1) It is set to 52.200 Mc. and the following tuned circuits peaked for maximum final grid current and p.a. tank tuned for maximum output.

(2) The v.f.o. is then set to 52.400 Mc., the oscillator plate is left untouched, but the final grid and plate circuits are peaked as before.

However, some trouble was found in respect to local reception of Channel 7 (181-188 Mc.), from radiation of the 7th harmonic of 26 Mc. when using a 13 Mc. v.f.o. in an earlier rig.

This rig used two doubler stages before the final and after much thought on the subject it was decided to go higher in frequency with the v.f.o. and eliminate one stage, hence the 17.333 Mc. v.f.o. and the elimination of the 26 Mc. component.

TX COIL DATA

L1 (v.f.o.)—15 turns 22 B. & S., 3/4" diam., spaced 16 t.p.i.

L2, L3—On iron slug formers, 3/4" diam., 7 turns for L2, 6 turns for L3, but left open to suit available formers.

L4 (final tank)—5 turns, 14 gauge, 3/4" diam., spaced 1/4" between turns.

The plate tuning and loading capacitors are of 25 and 100 pF. maximum and of screwdriver adjustment. The loading capacitor will need a 100 pF. fixed high voltage type across it and, of course, the r.f.c.

The r.f.c. could be left out if the proper precautions were taken with the blocking capacitor, plate tuning and loading capacitors having suitable voltage ratings, but I'll give a good reason why it should be there.

In my own unit, after removing it I developed a very bad case of modulation accompanied by r.f. feedback as well as two mates about 20 Kc. either side of the carrier. The whole case and cabinet was hot to r.f. and to cure this state of affairs I had to turn the modulation gain down to a point where I had a reported 20% modulation. As a last resort, I wound a new r.f. choke for this spot and I'm happy to say I ended a most frustrating period.

COMPONENT LAYOUT

The dimensions given in Fig. 7 for component layout will provide no difficulties in wiring, but may be varied as desired if it is to be fitted into another cabinet of a different size.

(Continued on Page 15)

The neutralising circuit is quite conventional, the 0.001 uF. in series with the adjustable capacity, being a precaution against voltage breakdown in the small type variable capacity used.

T.V.I.

This rig is used at a location about 35 miles from the local Channel 10 transmitter and no trouble is experienced with the low power used, on the 4th harmonic.

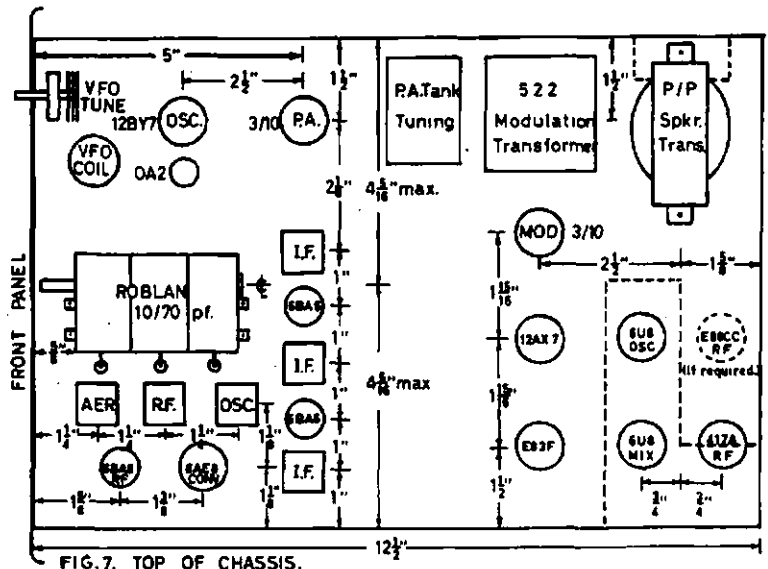


FIG. 7. TOP OF CHASSIS.



- ★ SW350 five-band a.m.-c.w.-s.s.b. Transceiver.
- ★ SW400 five-band a.m.-c.w.-s.s.b. Transceiver.
- ★ SW500 five-band a.m.-c.w.-s.s.b. Transceiver.
- ★ SW230XC 240v. a.c. Power Supply with Speaker in Matching Cabinet.
- ★ SW410 five-band Transistorised V.F.O.
- ★ SW22 Adaptor for extra V.F.O.
- ★ VX1 Plug-in Vox Control Unit.
- ★ SW45 five-band Manual Mobile Whip.
- ★ SW55 five-band Remote Automatic Mobile Whip.
- ★ WFS500 12v. d.c. 500 watt Mobile Power Supply.

OTHER EQUIPMENT

- ★ Galaxy Transceivers and Power Supplies.
- ★ Hallicrafters:—
SX146 all-band Amateur Receiver.
HT46 all-band Amateur Transmitter.
SX122 high class general coverage Receiver.
- ★ Hy-Gain, Mosley and Newtronics Beam Antenna.
- ★ Unadilla Cubic. Quad Antenna.
- ★ Antenna Rotators.
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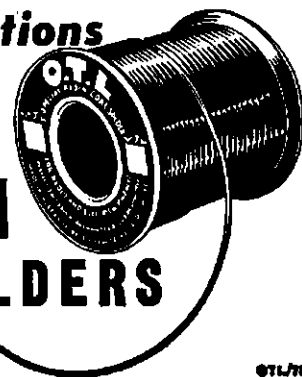
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OTL/79

GETTING STARTED ON 6

(Continued from Page 13)

However, this should likewise provide no great difficulty, as in the existing unit a vacant space is noted between the i.f. strip and the modulator. Thus the unit could be well fitted into a smaller area, but in the existing unit allowance was made for the possible future addition of a b.f.o., product detector, etc.

As it is, the emphasis is on amplitude modulation, the other modes being used

Nothing is worse than having to unnecessarily remove a number of components to remove or replace only one, nor is it desirable to bend components out of the way so as to be able to get to a given point with a meter.

For the more experienced constructors these points can be well appreciated, but for the less fortunate this is the best advice that can be given.

The best uplift to the morale of any constructor is to have a visitor walk into the shack and say that a particular piece of equipment is well built.

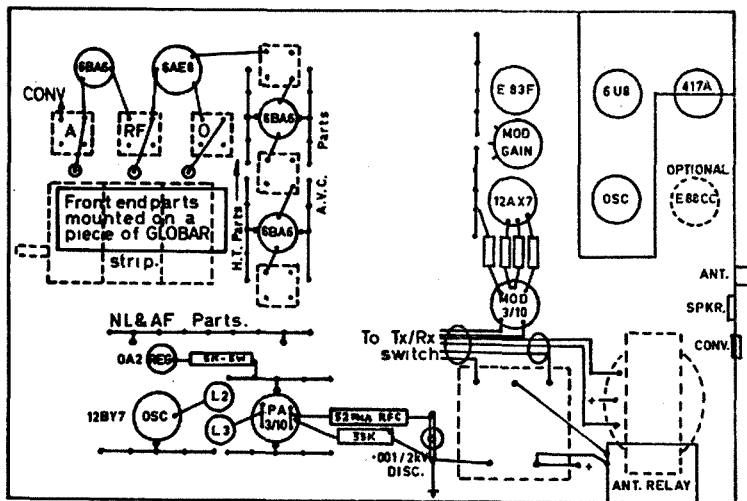


FIG. 8. UNDERSIDE OF CHASSIS.

by only a small minority of v.h.f. operators on 6 metres, in the author's experience.

If the layout given is adhered to no trouble will be experienced from such troublesome matters as feedback and it will be noted that the only shielding, either above or below the chassis, is confined to that surrounding the converter.

Further, and this is a follow up to the years spent in the commercial field, it has always been considered, for servicing reasons, good commercial design practice to keep valve sockets, i.f. transformers and other major removable components clear of a clutter of resistors and condensers, etc.

SIX-METRE CONVERTER

(Continued from Page 4)

cathode resistor or perhaps to provide additional feedback. One extra capacitor is all that is necessary to change the circuit to the "Robert Dollar" configuration in this case. However it is achieved, the requirement is to obtain stable, reliably-starting oscillation at the third overtone frequency, with no trace of output at the fundamental as established by tuning around this frequency on the station receiver.

The oscillator coil adjustment should not be very critical; as the slug is moved from the correct setting it will be found that oscillation stops abruptly on one side of the resonance, but dies away more gradually on the other side.

SOME FINAL SUGGESTIONS

If using a Roblan 10/70 pF. gang, remove the two outer rotor plates from each section, leaving five.

Other tubes than 6BA6 may be used in r.f. and i.f. stages, but will need taming down or running from a much lower supply voltage.

A 6BW6 goes well as a final on 6 metres, and one also as a modulator using modified Heising modulation; also a 6AU6 as a microphone pre-amplifier.

There are many small variations in components that could be incorporated in your unit, so go to it. I wish you all the success I have had with my own.

Oscillation may be monitored with a voltmeter on the "earthy" end of the oscillator plate coil; the reading will be higher the more vigorously the stage is oscillating.

Once the oscillator is behaving itself, alignment of the r.f. circuits is simply a matter of peaking the slugs (including the multiplier plate circuit) on whatever signals are available, either from Amateur stations, a signal generator, or Channel 0 sound. If available, a sweep generator is the most sophisticated way of doing the job, but this is by no means necessary.

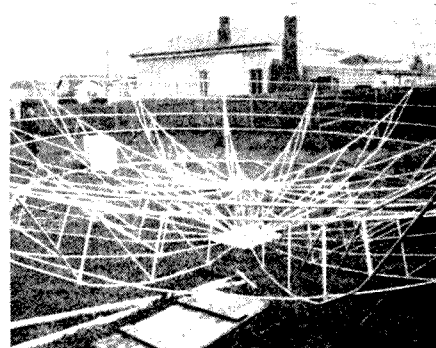
Performance of the converter, using a reverse-tuning i.f. around 4 to 2 Mcs., has been above reproach. It is possible, with the beam aimed directly at Mt. Dandenong to tune to within 100

A PARABOLIC ANTENNA

(Continued from Page 9)

The beam width to the 3 db points was measured by transmitting to a field strength meter while rotating the dish, and checked by measuring the noise received from the sun as it passed through the beam, and was found to be 12 degrees parallel to the dipole and 10 degrees perpendicular to the dipole. This seems consistent with expected performance. The gain on 432 Mc. is approximately 24.5 db over a dipole.

Minor lobes were too low in strength to be measured.



The beam was found to be unsymmetrical; this was corrected by adjusting the guy wires to position and the feed more accurately in the centre of the dish (a one-inch error in position was discernible as a distortion of the beam symmetry).

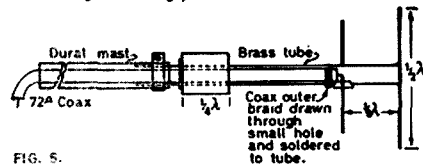


FIG. 5.

The foregoing type of construction is not suitable for anything larger than a 15 ft. diameter dish.

A 30 ft. dish is, at the moment, under construction but the material used is dural tubing with 16 spokes instead of 8, of girder type and with tubular rings at every two feet of radius.

Also it is intended to make the feed dipole array plug-in to facilitate multi-band operation.

Kcs. of the Channel 0 sound frequency before hearing any trace of it, even though when tuned right in the signal is 60 db over S9! Elsewhere in the band the only traces of Channel 0 (three in all) are at the receiver image frequency (910 Kcs. from the direct signal) which is about S9 due to the receiver's image ratio only being about 60 db, and two other spots at about S7 and S5 which are probably due to oscillator harmonic mixing effects. Cross-modulation, even of the weakest signals, is completely absent, while the sensitivity as measured with a signal generator is such that a tenth of one microvolt is plainly audible. So, on the receiving side, I can live with Channel 0. As far as transmitting is concerned?—Well, that's another story!

REMEMBRANCE DAY CONTEST, 1967

A perpetual trophy is awarded annually for competition between Divisions. It is inscribed with the names of those who made the supreme sacrifice, and so perpetuates their memory throughout Amateur Radio in Australia.

The name of the winning Division each year is also inscribed on the trophy and in addition, the winning Division will receive a suitably inscribed Certificate.

Objects

Amateurs in each Call Area, including Australian Mandated Territories and Australian Antarctica will endeavour to contact Amateurs in other Call Areas on all bands. Amateurs may endeavour to contact any other Amateurs on the authorised bands above 52 Mc. (i.e. intrastate contacts will be permitted in the v.h.f./u.h.f. bands for scoring purposes.

Contest Date

0800 hrs. G.M.T. Saturday, 12th August, 1967, to 0759 hrs. G.M.T., Sunday, 13th August, 1967.

All Amateur Stations are requested to observe 15 minutes' silence before the commencement of the contest on the Saturday afternoon. An appropriate broadcast will be relayed from all Divisional Stations during this period.

RULES

1. There shall be four sections to the Contest:—

- Transmitting Phone.
- Transmitting C.w.
- Transmitting Open.
- Receiving Open.

2. All Australian Amateurs may enter the Contest whether their stations are fixed, portable or mobile. Members and non-members will be eligible for awards.

3. All authorised Amateur bands may be used and cross-mode operation is permitted. Cross-band operation is not permitted.

4. Amateurs may operate on both Phone and C.w. during the Contest, i.e., phone to phone or C.w. to C.w. or Phone to C.w. However only one entry may be submitted for sections (a) to (c) in 1.

An open log will be one in which points are claimed for both phone and c.w. transmissions. Refer to Rule 11 concerning Log entries.

5. For Scoring, only one contact per station per band is allowed. However, a second scoring contact can be made on the same band using the alternate mode. Arranged schedules for contacts on the other bands are prohibited.

6. Multi-operator stations are not permitted. Although log keepers are permitted, only the licensed operator is allowed to make contact under his own call sign. Should two or more wish to operate any particular station, each

operating, then the word "log" followed by their own call sign, e.g., "CQ Remembrance Day from VK4BBB log VK4BAA."

C.w.: Substitute operators will call "CQ RD de" followed by the group call sign comprising the call of the station they are operating, an oblique stroke and their own call, eg., "CQ RD de VK4BBB/VK4BAA."

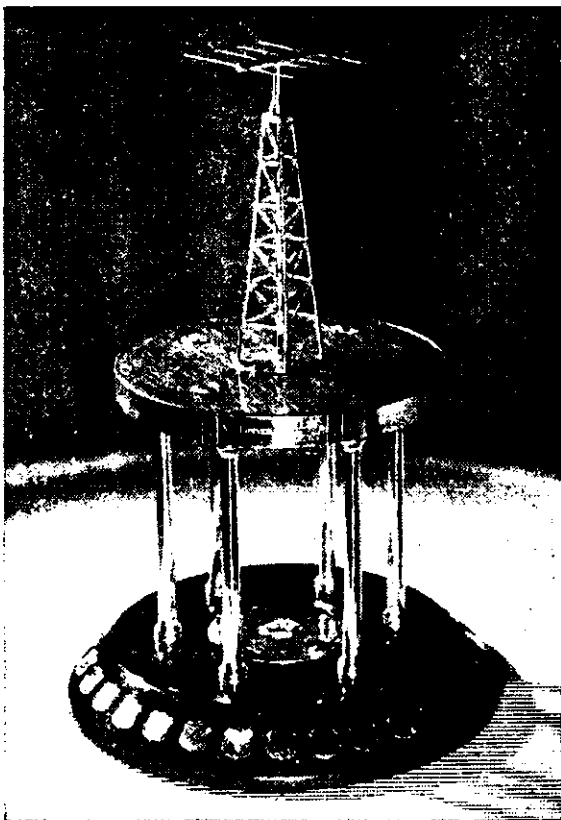
Contestants receiving signals from a substitute operator will qualify for points by recording the call sign of the substitute operator only.

7. Entrants must operate within the terms of their licences.

8. Cyphers—Before points may be claimed for a contact, serial numbers must be exchanged and acknowledged. The serial number of five or six figures will be made up of the RS (telephony) or RST (c.w.) reports plus three figures, that will increase in value by one for each successive contact.

If any contestant reaches 999 he will start again with 001.

9. Entries must be set out as shown in the example, using ONLY ONE SIDE of the paper and wherever possible standard W.I.A. Log Sheets should be used. Entries must be clearly marked "Remembrance Day Contest 1967" and must be postmarked not later than 4th September, 1967. Address them to "Federal Contest Manager, W.I.A., G.P.O. Box N1002, Perth, W. Aust.," Late entries will be disqualified.



Remembrance Day Contest Trophy

will be considered a contestant and must submit a separate log under his own call sign. Such contestants shall be referred to as "substitute operators" for the purposes of these Rules and their operating procedure must be as follows:—

Phone: Substitute operators will call "CQ RD" or "CQ Remembrance Day" followed by call of the station they are

SCORING TABLE

		To								
		VK0	VK1-2	VK3	VK4	VK5-8	VK6	VK7	VK8	VK9
From	VK0	—	6	6	6	6	6	6	6	6
	VK1-2	6	—	1	2	3	5	4	6	6
	VK3	6	1	—	3	2	5	4	6	6
	VK4	6	1	2	—	3	6	5	4	6
	VK5-8	6	2	1	3	—	5	4	6	6
	VK6	6	1	2	4	3	—	5	6	6
	VK7	6	2	1	4	3	5	—	6	6
	VK8	6	1	2	3	4	5	6	—	6
	VK9	6	1	2	3	4	5	6	6	—

Note.—Read table from left to right for points for the various call areas.

10. (a) Interstate scoring is as per published table for all bands; 52 Mc. and above included.

(b) Intrastate scoring for all bands above 52 Mc. will be on the basis of one point per contact.

Portable Operation: Log scores of operators working outside their own Call Area will be credited to that Call Area in which operation takes place, e.g. VK5ZP/2. His score counts towards N.S.W. total points score.

EXAMPLE OF TRANSMITTING LOG

Date/Time G.M.T.	Band	Emission and Power	Call Sign Worked	RST No. Sent	RST No. Received	Points Claim.

Note.—Standard W.I.A. Log Sheets may be used to follow above form.

EXAMPLE OF RECEIVING LOG (VICTORIAN S.W.L.)

Date/Time G.M.T.	Band	Emission	Call Sign Heard	RST No. Sent	RST No. Received	Station Called	Points Claim.
Aug. '67							
12 0810	7 Mc.	AS (a)	VKSPS	58002	—	VK6RU	2
12 0812			VK6RU	58007		VK7EJ	5
12 1035	52 "	AS "	VK4ZAZ	56010		VK5ZDR	3
12 1040	"	"	VK3ALZ	50025		VK3QV	1

Note.—Standard W.I.A. Log Sheets may be used to follow the above form.

11. All logs shall be set as in the example shown and in addition will carry a front sheet showing the following information:—

Name Section
 Address Call Sign
 Claimed Score
 No. of Contacts

Declaration: I hereby certify that I have operated in accordance with the Rules and spirit of the Contest.

Signed
 Date

All contacts made during the Contest must be shown in the log submitted (see Rule 4). If an invalid contact is made it must be shown but no score claimed.

Entrants in the Open Sections must show c.w. and phone contacts in numerical sequence.

12. The Federal Contest Manager has the right to disqualify any entrant who, during the Contest, has not observed the regulations or who has consistently departed from the accepted code of operating ethics. The Federal Contest Manager also has the right to disallow any illegible, incomplete or incorrectly set-out logs.

13. The ruling of the Federal Contest Manager of the W.I.A. is final and no disputes will be discussed.

Awards

Certificates will be awarded to the three top scoring stations in each of Sections (a) to (c) of Rule 1 above in each Call Area, and will include top scorer in each Section of each Call Area operating exclusively on 52 Mc. and above. VK1, VK8, VK9 and VK0 will count as separate areas for awards. There will be no outright winner for Australia. Further Certificates may be awarded at the discretion of the Federal Contest Manager.

The Division to which the Trophy will be awarded shall be determined in the following way.

By using the Equation,

$$S = \frac{P + 175(N - E)}{1000}$$

where—

- S = State's Trophy Tally Points.
- P = Total score of State.
- N = Total log entries received.
- E = Entrants from the State concerned.

VK1 scores will not be included with VK2, nor VK8 with VK5.

The trophy shall be forwarded to the winning Division in its container and will be held by that Division for the specified period.

**RECEIVING SECTION
 (Section D)**

1. This section is open to all Short Wave Listeners in Australia, but no active transmitting station may enter.

2. Contest times and loggings of stations on each band are as for transmitting.

3. All logs shall be set out as shown in the example. The scoring table to be used is the same as that

used for transmitting entrants and points must be claimed on the basis of the State in which the receiving station is located. A sample is given to clarify the position.

It is not sufficient to log a station calling CQ—the number he passes in a contact must be logged.

It is not permissible to log a station in the same call area as the receiving station on the m.f. and h.f. bands 1.8-30 Mcs., but on bands 52 Mcs. and above such stations may be logged, once only per band, for one point. See example given. VK1/VK2 and VK5/VK8 are considered to be the same area for scoring purposes.

4. A station heard may be logged once on phone and once on c.w. for each band.

5. Club receiving stations may enter for the Receiving Section of the Contest, but will not be eligible for the single operator award. However, if sufficient entries are received a special award may be given to the top receiving station in Australia. All operators must sign the Declaration.

Awards

Certificates will be awarded to the highest scorers in each call area. Further Certificates may be awarded at the discretion of the Federal Contest Manager.



**RADIO MESSAGES
 ARE SECRET**

The Australian Post Office has expressed concern over some evidence that radio communications are being intercepted from time to time and the information so gained used to the listener's advantage or as the basis for news items in the press, radio or television news sessions.

The Director-General of Posts and Telegraphs, Mr. T. A. Housley, points out that both the persons who intercept the messages and the news media publishing such information contravene Regulations under the Wireless Telegraphy Act and the Broadcasting and Television Act which prohibit the disclosure or the use, without lawful authority, of any message transmitted by a radio station, other than a broadcasting or television station.

Mr. Housley says the Post Office has a responsibility to ensure the secrecy of all messages and conversations exchanged through radio communication stations whether they be provided for public use by the Department or stations operating in licensed services, such as those used by Police, Ambulance, Fire Brigades, and other public authorities, or by commercial undertakings.

The Post Office feels that it is perhaps opportune to remind all those who, in their enthusiasm for DX listening, may overhear many types of radio transmissions of the privacy of all that passes between radio stations and their obligation to comply with the secrecy provisions of the Regulations.

**INFLATABLE RADIO ANTENNA
 MAST USED IN VIETNAM**

A tube-shaped, 60-foot inflatable radio antenna mast is now being used as a long-distance communications aid to fighting forces in the jungles of Vietnam.

Carried in a backpack and quickly deployed in dense terrain, the revolutionary lightweight antenna is being manufactured by Goodyear, who are perhaps more famous as the biggest manufacturer of tyres in the world.

The high-strength mast, constructed of a flexible, reinforced plastic-cloth fabric, can be extended to a height of 60 feet to clear trees, foliage and other obstacles in the jungle. This gives the radio a line-of-sight range of about 25 miles for ground-to-ground or ground-to-air communications. In contrast, portable radios using conventional short whip antennae sometimes have an effective range of only one-tenth or two-tenths of a mile because foliage absorbs their signals, according to Goodyear.

The inflatable antenna is connected to the radio by a small co-axial cable. The radiating element, fabricated of wire, is mounted at the top of the mast and can be adjusted in length to be tuned to the desired v.h.f. or u.h.f. frequency.

These antenna masts are seen by company officials as particular aids in situations where a combat unit becomes completely isolated by the enemy. Should this happen, the masts can be deployed quickly and a signal for help can be radioed to either ground or air support units.

Deflated, the mast rolls into a one-cubic-foot package, which is carried in a backpack along with a foot pump, hand crank, guy anchors and a repair kit. The entire backpack, including the mast and associated equipment, weighs about 28 pounds.

Once the mast is removed from the backpack, inflation is accomplished by the manually operated foot pump in approximately 15 minutes. The mast, which tapers from a nine inch diameter base to five inches in diameter at the top, is supported by nylon guy lines.

During retraction, the mast is completely packaged into the base by the hand crank. It then is put into the backpack together with its associated support equipment, ready for subsequent use.

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Performance! It is without doubt that the high quality of design, construction and operation of the Yaesu equipment contribute to increased popularity. Tests on receiver sensitivity and transmitter power output confirm the high efficiency of operation. In the P.A. circuits, coils of adequate size on ceramic formers are provided in an uncrowded layout. All equipments feature built-in 230V. A.C. 50 c.p.s. power supplies.

FR-100B, FL-200B: The ideal home station combination for elegance, convenience of operation and versatility. Can be connected separately or transceive, for S.S.B., A.M. or C.W.

FR-100B: Dual conversion receiver with crystal locked front end. Sensitivity, better than 0.25 μV . for 10 db S+N/N ratio. Two mechanical filters, 2.1 Kc/s. for S.S.B. and 4 Kc/s. for A.M. Crystal filter for C.W. High reduction precision gear driven dial with read out of 1 Kc/s. Selectable S.S.B. and C.W. with ring demodulator, A.M. with diode detector. Each tuning range is 600 Kc/s.

FL200B: Transmitter with Kokusai mechanical filter. Two 6JS6A tubes in p.a., 240w. p.e.p. input. VOX, ALC, USB-LSB selection. Complete with antenna relay and provision for receiver muting and linear control. For C.W., break-in operation is possible, T9X note, clean, chirpless keying. All plugs and microphone supplied.

FR-50, FL-50: Lowest priced S.S.B. combination with outstanding performance. May be operated in the transceive condition. Alternatively, the transmitter may be operated independently with either the built-in VXO or with the matching transistorised VFO, the FV-50.

FR-50: Dual conversion receiver. Sensitivity, 0.5 μV . for 10 db S+N/N ratio. Low drift transistorised h.f.o. becomes v.f.o. for FL-50 when transceiving. Second osc. crystal controlled. Product detector for S.S.B. and C.W. Diode for A.M. detection.

FL-50: Transmitter with five-crystal lattice filter and 5172.4 Kc/s. carrier crystal. P.T.T. control via p.b. mic. Antenna relay and provision for receiver muting and linear control. S.S.B., A.M. and C.W. 75 watts, 80 to 10 metres.

FL-1000: LINEAR AMPLIFIER. Of sturdy and neat construction, this linear provides the extra boost which is a decided advantage on the DX bands. Increases your DX reports by 2 to 3 "S" points. Four 6JS6A in g.g., 80-10 metres. Will match any S.S.B. exciter capable of output power of 30 to 100 watts p.e.p. Approved for Amateur S.S.B. use.

FT-100 Transceiver: Transistorised, for highest overall transmission efficiency, approx. 45% (12v. input to R.F. output). The ideal mobile/portable rig. Five bands, power supply built-in. Operate A.C. or D.C. simply by changing power cord. Sensitivity on receive, 0.5 μV . 10 Kc/s. offset tuning. Gear driven dial giving accurate linear tuning with 1 Kc/s. read out. Exceptionally stable VFO, instant operation, drift less than 100 c.p.s. in hour. P.A., 2 x 6JM6, 120w. p.e.p. Low battery drain.

Type F Generator: This is a complete assembly of a crystal filter S.S.B. generator as used in the FL-50 transmitter. Can be used as the basis of an S.S.B. rig on V.H.F. or H.F.

FF-30DX L.P. Filter: This is a three-section filter for T.V.I. reduction, with a cut-off frequency of 35 Mc/s.

FV-50 VFO: Transistorised, gives full band coverage for FL-50. Can be used with other 5 Mc/s. filter transmitters.

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SIDEBAND

Sub-Editor: PHIL WILLIAMS, VK5NN

CLIPPER TYPE COMPRESSORS

Several years ago in "QST" there appeared an article by Squires and Clegg (Speech Clipping for Single Sideband, "QST," July 1964) dealing with the business of increasing the level of modulation in an s.s.b. transmitter without introducing excessive distortion. The method is highly satisfactory if not grossly abused, and provided the power supplies and linear amplifiers are designed to work at the higher level, with an average power level tending to be nearer to the peak capability of the system.

80 watt transformer which has not yet blown up on 150 watts, but I dare not push it any harder. Besides, it is nice to sound yourself on 80 and 40 when speaking with friends.

But DX contests are for those with the signals which get through the QRM, without being "klobbered" out of readability, so these clipper/compressors look very tempting.

These extra h.f. crystal filters are expensive enough one at a time for us out here in Australia, and there is, too, the problem of the fellow with the bought transceiver which he dares not

Complete compressor units of this type are available from several manufacturers overseas at a price which would make them poor value in this country—but prices may come down if quantity production permits.

The use of 8 Kc. as the carrier in the clipper translates the original 0.3 to 3 Kc. audio signal, to the 8-11 Kc. region. When this signal is clipped, the harmonics fall above 16 Kc., so that a very simple l.p. filter in the 12 to 14 Kc. region is all that is necessary to eliminate the harmonics.

Demodulation using the same 8 Kc. oscillator, restores the signal to the original speech range so that it may be plugged straight into any commercial exciter or transceiver.

Should you wish to design the compressor into an exciter using, say, a 2 Kc. wide mechanical filter, the compressed 8-11 Kc. signal (nominal range) does not have to be demodulated back to the speech range, but can be fed straight to the balanced modulator in the exciter (it can still be handled by the a.f. amplifier), but the carrier frequency fed to this balanced modulator needs to be displaced a further 8 Kc. from the original carrier frequency specified for the filter (but you will need a little ingenuity to restore the netting facility).

Although I have not personally tried the schemes of Figs. 2 and 3, I have seen and heard them as used by other Amateurs, and have seen Fig. 2 done commercially at 18 Kc. It was certainly very effective.

The answer to the obvious question must be given before signing off for this month. Well, why can't you just clip the audio signal, and filter out everything above 3 Kc.? This is done in ever so many circuits in Amateur magazines. The answer is that harmonics of the lower audio frequencies, such as 400 c.p.s. will appear right up through the range at 400 Kc. intervals. With small amounts of clipping, say 3 or 4 db, this can be tolerated, but with 10 db or more, the straight audio clipper is far from satisfactory.

Before anybody takes me to task for calling a clipper/filter, a compressor, let me say that I am well aware of the sort of thing which the gain controlled amplifiers will do. They have their application for broadcasting, and a.i.c., now common in many exciters, accomplishes a similar result. These things do control levels, but do not re-shape the speech for more DX intelligibility as the clipper types does.

I shall be pleased to hear from anybody who has developed his own circuits for these systems and wish any experimenters the best of DX with their own interpretations of the scheme.

73 for now, Phil VK5NN.

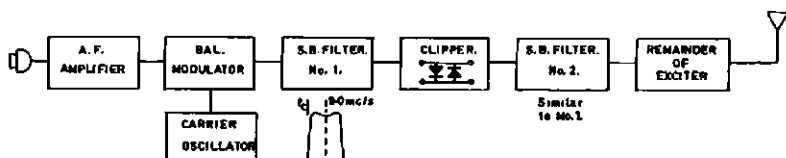


FIG. 1. S.S.B. EXCITER USING 2 FILTERS AT CARRIER FREQUENCY.

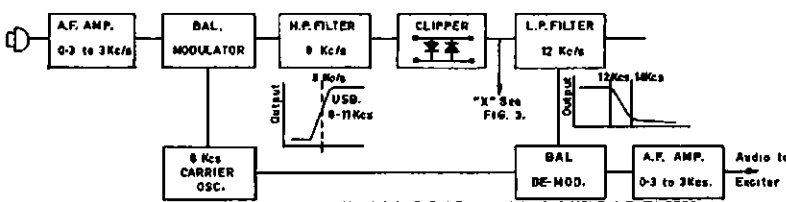


FIG. 2. CLIPPER TYPE COMPRESSOR AT SUPER AUDIO FREQUENCIES USING SIMPLE A.F. FILTERS.

Increases of general level of about 10 db are possible, and while the character of the speech is changed and background noises must be eliminated in the shack, the DX quality of the signal is excellent.

The method outlined by these gentlemen is shown in the block diagram of Fig. 1. The clipping takes place at 9 Mc., so all the harmonics generated are at 18 Mc. and above. To get rid of these and any other undesired products, they pass the output through another 9 Mc. crystal filter of the same type, and "hey presto" a clean clipped signal goes forth through the exciter.

I have experimented along these lines by passing the output of the old faithful phasing generator into the clipper (back-to-back silicon diodes) and then filtering the result through the McCoy filter, using the McCoy carrier crystal in the phasing exciter, of course. Signals from the lonesome 6146 in the exciter, were reported in W6 to be as readable as the original unclipped signal from the linear amplifier, but a few points down on the S meter. Comments on the changed "character" of the voice were "swallowed," and the system put aside, as my linear will handle peaks, but is powered by an

attack with the side-cutting pliers. For these cases, the outboard clipper/compressor is the answer, and Fig. 2 shows how this can be achieved using all audio type components and filters.

These filters are quite elementary types and about three sections designed according to the data in Terman or the Handbook, using ferrite "potcores," will be quite cheap and easy, requiring an audio oscillator and oscilloscope only, for the project. Clipping by the paralleled back-to-back silicon diodes is a preferred method, as this "rounds over" the tops of the voltage peaks, and can reduce 2 volt peaks to something of the order of 0.5 to 0.6 volt.

The system lends itself to the use of cheap audio transistors for amplifiers and balanced modulators, and there are plenty of 600 ohm push-pull to push-pull transformers available for this class of circuit.

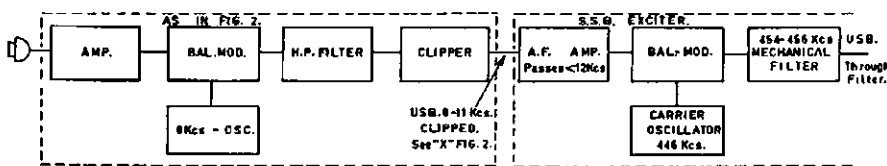


FIG. 3. DISPLACED COMPRESSED AUDIO WITH DISPLACED CARRIER OSCILLATOR.

SWL

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

Much has been written in the past on the subject of sending out s.w.l. reports, yet the further we go into the hobby, the more we learn. An overseas DX station, I think it was HM2BD, writing to my colleague, Bernard Hughes, of the I.S.W.L. Council, mentions that many QSLs from listeners and Amateurs alike, show the date in figures. He mentions that many countries and Amateurs, including a large percentage of Ws, show the numerical month in the first part of the group, thus 6/9/67 would to them be the 9th of June. A card sent to them showing 6/9/67, when checked against their log for 9th June, would be returned unconfirmed, and immediately the DX station is branded as a pirate. The suggestion from HM2BD therefore is, at all times write the name of the month and your confirmations may grow.

V.H.F. QSLs

The VK2 V.h.f. Group have asked that where possible, s.w.l.'s send reports of any loggings on 50 and over to the individual operator. These reports are valuable to members of the Group and will be QSL'd. However, we must realise that reports from the country and distant areas are wanted rather than from the chap up the road. Many of us have 2 and 6 metre gear and would be willing to assist our colleagues from the V.h.f. Group in their current series of checks.

VK2 GROUP NEWS

The April meeting of the VK2 listeners' group was held at the Wireless Institute Centre and 10 members were present. The speaker for this occasion was Peter Carter, President of the V.h.f. Group. Election of the two remaining office-bearers was again held over due to lack of nominations.

At the time of writing, no QSLs are at hand in the S.w.l. Bureau for members of the group. Reports from VK2 members for inclusion in the Bulletin or "A.R." will be welcome the former to our publicity officer, Mac Hilliard, Flat 4, 7 Fletcher St., Campsie, or to myself at Box 222, Penrith, where the phone is Penrith 20680 and if not there, I will be at home, Hazelbrook 6380.

OVERSEAS CLUBS

Following last month's rundown on the I.S.W.L., I would like to present to you the Newark, News Radio Club. This is possibly the oldest and best known of all the clubs and for an annual subscription of five U.S. dollars, one has access to one of the best News-sheets and facilities offered to all sections of the communication field. For full information contact the Secretary at 215 Market St., Newark, N.J. 07101, U.S.A.

There is a reason behind the mention of some of the overseas clubs for, as I have often said, the W.I.A. does not cater for anything outside Amateur activities, and we often have members who are basically interested in commercials, etc. In fairness to them, I am presenting the non-amateur clubs to be considered.

AROUND THE SHACKS

Mac Hilliard, now publicity officer for the VK2 group, still finds time for some listening. Mac's Collins is probably one of the best receivers to be in the hands of an s.w.l.

Not very often do we have the chance to welcome a newcomer to these columns, and it is with much pleasure that on behalf of the other s.w.l.'s I would like to say hello to Nick Bosly, of Roma, Qld., WIA-L4195. Quite a few queries on the subject of QSLing were answered for Nick and I trust that we hear more of him on the DX side of things.

Barry Snell, WIA-L3136, has been a regular contributor to these pages over the past months and it is with much regret that we have to say cheerio to him for a while, for by the time you read this he should be in Vietnam.

Eric WIA-L3042 has just returned from a holiday into VK5. His inward QSLs to hand at time of leaving were EA1CP, GM3CFS, HC1CV, OZ5DX, PA0FAK, UJ8AV, VK5XK/LH, VR4CR, 4X4LS, 9V1MX. His outward cards for Jan.-Feb. were tawled at 231. Finally, his loggings on 14 Mc. c.w. were 457DA, LA3GI/M, FO8BQ, VP7DX, VR2FF, PK1OW (QSL via F30W), OH5UY/MM, YV1AD, CO2JB, EP2HB, FL8RA, VP8BY, SV0WLL and MP4TDO. Down on 40 mx c.w. there is still a wealth of DX,

as shown by Eric's extracts: VE4YZ, OK1KOK, XE2SS, VE3AU, VE7LB, G2PL, G5RI, VE6AAF, VO1FB, VE3KE, VK2BRJ/9 and VE7AWH. And if you think that is good DX for 40, have a look at some of his loggings on 80: LZ1KKZ, HA9KOB, DL8EZ, UA1KAN, YU1EXY, UB5OF, UA1KBB, DL6XT, UY5AH, DL6LN, W3ZEG, SP7GH, UA4FI, DL1QT, F2CB/FC, F6MW, SP6AYD, DM4XL.

Alan Raftery, WIA-L5065, submits the following list of loggings on 20 s.s.b.: SM2CNI, DJ0RM, H18XAL, 4U11TU, UA1DZ, VR2EG, YN1LH, 4M5A (anybody know the QSL address of this guy?), VETPV and many of the regular Europeans. His QSLs of recent date are: 9G1DY, WARBZ, VK9DJ, VQ8AX, OX3JV, VE-3BSR, VP5RB, DJ8II and 9G1FR.

Ernie Luff has received QSLs from VQ8AX, VE8WT, DL8NU, W8MPW, UA4CZ, 4X4TP, PA0HBO, DJ3YC, ZS4OI, YV5CJF, VE5JS, VK2AVA/2, VE6ALI, VE6AKR, VK2MR, PJ-5CE and W8LNU. Loggings were: EL8B, JT-1KAA, VR30, VR3L, TF2WKH, ZL1AI, VP-2SAB and PJ2MI.

New QSLs here include G3FNFJ, 7X0AP, CP5AY and WA7BLV, the CP5 being a new country.

DX NEWS

The following can be QSL'd via the I.S.W.L. bureau in London: G3VFN, W0EQ, KH6BJ, VE1ACE, KI0TA, G13VJS, W2BUY and WB-2IGM, DL2WB and DJ7XC, who were both active from San Marino in the early part of the year, will QSL from their home calls. AP8B has informed Stew Foster, DX reporter for Monitor, that no Amateur activity has been permitted since May 1965, thus AP3AC and AP3CR must be pirates. VS9HRV, who was active from Kuria Maria in January, will answer all QSLs from listeners, particularly if they include a list of some additional calls that he was working around the time shown in the particular report.

EA9EJ is reported on 2120 using a.m., at times between 1800 and 1900z. ST2SA is legal. W3KVQ/2, 2308 Branch Pike, Cinnaminson, N.J. 08077, U.S.A. is QSL manager for CT-3AV, MP4BDF, VP2AR, VU2RM, 457WP, 5R8AN and 9N1MM. The following are pirates at the time of writing (April 17): SV1DL, SV2HB, SV0UB and VX0RS. 5R8 is normally a difficult QSL, and with 5R8AU, B.P. 437 Tananarive, Malagasy Republic, and 5R8AN whose manager is given above, you may have a better chance.

YA1FV, Fred Vogel, U.S.A.I.D., A.P.O. New York, N.Y. 09668, U.S.A. 7X0AP is a good guy for a QSL. QSL to Box 414, Alger, Algerian Republic.

EL8B, QSL via SM5MC; VR30, QSL via K6UJW; VR3L, via K8PKY; ZL1AI, QSL via K6UJW; PJ2MI, QSL via VE3EUU; YA3TNC, QTH Kandhar, QSL via K0RZJ. ZA1RB reports that the station using his call during December was definitely not him, and reminds all DX men that he will give plenty of notice prior to his operation from this eagerly awaited country. FR7ZL/T is on Tromelin for a year's operation, 14109, 14114 and 14120 are his frequencies. VQ8EF has informed the I.S.W.L. that he does not reply to s.w.l. reports.

QSL LADDER

As promised, here is the ladder brought up to date. It contains the names of listeners only and all who have made no contact with us for the past three months have been deleted. To qualify for a position on the ladder you must be an s.w.l. and have a minimum of ten countries confirmed. Just supply to the address at the top of this page your name, listener's number, number of countries, heard, number confirmed, number of zones confirmed, and number of American States confirmed. If further notification is not received within three months, your name will be deleted. The only exception will be anybody who has been called up for National Service.

Name	Confirmed	Heard	Zones	States
E. Trebilcock	293	299	40	50
P. Drew	197	265	38	41
D. Grantley	161	303	39	35
W. Smith	154	215	36	7
E. Luff	137	215	35	32
M. Hilliard	100	250	33	14
A. Raftery	78	194	31	13
B. Mackintosh	60	102	20	5

AWARDS

I must again mention through these pages that the only official award, sponsored by the W.I.A. for s.w.l.'s, is the S.W.L. D.X.C.C. The H.A.V.K., sponsored at the same time, is for overseas listeners only. The regular A.R.R.L. awards such as HA.Z., H.A.S., H.A.C., etc., are not issued by that body to s.w.l.'s, but their equivalent is available to members of the I.S.W.L., and possibly by some of the "private" American clubs.

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SIX-HOUR DIVISION

Section (a)— Call Sign	Score	Contacts	Power	Equipment
VK1AS/P	398	53	20w.	Fully transistorised Mohican rx, h.b. tx, inverted vee.
VK2AWW/P	518	79		Swan 240, G5RV.
VK2RJ/P	109	11		Galaxy V., Webster Bandspanner.
VK3LC/P	186	24		Galaxy.
VK3JO/P	101	11	8w.	Type 3 Mk. 2.
VK5MZ/P	89	11	11w.	Type 3 Mk. 2.
Section (b)—				
VK2YB/P	133	22	16w.	ATR2B, Windom.
VK2AGI/P	104	15	7w.	122, G5RV.
VK2JM/P	97	17	13w.	Command rx, tx.
Section (c)—				
VK3HE/P	155	23	5w.	Type 3 Mk. 2.
VK4UU/P	19	4	15w.	No. 19.
Section (d)—				
VK3YS/P	507	79		FT100, G5RV, f.m. carphone.
VK4PJ/P	369	53		Galaxy V., g.p. dip.
VK5LZ/P	608	71		H.b. tx, Galaxy V., inverted vee, doublet.
Section (e)—				
VK3QV	200	16	180w.	75A2, K.W. "Viceroy," G5RV.
VK3EZ	140	11	50w.	H.b. tx, BC453.
VK5RI	115	8	120w.	Viking Valiant, Eddystone, EH12.
VK7SM	435	29		Galaxy V., dipole.
Section (f)—				
WIA-L4144	390	26		HE30.
WIA-L4205	280	19		Home-built.
WIA-L4182	165	11		Commercial.

24-HOUR DIVISION

Section (a)—				
VK1VP/P	90	8	50w.	Home-built.
VK3WK/P	752	112		Marauder HX10, Heath SB300, and G5RV.
Section (b)—				
VK5ZF/P	561	64	10w.	Home-built rx, tx.
Section (c)—				
Nil Entry.				
Section (d)—				
VK2AAH/P	3786	682		
VK3RN/P	2621	467		
VK3VK/P	1432	247		
VK3ANU/P	1265	222		
VK5LZ/P	2094	286		
VK6VF/P	230	30		
VK9XI/P	1019	175		
Section (e)—				
VK1DA	215	14		
VK2AEC	300	22		Home-built tx, rx.
VK3XB	665	53		32S3, 75S3, and dipo.
VK3ANG	475	41		G222TR, Eddystone 888A.
VK3KS	245	20		32S3, 75S3.
VK3GK	103	13		Home-built.
Section (f)—				
WIA-L2022	450	36		Philips No. 4 and long wire.
WIA-L2023	230	19		7-tube super and long wire.
P. Forbes	770	59		AR7.
WIA-L3042	555	45		Trio 9R4J and long wire.
J. Ross	645	47		National T100.
WIA-L5065	435	31		Eddystone S640.

coupled to inverted vee up 45 feet; on 7, 14, 21, 52 and 144 Mc. respectively, they had FL200E/FL1000, FR100B and inverted vee; Swan 350, TA33 junior; FL100B-FR100B, single band 2 element quad; home-built 90w. a.m. tx., three-tube converter to Eddystone 750, 4 element beam up 20 ft.; and the same again on 144 Mc. a.m., and with an A.W.A. Carphone on 144 Mc. f.m. Another commendable effort.

VK3VK/P: All bands from 1.8 to 432 Mc. used and 12 operators. Equipment used consisted of FL100, FR100, FL200, FR700, Swan 350, Heathkit rx and tx, and mostly home-built on v.h.f. Antennae ranged from dipoles, G5RV, 10 element Yagi and 5/5 on 2 metres, 3 element on 6 mx, to 15 element on 432 Mc.

VK3ANU/P operated on 3.5, 7, 14, 52 and 144 Mc. using home-built tx's on low bands and Pye, A.W.A. Carphones on v.h.f. Receivers used were home-built 18 tube rx on 14 Mc., HE30, EIL rx, with dipoles and beams.

VK5LZ/P had 10 operators, used 3.5, 7, 14, 21, 52 and 144 Mc., and used a Galaxy 5, home-built tx on 40 and 80, home-built tx on 6 mx, and a modified Pye on 2 mx. Aerials used included inverted vee, doublet, 3 element Yagi and a 5 element Yagi.

VK6VF/P had a Collins KWM2, Central Electronics 20A with Drake 2B, and a T.C.A. 1649 on 6 mx. Four operators did the job of representing VK6.

VK9XI/P, our "Island Country Cousins," were really mobile! Operating was done on an articulated Labour Transporter with aerial on roof by VK9DR and VK9MV. Equipment used: FL200B tx with HQ170A rx into a three band beer can ground plane with 14 Mc. beer cans, and 21 and 28 Mc. as vertical wires. (No mention was made whether they emptied the cans before or after the contest.) They also had a 12 kw. diesel alternator, festoon lighting system, two refrigerators, fan and power points for cooking! (I always thought that there was an element of "roughing" it on field days, but it seems that VK9XI did it in a luxurious manner.)

VK1AS/P ran a fully transistorised mobile station at Broulee, N.S.W., using Heathkit Mohican transistor rx, home-brew all transistor tx running 20 watts input to the final. Rig used 19 transistors, 4 diodes, 2 zener diodes. Powered from 2 motor cycle batteries to give 12 volts. Maximum current on voice peaks was 2.4 amps., quiescent current 0.4 amp., standby current nil. Antenna was inverted vee at 25 ft. This score, he claims, should have been higher, but he had to open oysters for lunch!

VK5MZ/P said, "Good fun, but damned hot and 'mossies' terrible."

Finally, **VK5ZF/P** still says that G.M.T. for a VK Contest is unnecessary and protests once again—but thanks us for running the Contest.

Hope to see you all again next year, Neil Penfold, VK6ZDK, for Federal Contest Committee.

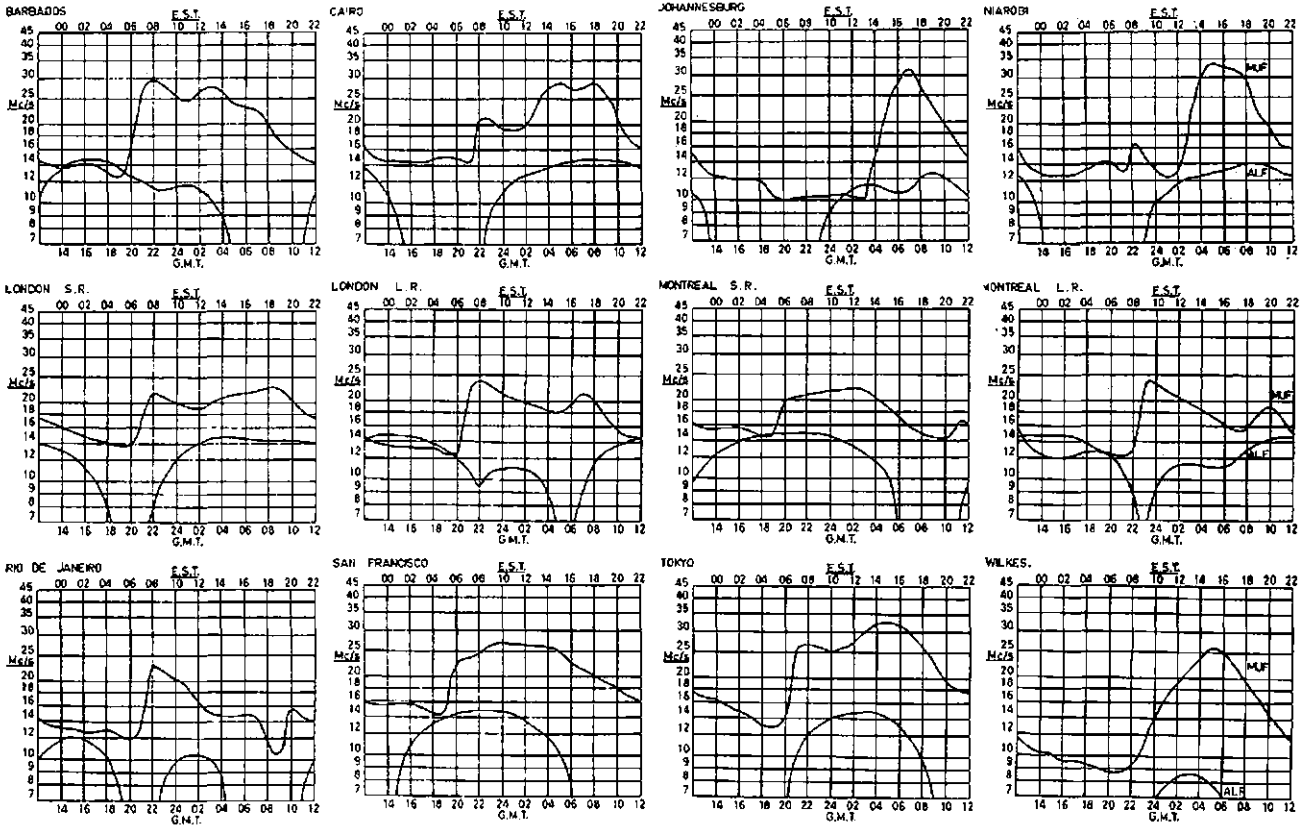
Above is the list of results of the John Moyle Field Day conducted last February. Winners are listed in heavy type. As may be seen, the entry list is rather small, but nevertheless, the activity of the portable stations is commendable. The multi-op. stations succeeded in scoring high; this no doubt brought about by the ability to work all bands and having a large number of operators and assistants.

Some points of interest from the logs:—

VK2AAH/P: All-band operation from 3.5 to 144 Mc.; seven operators and an extremely well laid out log per VK2SG (thanks Syd.).

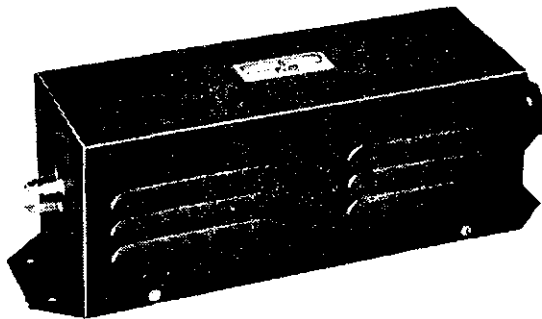
VK3RN/P: All bands from 3.5 to 144 Mc. were used by 11 operators and four assistants. Equipment list reads like a radio store; on 3.5 Mc.—home-built tx, 25 watts to 2E26, and Eddystone 750

PREDICTION CHARTS FOR JUNE 1967



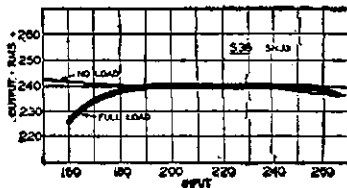
(Prediction Charts by courtesy of Ionospheric Prediction Service)

CONTROLLED VOLTAGE



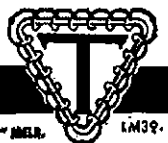
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LM39

DX

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

The sunspot number for June is given at 79. This represents a steady increase during the past months and may help to maintain activity on 14 and 21 Mc. during the winter months. However, 28 Mc. already shows signs of being on the skirts until next spring. 40 mx has W and J signals on it till midnight, then it becomes a mass of various types of QRM. Someone with poetic aptitude should write an epilogue on the demise of DX on this band.

NOTES AND NEWS

Mongolia: Vlad, whose back home call is UA1CK, will be signing JT1JT during May and June. Freq. is 14180 and listening as directed. QSL VE7ZM with s.a.s.e. (LIDXA). Kerguelen: FB8XX should be on s.s.b. by end of May with 10, 15 and 20 mx operation. (LIDXA)

WA6SBO Round the World DX-pedition: Bill kicks off from Clipperton on May 1. Then will follow Cocos and Malpelo. He would like the following made clear:

1. Major contributors will receive cards direct.
2. S.s.b. and c.w. activity on all bands.
3. One QSO per band per mode.
4. Contributors will be notified of all his plubs if they supply s.a.s.e.
5. Rubber stamping of non contributors' cards may be necessary. Further info from K2AFY. (LIDXA)

Oceania: All these chaps are active as of now. Maybe you need one or two. KG61J Volcano 14230, KP6BA Palmyra 21030, WA6ZZD/KP6 Palmyra 14215, K6BW Eastern Carolines 14210, KW6DS Wake 21050, KX6ER Kwajalein 14060, KS6BV American Samoa 14212, KJ6EB Johnson Is. 14300. (By courtesy ZL2AFZ, DX Ed. "Break-In")
Kermadec: Neil ZL1AI has been inactive for three weeks because of tx trouble. However, bootleggers have kept his call active on 7 and 21 Mc. Neil operates on a.m. 14260, usually from 0800z.

Alaska: KL7GCB, Near Is., 14325 0830z, and KL7FRY from Shemya in the Semichi Is. group. Several others are active and workable here from 7 through 28 Mc.

Swan Is.: KS4CC is reported active 14037 2110 and 28075 1950. QSL to P.O. Box 1148, Miami, Fla., 33148. (ZL2AFZ)

North Pole Expedition: VE8YL is on 14 c.w./s.s.b. at 0300z daily. QSL W0QUU.

Pacific Trust Territory: KG6IF Maroua 14220, KG6SL Marianas also KG6SM 21375. All around 0800z. (ZL2AFZ)

Kure Is.: KH6EDY 14235 0800z, 28575 0030z. QSL U.S.C.G., Loran Stn., Box 36, F.P.O., Frisco, California 96640. (ZL2AFZ)

Shetlands: VP8JF on daily 14020 0200z. (ZL2AFZ) Audible here usually 339.

Also judging by reports it appears that ZL5AC is QRV on both c.w. and s.s.b., 14 Mc. Tromelin Is.: FR7ZL/T at present is active from here on 14050 at 1330z.

Caicos Is.: VP5AB is active as of now on 14332, 14120 at 0730z. QSL W1WQC. Length of operation not known. (G3UGT)

Falkland Is.: VP8FL on daily 14127. Says he will not work in pile ups. (G3UGT) G3MMH is QSL manager unofficially.

South Orkney Is.: VP8JD on c.w. 14040 at 2030 and 21050 at 1900z. (G3UGT)

Rio de Oro: Justo is now very busy with s.s.b. 14120 2000z. Reported working mostly Ws on 14210. (G3UGT)

Cocos-Keeling: ZC2T was reported active, now it is claimed he is a bootlegger. K2AES who was named as his QSL manager says he is being swamped by illegitimate QSL requests. Western Samoa: 5W1AZ is QRT and 5W1AA is now the only station active from here. Is heard on 14050 a.m. xtal controlled, but has several other frequencies. Try around 0800z. (VK4UC)

Turkey: TA2AC still said to be QRV, also s.s.b. activity on 14200z at 0415. QSL for the former goes to K4AMC.

Rwanda: Several are active from here on most bands. A few are 9X5LH 21370 at 1830z, QSL via DL1ZK; 9X5GG 21390 and 14 Mc. 2000z, QSL W2GHK. (QSL manager, Stu W2GHK, also has logs for 9U5ID.) 9X5PS on 14 c.w. 2000z.

Zambia: 9J2BC seems to be a regular on 28 Mc. around 0700z. One or two others are active on this band.

Solomon Is.: Art VK4CR is busy most days on 14040 at 1200z and occasionally earlier. Also heard here on 28 Mc. QSL C/o. Weather Officer, Honiara.

Algeria: Harry 7XOAH is another with a good signal on 28 Mc. Listen around 0800z. He QSLs promptly.

ACTIVITIES

Ken VK3TL pleads pressure of work for his lack of activity this month. However, short as the list might be, it is choice and select. 20 c.w./s.s.b. on the big quad or g.p. he worked GB2SM, GB3SET, I3CWX, I4LCK, I6KDB, I7AA, L9FLD, PA9CN, PJ2CR, VE1ARY (PE1), VP5RS, K8NHV/VV5, 4M5A, 4U1TU, 5T5KG, 5W1AA. Best QSLs received were SLOAX, HSI1AK, HS4AK, 4X4UL, OD5LX, KC6BW, EP3AM, KOOXV/CE0, VO1AX, VK0CR, GD-6IA, PJ5CE, VR6TC, LX10C, 9N1BG, 5Z4JH, 9X5PS, 6W8BB, VP2GLE.

Dud VK4MY with his beam lowered to 28 ft. as a precaution against cyclonic weather on the Gold Coast, worked this nice list on s.s.b./c.w.: XW8C 14110, VK0TO 14115, ZS5TU 28585, ZS6ATA 28550, ZS4OI 28580, 9J2DT 28575, HK-4KL 28580, VU2DKZ 14166, KP4BJM 28560, GB2SM 14156, 4U1TU 14122, 19RB 14160, I2LAG 14135, 9M2PO 28568, UW3VT 14142, PA0DEC 14188, 9V1FF 28590, I3CWX 14100, VE1XP 14115, WE8YC 14132, ZS1KJ 28585, OD5FC 14070, WH-6GF 21126, ZL5AC 14150, HM1CB 21027, GW6YQ 14086. Mostly between 0700 and 1200z.

Henry VK8HA in Darwin, who says the wet is now over and conditions improving overall. Some of his QSOs and activities are as follows: On 21 Mc. c.w. OH0NL, PA0LL, UPO1 15 (Nth. Pole), ZE3JX, FR7Z/MM, LA1K, G13TLT, CE3ZW, K7PFU/KH6, UR2DZ, F8OP, KV4CI, ZB2AM, EA2CR, OZ4FF, 9J2HZ. On 28: PA-0DB, DL9PU, HB9GX, UT5UK, OH1TT, UQ2GQ/UA0, K7V4CI and Ws. On 20 mx has improved since March and these past few weeks he has managed SV0MU, ZDSM, ZDSG, XE1KKV, 9X5PS, SF7HX, PJ2CZ, F0A8G, 3C3AYX, FY7JT, CT5AS, DUF1M, VA9ASP and all W areas.

David VK3QV reports good conditions on 28 Mc. In fact he predicts it will turn out better than the 1960-62 era. He has erected a wide spaced 3 el. beam with gratifying results. Some of his recent QSOs are: CR6DX, CR7DS, CT1BE, FK8AC, HL9TQ, HR1KS, KL7WAH, W7VPT/KL7, KP4AST, KW6EJ, MP4TBO, OE-5XXL, OH1VA, OH2TI, OH5SM, SM5BPI, SM-0ANH, UA3WD, UA3ULX, UF6ACR, VE7BO, VK0CR, VK9GN, YV5BG, ZE1JJ, ZK1AR, ZS4OI, ZS3HT, 3C5US, 3C7AXQ, 3C7FZ/SU, 7X0AH, 9J2IE, 9J2WR, 9M2PO, 9M2LO, 9V1FF, XE1KKV, ZC4CN plus many ZS areas, also all W, ZL and J prefixes, etc. All s.s.b. (Really a super list OM and welcome back to the column.—Al.)

Chas VK4UC, a regular voice from the Peninsula, reports 14 Mc. as good between 0500 and 0800z. Has now added s.s.b. to his activity and worked FR7ZL/T, VR3L, VP8BY, FB8WW, F08BU, G1ETK, TL8QQ, ZE4JS, 5W1AA, CM-2BL, 7Q7EC, EL2D, BV2A, CR4BC, H18JG, HS4AK, KC6CL, KJ6BZ, ZS6OY, ZS8OA, 5A3TW, 4M5A, LX1WR, YN1LH, CT1PK, OX-3KM, GB2SM, CR7CI, etc., and on Al mode: OH3YL, ZEBJV, BV2A, 9M8II, VQ8CC, CT1CB, UV3BC/M Mirny, KP4YD, CM2BL, 11YS. Chas reports making some 5,000 odd DX QSLs in three years and says he's dragging his feet!!!!

Jeff VK6C supplies info on the WA6SBO DX-pedition. Equipment to be used is a Swan 500 with ext. v.f.o., 3 el. for 20-10, 14AV5 for 80-40. The vessel is 35 ft. Trimaran, the "Antipodes". Jeff says that QSLs can be sent via K6VAZ, Walter Manning, 2466 Homesite Dr., San Delgo, 92114. When working the expedition, listen as directed. (Tks OM, more when you have it.)

Merv VK4DV from North Queensland reports conditions good on 20, 15 and 10. He lists prefixes worked from all continents such as GW, GM, VA, EP2, VU2, TG, EA8, LU, VP7, ZF5, 9N1MM, ET3USA. (Tks OB, pse give full calls and times next time.—Al.)

Peter VK4FJ says 20 mx is good on the s.p. to Europe at 2000z and VE, W workable at good strength from 0800z. On 15 mx Europe at 1000 and later is workable. Ten has fallen off somewhat but Africans can be QSO'd round 0700z. He lists these good ones as QSO'd: 14 Mc. s.s.b.: VQ8CA, EA3JE, G8KS, F3NI, OH1XB, UW9EF, G3RUN, UA3KBO, F2KL, F3DD, EA7HN, GW3AX, SM5AA, OX4PM, CX-3BBD, F8CS, HB9ABV, KB6CZ, OA4SO, HI-8XMT, VS9MB plus lots Europeans. On ten: UC2AA, GW3MFY, DL9FG, DJ5JK, ZS6RM, YS1O, UF6ACR, F3II, SM2CTY, UW3AD, DU-1DBT, ZS3HT, etc. (Keep it up Pete.—Al.)

Reg VK4VX hands in an excellent 20 mx DX list, but also says he has worked some 60 countries on 10 these past few weeks. An excellent achievement and it augurs well for activity on this latter band next spring and summer. On 14 s.s.b.: CT1BT, CR4BC, CE0A, CN8CZ, CR6IS, CR6GQ, DL1RC, DU7SV,

EL2S, EA3NI, EP2BQ, F5BV, FG8XL, G3KGB, H18XR, HB9VW, IS1EP, IITRA, JT1KAA, LU7MR, LX1WR, OX3WX, PJ2CC, SP7SH, SM4AIQ, UR2KAN, VP5RS, VP2LS, VP6RG, VS9MB, XE0YL, VQ9TC, YO2BE, YV4RZ, YN1HSM, YK1AM, ZF1RD, ZS1FRP, ZS8L, 5W1AA, 5N2AAJ, 9G1KT, 9Q5EP, 8A3TW, 3B1BD, 7X0AH. (Congrats on your 10 mx achievement, Reg OB.—Al.)

SOME QTHs

ZF1RD—K8LSG.
VQ8AX—VQ8AD (QSL manager for VQ8).
6Y5GG—VE4XN.
VR1C—ZL2NS.
W0JJC/KM6—KM6CE.
WA6ZZD/KP6—K6UJW, 4825 Regalo Rd., Woodland Hills, 91364.
KM6BI—WA4KXX.

—QSO and QTHs supplied by VK4DV.
DU1OR—W2CTN.
FB8WW—K2MGE.
ST2SA—Box 244, Pt. Sudan, Sudan.
6W8CD—Box 2025, Castro Valley, Cal. 94546.
VP8IQ and VP8JQ—CX2AM.
VP2MK—W8LWS.
AP8NO—DJ3KM.
I2FRC—IJT.

—By courtesy of Fla. DX'er.
TL8QQ—W4DQS.
ZE4JS—W3HMK.
5W1AA—Box 498, Apla.
CM2BL—OK1GL.
7Q7EC—W5IGI.
EL2D—KJ3JO.
BV2A—Box 101, Taipei.
VR3L—K8PKY.
CR4BC—Box 36, St. Vincent.
YN1LH—Box 52, Managua.
—Supplied by VK4UC.

QBP CLUB NEWS

Last month mention was made of a booklet produced by QRP Area Co-ordinator, Barry VK5BS. Seems I did not have the full info on this. The following is the amended version. I quote: "The Australian and New Zealand Branch of QRP International has issued a functional booklet entitled 'Country Check List', which incorporates all prefixes, U.S. States and Pacific countries, etc. The purpose is to act as a self-contained log for DXCC, WPX, WAP, WAS, etc., with provision for logging QSO and QSLs.

"To obtain it, it is necessary to work three N.Z. and nine Aust. members of the club. Club freqs. are 3540, 7040, 14065, 21040 and 28040 kc. for c.w.; 3855, 7260, 14260, 21300 and 28540 kc. for phone. Forward a list of club contacts to VK5BS, 18 Cornish St., Glenelg North, S.A.

"Members in this area are: ZL1ARY, 1AFQ, 1AWT, 1TB, 2AI, 3II, 1BDF; VKs 2IC, 2QK, 2QL, 3RJ, 3NC, 3YU, 4SS, 4CK, 4TY, 4UC, 4AP, 5BS, 5RB, 7GV, 7KH, 7ZV, 7RG."

ZONE 14 WPX AWARD

The Polar Bears Radio Club issues this award to any Amateur for contact with different prefixes in zone 14. Three classes are available: Class 1 for 100 prefixes, Class 2 for 75 prefixes, and Class 3 for 50 prefixes. Endorsement will be made for all contacts on a single band or in any single emission type.

The countries of zone 14 are: SM, LA, OZ, OY, G, LY, GD, GI, GM, GW, PA, DJJ/DL/DM, ON, F, LV, HB, HE, 3A2, ET, EA6, CTI, ZB2, EI, PX, 4U1. (HB1/FL counts as HE, but CS3, GB, SL, LJ, PJ, etc., are valid for this award.)

A charge of five I.R.C. is made for the costs. Applications (QSLs not required if the list has been checked by another Amateur) should be sent to P.B.R.C., C/o. Sven Elfvig, Sölgardsgatan 15, Örn Skoldsvik, Sweden.

UNIDENTIFIED PERSISTENT INTERFERENCE BETWEEN TWENTY AND TEN METRES

These past few weeks queries have come from the three Eastern VK States as to the source of a metallic, clicking type interference, strongest on 21 Mc. The P.M.G. Vigilance Station in VK4 confirmed this interference, reporting its source as roughly north of New Guinea apparently? When loudest, it QRMs commercial teletype circuits. This direction is verified by the Hams who have turned their beams.

Sometimes the clicking is regular at about 1 second intervals, but varies to a warbling, rhythm like effect many times a second. Its bandwidth is not constant and sometimes covers 12 to 30 Mc. It has been suggested that a satellite is the possible culprit, however some days it is absent and other times strong all through the daylight hours. I'm quite sure the P.M.G. would welcome any clarifying info on it.

My thanks to all those who have taken the time and trouble to help the column along. Come on the air if you can as there is plenty of DX available. 73, Al VK4SS.



News has been received about our Supervisor, Mr. Rex Black, who, after enjoying a very pleasant voyage to Italy, was struck down in Naples by a virus but has now recovered. Rex was very pleased to have an unexpected eyeball QSO with Harry Major from Victoria—another very active Y.R.S. member. As I hear it, Rex and Harry were walking down the same street in London, I believe, when Rex spotted Harry's W.I.A. lapel pin. After catching up with him, you can imagine their mutual surprise when they discovered they knew each other through correspondence and a long association with Y.R.S.

The first copy of the Y.R.S. Newsletter for Supervisors and Club Leaders has been received from the new Editor, Roger Davis, VK1RD. This is full of details on where to obtain information and a short explanation of the various jobs assigned to individuals. With regard to the Postal Groups, it is rather disappointing to see that the total number has been reduced to three in New South Wales. There are many boys who could benefit from this service if the leaders were there and, therefore, any offers will be appreciated. All you need do is contact Roger Davis, VK1RD, Postal Group Supervisor. Actually the job is quite easy as compared with a Club Leader who has to be present on regular days each month. So anyone with an interest in young people could be of help in promoting this hobby of radio and filling a gap in the Y.R.S.

I have some news from Bert Hollebon, VK5EQ, who advises that the Port Pirie Youth Radio Club has a new A.O.L.C.P.—Graham Johnston, VK5ZGJ. The Port Pirie Club has a very impressive list of successes—21 Elementary Certificates, three Juniors, and two A.O.C.F.s. It seems their system of multiple choice questions is paying off. Bert says they found that the younger people doing the Elementary gave a better account of their knowledge with this system. As the certificates progress, the number of multiple choice questions is reduced in order to properly prepare the students for the written P.M.G. exam.

VK3ZTT is the call sign for the A.P.I. Radio Club at the P.M.G. Technicians School, Vic., and is active on Monday, Wednesday and Friday of each week from 0230-0300 G.M.T. There are some 30 members in the club which is run by Tony King, VK3ZUA; Bob Whalley, VK3ZWZ; Dave Buck, VK3ZMX; and Don Reid—all instructors at the school.

Recently a group of boys were heard bashing the air from VK2WJ, Dural, on 146 Mc. They were working up some contacts for their radio telephony certificates and getting some very good experience.

Eric Gauja, Canberra Youth Radio Club, has received his Junior Certificate with Honours.

There are many very active clubs in Y.R.S. and I would like to receive a bit of information about them—membership, activities, club station, facilities, etc.

The Canberra Youth Radio Club is a good example of a small club—membership of 17—which concentrates on the Youth Radio Scheme. Roger Davis, VK1RD, is the leader in this case and they have Elementary and Junior Certificate lectures and several older boys nearing the A.O.C.P. standard. The boys who are very keen, bring their friends and thus the club is growing. They have even started a library. There is a charge of \$1.00 which covers printed notes, certificates, etc.

VK2ATZ is the call sign for the Hunter Branch of the W.I.A. which started operations in May 1964 in an old church building in Teralba with 25 members. With plenty of elbow grease and muscle power, the club now has an office, store, canteen, workshop, tx shack and a main hall for lectures and Morse classes. The membership now stands at 90, but fluctuates a little. The club can operate on 160, 80, 40, 15 and 2 metres.

Classes are held on Wednesday evening and Saturday afternoon with Wednesday reserved for those working for the A.O.C.P. and Saturday for hobbies and Y.R.S. interests. Notes of all lectures are available and there are also

notes for the Junior and Elementary Certificates available. Workshop facilities are available whenever the club is open and there is also a library with a good selection of technical books and magazines. This club handles the Junior Certificate arrangements, setting and marking examinations, etc.

One of the difficulties with people is that very often they work very hard for others and are so modest that they often do not realise their own worth. If you know of anyone like this, perhaps you could get a few details and send them to me as this publicity is to help Y.R.S. and the more we know about it the better.

I will end my notes with the usual request for news. To date I have not heard from VK7 or VK6, so perhaps this can be rectified shortly. Please send all news to me by the last Wednesday of each month. The address is Mrs. M. Swinton, VK2AXS, P.O. Box 1, Kulnura, N.S.W. 73, Mona.

ARE YOU . . . READING "73"?

If you are a DX-er, a VHF-er, or a home constructor; whether your interests are SSB, RTTY, microwave, low brow or high brow, valve, transistor or integrated circuit, "73 Magazine" has something for you each and every month. Every month "73 Magazine" publishes over 30 technical and construction articles—more than the other Ham magazines put together. Since there are so many pages of technical material in each issue, "73" can well afford to have something for every reader; the other Ham magazines just do not have the space. In addition, many of the latest electronic developments have been first introduced to the Ham fraternity from the pages of "73 Magazine." So, should not you be reading "73"?

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NEW CALL SIGNS

FEBRUARY, 1967

- VK2ASZ—K. L. Lear, 179 Russden Rd., Blaxland.
- VK2BRJ—R. H. James, 34 William St., Hornsby.
- VK2BWH—W. J. Hanley, 54 Carinya Ave., Mascot.
- VK2ZUC—R. L. Carpenter, 134 Medcalf St., Speers Point.
- VK3JW—J. W. Martin, Station: Bulumwaal Rd., Wy-Yung, via Bairnsdale; Postal: P.O. Box 239, Bairnsdale.
- VK3ANE—Youth Radio Clubs (Vic. Division), Station: 355 O'Heas Rd., Pascoe Vale; Postal: C/o H. W. Rider, 232 Cumberland Rd., Pascoe Vale.
- VK3AOQ—Hamilton District and Alexandra Colleges Investigators' Science Club, "Mynlong," Kent Rd., Hamilton.
- VK3AOV—V. E. Squires, 1 Tennyson Ave., Kilsyth.
- VK3ATG—J. W. E. Edmonds, Station: Portable; Postal: 56 Baden Powell Dr., Frankston.
- VK3AUN—R. F. Lloyd, 171 Cheddar Rd. West, Keon Park.
- VK3AUO—P. D. Carter, 11 Prince's Ave., Trafalgar.
- VK3AXS—E. Smith, Unit 4, 6 Patty St., Mentone.
- VK3ZBJ—G. L. C. Jenkins, 22 Mernda Ave., Carrum.
- VK3ZCB—R. K. Constable, 84 City View Rd., North Balwyn.
- VK3ZPG—D. J. Palmer, 5 Flora St., Bayswater.
- VK3ZQK—D. W. Malseed, Portland Rd., Heywood.
- VK3ZQS—P. J. Stackpole, 34 Service St., Hampton.
- VK3ZSE—M. Bellaart, 35 Cox Rd., Norlane, Geelong.
- VK3ZSZ—L. Osborn, "Stoneycroft," Splittrock Rd., Upper Beaconsfield.
- VK3ZUC—R. W. Walker, Ash Rd., Leopold.
- VK3ZUE—R. J. Jennings, 11 Dunbar Ave., Caulfield.
- VK3ZUF—P. McNab, 2/137A Woodland St., Essendon.
- VK3ZUG—R. M. Cowling, 5 Weddell Rd., North Geelong.
- VK3ZUR—L. Janes, C/o. 36 R.T.C., R.A.A.F. Base, Laverton.
- VK3ZVA—J. N. Malcholim, 10 Bales St., Mt. Waverley.
- VK3ZVB—B. F. Lavery, 49 Joy St., Braybrook.
- VK3ZWL—J. A. Locke, 9 Ridgeway Pde., Sunshine.
- VK4BL—B. J. Davey, 140 Goodwin St., Currajong, Townsville.
- VK4EN—E. D. Neale, 22 Waterworks Rd., Red Hill.
- VK4GM—A. F. Jacobsen, Station: 25 Kilkivan Ave., Kenmore; Postal: Box 82A, G.P.O., Brisbane.
- VK4NX—N. Williamson, C/o. Peoples Palace, Sheridon St., Cairns.
- VK4TC—Townsville Amateur Radio Club, Station: 17 Neelson St., Wulguru, Townsville.
- VK4ZCT—J. C. Grant-Thomson, 26 Coolah St., Aspley.
- VK4ZDA—M. D. Adams, 25 Australia Ave., Broadbeach.
- VK4ZDR—D. R. McLean, 58 Bell St., Biloela.
- VK4ZZZ—R. G. Crawford, Station: Portable; Postal: Radio Section, 10 Squadron, R.A.A.F., Townsville.
- VK5YL—D. A. Robertson (Mrs.), "Maroomka," Milan Tce., Stirling.
- VK5ZCR—C. E. Rieger, 24 Second Ave., Sefton Park.
- VK5ZLC—C. R. Ludewig, 13 Attrill Ave., Hilton.
- VK5ZOK—N. J. Kennedy, 26 Elizabeth St., Tea Tree Gully.
- VK6DL—J. V. Delano, 145 High Rd., Melville.
- VK6FT—J. F. Reid, Carnarvon Motel, Carnarvon.
- VK6ZGB—I. D. Priestley, 37 Amberly Rd., Balga.
- VK8ZGK—P. C. Kloppenburg, 9 Muldrick St., Innaloo.
- VK6ZGO—G. D. Ogg, 50 Milton St., Mt. Hawthorn.
- VK8AU—D. D. Hanner, Batchelor.
- VK9FM—F. S. Maynard, Block 61, Popondetta, P.
- VK9WD—W. Dalgleish, Kundiawa Coffee Society, Kundiawa, via Goroka, N.G.
- VK9ZCF—B. M. Chester, C/o. D.C.A., Cocos Island.

VHF

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

Well, news time again and I would like to thank all correspondents for sending in their neatly typewritten notes. It will be appreciated that it is much easier to read typewritten notes than those hand written. There is only one request, please leave a margin 1 inch wide on each edge of the paper.

73, Cyril Maude, VK3ZCK.

MACQUARIE ISLAND BEACON

The six metre beacon on Macquarie Island is now operating continuously except for a two-hour period between 0930 and 1130 E.A.S.T. daily. The beacon is on 52,9025 Mc. with an input power of 25 watts. Signals from the beacon were heard in Melbourne on 16/4/67 at 2200 hours E.A.S.T., and were R5 S2 with slow deep QSB.

NEW SOUTH WALES

The April meeting of the V.h.f. and T.v. Group saw a closely contested election for officers of the 1967/68 group committee. Fifteen nominations were placed before the starter, Pierce Healy, and it was heartening to see the keen interest displayed by all present. Elected to office were: Peter VK2ZPC, chairman; Tim VK2ZTM, vice-chairman; Norm VK2ZXC, secretary; Keith 2ZAU, treasurer; Bob VK2ZMM, broadcast and publicity; Phil 2ZPL, contest liaison.

On behalf of the incoming committee and members we extend our thanks to the previous committee for their twelve months of voluntary service.

The new committee held their first meeting three days after the April meeting and decided several matters of policy including the reconfirmation of the members comprising the permanent contest committee. The group committee extends an open invitation to country members not already members of the group to join up, it only costs a four cent stamp, and at the same time let the committee know of your views and suggestions.

Country or interstate visitors who would like to advise the N.S.W. secretary of their itinerary and operating frequencies will be assured of adequate publicity for their forthcoming visit through the Sunday broadcasts.

The Sunday evening v.h.f. broadcasts, propagation permitting, will be radiated on 53,866 Mc. a.m., 53,950 Mc. f.m., 144 Mc. a.m. and s.s.b., 146 Mc. f.m. and 432 Mc. a.m. A roster of originating stations has been drawn up and will be published in the monthly Bulletin.

The new W.I.C.E.N. net frequency, 53.95 Mc. f.m., has got away to a good start with excellent coverage being reported by the early starters. The 53,866 Mc. a.m. net has also found a new lease of life with the addition of several stations in the Blue Mountains area.

A v.h.f. field day was held at Pittown Airstrip on Sunday, 16th April, and consisted of scramble, treasure hunt, hidden tx hunts and pedestrian fox hunts.

The 52 and 144 Mc. fox hunts are held regularly every month and the contest committee are anxious to see new starters in these events. Remember that even s.w.l.s can take part in these events as transmitters are not necessary. 73, Keith VK2ZAU.

HUNTER BRANCH

Would all QSL Bureaux please send all QSLs for the Hunter Branch direct to our own QSL manager, Stan VK2AYL, address as per Call Book.

Six Metres: This band has been very quiet with Channel 0 being heard at times, but we think that it could be Wagga. The Saturday and Sunday morning nets at 1000 hours have been very quiet with VKs 2ZWM, 2ZMO, 2ZJG and 2AYF being the most active stations.

Two Metres: Some good contacts have been had with Sydney town during the week 17th-21st, with the 20th being the best. All signals were S9 plus with Adrian VK2HE on s.s.b. being the best. VK2ZMO worked seven stations and Gordon almost as many. Bill VK-2ZWM and others were also heard working the Sydney boys.

The building bug has hit the locals, efforts range from transistor converters to high power finals and stacked antennae. 73, Mac VK2ZMO.

VICTORIA

From reports received from Melbourne Amateurs there is an increase in activity on the 432 Mc. band, and some stations are reported to be trying out f.m.

Two metres has seen the usual activity plus a few new stations and the re-appearance of a couple of old hands. In the DX way of things, there have been a few openings to Northern VK7 and Eastern VK5, but from reports received from others there could have been many more. This state of affairs could possibly be put down to the many large and noisy power leaks we Melbourneans have had to put up with over the past few months.

Six metres has been like two but here the main activity has been on the a.m. net of 53.032 Mc., with some activity on the f.m. net of 52.525 Mc. Here in Melbourne we have a very queer gent who feeds on bird seed and has a very penetrating whistle and a six metre transmitter. No reports have been received of any DX activity in Melbourne but information from other sources suggests that VKs3 have been heard in KA2.

The VK3 V.h.f. Group meeting was held on 19th April and some 60 members and visitors heard Graham VK3ZWA (ex VK6ZDB) describe and demonstrate radio control systems as applied to models.

The two metre fox hunts and scrambles still attract the numbers and for fox hunts we have got down to using 250 milliwatt transmitters and we still find them. 73, Cyril VK3ZCK.

EASTERN ZONE

Channel A f.m. is very active between 0600 and 2300 E.A.S.T. with some stations using Channel B to get away from the QRM. Any Amateurs travelling through Gippsland are welcome to call on Channel A and arrange eyeball QSOs.

David VK3DY was told by a KA2 (in Japan) that this month (May) he has heard VK4, VK3, VK2 and VK3 on six metres, so he is now building a one kilowatt rig so that he can make a two-way QSO.

Active in Gippsland are: David VK3ZOZ, Art VK3ZAT, Lee VK3ZSS, George VK3ZCG, David VK3DY, Peter VK3ZDP, Harvey VK-3ZWH, Duncan VK3ZQB, George VK3AED, John VK3AOJ, Harry VK3ZX, Allan VK3ZNB, Barry VK3ZQC, Bert VK3BB and Graham VK3ZQZ. Between them they use 6 a.m., 2 f.m., 2 a.m. and all the h.f. bands. 73, George VK3ZCG.

QUEENSLAND

At the April v.h.f. meeting a record attendance was noticed. Peter VK4ZPL flew down from Townsville for the night. Dave VK4DP gave a summary of Convention matters concerning the Limited licensee. W.I.C.E.N. was also discussed but nothing was finalised.

Fox hunts in Brisbane are now on both six and two metres and are held by the D.C.A. group who are not Minitrans fanatics as is generally believed. These fox hunts are well attended and have not become drag races as they seem to be in other States.

The VK4 beacon project is nearing completion and a keyer disc seems to be the main hold up. The intended frequency is 144.4 Mc. The local t.v. station TVQO provides a weak but very effective six metre beacon. On the subjects of projects, the 432 converters being built at the QTH of Roy VK4ZRM are progressing smoothly. Only four regular 432 Mc. signals can be heard in Brisbane, these are of Bill VK4ZBD, Kev VK4ZR, Alan VK4AI and Roy VK4ZRM.

Six metre activity in Brisbane is declining and the general move is to two metres because of t.v.l. problems. During April, VK3s were heard in Brisbane but openings were very short and signals very weak. JAs have been worked from Brisbane and northern districts and signals have been quite strong. Alan VK4ZAW is having a ball with the JAs and is a keen DX man. Openings have generally been during the evenings and due to t.v.l. most have had to be content to just sit and listen to the JAs. Alan tells me that Australian high band television was received in Japan recently, also it seems that JA1GJ is now on 51.990 Mc., while JA4, JA6 and JA8IGY remain on 50.5 Mc. Peter VK4ZPL told me that in Townsville nearly all the Pacific area can be heard on six metres during the evenings, and that Russian t.v. near 50 Mc. is quite strong. New calls on six metres are: John VK4ZFD, Norm VK4NP and John VK4ZR. George VK4ZMG and Peter VK4ZPC are in the design and construction stages of filter type s.s.b. excitors.

On two metres, to be "with it" now, it seems that one must have high power or s.s.b. Tom VK4ZAL still works the Toowoomba chaps with his five watts. Graham VK4ZZG is still lethal in my area, Lawrie VK4ZBL and Ron VK4ZK have good s.s.b. on two metres and no doubt others will follow. Mike VK4ZMW has a new seven-tube g.g. converter and Bill VK4ZBD still makes the first r.f. tube glow blue.

On a final note, don't miss the VK4 Convention at Alexandra Headlands on 2nd, 3rd and 4th June—should be quite an affair. 73, Mike VK4ZMW.

SOUTH AUSTRALIA

Activity in VK5 at the present time is somewhat depressing, however some incentive is currently available with the news of JA activity from VK8. It has been reported that VK-8ZMR in Darwin has worked 160 JAs recently and it would appear that the entire complement of six active Amateur stations in that area have really "been having a ball". As yet the elusive DX from JA has not reached this southern latitude although a report of scatter signals on April 8 at 1430 hours S.A.S.T. by Garry SZK may indicate the tide of events to come.

On the 2 metre scene the main source of activity is presently centred on Jim VK5ZMJ at Port Pirie, who through the use of s.s.b. has licked the t.v.l. situation. In addition, John VK5ZBZ has been heard from the Pirie area.

It has been reported that Mick VK5ZDR and Herb VK3NN are currently conducting daily tests on 144 and 432 Mc. to ascertain whether there is any direct relationship between the two bands as inferred by W land types who claim 432 Mc. is equivalent to 144 Mc. for long haul communication. They have drawn no conclusions, however Mick reports that the 432 signal is always audible however the a.m. readability is highly debatable at times.

With respect to the t.v. boys, George VK5GG has at last perfected the video signal and is currently trying to add the f.m. audio onto the 432 Mc. carrier, 5.5 Mc. away from the video. 73, Colin VK5ZHJ.

WESTERN AUSTRALIA

The following DX countries have been heard on six metres in the Bunbury area: JA, BV, Korea and plenty of f.m. and video.

8/3/67: RTTY, 2-way f.m., t.v. video and Hams, BU2ZAZ, BV2YM, JA2DB.

14/3/67: F.m., t.v., etc.

29/3/67: F.m., t.v. video on exactly 44.5 Mc. with brief pictures.

30/3/67: F.m., t.v. carriers, etc., more DX.

4/4/67: This day was very interesting. I very much doubt that these signals were from W land; it could have been KR6 or even Vietnam. All day American voices were heard and from their conversation it seemed like military networks (two-way f.m.).

5/4/67: More DX to north, with HLKA Korea, f.m. (commercial) on 49.6. It peaked 9 plus and in some instances one could here the news-reader rustle the papers. 73, Danny VK-6ZFF. (Reprinted from the West Australian V.h.f. News Bulletin.)

TASMANIA

Launceston Area: Two Metres—Activity on this band is mainly between 0700 and 1100 E.A.S.T. and at week-ends. Most stations in the Launceston area are able to hear Melbourne stations on the average of two or three nights per week. The Melbourne stations have been called but alas no stations have been worked with the exception of Ron VK3ZER, who can be heard most nights, so how about it chaps, try swinging those beams south for a change.

Six Metres—Activity on this band at the moment is low, with the main activity being mobile stations. In the near future there is to be a translator put into service on channel one from channel three, so there could be t.v.l. problems in the Launceston area. There are stations at the moment building high power six metre gear.

Hobart Area: Two Metres.—This band is not very active at the moment, but there are stations who are either building or planning to build in the near future.

Six Metres.—This band is the main one in use in the Hobart area. The main frequency used is 53.035 Mc., the a.m. net, with about twenty mobile stations on at the moment. Most home stations have this frequency also. There is Morse practice two or three nights a week on the net at about 2000 hours E.A.S.T. and this runs for about half an hour.

73, Brian VK3ZBR/7.

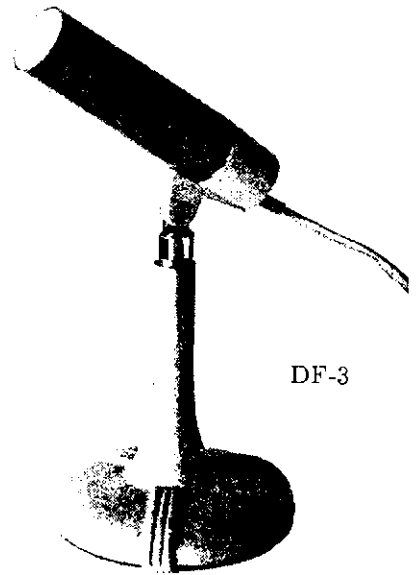
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FEDERAL AND DIVISIONAL MONTHLY NEWS REPORTS

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

FEDERAL

FURTHER EQUIPMENT APPROVED

In the December 1966 issue of "A.R." (page 6) is a list of sideband equipment approved by the Radio Branch of the P.M.G. Department. In a letter dated April 1967, the Department indicates that they are prepared to accept, as meeting the 400 watt p.e.p. power output limitation, the Yaesu Musen equipment, type FL50 and FT100, as meeting these requirements.

NEW ARRANGEMENTS FOR QSLs TO VK

Due to the heavy and steadily increasing workload at the W.I.A. Federal QSL Bureau, 23 Landale St., Box Hill, E.11, Vic., it has become necessary to re-organise the W.I.A. Inwards QSL Bureau.

Commencing immediately, the Federal QSL Bureau can handle cards ONLY for VK8, VK9, VK0 and unlisted stations.

Cards for all other districts should be sent DIRECT to the Divisional Bureaux listed below.

VK1 and VK2—

VK1 and VK2 QSL Bureaux, W.I.A., Box 1734, G.P.O., Sydney, New South Wales.

VK3—

VK3 Inwards QSL Bureau, C/o Mr. E. Trebilcock, 340 Gillies St., Thornbury, N.17, Victoria.

VK4—

VK4 QSL Bureau, Mr. J. Files, VK4JF, 18 Vanda St., Buranda, South Brisbane, Queensland.

VK5—

VK5 QSL Bureau, Mr. Geo. Luxon, VK-5RX, 27 Belair Rd., Torrens Park, South Australia.

VK6—

VK6 QSL Bureau, Mr. J. Rumble, VK-6RU, Box F319, G.P.O., Perth, Western Australia.

VK7—

VK7 QSL Bureau, Mr. J. Batchelor, VK-7JB, 39 Willowdene Ave., Lower Sandy Bay, Tasmania.

VK8, VK9, VK0—

W.I.A. Federal QSL Bureau, 23 Landale St., Box Hill, E.11, Victoria.

— . . . —

FEDERAL QSL BUREAU

The background to current changes in the Australian QSL Bureau organisation may prove of interest. During the past nine months, handling of cards through the Federal Bureau have trebled and many months have been four times the total of any previous corresponding month. This huge increase in the workload has, in my opinion, been brought about by a number of factors: (1) The tremendous growth of s.s.b. operation; (2) the availability of commercial equipment; (3) the steady increase in the Ham population all over the world; (4) the rapid improvement in DX conditions on all bands; (5) the greater use of outward bureaux for the despatch of QSLs.

In the past six months the handling of the load at this Bureau has demanded from 12 to 16 hours of labour weekly, to do the job as it should be done, even with assistance freely given by Dave Jenkins, VK3ABR, which is gratefully acknowledged. However, devoting all this time to Bureau duties has upset domestic obligations and restricted social intercourse and made inroads into the time available for radio activity.

The receipt in one month of five consignments of cards—three from Japan and one each from the U.K. and Italy—each weighing 10 lbs. and containing 7,500 cards in total, brought the situation to a head, and as a result I asked the Federal Executive to relieve me of the job. This was discussed at the recent Easter Convention in Hobart.

After further thought on the subject, it was apparent that whoever took over the job, no matter where located, the same labor problem would be involved and would probably result in many changes of managers and bureau addresses, which would become confusing to Overseas Bureaux.

Therefore I suggested to Federal Executive that they implement now a scheme that must inevitably have been introduced in the early future. That is that all Overseas Bureaux be

directed to mail direct to each Division (VK2 to 7 inclusive) and that the Federal Bureau handle only VK8, VK9 and VK0, and also unlisted VK stations. The A.R.R.L. were forced to implement a similar plan many years ago and indeed have recently further divided one of their districts.

VK Divisional Inward Managers will not be involved in any extra work, merely receiving the cards direct from overseas instead of through the Federal Bureau.

The scheme, which should be fully operative after the expiration of twelve months, should result in faster receipt of cards, save work and circumlocution and also reduce postage bills.

The Radio Society of Ceylon draws attention to their Worked Ten Ceylon Award. Full details from this Bureau.

The Windsor Ontario Canada Centennial Committee, in conjunction with the Windsor Amateur Radio Club, announces a "Windsor Centennial Award" during the year 1967. Contacts with five club members earns a certificate and each month a draw from certificate winners decides the recipient of a silver medal, and a later draw decides the winner of a set of coins (including a 20 dollar gold coin). Full details from this Bureau.

EI4BK advises of the annual DX-pedition of Region 4 of the I.R.T.S. This year they plan operation from Bere Island off the s.w. coast of Eire, from 1700z, June 3, to 1200z, June 5. They will use all bands from 160 metres to 14 Mc. inclusive, and all modes. The call sign will be EI0BI. A special QSL card for contacts will be issued by EI2AW.

The new address of the DL4/DL5 QSL Bureau is: M.A.R.S. Radio Station, Hqrs. 93rd Signal Battalion, A.P.O. New York 09175, U.S.A.

Tubby Vale, VK5NO, reporting in from Eldo Tracking Station, Gove, Arnhem Land, N.T., where he is signing VK6NO. Present gear is an FL200B and a local version of RA117. He is waiting for his house to be completed and says the area is fine for DX and also fishing. Reports that son, Jeff VK5ZP, was married last February.

—Ray Jones, VK3RJ, Manager.

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FEDERAL AWARDS

DEUTSCHER AMATEUR RADIO CLUB

ISSUES "WORKED ALL EUROPE" AWARD

It is stated in the rules "as a recognition for the close co-operation of the European short-wave Amateurs and especially as an expression of a sincere relationship between the Amateurs of the world, the D.A.R.C. grants the W.A.E. award for outstanding operational performances in three different classes: W.A.E. 3, W.A.E. 2, and W.A.E. 1."

The W.A.E. countries list comprises 60 countries, territories and islands in and around Europe. All Amateur bands may be used and each contact with the different listings on each band counts one point (3.5 Mc. contacts from VK count two points).

W.A.E. 3 is for 100 pts., min. 40 countries.

W.A.E. 2 " 150 " " 50 "

W.A.E. 1 " 175 " " 55 "

D.A.R.C. advises that the new Awards Manager is Walter Geyrhalter, DL3RK, 8950 Kaufbeuren, Box 262, Germany.

In furnishing the above information, D.A.R.C. "congratulates VK4FJ, Roy Baxter, for being the first Amateur in Oceania to obtain W.A.E. 1 (c.w.) and W.A.E. 3 (phone) too." VK3AHO, Bill Hempel, holds W.A.E. 3 (2 x s.s.b.) certificate No. 6.

Detailed rules and application form may be obtained from W.A.E. Award Manager, DL3RK.

SILENT KEY

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

VK2ARA—W. Short.

VK2BDF—D. Freemantle

VK3BY—Otto Holst.

VK5JO—J. E. McAllister.

NEW SOUTH WALES

OFFICE-BEARERS FOR 1967

Following the election of Councillors and the Council meeting held on 7th April, the office-bearers for VK2 Division for 1967 are as follows:—

President: K. Finney, VK2KJ.

Vice-Presidents: W. Lewis, VK2YB; C. Wilkins, VK2ALB.

Treasurer: Mrs. Gerdes (until June).

Secretary: Not filled.

Legal Officer: W. Clark, Assoc.

Registrar: W. Johnston, Assoc.

Education Officer: H. Burtoft, VK2AAH.

Class Supervisor: C. Bardwell, VK2IR.

QSL Manager: T. Whiting, VK2ACD.

Predictions Officer: F. Hine, VK2QL.

Bulletin Co-Editors: W. Johnston, Assoc.; G. Sabin, VK2AGS.

Morse Supervisor Tape Service: E. Hodgkins, VK2EH.

Morse Supervisor Practice Sessions: D. Courtney, VK2AUC.

Librarians: K. de Haan, VK2UE; P. Tavarie, VK2ATA.

Engineer-in-Charge: D. Duff, VK2EO.

O.I.C. Dural Grounds: L. Cartwright, VK-2ZIC.

Y.R.S. Council Liaison Officer: D. Jeans, VK2BSJ (Councillor).

Zone Liaison Officer: C. Henderson, VK2CH (Councillor).

W.I.C.E.N. Co-Ordinator: V. Cole, VK2VL.

Communications Officer: W. Lewis, VK2YB (Councillor).

Divisional "A.R." Correspondent: S. Dogger, VK2ZRD (Councillor).

An additional number of positions and appointees are to be determined by Council and these will appear next month.

MEMBERSHIP DRIVE FOR N.S.W.

The new VK2 President, K. Finney, had barely had time to warm up the hot seat when he announced that the Division was going to launch a solid membership drive. All Amateurs are reminded that the W.I.A. can progress to greater achievements by having new blood in the ranks, in the form of more new members. Putting it bluntly, the writer feels that the figures of membership are a disgrace in VK2, so how about it you guys? The slogan, old as it is, is good for this drive: "Every member get a member." I feel that no more need be written here, just see that your mates are with the "in people" in th W.I.A.

ZONE LIAISON OFFICER

Council has established a new position of one councillor being a Zone Liaison Officer. The idea is to provide the necessary communication between the country Amateur via his Zone Officer to Council.

LIBRARY

The Librarian advises that a good supply of books and magazines are always available, country members are able to secure loans as well as visitors to W.I.C. Contact the Librarian for details at W.I.C.

Y.R.S. LIAISON OFFICER, N.S.W.

Councillor Dave Jeans has been appointed as Y.R.S. Liaison Officer in N.S.W. Following the departure of the Federal Co-ordinator, Rex Black, VK2YB, for an overseas holiday, it was discovered that Y.R.S. activity was on a decline in N.S.W. and as the W.I.A. has put a great deal of effort into Y.R.S. it was decided to assist the Y.R.S. in N.S.W. by giving them a spokesman on Council.

DURAL TRANSMITTING STATION

Country and city members alike will be pleased to learn that the equipment at Dural will be added to in the next few months, as well as the existing equipment being overhauled. Full details were not available at the time of writing, but your correspondent understands that the v.h.f. and a.m. equipment is to be overhauled to bring it up to standard. It is also known that the W.I.C.E.N. group plan to install a 53.950 Mc. f.m. base at Dural to supplement the existing 53.866 Mc. a.m. base equipment. Plans for the h.f. equipment are not yet formulated, but it is hoped that the BC610 80 mx transmitter can be replaced shortly as this unit worries the operators

somewhat and has had several failures which have interrupted the Sunday morning broadcasts.

"SOUTH EAST ASIA NET" AWARD CERTIFICATES

Mrs. Hebe Grouse, VK2AOK, advises that she has been appointed the custodian for the "South East Asia Net Award" certificate. Hebe is taking over from the previous custodian who was 9V1MT, Harry Pain, who is returning home to G. land. This net meets nightly on 14.320 Mc. at 1200 G.M.T. The attractive certificate is awarded to any Amateur who works 12 south east Asia net members outside the net time.

NEPEAN FIELD DAY

Members are advised that the Nepean District Amateur Radio Club will not be holding their annual field day until the spring this year.

VISITORS TO SYDNEY

During mid April Amateurs in Sydney were privileged to meet well known Alaskan Amateur, Nancy Lee Dittman, KL7FCG, and her family. KL7FCG is very well known in Alaska together with her mother, KL7EWH, as the organisers of the Bush Amateur Radio Training in that country.

After some nine years in Alaska the Dittmans decided to migrate to Australia and in so doing were on their way to Launceston, Tasmania, when they passed through Sydney.

APRIL MONTHLY MEETING AT W.I.C.

The April general meeting was held at Wireless Institute Centre on 28th April with an attendance of some 60 members. Visitors included Eddie VK1VP, George VK3WJ, and Les VK2AIF/XV5 portable. Les visited to tell us that he has just returned from South Vietnam. Les is the sole member of the Army Radio Club VK2AIF at Ingilburn Army Camp, but now that he is back he hopes to get the Club re-established so that Amateurs in the camp should contact Les for the gen.

The Education Officer, Harold VK2AAH, said that some 116 lecture tapes were in circulation and that he had only lost one. Harold went on to say that lecture tapes are readily available for the return postage charge and that many subjects are covered, so members who miss lectures given at meetings may be able later to obtain the lecture on tape. In conclusion, Harold said that the lecture subjects were carefully selected and members should not hesitate to contact him on these points.

Reporting on W.I.C.E.N. activity, Vic VK2VL said that v.h.f. mobiles were used extensively in the Sydney area and 53 Mc. units were used in the Blue Mountains and Illawarra areas. Vic went on to say that h.f. was going to be used in contact to country areas and this was partly set up in the form of call backs to VK2WI at Dural after the Sunday broadcast. Concluding, Vic said that it was not necessary to have a mobile unit to take part in W.I.C.E.N. activities and exercises as there was always a need for assistance at Dural to man the base station and do the necessary paper work during an exercise, an example of this being shown in the recent article in "A.R." on the VK7 emergency.

The lecture for the evening was given by Bruce Ridley of the D.C.A. Laboratory staff and was on Transistors in R.F. Service. Bruce covered the use of transistors in v.h.f. amplifiers, in the various configurations discussing the problems and advantages of the various circuits shown on the many slides used. Circuits of transmitters were shown and commented on. The vote of thanks was moved by Dave VK2EO who said that the lecture was appreciated and the usual round of applause followed.

The June lecture will be "RTTY—All About It," and will be given by Pat Bennet who is an engineer with D.C.A. It is believed to be a good lecture on a subject of which little is known in VK2 but of which many are very interested.

CONTEST CALENDAR

- 8th/9th July: N.Z.A.R.T. Memorial Contest (3.5 Mc. only).
- 8th/9th July: R.S.G.B. 1.8 Mc. "Summer" Contest.
- 12th/13th August: Remembrance Day Contest.
- 12th/13th August: 13th W.A.E. DX Contest (c.w. section).
- 9th/10th Sept.: 13th W.A.E. DX Contest (phone section).
- 7th/8th October: VK-ZL-Oceania DX Contest (phone section).
- 14th/15th October: VK-ZL-Oceania DX Contest (c.w. section).
- 14th/15th October: R.S.G.B. 21/28 Mc. Telephony Contest.
- 28th/29th October: R.S.G.B. 7 Mc. DX Contest (phone section).

The meeting closed at 10.30 p.m. just after the chairman had announced that consideration was to be given to starting the meetings at 6 p.m. as is the case in similar organisations. So no doubt we will hear more of this later.

73, de Stan VK2ZRD.

HUNTER BRANCH

So you want to go sideband. Well if you missed the April lecture you missed your chance to indulge in the gentle art of duck-talking at bargain rates. Ian 2ZIF amazed

OBITUARY

BILL SHORT, VK2ARA

Bill hailed from the Grafton district and during World War II. was employed at an aircraft factory at Auburn. After the war he was employed at Telephone and Electrical Industries Ltd. He had a home at Beacon Hill on the north side of Sydney, until his retirement when he left and built a home in the Clarence River district. Bill had only recently become active from this QTH when he suffered a fatal heart attack. Members who visited W.I.C. on bulletin folding days and assisted will remember Bill as a very willing worker for the W.I.A. in many practical jobs around Atchison St.

Deepest sympathy is extended to his many friends on their sad loss.

DAVE FREEMANTLE, VK2BDF

Dave commenced radio construction at the then early age of 12 in India where he lived, and took up a career in communications with the Indian Railways. Dave first became active in mid 30s as VU2CR, operating from all parts of India. The advent of World War II. saw Dave join the British Indian Army, gaining a commission, and eventually retiring after full service with the rank of Lt. Colonel. Following his retirement he migrated to Australia in 1966 and was employed in the military electronics field.

Dave had only recently taken out the call VK2BDF and was busy preparing his shack on the morning of his sudden death.

His many friends extend their deepest sympathy in this sad loss.

OTTO HOLST, VK3BY

Members of the W.I.A. will be sorry to hear of the passing of an old timer, Otto Holst, who died on 31st March, 1967, aged 60 years.

Hector (died 1954) and Otto shared the Call Sign VK3BY dating back to the original issue of the VK signs, just after the 1914/18 war.

For about ten years prior to the second war, VK3BY was well known to Melbourne listeners for its broadcast of music on 255 metres late at night and on each Sunday.

Hector and Otto designed and built a 4kw. transmitter for the Melbourne Herald station 3DB.

For 36 years up to his death, Otto supplied and operated the public address system in the Melbourne Town Hall.

The VK3BY mast, 105 feet of Douglas Fir, erected about 1930, still stands as good as ever, at 27 Bamba Rd., Caulfield.

W.I.A. members extend their deepest sympathy to the family of Otto.

JOSEPH EDWARD McALLISTER, VK5JO

The VK5 Division, with sincere regret, announces the passing of Joe McAllister, VK5JO, who died on Saturday, April 29, from a heart attack.

An ex-councillor of his Division, and one of the few Life Members, Joe has been a hard worker in the interests of VK5, both administratively and socially, and during the years when the social activities in VK5 were greater than now, Joe could always be found enthusiastically engaged in all of the jobs usually avoided where possible by other Council members.

He was mainly responsible for the formation of the Brompton Boys' Club, and steered that venture through many successful years. Active on the air until just recently, and thus well known throughout VK, he will be missed by many, and to his sorrowing wife, Nellie, and the members of his family we extend the deepest sympathy in their sad loss, and can only hope that the hand of time will help to erase the shock of his passing.

everyone with his new all-transistor transceiver for 80 and 20 which he displayed at the meeting. This all new unit which was designed and built by Ian is quite small by usual transceiver standards. In fact it is only about one third of the size of the smallest of them. (What about amazing me by sending an article on the thing.—Ed.) By demonstration it goes like the proverbial rocket and part of the reason Ian says is the use of a 9 meg. filter (recently released) which does away with the need for i.f.s. To go on and detail all the new and bright ideas which the design contains would occupy more space than the column allows but, suffice to say, it is a revelation in design and construction and sure proof that Amateurs are still able to roll their own—in this case convincingly better than the professionals.

There was a film about expired air resuscitation also at the April meeting. It is always the obvious things that escape our notice, so the message in this film was an important one and worthy of the attention of all. Electric shock is a very real danger to all of us and this film showed very graphically what can and should be done in an emergency. The film shown is the first of a series of colour documentaries, mostly concerning electronics which will be shown at future Hunter Branch meetings. It is proposed that the screening should start promptly at 8 so if you are interested, please be early.

The Branch has made a bulk purchase of some 2N3564 types and these are available to members at an attractive price. Tony VK2ZCT is looking after the distribution and, if he has any left when this appears, he would be pleased to do trade by post. His address is okay in the Call Book. Of course these semi-conductors will also be available at the meetings. Tony, aforementioned, has already made good use of the same devices in a transmitter for 2 metres. Using five transistors, the output is around ½ watt. It will be the subject of a forthcoming lecture at our meeting. Here is another example of Amateur ingenuity—printed circuits and all. (Why not submit for publication in "A.R."?—Ed.)

The Monday night broadcasts are now on a roster basis and it is aimed to have this service transmitted from as many locations as possible. Already, many have volunteered for a turn on the programme and it should be possible to maintain continuous Monday night operation for the next month or so. If you would like to have an opportunity to take part and your name is not on the roster, please contact Frank 2ZFX who will place your name on the list.

Back on the air after a long absence is Leo 2QB, heard calling in to 2WI a Sunday or so back.

With the possible issue of some more car-phones, the 146 meg. net looks as if it is now well established. Bill 2ZWM seems to have sorted out his problems and even John 2ZJG can hear signals on his f.m. crystal set. To cap it all, there is a plan to relay broadcasts on Sunday mornings and Monday nights on 146.0, preliminary tests having confirmed that both Bolton Point and Teralba are good originating points for f.m. You'll stand a better chance of hearing the signals with a vertical aerial however. Still using f.m. and a modification of the crystal set mentioned earlier, John is to make an excursion to Wollombi and all points thereabouts with some Scouts. I'm not sure of the date for this, but a listen around v.h.f. will soon put you right.

Surprise of the month came when a familiar voice signing ZLIAMU came up on 80 the other night. So that's where he went! And again from overseas, Jim 2AHT is keeping in touch with Jack 2KQ at this end. When last heard he was in Panama. Kev 2ZKW is still making the headlines with the Club at Maitland. Apparently he has some very eligible young men up there since latest reports indicate that YLs are being attracted to the activity. And, of course, the new licence will be coming along soon so expect to hear Maitland Y.M.C.A. on very shortly.

I hope that the July meeting has not escaped your notice. Our well known Secretary will be the chief talking man on this occasion and Gordon will be discussing how to make Command receivers really go. He has all sorts of bright ideas to make them perform as their designer never intended and you will be well rewarded if you come to room 6 in the Clegg Building of the Newcastle Technical College on 7th July. And there'll be a film too. See you, 73, 2AKX.

CENTRAL COAST

The general meeting of the Central Coast Branch was held on Friday, 21st April. The suggestion of a club field day was discussed. Sunday, 4th June, being the tentative date set. The lecture was given by Tony 2ZCT on his

experiences while building an all-transistor 2 metre transmitter. One of Tony's main objectives of the project was to prove that the one transistor type could be used throughout the various stages of the transmitter. It was a most interesting lecture, that was supported by a very good attendance. 73, Bill VK2TS.

VICTORIA I.T.U. FUND

Further donations to the I.T.U. Fund have been received from: Anon. \$20.90, VK3ZIQ \$5, VK3ZE \$3.70, VK3ZOO \$2, VK3WT \$2, VK3FD \$2, VK3CB \$2, VK3GY \$2, VK3OJ \$1, VK3ZQF \$1, VK3OW 20c.

EASTERN ZONE

We welcome all Zone members and visitors to our Eastern Zone Convention being held over the Queen's Birthday week-end, 10th and 11th June at Maffra.

If you and your family or friends wish to stay the Saturday night, please book in per our Secretary, Stan VK3ZAB, Traralgon, or David VK3DY of Maffra. Dinner and Convention business in the Presbyterian Hall at Maffra on Saturday evening, arrive by 1700 hours. Ladies can go to the pictures.

Sunday is open, perhaps a Zone disposal and swap session, so bring along any gear you may like to sell or swap, also in the morning an optional trip to David's (VK3DY) shack and t.v. workshops. Then a picnic lunch at the picturesque Glen Maggie Weir. Bring along your mobile and portable gear, as we will make full use of 80 and 40 mx a.m., and 2 mx f.m. channel A, also 6 mx a.m. net (53.032 Mc.) on the Sunday morning (no Ch. 0 transmission!). So we hope to see as many as possible, and we welcome you all to come along.

Channel A 2 mx f.m. is now a very active channel in Gippsland. We even use Channel B to take the overflow traffic! 73, George VK3ZCG, acting Notes Correspondent.

MOORABBIN AND DISTRICT RADIO CLUB

Although visitors are always welcome at the Club, it is not the easiest place to find. The club room is in Black Rock and not, as one might suspect, in Moorabbin. A further com-

plication is that, although the postal address of the club is 17 College Grove, Black Rock, the entry to the club room is off Karrakatta Street!

Karrakatta Street, Black Rock, runs off Bluff Road, parallel to Balcombe Road. On the north side of Karrakatta Street, almost down to the College Grove end, there is a large wooden gate with a small door in it—this is the entrance to the Moorabbin and District Radio Club, which meets on the first and third Fridays of each month.

The first Friday is a "natter night" with no formal business, and while the older members group around for a "rag chew," the younger ones are able to "have a go" at the Club's transmitter—VK3APC—which is operated by Drew, VK3ANU.

The business meetings are held on the third Friday, and are usually followed by a lecture, films or a demonstration of gear.

Kits for the Club transistor receiver, recently featured in "A.R.," can still be obtained on application to the Secretary, Harold Hepburn, VK3APQ, 4 Elizabeth St., East Brighton—Phone 96-2414. Harold arranges for kits to be made up as orders are received and a steady flow of enquiries is still being satisfied.

The club station—VK3APC—now operates regularly on 20 metres, controlling a net of Club members. Overseas stations are invited to join in, thus giving them the opportunity of contacting several Club members in the one evening as a means of qualifying for Honorary Membership. President Bill Yates, VK-3AHS, operating as VK3APC/P started the ball rolling on s.s.b., followed by Jack VK3VT. Other Club members will take turns at operating as VK3APC/P.

The slow Morse practice sessions transmitted by Drew VK3ANU between 8.30 and 9 p.m. on Tuesday and Wednesday evenings on 144.4 Mc. continue to provide a service much appreciated by Limited licensees aiming to take out a full call. One of Drew's "pupils", Alan VK-3ZSL, was among the successful candidates at the April examination.

The Club library has been improved by the purchase of several new text books and the donation of some others by Neil VK3ZRT and Jack VK3VT. 73, Stan McLean, Asst. Sec.

QUEENSLAND

TOWNSVILLE AND DISTRICT

At the monthly meeting of the local Radio Club for April, it was pleasing to note that the newcomers to Townsville are really interested in the Club. There were also a few that came along to enquire the why's and wherefore's of how to become an Amateur, also if the examination was very hard. It was explained that it did entail quite a few missed dates with the opposite sex and that some midnight oil would be consumed. With aid of the classes and diligence on their part, there was no doubt that they could pass the examination.

It appears that some of the members have put in quite a lot of time approaching the local city councillors with regard to having a block of land put aside to erect a club house. It is to be hoped that one of the selected sites upon Castle Hill near the water reservoir will be granted. All in all, this spot would be well above the city hustle and bustle and well away from man-made noises, besides giving a splendid path to most of the globe and a spot from which to view the city below, and Magnetic Island in the distance.

Once again it is the desire of the club members to hold an evening get-together same as in the past.

Wonder if you have noticed the March issue of "73" and the beaut seven element beam on 14 megs. This would look nice on Bowen Road and be a landmark to all visiting Hams. Must try and talk 4B or 4EJ into its possibilities.

As I hope to visit Cairns next week-end, we will have some info from that neck of the State. It is pleasing to see that the Ramm boys still journey the 100 miles round trip from Ayr to the local club meetings. Certainly makes us locals seem small when we miss out in coming along. 73, Bob VK4RW.

BUNDEBERG AMATEUR RADIO CLUB

I am slightly out of touch with Club events this month, after 14 days in VK3 and 3 days in VK2. If the news runs out before the end of the allotted space, I have a legitimate excuse. At the C.D. School at Mt. Macedon, I had the pleasure of meeting Hilton ZL1AKW, Joe VK4OJ, Don VK5TM, Tony VK2ZDG/T, John VK2EJ. We spent many of our off study hours rag-chewing.

Most of the parts are to hand for our emergency 240v. a.c. power supply and now we require several good working bees to make it a going concern.

The big event of the month was the B.A.R.C.

participation in the Centenary Raft Race. The race was conducted on the Burnett River on Saturday, 22nd April. A moderate degree of chaos prevailed throughout the event. Our lads came in seventeenth in a field of thirty-five. Well done, chaps! All ten of you. Our raft carried the station call sign of VK4BW/Marine Mobile on 6 metres. Contact with the control point was maintained throughout the event. The gear consisted of a Pye Mk. 3 into a 3/4 wave whip. More sophisticated gear was contemplated, but we had warning of a large number of buccaneers and boarding parties roaming the river, so we decided on something simple. Our raft was last seen drifting away into the sunset, carrying two forlorn looking figures and the station equipment. The questions of the month are: Has the gear been recovered? Is anyone missing?

Don VK4NK is well and truly away on 15 metres. Don has been heard working many DX countries on a.m. He is also on 6 metres now. Exams. are over once more and we wish those who sat for them the best of luck. For those who fall and we hope there are none, we say, "Don't worry, there is always a next time."

On that sad note, I will wind it up for now. 73, Rusty VK4JM.

SOUTH AUSTRALIA

The monthly general meeting of the VK5 Division was held as usual in the club rooms on the night after Anzac Day to a record attendance of members and visitors—a record that I sincerely hope will never be beaten in the future. The attendance was the huge number of 30 members—an all-time record low, and I only tell the truth because the Editor, may his red pencil never be used against me—has a couple of spies planted right in the middle of VK5, and if I ever err on the side of untruth, he will be right on to me. Several reasons can account for the low attendance, the main one being that it was not the usual Tuesday night, due to Anzac Day falling on the Tuesday this year, with a consequent shifting of the meeting night to the Wednesday, but whichever way one looks at it, the attendance was without doubt very poor.

The first part of the meeting was given up to a report on the VK7 Convention by the Federal Councillor, Geoff 5TY, in his usual inimitable manner, and the applause that greeted him on its conclusion is still bothering him, because it was so noisy that he is not yet sure whether it was because of its excellence, or because he had finished speaking. Anyway, this was followed by a smoke-on and then the distribution of the QSL cards—an all-in effort by the members of Council present—because George 5RX was conspicuous by his absence. Then followed a screening of the colour slides taken by the aforementioned Federal Councillor, taken in VK7 on his recent visit. The slides created considerable interest to all present, so much so that the chairman, Murray 5ZQ, became so bemused that he forgot to ask anyone to propose a vote of thanks to the speaker, which meant that Geoff simply mounted his umbrage and peddled forth into the night with his morale considerably bent.

A visitor to the meeting, although he is a member, was Ernie Luf, WIA-L5080, who admits to seeing the light of day during 1984, and is one of VK5's keenest s.w.l's. His QTH is at Elizabeth and he has been a VK about two years or so, and has a trunk full of awards and belongs to enough clubs and associations to prove his keen interest in the hobby of s.w.l.

In these notes recently I alluded to the fact that the Associate Members did not appear to have a representative on the Council and a certain gentleman by the name of Wayne Kitchener, complete with beard, was foolish enough to make a few enquiries from a certain Council member as to why and why not. The sequel is of course obvious to anyone who knows the inner workings of the VK5 Division—it gives me great pleasure to announce that the new Associate Member's representative on the Council is Wayne Kitchener, complete with beard, and also now a full wake up that silence is golden!! Welcome Wayne, and my commiserations, they caught me the same way, but my trouble is that I still have never learnt to keep my mouth shut. You ask them! Incidentally, quite a number of Associate Members seem interested in W.I.C.E.N., but seem to think that W.I.C.E.N. is open only to Full Members. This is a long way from the fact and any grade of W.I.A. member is more than welcome to join the gang, and believe me, there is plenty for all to do, and if there was not, "Old Grumpy" will manage to find something!!

Col 5CJ made one of his rare visits to Adelaide over the Easter break, and found time to look up a couple of his radio friends. He does not always get time to do this these days,

VICTORIAN DIVISION W.I.A.

EASTERN ZONE

CONVENTION

10th and 11th JUNE

Saturday, Maffra, Dinner 5.45 p.m.

Sunday, Barbecue Lunch at Glenmaggie Weir

For reservations, contact VK3DY, David Scott, 174 Johnston St., Maffra. Deposit of \$2 must be included with application.

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Secretary W.I.A., Victorian Division, P.O. Box 36, East Melbourne (Phone: 41-3535, 10 a.m. to 3 p.m.), or the Class Manager on either of the above evenings.



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but he did take time out to spend a half hour or so on the landline, aside from the previously mentioned personal calls on at least two Amateurs. Long time no see Col. How is the tiger? Or don't you call him that now? Our VK5 Councillor, that happy-go-lucky and cheery Geoff 5TY—I am giving the "Grunpy" a rest for a while, he is too big for me—is without doubt of ample proportions as Federal Councillors go, but the Observer, Treva 5ZIS must have caused a few Federal brows to pucker up when he was sighted at the Convention. He is about three inches larger in every direction than Geoff. All of which is to prepare you for the statement that VK5 was amply represented at the VK7 Convention. Oh, I am a one!

I noticed in a recent report of a lecture at a VK2 meeting that Keith 2ZAU began by stating that the most efficient system of transmission of intelligence was c.w., followed by s.s.b. and others. Naturally I read no more of the lecture for fear of becoming tainted, but I have made him an honorary full member of my shun-sideband-association in honor of such a statement, especially in open company. Sit down, fellow!

Over Easter the call sign of VK5RN was heard on the air and I had to look up the call sign book to make sure that I was not making a mistake. Apparently David 5RN-1ATR was over on a short visit and took the opportunity of making his presence known.

Once again Phil 5NN is among the award winners for technical articles to the magazine. To Phil, Harold 3AFQ and Roger 3ZRY go congratulations, and praise for a job well done. More power to you gentlemen.

The annual Convention was quite a do, according to reports drifting through from my espionage agents located right at the spot. In fact, the VK5 delegate is reported as saying that the Divisions could save money by not booking sleeping accommodation for the delegates. Evidently they don't make much use of sleep at such gatherings, in fact Treva 5ZIS stated quite definitely, when interviewed by our special representative upon his return, that anybody who thinks that the Convention is a holiday has another think coming. Incidentally, he managed to get his camera wet and had quite a job sorting it out afterwards, although he was assisted by Geoff 5TY who is an adept at Esperanto and knew all the suitable words to use when the going got tough!!

One of my spies reports that he heard George 5CV calling on 14 Mc. and looking for the Firebird Club and expressed "iggerance" as to the said club. I have forwarded my reprimand on stiff paper to him and pointed out that evidently he does not read my notes in the magazine, because I have already made reference to this club when I said that Rob 5WA was having a go at his tickle, now that he has become a gentleman of leisure, just so as he could perhaps contact the members of the Firebird Club in W. land. Now Rob was at G.M.H. as is George, and if this does not ring a bell, then I am a failure.

At a recent lecture in the club rooms covering oscilloscopes, the speaker made use of the term "cooking with gas". John 5KK, in proposing a vote of thanks to the speaker, said he took a dim view of the use of such an expression as his organisation was doing its best to sell electricity. There is now talk of firing the E.T.S.A. boilers with natural gas at the generating point, so it now seems relative to ask, "who cooks with what?" The member for Osborne will now take the floor!

Recently mention was made in the W.I.A. broadcast that a certain W Amateur would arrive in Adelaide by air on a Friday, would be staying at the Hotel Australia, and would be pleased to contact any VK5 Amateurs. The Friday duly arrived on schedule, and certain W.I.A. representatives were in attendance, but no Yank put in an appearance, and he was not sighted at the Hotel Australia. In view of the fact that he was on his way to Alice Springs as the end of his journey, it can only be presumed that he finally arrived at his destination. Here's hoping anyway!

Jack 5LR recently returned from a stay at Victor Harbour, was so taken with the locality that he has now sold up his QTH at Blackwood and plans to reside at Victor in the near future. One of my spies, who moves in vice-regal circles, tells me that the new QTH is very near the summer residence of the South Australian Governor, so I expect that before long will be referring in these notes to my friends Sir John and Lady Florence at their summer residence. Ho hum—what it is to be rich and in the social whirl!

Vern 5VB—the Admiral to you—was recently heard talking about a quad for 576 Mc. Just where he will erect such an object, considering all the other skywires at his QTH, is somewhat debatable, maybe the "shipyard" has been enlarged since the disastrous fire.

Contacted quite a few new call signs and

missed out on a few of the old ones this year whilst fixed portable at the Oakbank Racecourse over the Easter period. Never heard Comps 5EF, but had the usual contacts with Carl 5SS and Frank 5MZ, and despite the fact that I ran for cover up and down the band, was finally cornered by Les 5LC and almost at the point of a gun was forced to QSO him, and suffer the humiliation of having to listen to his s.s.b. signal. He sure is persistent, this fellow, no matter where I bobbed up, he was on my wheel, and became almost insulting at the finish when I would not answer. Joking aside Les, I enjoyed the contact, even if I did not agree with all you said!!

The fates were kind to me just after I finished with Les, right on top of him as he finished came a decidedly watery and wobbly signal which, try as hard as I could, would not resolve. Les broke in and said that he could not resolve either, and I politely went back to the watery one, and said, "Sorry OM, but I cannot resolve your signal, I think you might have a little trouble." Back came the signal, but still no good, so I put on my best s.s.b. voice and said, "Still no good OM, I think you are having trouble with the quiescent plate to cathode capacitance, due to the bifilar choke having a high peak emission, and thus being out of step with the thermal power." I also suggested that he get in touch with Phil 5NN, the maestro of s.s.b., who would no doubt put him on the right track in no time. Back came the signal, now improved out of sight, and a very embarrassed voice said, "Okay Pansy, this is Phil 5NN, sorry about the signal, was having a little trouble with my squelch circuit, but okay now." My cup of happiness was full to overflowing, fancy me giving advice on "The Thing" to the maestro!!

The passing of Joe 5JO came as a shock to most VK5 Amateurs, but to those near and dear to him it was not so unexpected, as he had been ill, due to his heart condition, for some time. Possessing no special qualifications, Joe found passing the examination for his ticket quite a hassle, and consequently after securing it he esteemed it much more than most Amateurs. Well known throughout VK for his activity on the air until just recently, he will be missed by many, and the ranks of the hard workers for the VK5 Division have been sadly depleted by his passing.

Returning from the weekly visit to the supermarket recently, my ears were assailed by a barrage of toots and hoots from an approaching automobile being driven by Jack 5JS and before I could rush inside my bark hut, he was introducing me to Bill 3AAW from Wannambool. Despite the fact that he was a VK3, he turned out to be quite human and had quite a few words in favour of our fair city and its inhabitants. He endeared himself to me immediately by stating that he was a reader of the VK5 notes, and even though Jack kept on calling out, "Don't tell him anything, he will only use it against you," we had quite a chat on various matters and parted on good terms. Just fancy, a VK3 and I parting on good terms!! Would the magazine committee please note?

Talking of the magazine committee, and who would want to unless the idea was to get sweet with them, I notice in their monthly report for April that they ask me to note that Greg 7ZKJ had submitted a story on the Hobart fires, which upon reading I must congratulate for a factual and absorbing report. I noted with real pleasure that he has now joined the ranks of VK call signs, and upon this I also congratulate him wholeheartedly. However, as he is still under suspension for his previous article on "The Thing," including a sneer at me, I must refrain from saying any more until the suspension is lifted, plus answering his letter to me on both the above matters. Nice work Greg, quite the best news to come out of VK7 for some time.

Have not heard anything from Les 5PN for some time, but one of my spies tells me that he is hale and hearty, and still interested in the hobby. What about some news of yourself Les? I promise to distort it for you!

It is well over twenty years since I first started writing, at the direction of Council, the weekly W.I.A. notes in the local paper. During this time, I have never even slightly departed from the strict decorum set up by this paper and any time I slightly got off the straight and narrow, into the w.p.b. went the paragraph without fail. Not so my two relief journalists, Geoff 5TY and Phil 5NN, who kindly take over during my holidays, etc. Take this year, Phil with careless abandon writes along the lines that "the usual writer of these notes is at present on holidays at Oakbank and can be heard among the mobiles and portable stations active on the bands." Now for the parry and thrust, "He is using an umbrella-topped vertical antenna, and can be heard contacting his many friends in VK3." I have been able to explain technically the

details of the umbrella-topped vertical to all the kind and loyal friends who have made enquiries as to its construction—but how can I explain about my many friends in VK3!! Oh that such wickedness should be. Umbrella-topped vertical—wouldn't it?

Heard on the beanstalk that John 5SJ is about to emigrate to VK2 in connection with his vocation. This will not be the first time he has had a VK2 call sign, as he was at broadcast station 2BH at Broken Hill for a while and his VK2 call was well known in that area. Best of luck, John.

One of my secret agents stationed at a Tasmanian airport tells me, with tears in his eyes from laughing, that a certain VK5 delegate made a special trip out on the tarmac to photograph a departing plane, only to find that the said plane was the one he should have been on! No wonder everybody on the plane seemed so friendly and waving at him! Just think, the destiny of the VK5 Division lay in his capable hands! Understand that Geoff 5TY added two new words to his already extensive vocabulary when he woke up that the plane was his. Anyway, he is back in VK5, so he must have wangled it somehow. Just imagine it, he nearly became a VK7!

Arthur 5HY, who has been on the sick list, is well on the way to recovery and providing he takes it easy, all will be well with him. I rang to see how he was making out, and he sounded quite cheerful and told me that his s.s.b. set-up has been the best therapy of all. When I told him that I felt that a.m. therapy would be even better, he turned nasty and threatened to leave his s.s.b. equipment to me in his will. How vindictive can they be?

Received in the post this month a copy of "Break-In" with the compliments of the N.Z.A.R.T., from ZLZAPC. An excellent magazine this, and when one remembers that it started as a news sheet some 40 years ago, it has certainly come a long way. The only thing that puzzles me is why was I singled out for the honour, especially by ZLZAPC, who conducts the Technical Notebook section for the magazine. Has he mixed me up with someone else? Does he think I am somewhat down technically? Or could it possibly be that my well known personality has penetrated even ZL land? Let's hope it is the last reason! Anyway, many thanks OM, the thought was much appreciated.

I notice with troubled feelings, in fact I read it in a certain VK publication, that a young Brisbane university student borrowed an entire A.B.C. radio station recently—4QG to be exact—and operated it for four nights one week for a series of late-late broadcasting tests. He is doing a thesis on radio for his Master of Engineering Science degree. This was not the reason for my disquiet, oh no, what did cause the attack of collywobbles was the fact that he—and I quote—"Wanted to compare a new system of compatible single sideband modulation with the double sideband modulation normally used in Australia." He asked listeners to write in commenting on their reception of d.s.b. as compared to s.s.b. as he switched from one to the other and the replies flooded in—how do you like that?—the replies flooded in! Apparently VK4 has tired of accusing me of verbosity, etc., etc., and this is their new secret weapon—and all because I once suggested in these notes that they could not grow a straight banana—me and my big mouth!!

Anyway, some good news has arrived from overseas. I read that a new association was to be formed to be known as "A.M. International," with the idea of giving the s.s.b. gang a run for their money on all bands. My cause is not entirely lost. How do you like that? Comps 5EF—
73, Debs 5PANSy to you.

WESTERN AUSTRALIA

Hi there! What's new? Well one thing is for sure—a brand new son and heir for Lance 6LR and XYL. Congratulations to you both.

There is also a brand new 6 metre ground plane atop one of the tall structures at 6LV and thereby hangs a tale. It appears that Jack 6RT was bitten by the construction bug one recent evening—you know how it is. Gathering sundry bits and pieces of dural tube and plate, screws, nuts, co-ax connectors, pipe fittings, etc., etc., he settled down to the task of constructing the thing. It was a nice night and a transistor radio played quietly in the background as work proceeded. Various friends dropped in to gaze in awe and generally distract the constructor. At last it was complete and everyone ducked as Jack held it proudly aloft. There it was—magnificent against a background of hacksaws, screwdrivers, benches, windows, doors. DOORS—oh, no. Yes, you've guessed it, no matter how he twisted and turned the fool thing, it just would not fit

through the doorway. Ah well, it wasn't really so hard to re-assemble it again outside was it Jack?

Keep an ear open on 40 metres for a brand new call VK6NKG (Cliff) who tells me that he is constructing a sideband rig, in fact by the time you read this he may well be operating regularly.

It was nice to meet up with Keith 6KH at a recent meeting. Hope you can make it more often OM.

Another visitor at the same meeting was Karl VK2BKK/Portable 6, who has hopes of getting VK6IZ. "KK" as he is better known, numbers DL4IZ, WA9RYN, W3ZVK among his previous call signs and, to use his own words, he is having a ball on 20 metres c.w.

News to hand indicates that Doc, ex VK6AQ, is operative under his previous call of VK3AVM and would be pleased to contact VK6 stations on 40 and 80 metres.

That lush green lawn springing up around the QTH of Bill 6WY is the direct result of his trip overland. When Bill cleaned the car afterwards there was enough dust and mud to top dress the lawn.

It would appear that the club station 6AT may soon be on the breeze again from the air base at Pearce. Some fourteen or fifteen intrepid birdmen have shown an interest in Ham Radio and with a bit of gentle urging from Mick 6FP and Norm 6NS should soon have the club active again.

Another bloke doing a bit of hinting at the possibilities of Ham Radio is Bob 6BT who has been nudging some of his students at Kalamunda High in the right direction. He and Bob 6BE gathered a few of the boys and a couple of interested parents (yes, this rare species does still exist) in their respective shacks for a practical demonstration. And a practical demonstration it was. I mean to say, when was the last time you heard a "round table" of seven stations on 80 metres? Practically unheard of during the last couple of years you must admit. Anyhow, those guilty of taking part were 6BT, 6BE, 6RG, 6GL, 6PH, 6LV (also with students) and yours truly.

Coincidence Corner. Can you beat this? A little while back, Bob 6GF was in contact with G5RV (of antenna fame) who mentioned that he would soon be operating portable from Iraq or Iran or some such desert outpost, with the call of EP2RV. Some little time later, Bob worked a guy from this area and enquired of him whether he had heard anything of EP2RV? Imagine their surprise and pleasure when a "breaker" announced that he was indeed the man in question, G5RV/EP2RV. It appears that while going about his daily tasks he had left his transceiver running in his nearby vehicle, and upon hearing his name and call sign being taken in vain, decided to investigate. Bob is now awaiting a card to back up his story.

Meanwhile, back in the jungle, activity on the v.h.f. bands continues to boom. I almost heard a station on 6 metres the other night—I think.

It would appear that we have a very distinguished gentleman trying to conceal himself in our midst. However, even the best kept secrets will get out. So next time you pass Jack 6TX in the street, just tip your hat or bend the knee or something as a mark of respect. It's NOT everyone who belongs to one of Mexico's more exclusive clubs, and what is more, he has a membership certificate to prove it. A fine body of men that Pistol 4 Club. I dips me lid.

Another of the local gents who is being transferred to the Eastern States is Wolf 6ZAY. Good luck in the new surroundings OM.

Permit me to stand on the soapbox and give forth with a couple of blasts on the trumpet. There's nothing like blowing one's own trumpet occasionally and if we don't do

so in this Division no one else will do it for us. The cause of this mild outburst is the fact that VK6 is ahead in donations to the "Australis" project. Come on some of you "Bigger" and "Better" Divisions. We'll stand by with pressure packs while you open the purse strings.

Talking of moths, reminds me of mothballs. A most useless invention. I have never managed to hit one of the little blighters with one yet!

Perhaps I had better bow out quietly before I get thrown out. 73, Ross VK6DA.

TASMANIA

First and I think foremost this month, an appeal to all those who have not yet paid their subs. At the last Council meeting probably all time record of 92 subs. still remained unpaid. Everyone still overdue has now had his "A.R." cancelled, and this creates extra and unnecessary work for both the Secretary and Treasurer, as well as a financial strain on the Division. So this year, and every year, please make sure your subs. are paid.

Now to the lighter side of things. Wilf 7ZAQ has now passed the c.w. exam and is awaiting a full call. And on the subject of new calls, Nancy, ex-KLTFCG, has recently settled in Launceston and become VK7ZA. She will be active on h.f. and on 2 metres. Welcome to VK7 to you and your family, Nancy.

And still on the subject of people shifting around the world, our old friend Basil VE6APO, ex VK7BL, is now listening around 14150 at week-ends between 0600 and 0700z for any contacts back to VK7.

Last v.h.f. season, VK7 had but one brave soul operating on s.s.b. From the present trend, however, it seems likely that quite a number of operators are experimenting with this mode and the one will be multiplied many times by the arrival of the next season. Just off hand, I can think of about ten stations who have started taking the great step forward or who are aiming at it.

While on the subject of the duck talk gear, Den 7DK has just recently purchased a new receiver-transmitter combination which sits proudly beside his still-retained transceiver. This, together with the proposed new tower and beam combination should make quite a formidable set-up for future contests and the like.

A lecture was given this month by our lecture officer, Len 7LB, on a portable rig he has constructed for the shipping frequencies and the eighty metre band. It was an excellent lecture and a very fine piece of gear.

The Jamboree-on-the-Air is fast approaching again and has unfortunately been scheduled for the week-end before the R.D. contest. In spite of this, please give it time if possible as the number of stations participating is the key to the success of the event.

The next general meeting of the Division will be an auction sale to dispose of all sorts of things the disposals committee have been hoarding up in their little store. So come along and see what you can spend your money on.

And don't forget—if you haven't already done so, please pay your sub. 73, VK7ZLP.

HAMADS

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

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ESTATE, the late VK2AKB: Hallcrafters HT-32, 10-80 mx, s.s.b./c.w., self-contained filter-type tx. \$275. Hallcrafters SX-100 continuous coverage 550 Kc. to 30 Mc. Receiver, plus Ham-bandspread dial, sideband and selectivity controls, built-in crystal calibrator. \$225. Hallcrafters HA-2 2 Metre Transverter, self contained 50w. p.e.p., never used. \$225. Cossar single beam C.R.O. 5 inch, type 1045, \$75. Cossar V.T.V.M., type 1044K, \$40. A.W.A. Universal Bridge, A56048, \$30. Phillips Transistor Tester, \$15 O-Max British made G.D.O., all colls, 240v., \$25. Further for sale: Hy-Gain 14AVQ, \$30; 18AVQ, \$50; both used but perfect. Used Mosley TA33 Junior Tri-Band Beam with CDR AR-22 Rotor and 30 t. Telescoping Mast, \$100. Heath model HD-10 Electronic Keyer, new condition, \$45. Galaxy V. s.s.b. Transceiver, with heavy duty a.c. supply unit in Galaxy cabinet, together with stable external V.F.O., \$425. Alex Outtrim, VK2EX, 30 Boomerang Rd., Springwood, N.S.W.

FOR SALE: Amateur Ten (mech. filter), 5-band a.m.-d.s.b. Transmitter, Electronics, \$200. BC348, built-in power supply, \$34. BC453, \$14. Otto Sass, VK2SI, 12 Ruswell Ave., Speers Point, N.S.W.

FOR SALE: Eico 753 s.s.b.-a.m.-c.w. Transceiver, silicon transistor v.f.o., complete with a.c. p.s. speaker unit, little used. \$350 o.n.o. 48 Orchard St., Mount Waverley, Vic. or phone 232-9492.

FOR SALE: Heathkit Mohican Transistorized Receiver, 550 Kc. to 30 Mc., \$125. BC453 L.F. Command Receiver, \$17. Mullard 10/10 Amplifier and Pre-Amp., \$38. 522 Transceiver, \$17. Triple Command Receiver Racks, \$1.75. Welwyn Wire Wound Resistors, Erie Tubular Ceramic Capacitors. Phone 870-5508 (Melb.).

FOR SALE: K.W. Viceroy, Mark 2, 3.5-30 Mc., complete with power supply, good condition, \$340. VK5GM, Phone 3-4542.

FOR SALE: Swan SW240 Tribander with 240v. a.c. power supply and opposite s.b. in mint condition with instruction manual, \$475. VK2ALR, Ron Richardson, 12 Bowden St., Parramatta, N.S.W.

FOR SALE: Table-top Panda PR120V Transmitter, 150w., 80-10 metres, a.m., c.w., mint condition. Bargain at \$100. Also grey crackle finished five-draw steel rack, complete with 1500v. 400 mA., 500v. 200 mA., 200v. 100 mA. power supplies and zero bias Class B 807s Modulator, 2 spare drawers. Ideal for v.h.f. or linear. \$50. Comps Daw, VK5EF.

FOR SALE: Trio 9R-42J 9-tube bandspread Receiver, modifications include voltage regulator and product detector. 110v. input, excellent condition, \$50.00. K. V. Roget, VK3YQ, 43 Willow Gve., North Kew, Vic. Phone 85-3604.

FOR SALE: UM2 Mod. Trans., \$13. Command Rec., 3-6 Mc., \$12. T.V. Projection Unit, Schmidt Optical Projector and 2 inch mag. def. tube, \$20. One-third h.p. motor and refrigeration compressor, \$10. VK3ZAN. Phone 306-9380.

RECEIVER, Telefunken 15 valve, 1.5-25 Mc., five tuned r.f. circuits, variable crystal filter, bandspread, crystal calibrator, a.c./d.c. supply, information and spares, \$120. Various Items Ham gear clearing out, any reasonable offer. VK3AVB, Phone (Melb.) 89-1411.

SELL: Drake 2B with O Multiplier, speaker, hand-book, perfect order, \$360 or nearest offer. VK5WG, Ngapala, S.A.

SELL: Hy-Gain 18AVO 10 through 80 metres all-band Trap Vertical. New, in original unopened carton. Sells \$50 in U.S.A., cost \$100 to land. Sell \$70. Roth Jones, 1 Albert Rd., Melbourne, S.C.2. Phone 28-6911

SELL: Two metre crystal locked Converter, three-tube, i.f. 7-11 Mc. \$20 or best offer. Bridger, VK3ZF1, Phone Melb. 65-1270 (business) or 90-5347 (home).

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WANTED: Central Electronics Sideband Slicer and O Multiplier, Model "B". Condition and price to J. Wayland, 97 Cambridge St., Camp Hill, Qld. Phone 98-4314.

WANTED: English Practical Wireless, as follows to complete collection: All copies for 1948; Nov., Dec., 1950; April, May, Sept., Nov., 1956; all copies, 1960; May, Aug., Nov., 1963; also Practical Electronics, Nov. 1964. Please write or ring first regarding any or all copies and price, 68-6857. W. Babb, VK3AQB.

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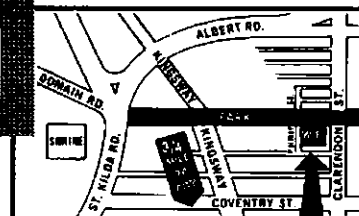
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16	500	65c	250	15	50c
24	350	50c	250	25	50c
24	500	80c	250	50	85c
25	25	30c	500	6	45c
25	50	35c	500	12	65c
30	6	25c	500	15	65c
30	12	25c	500	25	70c
32	350	65c	500	50	\$1.15
32	500	95c	1000	15	85c
50	6	30c	1000	25	\$1.20
50	15	30c	2000	15	\$1.00
50	25	40c	2000	25	\$1.35
50	50	40c			* P.V.C. can type

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John Batrick, VK3OR

FEDERAL COMMENT

☆

ON HOMEWORK

This evening, perhaps, while your chil-
dren are doing their homework—before you
chase those long-path Europeans on 20
metres, or chat to a couple of your friends
on 2 metres, or finish wiring-up that project,
or whatever you planned—may we suggest
some homework for you?

In this issue appears the first of a series of Executive Communica-
tions designed to acquaint Australian Amateurs with certain important
matters affecting the future of Amateur Radio. Please read George
VK3VX's article on the I.T.U., then to do some homework!

Take a piece of paper, a pen; rule your paper down the page into
three columns. Head the first column "for us", the second one "agin us",
and the third "don't know". Look at the list of Member Countries of
I.T.U., and place each in one of the columns, then add them up. What
is your answer?

On what basis can one place countries in those three categories?
Yes, it's a bit hard, even for h.f. operators; v.h.f. operators do this
exercise, too—although you are not much concerned at operation outside
Australia, the maintenance of your spectrum allocations within Australia
depends on just the same thing: **VOTES AT I.T.U. CONFERENCES
CAST BY AMATEUR-ORIENTED COUNTRIES.**

How does one tell if a country is "Amateur-oriented"? Some guide-
line: Is the Amateur prefix often heard? Is the operator of that station
an indigenous person (not an ex-patriate American, Briton, etc., or a
DX-peddler)? Does his country have an active Amateur Society?
Has his Society such a standing that he is a member of it? Is his Society
on good terms with his country's administration?

Affirmative answers probably indicate that the country MAY be
"Amateur-oriented", and it MAY cast its vote in favour of its Amateurs
and their frequencies. My homework indicates that in the last resort
we will need 66 countries who do! Unless there are no further I.T.U.
Conferences. Then what?

—JOHN B. BATTRICK, VK3OR, Federal Secretary.

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Data	PC1	PC2	PC3	PC4	PC5	PC7	PC9
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Outp. Imped. ohms	40	15	15	15	3	8	600
Supply Volt. —volts ..	9	9	9	9	12	9	9
Typical Distortion % ..	2	3	3	3	3	3	1
Frequency response	300-15K	200-12K	200-12K	200-12K	50-12K	50-12K	20-20K
Overall Dimensions	2x1	2½x1½	2½x1½	2½x1½	5½x1¾	3x1¾	2x1
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- PC3—D.C. Relay Driver. Sound-level Meter Amp. Low Power Battery Stereo. Heating and Ventilating Control Amp.
- PC4—G.P. Amp. and Driver's Office Dictating Machines. Listening Booth Amps.
- PC5—Portable Audio Amps. Car Radio Audio Amps. Servo Amplifier. Tape Relay Amp. Automation Drive Amp. Burglar Alarm Amp.
- PC7—Tape Language Lab. Telephone Dictating Machine Amps. Control Amp. for Textile Machinery.

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Type K5B20: Normal a.c. (r.m.s.) Circuit Voltage, 240 r.m.s., Current capacity 5 amps. \$3.45 plus S.T. 12½%

Pulse Diode, Type K2C 78c plus S.T. 12½%

Pulse Transformer \$1.20 plus S.T. 12½%

Please add Packing and Post, 10c set.

NOTE: A Circuit is available for making a 1,000 watt Light Dimmer using K5B20, K2C, Pulse Transformer and a few resistors and condensers. Write or call for a copy.

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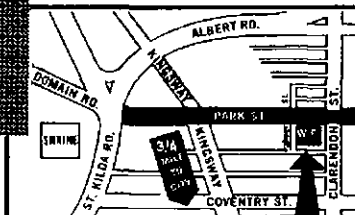
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CONVERSION OF CRYSTAL CALIBRATOR No. 10

• There are a number of these crystal calibrators on the market at a very low price, which make excellent wave meters. However, unmodified it is necessary to supply the unit's filaments with 12 volts d.c., which is difficult to obtain without lugging a car battery into the shack. Readers are given a choice of two methods of conversion for the filaments of the unit.

THE unit consists of a 500 Kc. crystal controlled oscillator, providing output in multiples of 500 Kc.; a v.f.o. with a tuning range of 250 Kc. and a mixer in which the signals are combined and the output taken.

Output is useable to 30 Mc. at 2 Kc. calibrated intervals.

The calibrator requires an external power pack of 12v. d.c. for the filaments and 250-300v. d.c. h.t. (More output is obtained when the h.t. supply is 300 volts.)

Valves used are 1T4 (crystal oscillator), 1R5 (mixer), 1T4 (v.f.o.) and a CV286 neon which discharges at one second intervals to identify the unmodulated carrier output.

Modifications to Permit D.C. Operation on 3v. in lieu of 12v.

ALAN R. HERALD,* VK3AJF

The simple modification described enables the filaments to be operated on 3 volts d.c. at 150 mA.

Remove the four screws at the extreme corners of the front of the unit and remove from the box. Lay on the bench face downwards with the dial glass nearest to you. A thick wire choke will be noticed attached to the left side of the switch. Connect approximately 2½" of wire from the solder lug at the left end of the choke to the solder lug on the top edge of the chassis to the left of the neon tube (CV286). (There is a r.f. choke connected from this solder lug to pin 7 of the neighbouring CV785 tube.)

Next lay the unit upright on its top edge. Behind the switch, between the two panels, in the right hand corner will be found a red 22 ohm resistor connected from the rheostat to an earth lug. Cut the resistor from the earth lug and leave the cut end clear of the chassis. It may be possible to completely remove the resistor from the rheostat, but it is difficult to get any tools into the small space. The unit will now operate on 3 volts d.c. filament supply and 250-300 volts d.c. h.t.

Connections on the input pins on the front panel are now as follows. The left hand "thicker" pin, 3 volts positive; centre pin, h.t. 250-300 volts d.c.; while the right hand "thin" pin is the common negative.

No doubt the connecting cable provided will be used to connect the battery and h.t. Do not be fooled by the colours of the wires in this cable; they are most unconventional.

As the power consumption at 3 volts is only 150 mA., a cycle lamp battery should be sufficient to supply the unit for a long time with the intermittent use a wave meter gets.

If the dial does not zero beat the crystal frequency at the high frequency end (left end), adjust the trimmer adjacent to the tuning condenser.

A full description of the technical details of the unit will be found in "A.R.," December 1960.

Rewired for A.C. Valves

I. W. O'TOOLE,† VK2ZIO

As the author is not equipped to operate battery tubes, conversion to a.c. became a necessity and operation of the filaments from 12v. a.c. was tried, but proved to be unsatisfactory owing to a high hum and low output level. (The latter being apparently normal.)

As this step proved unsuitable, the unit was rewired for a.c. valves. Of the valves on hand, the first selection proved suitable. They were: 6AM6 (xtal osc.), 6AM6 (v.f.o.) and 6BE6 (mixer). The neon (CV286) remained unchanged.

Although the change to a.c. valves requires the complete rewiring of the sockets, no component values have to be changed, or additional ones added. The filaments now become 6v. operated, though 12v. operation is possible by placing a dropping resistor in series with one of the valve filaments, or replacing this with a pilot light of suitable current rating, installed above the dial plate.

When the power was applied a very considerable increase in output was evident, the results being well worth the time taken.

Expected operating voltages should be:—

Crystal Oscillator, 6AM6:
Plate 60v., Screen 60v.
V.f.o., 6AM6:
Plate 40v., Screen 15v.
Mixer, 6BE6:
Plate 30v., Screen 25v.

These voltages may appear to be rather low, the input h.t. being 230v., though any increase in h.t. applied to the tubes would result in increased temperature drift after switch on, which would be when it was required for measurement.

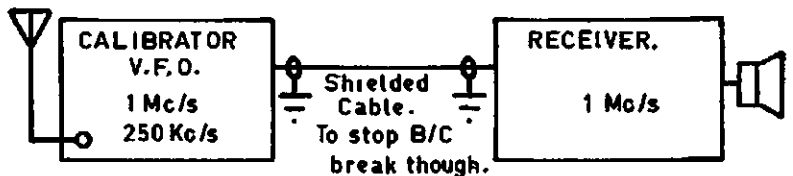
Effective h.t. on the plates and screens could be increased by altering the value of the feeder resistors, which are quite high, giving increased output if one was not concerned with drift.

VALVE BASE NUMBERS

Pin	1T4	6AM6	1R5	6BE6
1	F—	G1	F—	G1
2	P	K	P	K, G5
3	G2	H	G2, G4	H
4	NC	H	G1	H
5	F—	P	G5, F—	P
6	G1	G3, Is	G3	G2, G4
7	F+	G2	F+	G3

At this stage, the v.f.o. calibration accuracy was checked and found to be quite erroneous, brought about by the changed valve capacitance and component positions plus the fact that the

Aerial (finger) for 10Kc/s calibration.



Control switch on "DIAL".

Tune V.F.O. for zero beat.

CALIBRATING THE V.F.O.

The cathodes of the three a.c. valves were earthed, the crystal oscillator and mixer valves directly, and that of the v.f.o. through the v.f.o. coil (Z1/ZA 34863), the connection being made to the lug nearest to pin 7. All other wires were reconnected to the appropriate elements.

Rewiring may appear to be tedious work, but it did not exceed 45 minutes in the author's case, and he also managed to fit all of the components back in!

adjustments had not been adequately "anchored" when the unit was last calibrated.

Calibration appeared to be rather a headache and after much thought a foolproof method was evolved, whereby the v.f.o. could be calibrated against the crystal oscillator, using a receiver tuned to 1 Mc.

With the control knob turned to 500 Kc., the receiver is tuned to 1 Mc., a b.f.o. being used to zero beat the incoming signal. With the control knob on "dial" the v.f.o. is tuned to 1 Mc. (calibrated scale) and the Philips trim-

* 12 Elm Street, Surrey Hills, E.10, Vic.

† 78 Garden Grove Parade, Adamstown Heights, Newcastle, N.S.W.

mer on C26 (v.f.o. gang) is adjusted until the v.f.o. zero beats with the xtal oscillator output at 1 Mc.

The v.f.o. is then tuned to 250 Kc., the harmonic from this being used to zero beat with the crystal output on 1 Mc., the v.f.o. frequency being adjusted by the slug at the top of the v.f.o. coil (Z1/ZA34863).

These two operations are repeated until calibration at both ends of the dial is correct. When this has been achieved, the unit can be placed in use.

The addition of a shielded output socket and lead to the receiver (which is a necessity during normal operation) and the retaining of the original screw down aerial terminal, allows calibration of the 10 Kc. points.

Armed with a pencil and paper and the same test set-up as before (this time at night), tune the b.c. receiver and the calibrator v.f.o. to 750 Kc.

By placing one's finger on the original calibrator aerial terminal the broadcast station on that frequency (4QS Too-woomba) may be heard without any hetrodying whistle, when the calibrator is tuned correctly to 750 Kc. This procedure is then used every 10 Kc. until the v.f.o. is tuned to 1 Mc. While this is being done, a list of errors is prepared, and studied in preparation for frequency correction.

This error can then be reduced by moving the outer plate of the tuning capacitor. Gaps have been cut from the plate to allow this to be carried out, over specific portions of the range.

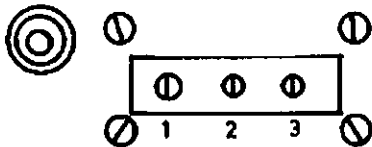
The author's v.f.o. appears to have a maximum error of +300 c.p.s., which is quite acceptable as errors are not multiplied, as the unit operates on an additive basis.

Other valves could be used in place of the ones listed, particularly in the case of the 6AM6, 6BA6s or 6AU6s should operate in this place satisfactorily.

If the existing power socket, plug and cable are to be used, one should note

that the wire colours in the cable are not connected with the conventional colour code in view.

AERIAL



POWER INPUT PLUG.

		Old	New
Pin 1	F+	12v. d.c.	6v. a.c.
Pin 2	HT+	250v.	250v.
Pin 3	Earth	—	—

OPERATION

The calibrator is not to be confused with a signal generator, the latter being designed to produce output on only one frequency (plus harmonics). The calibrator produces output at every 500 Kc. and when the v.f.o. is on, at four additional points per megacycle.

This means that the calibrator will produce 180 calibration points between 0-30 Mc. at any one time. Hence any receiver being used in conjunction with the calibrator must have reasonable calibration if quick readings are desired.

To find any given frequency turn on the receiver b.f.o., tune to obtain zero beat with the v.f.o. signal. When measuring the frequency of a received signal, hetrodye the v.f.o. against the signal, refer to the receiver dial, then read the v.f.o. dial.

If the unit is in continual use, a plug in the case may be screwed out to offset temperature drift.

Once the calibration has been corrected, drift has not been noticed. The unit has been in a car travelling over gravel roads of the worst order and the calibration has remained correct.

The author has tried numerous circuits and methods to obtain accurate frequency readings, this unit being so far the best, and a delight to operate, even WWV is now on frequency!!

CALIBRATION CHART

10 Kc. Correction

Frequency	Deviation C/s.
Kc.	+ -
750	0
760	200
770	300
to	etc.
1000	etc.

10th JAMBOREE-ON-THE-AIR

This year's Jamboree-on-the-Air has been scheduled for the period 0001 hours G.M.T. on Saturday, 5th August, to 2359 hours G.M.T., Sunday, 6th August.

This coincides with the holding of the XII. World Jamboree in Idaho, U.S.A., and also with the 60th Anniversary of the first experimental Scout Camp on Brownsea Island, England, in 1907.

In celebration of Scouting's Diamond Jubilee, Scouts throughout the world are planning special camps during this period and it is hoped that most, if not all, of them will be equipped for the week-end of 5th/6th August with an Amateur Radio station "linking" them with stations at both the World Jamboree and on Brownsea Island. In some countries, school holidays do not fall in August. Scouts in these countries can take part in the J.O.T.A. in the usual manner—by visiting a friendly Amateur Radio operator. With very few exceptions, every member of the Movement will be able to share in the celebrations—whether as a participant in the World Jamboree, or in a "link" camp, or from his home town. Short wave listeners are, of course, very welcome participants and many of our most useful reports in the past have come from these sources.

The World Bureau station VE3WSB will NOT operate during this J.O.T.A., since most of its staff will be attending the World Jamboree. Instead, its place will be taken by K7WSJ (King Seven World Scout Jamboree) operating from the Jamboree site at Farragut State Park in Idaho, U.S.A. This station will operate part-time from 1st to 9th August except for the period of the 10th Jamboree-on-the-Air, when it will be in continuous operation for the full 48 hours of the event, using three complete stations and the following frequencies according to prevailing conditions:—

Band	C.W.	S.S.B.
80 Metres	3,525 Kc.	3,950 Kc.*
40 Metres	7,025 Kc.	7,290 Kc.*
20 Metres	14,025 Kc.	14,290 Kc.
15 Metres	21,025 Kc.	21,290 Kc.
10 Metres	28,025 Kc.	28,590 Kc.

Note that the higher frequency in each band is of necessity, in the U.S.A. segment, in order to comply with local licence regulations. Note also that frequencies indicated by an asterisk are outside the approved Australian frequencies and Groups should not make any attempt to use these two particular frequencies.

A special station will operate from Brownsea Island, using the call GB3BSL. The originator of the J.O.T.A., Les Mitchell, will be in charge of this station. No information as to the frequencies to be used are available as yet, but this information will be passed on as soon as it comes to hand.

Both the above stations will issue special QSL cards to all stations they contact.

CONTEST CALENDAR

- July 8/9: N.Z.A.R.T. Memorial Contest (3.5 Mc. only).
- July 8/9: R.S.G.B. 1.8 Mc. "Summer" Contest.
- August 12/13: Remembrance Day Contest.
- August 12/13: 13th W.A.E. DX Contest (c.w. section).
- September 9/10: 13th W.A.E. DX Contest (phone section).
- October 7/8: VK-ZL-Oceania DX Contest (phone section).
- October 14/15: VK-ZL-Oceania DX Contest (c.w. section).
- October 14/15: R.S.G.B. 21/28 Mc. Telephony Contest.
- October 28/29: R.S.G.B. 7 Mc. DX Contest (phone section).
- November 11/12: R.S.G.B. 7 Mc. DX Contest (c.w. section).

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PART THREE

K. A. KIMBERLEY,* VK2PY

RUBBER CRYSTALS

The decision to change the frequency of my previous crystals was made with some slight trepidation. However, having literally decided to cross the "Rubicon," I was pleased for doing so. The results were good and the experience gained was invaluable.

Literature consulted revealed two approved methods. One being plating, which lowers the frequency, whilst an increase in frequency results from edge grinding. Both methods were tried at VK2PY and I am able to report that reasonable success was achieved with both methods.

Plating Method

The plating method will be described first, the bath for which is made up as follows:—

Copper sulphate: 30 gms.

Sulphuric acid: 10 c.c. (warning, see note).

Alcohol: 10 c.c.

Water: 200 c.c.

Both the copper sulphate and acid are obtainable from the local chemist.

Warning: The mixing of concentrated acid and water is dangerous. It is, therefore, advisable to have the chemist do this for you. Naturally the amount of water added to the concentrated acid should be subtracted from the total requirement. The alcohol (not drinking type, although a swig or two would have been helpful) used was ordinary metho. Gently heat the water and add the sulphate, stir well and when the crystals have dissolved pour the solution into a glass tumbler. Obtain a length of heavy gauge copper wire, for use as an anode, and instal in tumbler as shown in Fig. 9.

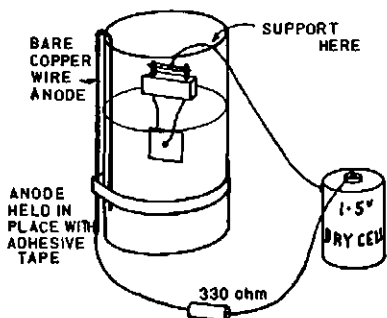


FIG. 9

Some initial practice on less valuable objects is recommended as a starter. I used a sixpence because the crystals were silver plated. For your first experiment, substitute a 22 ohm resistor in place of the 330 ohm. Lower the "zac" into the solution as shown in Fig. 9 and add about half of the specified amount of acid and metho. Grad-

ually add lesser amounts until the plating becomes smooth and copper coloured.

Five minutes' plating will have the sixpence looking like two cents. As plating is reversible, interchange the battery connections and "hey presto" some minutes later the sixpence will be restored to its original condition. A slight amount of rubbing with the fingers will remove any residual deposit of discolouration.

Replace the 330 ohm resistor and give the same treatment to another "zac". This is where things seemed to go haywire. Half an hour's plating resulted in a deposit so light as to be practically non-existent. Closer inspection revealed a fine even coating so thin that the silver colour of the coin shone through. This had me worried, however it was soon learnt that this is the ideal condition. Any attempt to deposit copper at a faster rate results in control of the process being lost.

Before commencing operations on your crystals, make sure that they are active and measure their frequency of oscillation, as a reference will be needed to gauge the progress of frequency shift.

We are now ready for the "Rubicon". Carefully remove the two small screws in the bottom of the crystal holder and then gently remove the top cover. Next wrap some light wire around both pins and lower into plating bath. Try to keep as much of the holder as possible out of the solution as this makes for easier cleaning.

After about five minutes remove the crystal from the bath. Dunk it into warm water, then into metho, back into another container of water, agitating it for several minutes and then into another container of metho or spirits. When completely dry compare the frequency against the original reference. You will now have a guide as to time required for a given frequency change.

At VK2PY 10 minutes was required to change a channel 25 crystal from 416.66 Kc. down to 415.550 Kc. It was soon discovered that 2 Kc. was about the maximum change obtainable without reducing the Q of the crystal to a point where it becomes useless. If this happens, don't worry, the crystals are recovered by reverse plating. Of course the same treatment is given when the required frequency has been considerably overshot. Where the overshoot is only small, it was found better to bring the frequency back by edge grinding. This will be described in detail a little later in this article. It must also be pointed out that crystals can be raised from their original frequency by reverse plating, however this was not tried as it was considered to be too touchy. If too much metal is removed from the crystal you are finished with it forever (unless you have a museum). As this represents a pos-

sible loss of hard-earned "hoot", it was considered wise to avoid this method altogether.

Before proceeding on to the grinding method, I must emphasise that care, extreme cleanliness, and patience must be observed throughout the whole process. It is better to spend time rather than end up with a heap of useless quartz crystal.

Edge Grinding

Having mastered the plating method, you are now ready to be initiated into the mysteries of edge grinding. Shifts of 10 Kc. and over are easily obtainable and in my opinion this method is far superior to plating.

The requirements are a small piece of wet and dry (about 240 grade) rubbing paper, a pair of tweezers, a steady hand, and a strong wrist. The method here is as follows:

Remove the two small screws in the base of the holder and carefully remove the top cover and, of course, you have measured and noted the frequency. Pardon this harping on the necessity of keeping a reference point.

With your tweezers in the left hand firmly hold the crystal whilst supporting the wrist by placing it on your work bench. The crystal holder should be steadied by resting it on a support, as shown in Fig. 10. Hold the wet and dry paper (do not wet) in your right hand and give the crystal 20 or 30 sharp rubs along the top edge as shown.

It would be wise to re-measure the frequency of the crystal in order to gain some clue as to how many rubs will be required to shift the crystal to the correct frequency. Shifts of over 1 Kc. are easier to obtain by operating on two adjacent edges. "Gently, Bentley," is the order of the day here. Once the wires that are soldered to the crystal come adrift your interest in that crystal is suddenly terminated.

I suffered from what at first sight appeared to be an irrecoverable casualty. Whilst striving for a large frequency change, I guess I was a trifle heavy handed with a channel 24 crystal and managed to chip off about 1/16" square from one corner. Before consigning it to the nearest w.p.b., some curiosity caused me to plug the wreck into my test oscillator. Wonder of wonders, it still oscillated and with tons of activity. In fact I had a brand new channel 30 crystal. This should give the reader some idea of how much change can be obtained by edge grinding. So much for grinding, remember any overshoot in frequency can be corrected by a few minutes in the plating bath.

The relative merits of the two methods are set out in Table 1.

Well chaps that's about it as far as crystal changes are concerned. Perhaps at some future date I might try my hand at high frequency crystal filters.

* 5 Don Street, Newtown, N.S.W.

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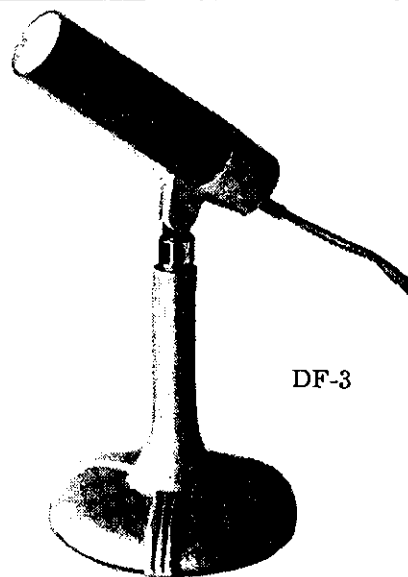
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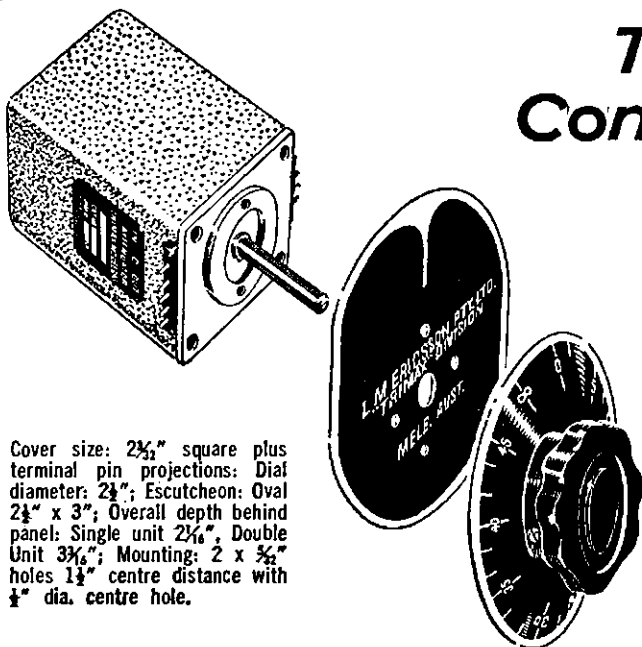
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LM50

However, the severe case of writer's cramp now being suffered by the author may make it mandatory for him to employ a secretary to do the writing!

Plating Method	
Advantages	Disadvantages
Easily controllable. Reversible. Low breakage risk.	Messy. Various solutions easy to spill. Limited frequency change. Preparation time. Clean-up time.
Edge Grinding Method	
Advantages	Disadvantages
Easily controllable. Large freq. shifts. Clean. Fast (no special set-up required).	Breakage risk. Non reversible.

Table 1.

TEST GEAR FOR ALIGNMENT OF SIDEBAND RIG

Listed in an earlier part of this article was the test gear requirements for the alignment of the transistorised sideband rig. They were as follows:—

- (1) Stable bandsread oscillator.
- (2) Suitable detector.
- (3) C.r.o.
- (4) Sweep generator.

For the Amateur who would like to try his hand at the rubber crystal act, a further requirement is a crystal checker.

A discussion of the above equipment now follows:—

Stable Bandsread Oscillator

This is a simple piece of test gear and should not cause any difficulty to the constructor. This oscillator must, for obvious reasons, be stable, so therefore some care must be taken in its construction.

Hand capacity affects are to be avoided. A piece of 12" x 12" aluminium bent into an L shape should prove a satisfactory housing.

The construction of this oscillator will not add much to the cost of the project as all parts, with the exception of the variable, will be used in other parts of the rig. Hence they are re-

claimed when the filter is a going concern. Do not cut the component leads too short, otherwise they may not be reusable later.

The transistors are both OC45 types, the first (oscillator) is connected in common emitter, whilst the second is connected in the common collector configuration. The use of an emitter follower stage provides us with an ideal low output impedance point.

Little difficulty will be experienced in the calibration of this unit provided a straight line capacity gang is used for tuning purposes. The gang should be tapped down the coil until the frequency shift obtainable with it is in the order of about 15 Kc.

The calibration should proceed as follows: Set the variable at half scale and adjust the coil slug or trimmer capacitor so that the oscillator's frequency equals approximately that of the filter's expected centre.

Calibrate the test oscillator at five or six points by heterodyning its harmonics against broadcast band stations. The author's filter is centered around 416 Kc., hence the following stations would be suitable:—

- 2CY: 850 Kc. ÷ 2 = 425.0 Kc.
- 2SM: 1270 " ÷ 3 = 423.33 "
- 2DU: 1250 " ÷ 3 = 416.66 "
- 2NC: 1230 " ÷ 3 = 410.0 "
- 2GL: 810 " ÷ 2 = 405.0 "

Using the points so obtained plot a graph of dial reading versus frequency. The read-out accuracy should be more than ample for our requirements.

Note: The circuit (Fig. 11) works equally well as a crystal checker. The only modification needed being to replace the 0.001 uF. capacitor with a suitable crystal holder (octal socket, etc.).

Suitable Detector

The provision of a suitable detector presents quite a problem to the home constructor. The problem being the large voltage gradients to be measured, i.e. suppose 15 volts (the output from the filter) is used as a zero reference point, then 1.5 volts becomes the -20 db point. Okay there is nothing difficult here, however to reach the -40 db point one must be able to measure 0.15 volt and 0.015 volt for -60 db.

This represents a ratio of 1,000:1 and the signal really goes down into the muck. After much head-scratching, two solutions suggested themselves:

- (1) Do the pass band measurements in a later stage of the transmitter, i.e. at a higher power level.
- (2) Knock up a temporary valve type amplifier (valves, ugh!) as shown in Fig. 12. The borrowing of a v.t.v.m. is also required.

As I have not yet built (or even started) the power stages, solution 2 had to be used at VK2PY. However, a quick check with my sweep generator and c.r.o. produced a curve at the output of the balanced mixer identical with that appearing at the filter output. This proves that solution 1 works okay.

The amplifier is a straight forward affair and does not need much comment. T1 is a standard i.f. transformer modified by adding a tertiary winding of 3 turns over the grid winding. This tertiary couples to the filter output via the 100 ohm resistor. T1 is broadened by connecting a 100K ohm resistor across it, whilst T2 is broadened sufficiently by the action of the germanium diode detector.

The v.t.v.m. used by the author was a borrowed VoltOhmMist. This instrument was "just the shot" as the 0-15 volt range almost coincided with the gear's overload point, whilst on the 1.5v. scale readings down to 0.015 volt were just discernible. The noise level of the set-up was 0.010 volt.

Cathode Ray Oscilloscope

The next item on the list is a c.r.o. Mine is based on a "Radio & Hobbies" design. This particular instrument has both the vertical amplifier and sweep speed calibrated.

The vertical amplifier is directly coupled, which enables the c.r.o. to be used for measuring d.c. potentials.

In fact this instrument is a satisfactory substitute for the v.t.v.m. as described previously.

Almost any modern c.r.o. would be suitable provided that the following features are included:—

- (1) Screen size at least 2½".
- (2) Vertical amplifier response to about 2 Mc.
- (3) Sweep speeds to 1 cm. per micro-second.
- (4) Vertical sensitivity at least 0.1 volt per cm.
- (5) Time base output available for driving sweep generator.

Don't let the non ownership of a c.r.o. deter you from this or any similar project. Use the old Amateur resourcefulness to borrow one. I am

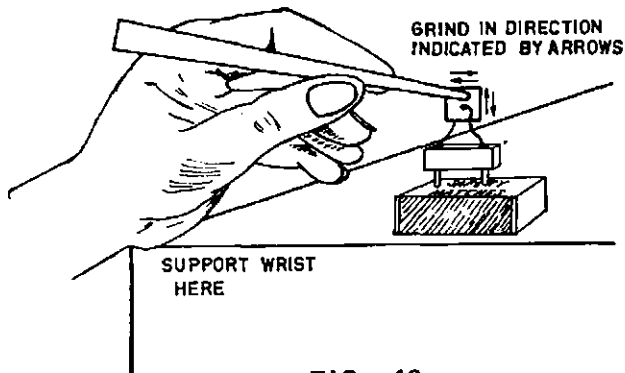


FIG. 10

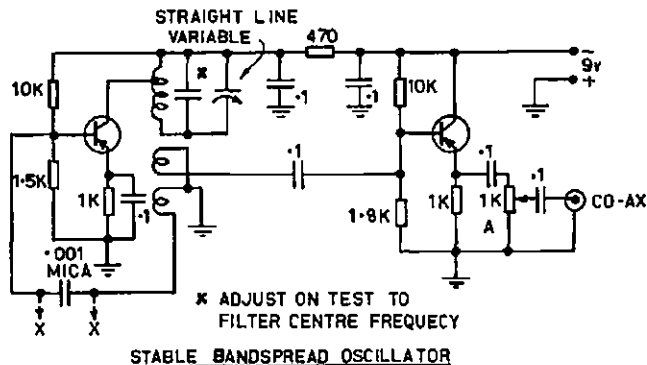


FIG. 11

sure that you will be more than pleased for having done so.

If you own, or are able to borrow, a c.r.o., it is suggested that the time taken to build a simple sweep generator will be more than recouped in the alignment of the filter.

Another use for the c.r.o. is as an indicator on the crystal checker. The c.r.o. connected to the output of the checker tells, at a glance, if and how strongly the test crystal is oscillating.

b.f.o. pitch control. Make sure that the silicon rectifier and its isolating resistors are placed at the remote location. The d.c. control wires should be adequately by-passed.

The above method is used in my sweep generator and whilst it is possible to use any silicon device, the Q of some types drops to a low value at about 15 Mc. or so. I have used a type specially made, by Mullard, for this usage. It is a type BA102. It is not

verse voltage should be sufficient to bias the rectifier to prevent clipping of any portion of the oscillator wave form. By keeping the oscillator amplitude low, the bias requirements are reduced accordingly and hence the sweep range obtainable is increased.

My generator was originally built for t.v. work and included bar and marker generators. However, these facilities have been omitted from this description.

I have used plug-in coils in order to reduce stray capacities and hence keep the sweep width as great as possible. For normal Ham use a switched set-up could be used, but it would be wise to include a switch position for a plug-in coil. This provision will save the necessity of diving into the innards of the gear any time an odd frequency comes up.

The generator uses valves as it was built before I was bitten by the transistor bug. The use of transistors should not present any great design difficulties. The valve used at VK2PY was a 6BL8 but the constructor has a wide choice of tubes to choose from. Physical layout would be easier if separate tubes are used. Say a 6AU6, etc., and a 6C4, etc.

The pentode's screen grid is used as the oscillator anode and is electron coupled to the anode. The signal is taken from the anode and is fed into the triode which is used as a cathode

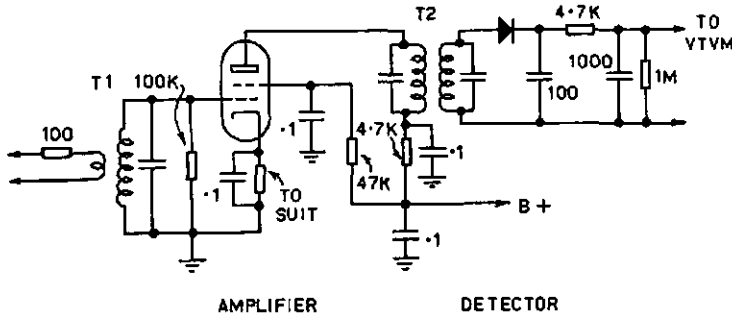


FIG. 12

Sweep Generator

The last instrument to be described is the sweep generator which has proved invaluable here at VK2PY. All receiver alignment is done with it. The serious worker can readily see what is happening to the pass band of the receiver under test.

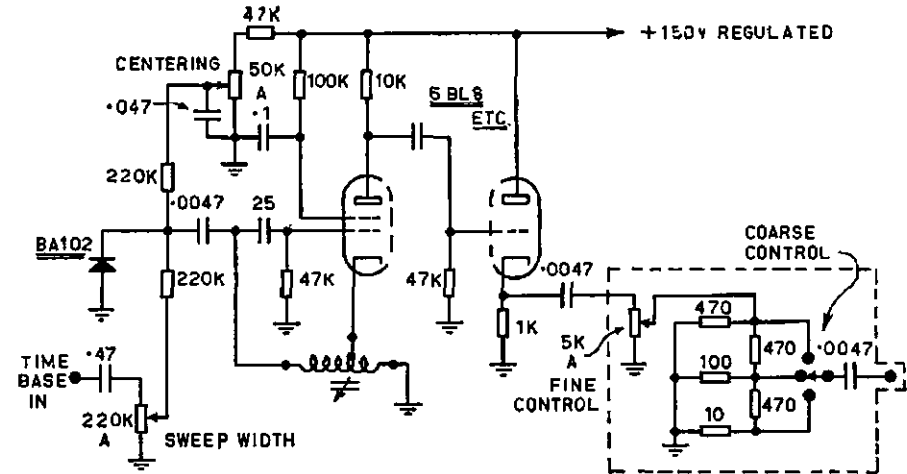
The old method of tuning the i.f. transformers to a peak does not always give the most satisfactory result. True more gain is produced (we usually have too much i.f. gain, anyway), however the pass band will be too peaky. Tendencies to "take off" are observable. Broadbanding of fixed tuned converters is another use for the sweep generator. It could even be the basis of a "pan-adaptor".

The use of a silicon rectifier, suitably back biased, as a voltage dependant capacitor lends itself to many applications. How many times have you wanted to fit a tunable b.f.o. (or etc.) into a receiver but have been unable to fit the control in a suitable electrical position? The drilling of the front panel may tend to reduce the re-sale value of your "Joe Blow's Super 199X".

The silicon rectifier gets over this problem easily. Remove the single pot. used as a volume control (etc.) and replace it with a dual concentric type. One section is rewired as the volume control whilst the other becomes the

lister in Table 2 of capacity against reversed voltage as I did not have a spare and could not spare the time to remove it from the instrument.

A perusal of Table 2 reveals that the capacity increases with a lowering of the reverse voltage. Naturally the re-



SWEEP GENERATOR AS USED BY VK2PY

FIG 13

Reverse Voltage	Capacity				
	S.T.C. R122A	Philips OA214	Mullard BY211	Ducon 1N2094	Anodean 1N3193
6.0 v.	6.6 pF.				
7.0 v.		22.0 pF.		30.0 pF.	
8.0 v.			14.0 pF.		
10.0 v.	5.2 pF.	18.5 pF.	12.0 pF.	25.0 pF.	16.0 pF.
15.0 v.	4.4 pF.	15.0 pF.	9.5 pF.	20.0 pF.	14.0 pF.
20.0 v.	4.3 pF.	12.5 pF.	8.7 pF.	17.0 pF.	11.5 pF.
30.0 v.	3.9 pF.	10.5 pF.	7.8 pF.	14.5 pF.	9.8 pF.
50.0 v.	3.6 pF.	8.5 pF.	6.5 pF.	12.0 pF.	8.0 pF.
100.0 v.	3.3 pF.	6.5 pF.	5.4 pF.	9.0 pF.	6.5 pF.

Table 2.—Capacity versus Reversed Voltage.

follower. The output signal is taken via an attenuator connected into the cathode circuit. See Fig. 13 for further details.

Caution: As I have repeatedly pointed out, the use of this sweep generator makes the alignment of the crystal filter easy. However its use is not without pitfalls.

The first being the use of an excessive sweep speed. This causes the filter to ring and shows up as damped oscillatory waves along the flat top portion of the band pass curve. The best speed was found to be 50 millisecc., at this speed the c.r.o. moving spot just merges into a continuous line. The flicker is

(Continued on Page 17)

TRANSISTOR AMPLIFIER DESIGN

R. L. HARRISON,* VK3ZRY

PART FOUR

CLASS B AMPLIFIERS

A class B amplifier is biased so that it conducts for only 180° of a sine-wave input cycle, as previously defined. That is, for an upward signal fluctuation, the transistor turns ON, while for downward signal fluctuations it remains OFF.

Thus, if we wish to amplify a full sine-wave, using a class B amplifier, we must have two devices in a symmetrical arrangement being driven 180° out of phase. That is, one device ON while the other is OFF. The most popular arrangement is push-pull using centre-tapped transformers (see Fig. 1).

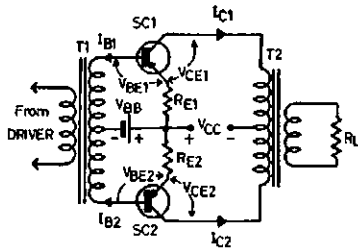


FIG 1

The advantages of class B amplifiers are as follows:—

1. Theoretical maximum efficiency is 78% versus 50% for class A. Practical efficiencies approach 75%.
2. Quiescent power consumption is very low, whereas class A stages constantly draw power.
3. Even-harmonic distortion can be reduced to a minimum.
4. Two transistors share the power dissipation.
5. No net d.c. current flows through the output transformer, thus magnetising flux is zero, keeping the transformer weight low.

CROSSOVER DISTORTION

Transistor base characteristics are far from ideal, and if operated at cut-off, will produce a severe form of distortion called "crossover distortion". For small input signals this is particularly bad, the effect gradually decreasing as the signal increases (see Fig. 2a).

To overcome this, the transistors are given a slight forward bias (Fig. 2b). The transistors are biased to what is called "extended cut-off" (really class AB operation). For germanium transistors this value of extended cut-off bias is around 0.15 to 0.2 v. For silicon transistors this is 0.55 to 0.7 volt.

DESIGN PROCEDURE

Before attempting to design your class B amplifier, you should obtain the collector and base characteristics of several suitable transistors. Keep in mind the power output limitations as

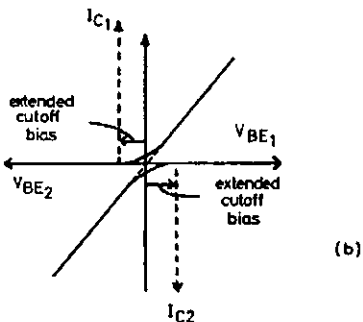
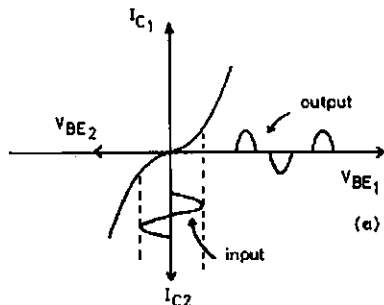


FIG.2.

set out in Part Three. You will find the design procedure very similar to Part Three.

1. Choose the power output desired and add 20% to account for losses.

$$\text{Power desired} + \frac{1}{5} \text{ power desired} \dots (1)$$

2. Calculate P_C max. from the following equation:—

$$P_C \text{ max.} = \frac{1}{4} P_o \dots (2)$$

3. Choose V_{CC} . Check to see that V_{CC} is less than V_{CE} max. for any of the transistors. Discard any transistors that have V_{CE} max. less than V_{CC} .

4. Choosing your transistor: Select one that has a P_C max. somewhat greater than the value found in equation (2).

5. Calculate the collector to collector load resistance R_{CC} .

$$R_{CC} = \frac{2 V_{CC}^2}{P_o} \dots (3)$$

Check that I_o peak ($= 4 V_{CC} \div R_{CC}$) is less than the maximum allowable collector current for the value of V_{CC} used. If I_c peak exceeds max. allowable I_c then choose another transistor and check again. If this does not work out, increase R_{CC} .

6. Determine R_E for each transistor from the appropriate graph. Graphs 1 and 2 are for germanium transistors and Graphs 3 and 4 are for silicon transistors.

If the graphs do not go up to the value of R_{CC} you calculated, then use the following equations:—

For germanium transistor:

$$R_E = \frac{5 V_{BE} R_{CC}}{4 V_{CC}} \dots (4)$$

For silicon transistors:

$$R_E = \frac{V_{BE} R_{CC}}{2 V_{CC}} \dots (5)$$

where V_{BE} is the value of extended cut-off bias. For germanium transistors you can assume $V_{BE} = 0.15$ volts, and for silicon transistors you can assume $V_{BE} = 0.6$ volt.

Where R_E becomes very small, less than 2 ohms say, a rather neat little trick can be employed. Use a small length of toaster element (an inch or two), as the emitter resistor. As the average power increases, so does the junction temperature. The current through R_E increases as I_o increases, the length of toaster element increases its temperature, this increases its resistance. Thus providing some compensation for changes in forward conductance in the emitter-base junction due to temperature rise.

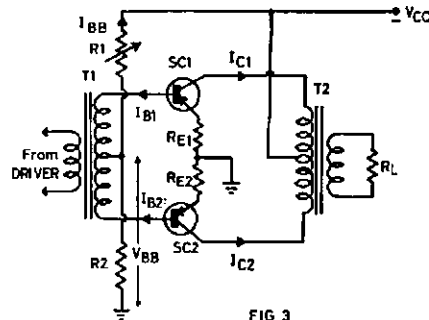


FIG 3

7. Determine R_1 and R_2 (Fig. 3).

(a) First determine I_B for small signals. Go to the collector characteristics graph (I_c versus V_{CE}) and find the value (I_B) for one of the lowest curves (see Fig. 4). Now let $I_{BB} = 10 I_B$ (small signals).

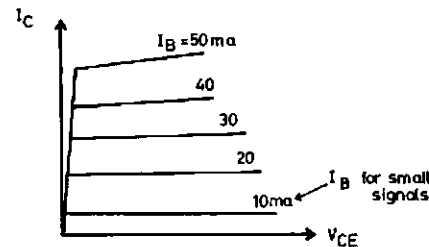


FIG.4.

(b) Now

$$R_1 = (V_{CC} - V_{BE}) \div I_{BB} \dots (6)$$

and

$$R_2 = (V_{BE} R_1) \div (V_{CC} - V_{BE}) \dots (7)$$

where V_{BE} is somewhat greater than the extended cut-off bias to overcome the voltage drop due to the resistance of the secondary winding of T1.

It would be a good move to make R_1 a wire-wound pot. of appropriate value and wattage to enable some adjustment to be made.

This method of bias gives no thermal stability of the bias past about 30°C. Where it is likely that a wide variation

* 1 Mary Street, North Balwyn, E.9, Vic.

in temperature will be encountered, then some compensation for changes in V_{BE} will have to be included. This will be described later.

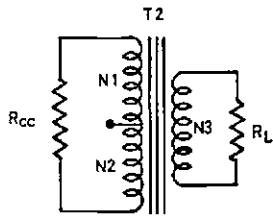


FIG. 5.

8. Now for the output transformer T2. Let's take a look at the equivalent circuit (Fig. 5).

The load on the secondary (R_L) could be a speaker or the modulation impedance of a transmitter. The impedance across the primary is R_{CC} as found from equation (3).

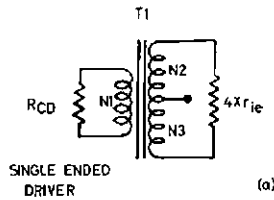
Now—

$$(N1 + N2) \div N3 = \sqrt{R_{CC} \div R_L} \quad (8)$$

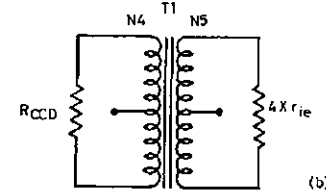
where $(N1 + N2)$ is the total primary turns, and $N3$ the total secondary turns.

It is recommended that the primary be bifilar wound to preserve balance and reduce transient responses.

9. The input or driver transformer (T1) comes next. Now we could have either a single-ended driver or a push-pull driver, see Figs. 6a and 6b respectively. The loads on primary and secondary are shown also.



SINGLE ENDED DRIVER (a)



PUSH PULL DRIVER (b)

FIG 6

First determine r_{ie} .

(a)—
 $I_B \text{ peak} = I_C \text{ peak} \div h_{FE \text{ min.}}$ (9)

where $I_C \text{ peak} = 4 V_{CC} \div R_{CC}$ (see Fig. 7) and $h_{FE \text{ min.}}$ obtain from transistor data.

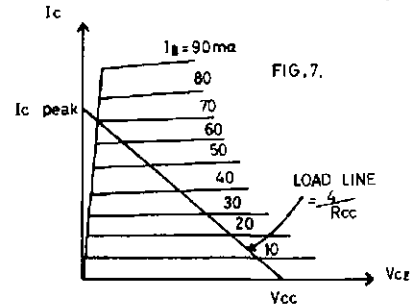
(b) Now go to the base characteristic curves (I_B versus V_{BE}) (Fig. 8) and find $V_{BE \text{ peak}}$.

(c) Now—
 $r_{ie} = (V_{BE \text{ peak}} - V_{BE}) \div I_B \text{ peak}$ (10)

where V_{BE} = extended cut-off bias.

Next we have to calculate the power required to drive the amplifier (P_i) to full output. This is given by—

$$P_i = \frac{I_C \text{ peak} \times V_{BE \text{ peak}} \times 1.5}{h_{FE \text{ min.}}} \quad (11)$$



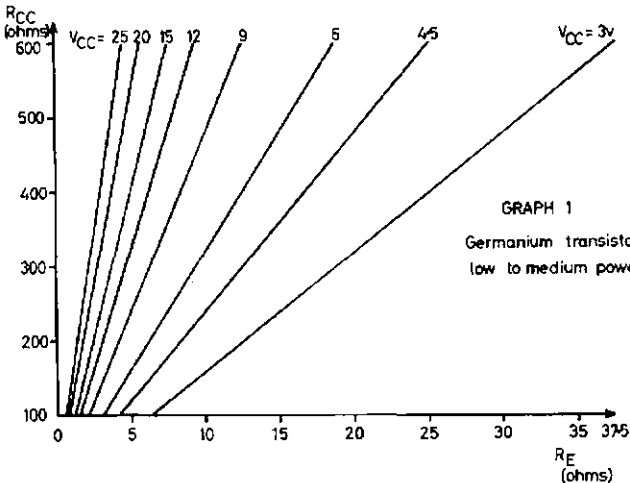
Now you can drive the amplifier in several different ways. This will necessitate a different primary load, and thus different turns ratio on T1. I will give equations for the following three methods: class A single-ended, class A push-pull, and class B push-pull.

Here are the formulae for the primary loads. They will enable you to design a suitable driver.

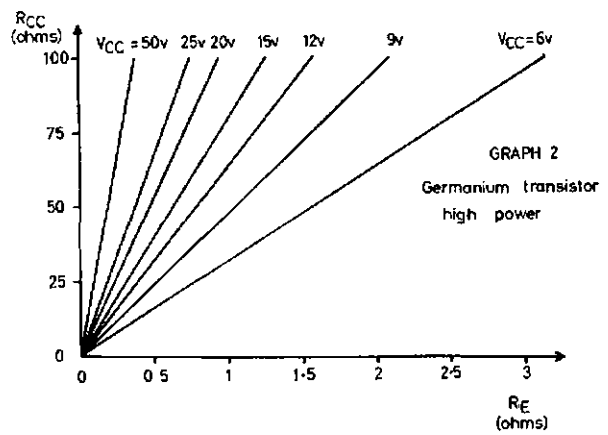
For class A single-ended driver:
 $R_{CD} = V_{CC}^2 \div P_i$ (12)

For class A push-pull driver:
 $R_{CCD} = 2 V_{CC}^2 \div P_i$ (13)

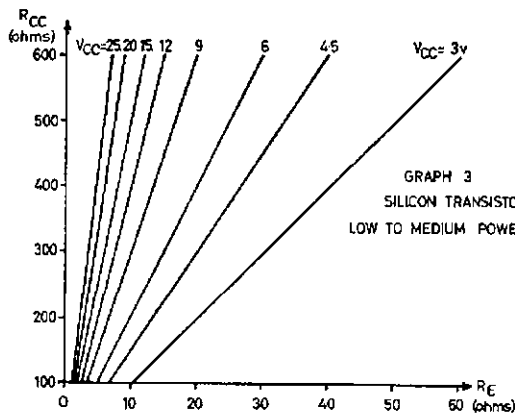
For class B push-pull driver:
 $R_{CCD} = 2 V_{CC}^2 \div P_i$ (14)



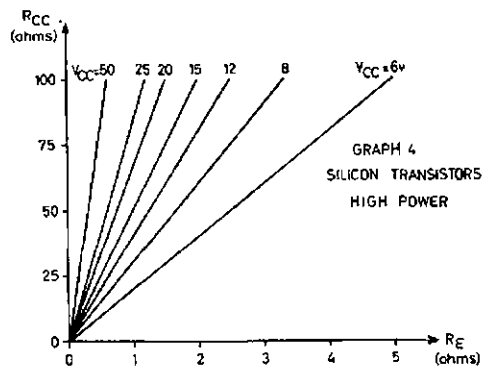
GRAPH 1
Germanium transistor
low to medium power



GRAPH 2
Germanium transistor
high power



GRAPH 3
SILICON TRANSISTORS
LOW TO MEDIUM POWER



GRAPH 4
SILICON TRANSISTORS
HIGH POWER

Now for the turns ratios for T1.

(a) Single-ended class A driver:

$$N1 \div (N2 + N3) = \sqrt[3]{R_{CD} \div 4 R_{L1}} \quad \dots \dots \dots (15)$$

where N1 is primary turns and (N2 + N3) is total secondary turns.

(b) Push-pull class A driver:

$$N4 \div N5 = \sqrt[3]{R_{CCD} \text{ (class A)} \div 4 R_{L1}} \quad \dots \dots \dots (16)$$

* R_{CCD} from equation (13).

(c) Push-pull class B driver:

$$N4 \div N5 = \sqrt[3]{R_{CCD} \text{ (class B)} \div 4 R_{L1}} \quad \dots \dots \dots (17)$$

* R_{CCD} from equation (14).

where N4 is total primary turns (centre tapped) and N5 is total secondary turns (centre tapped).

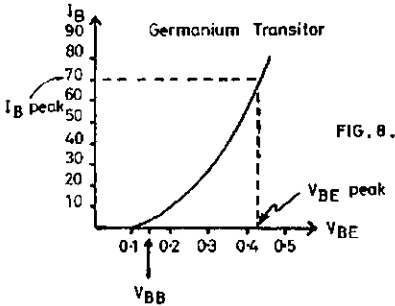


FIG. 8.

Now there you have your method for designing class B amplifiers. A short summary on the quantities you have to find will help clarify the situation.

- (1) P_o = power desired + $\frac{1}{2}$ power desired.
- (2) P_c max. = $\frac{1}{4} P_o$.
- (3) V_{CO} . Check $V_{CC} < V_{CE}$ max.
- (4) Transistor.
- (5) $R_{CC} = 2 V_{CC}^2 \div P_o$. Check I_c peak $< I_c$ allowable.
- (6) R_n from graphs.
- (7) $R1 = (V_{CC} - V_{BB}) \div I_{BB}$.
 $R2 = V_{BB} R1 \div (V_{CC} - V_{BB})$.
- (8) T2. $(N1 + N2) \div N3 = \sqrt[3]{R_{OC} \div R_L}$.
- (9) T1. Consider your driver, then use appropriate equations.

BIAS STABILITY CONSIDERATIONS

As you well know, V_{BB} will vary with temperature. This change is in the order of 1 to 2 mV./°C. Now this can produce quite a shift in the bias if a wide temperature range is encountered. Where high power transistors are used, the junction temperature will rise due to power dissipation. Also the ambient temperature may rise substantially—for example, in a car

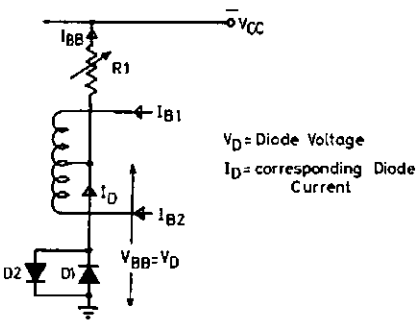


FIG. 9.

standing in the sun, the internal temperature in certain places may be 15 to 20°C. higher than the external temperature.

Now, all increases in temperature will increase V_{BE} , gradually increasing I_c , which increases the junction temperature and so on until the transistor "runs away" and destroys itself. This is a highly undesirable state of affairs.

There are several ways to prevent thermal run away. One is to limit the temperature rise of the transistor by mounting in on a heat sink (more about that later). Another way is to compensate for the changes in V_{BE} . This is very suitably done by using a suitable diode to control V_{BB} (see Fig. 9).

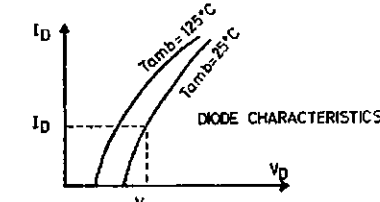


FIG. 10(a).

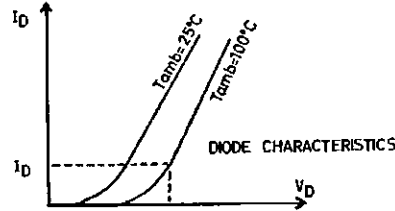


FIG 10(b)

Now D1 can be chosen so that it changes its forward voltage drop at the same rate as the emitter-base diodes of the transistors. R1 is adjusted to give the correct bias to the transistors to prevent crossover distortion. The purpose of D2 is to provide a low impedance return for the base drive circuit. D2 has no effect on bias stability.

To find a suitable diode for D1, look for one that has an I_D max. greater than I_B peak. If you are using germanium transistors, look for a germanium diode. For silicon transistors use a silicon diode.

Having chosen your diode, the next thing you wish to know is I_D . Determine this from the diode characteristics

(I_D versus V_D) (see Figs. 10a or 10b—diode characteristic curves can be shown either way). Use the curve for the lowest ambient temperature (T_{amb}) shown (usually $T_{amb} = 25^\circ C.$). Locate V_{BB} on the V_D axis. Now V_{BB} should be slightly higher than the extended cut-off bias (V_{BE}) to account for losses in T1. A good rule of thumb is:—

Germanium, $V_{BB} = 0.2$ to 0.25 volt.
Silicon, $V_{BB} = 0.7$ to 0.8 volt.

Now find I_D as in Fig. 10, then calculate R1 from the following formula:—

$$R1 = \frac{(V_{CC} - V_{BB})}{2 \times I_B \text{ (small signals)} + I_D} \quad \dots \dots \dots (18)$$

I suggest you make R1 a pot, to allow for adjustments that may be necessary, as the driver transformer secondary resistances are unknown. D1 and D2 can both be of the same type.

This system can be used to provide compensation for bias changes, due to temperature change, in class A amplifiers (refer to Part Three). You will find that V_{BB} is higher than that for class B amplifiers, so just connect sufficient diodes in series to make up the voltage drop for V_{BB} . Choosing the diodes is the same as for class B. Also, when calculating R1, $V_{BB} = V_{BE} + V_{BE}$ (refer to Part Three).

A circuit is given in Figs. 12a and 12b. All diodes are of the same type. Make sure the diodes are connected in the right polarity for the transistors in use (i.e. Fig. 12 shows NPN transistors; reverse the diodes for PNP transistors).

HEAT SINKS

Any transistor is capable of supplying a substantial amount more power when it is mounted on a heat sink of adequate proportions. The efficiency of a heat sink is determined by its thermal resistance. The thermal resistance is affected by the surface, material, colour, if the air flow around it is restricted or free, and thermal contact to other heat conductors, of the heat sink. Thus, heat sinks are often painted black (good thermal radiator), have fins (to increase surface area) and are mounted in easily accessible places or on metal chassis.

High power transistors are made in a case that facilitates attachment to a heat sink. Usually the case has the collector internally connected to it, and where the collector has to be insulated

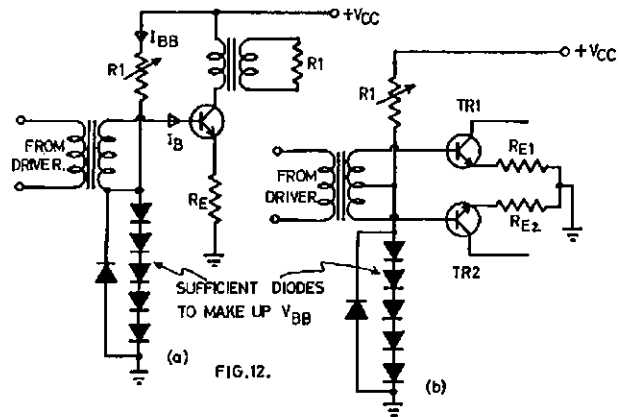


FIG. 12.

from earth, a mica washer can be obtained (as well as bolt hole insulators). Alternatively, the heat sink can be insulated from earth, but this is not always practicable as the chassis is often used as a heat sink.

Extruded aluminium heat sinks, meant for power transistors, are obtainable in various sizes, e.g. 2 x 4, 4 x 4, and 6 x 4 inches. Most are made to mount a single transistor, but some are made to mount two transistors. The heat sink you choose should be as large as you can afford, keeping in mind the power involved.

Small, low power transistors have a body that can be clamped onto a chassis or a metal fin. The manufacturers often recommend a suitable size and shape of the metal fin type of heat sink. You

can either buy one or make one (see Fig. 11a).

Other ingenious ideas can be used to make heat sinks. A small length of copper tubing, with an inside diameter just too small to fit over the body of the transistor, can be cut down in length and sprung apart so that it makes a tight fit over the transistor (see Fig. 11b).

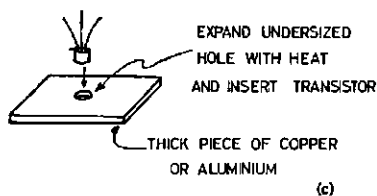
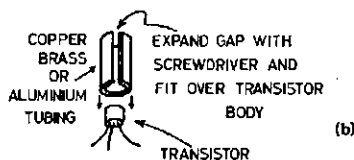
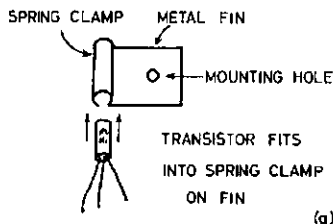


FIG. 11.

A hole, just smaller than the transistor body, could be drilled in a thick piece of aluminium, brass or copper, the metal heated and the transistor dropped into the expanded hole (Fig. 11c). When the metal cools and contracts the transistor is firmly held, making good thermal contact with the transistor and heat sinking is very effective. You may experience trouble if you attempt to remove the transistor however.

Where practicable, the diode (or diodes) in the bias circuit (if used) should be mounted on the heat sink near the transistor so that it is subject to the same temperature changes as the transistor. Insulate the diode with mica (very thin) if necessary.

Well, that concludes this article on transistor amplifier design. The next article (Part Five) will be on class B and class C r.f. transistor amplifiers. There will be a follow up article (Part Six) on practical, working circuits, that have been constructed from this series of articles.

This series has been longer than I intended, but that was of necessity so that a complete amplifier stage could be designed and constructed with adequate safety precautions.

I would, at this stage, like to thank a number of my friends who gave me abundant encouragement and criticism as well as help during the writing of

these articles. Thanks to Peter Cohn (VK3ZPC), Dennis Long (VK3ZVL), John Hill, Graham Young, Sue Tomlinson and Mary.

Any queries should be addressed to me and please enclose a s.a.e.

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SIDEBAND

Sub-Editor: PHIL WILLIAMS, VK5NN

As these notes are being written while on vacation in VK3 (of all places) the subject matter cannot be very technical and I ask the more fastidious readers to refrain from taking me to task over details which cannot be checked in the absence of my technical library, for which there was just no room in the caravan.

There are several items which come to mind and may interest home constructors, one dealing with variable frequency oscillators and the other concerning a rather unusual but quite logical design for an s.s.b. exciter.

Before getting under way with these, however, may I thank the many correspondents who have written to me on all sorts of sideband matters from exciters to transistors, and pardon myself for not replying for the reason stated above. Many people accuse me of being so pro-sideband that I must be anti-other-modes. This is not strictly true, as I have some a.m. equipment for 6 and 2 metres, myself, but I would say to those who are obviously anti-sideband that they, too, may learn something from this column, as linear amplifiers will do quite a good job of amplifying a.m., even though the efficiency may be low. Taxi-phones and 122 sets, for example, may be fed into linear amplifiers and the equivalent of 75 watt a.m. rig can be obtained at less cost and space than using high-level plate modulation.

Having listened to thousands of a.m. signals throughout the years, I may truthfully state that the number of well adjusted class C plate-modulated p.a. stages in the Amateur bands is quite small. It is a very difficult task to make sure that such a stage has the correct grid current, grid voltage, screen voltage, plate voltage, modulator output impedance, load impedance (r.f.), neutralisation, and tuning, all together at the same time. I am not saying that it is impossible, but it is difficult.

The class B linear amplifier, especially the AB1 type which draws no grid current, is much easier to adjust because there are many less variables to consider. It does not take a genius to realise this, one needs only the normal complement of fingers to count with.

In conclusion, my own 2 metre final (a.m.) appears to be almost impossible to neutralise, and I know it, but not one person apart from myself worries about a little "broadness" on 2 metres.

BUILT-IN V.F.O.'s AND HEAT

This small hint has proved useful in many Amateur stations, not only in s.s.b. equipment. Every receiver has a v.f.o. and some of the cheap ones are plagued with heat drift. Substi-

tution of silicon rectifiers for the h.t. valve rectifier, reduces the heat liberated inside the box and addition of a VR tube in the (rewired) rectifier socket, really helps the frequency stability.

There is still the problem of heat radiation and conduction, however, and I have found that drilling a row of holes in the chassis, either around a heat source such as the audio output tube socket, or around the r.f. coil box, will reduce the heat conduction. Holes should be spaced to leave about one-third of the hole diameter between each hole to retain sufficient rigidity in the metal.

The radiation and convection of heat may be reduced by fixing half inch thick foam polystyrene, you know the stuff—it looks and feels like solid froth, and is an excellent heat insulator and reflector—to the outside of the v.f.o. box or between hot objects and the tuning components. This is really good gen, and the improvement in my deltatet tuned oscillator, when a sheet of this was cut to form a 6" x 4" barrier around the 2 to 3 megacycle tuned i.f. section, was quite marked. The receiver appears to stabilise in about 7 or 8 minutes instead of about 15 to 20 minutes previously. Do not attempt to glue this foam with polystyrene cement as the solvent has a sad effect on the foam and it melts away like "fairly floss". Water based cements, such as the "gums" and p.v.a. wood-worker's glue, are quite good, or the assembly may be fixed to the desired shape with white adhesive tape (fabric type—from the chemist). If you wish to change its colour, then cover the whole assembly with aluminium (cooking) foil, and spray paint over that—not onto the

foam, or you will have further solvent troubles.

And where does one obtain this foam? Well, you will see it formed into all sorts of packing pieces for fragile and expensive items from chinaware to electronic instruments—even meat trays in the super-markets—or the larger builders' hardware merchants sell sheets up to 6 x 3 ft. for special insulation jobs.

A STRAIGHT S.S.B. EXCITER

Most s.s.b. exciters are far from straight as they mix frequencies up and down, and then have to get rid of all the spurious beats to the point of keeping them more than 60 db. down below the required signal.

An interesting exciter designed by G3HRO was described in "Wireless World" for March and April 1967. This exciter is quite unusual as the v.f.o. tunes at half of the final frequency for 40 and 80 metres, and a third of the final frequency for 20, 15 and 10 metres. The balanced modulators are fed with final frequency at plus and minus 45 degrees from five different r.f. phase shift networks, one for each band. The two balanced modulators are type 7360 valves, which are quite superior for balancing out carriers, and employ the phasing method of generation of s.s.b. This part of the circuit is almost identical with the circuit in the 1965 A.R.R.L. Handbook, from which it was no doubt taken.

Since the output from this generator is reasonably high, the signal feeds straight into a 5763 driver and thence to a 4CX250B final stage, which can operate at the full legal rating for U.K. of 400 watts p.e.p. A very neat little transistorised vox circuit is included.

Of course, a separate h.v. power supply of over 1,500 volts is needed for the 4CX250B, and a blower is required to cool it, but if you do not want to run such high power, 6146s or the t.v. line tubes may be installed with similar grid bias and screen grid supplies, but plate voltage of 700-800 volts only, should be applied to these smaller tubes.

(Continued on Page 22)

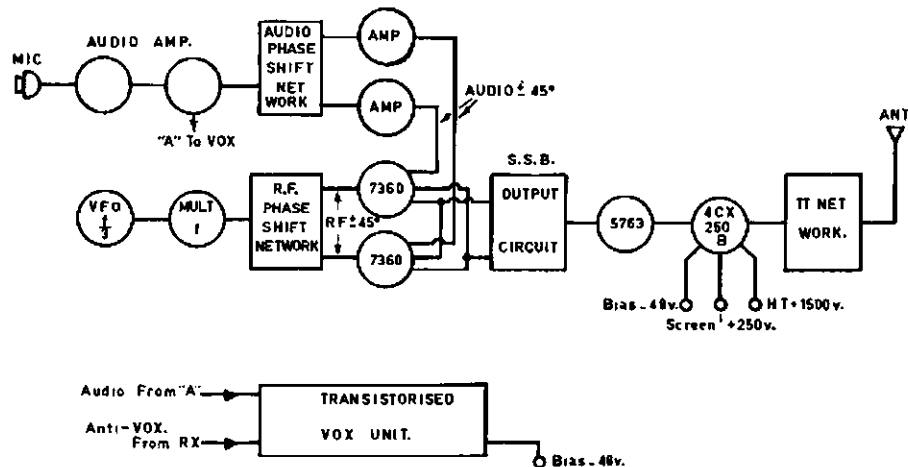
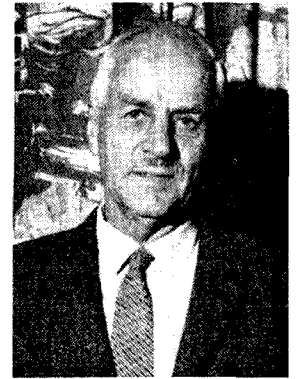


FIG. 1. S.S.B. EXCITER BLOCK DIAGRAM.

Fully described in "Wireless World," March and April, 1967.

WHAT IS THE I.T.U.?

G. PITHER, VK3VX, W.I.A. Federal Liaison Officer



G. Pither, VK3VX

It is the International Telecommunications Union and it has grown from an organisation founded in 1865 to establish telegraph regulations. It is the world body established to maintain order in the Radio Frequency Spectrum. As such, it sets the limits of the frequencies used by Radio Amateurs, and it has in its hands the very existence of Amateur Radio.

HISTORY

For more than 100 years an international body has existed to establish international agreements covering radio communications, and an outline of its history is given here:—

- 1837—First electric telegraph.
- 1849—The telegraph first used internationally.
- 1865—Paris, 17th May. Foundation of the **International Telegraph Union** by twenty States with the adoption of the first Convention. First Telegraph Regulations.
- 1868—Vienna Conference. Bureau of the Union set up in Berne.
- 1871-2—Rome Conference.
- 1875—Saint Petersburg Conference. New Convention which lasted until 1932.
- 1876—Invention of the telephone by Alexander Graham Bell.
- 1885—Berlin. Administrative Conference makes first I.T.U. provisions for international telephony.
- 1895-6—First wireless transmissions.
- 1903—Berlin. Preliminary Radio Conference of nine States.
- 1906—Berlin. First International Radio Conference with 29 States. Convention and Radio Regulations drawn up. Adoption of SOS signal.
- 1912—Titanic disaster. London Radio Conference. Improved Radio Regulations.
- 1924—Paris. Creation of C.C.I.F. (International Telephone Consultative Committee).
- 1925—Paris. Creation of C.C.I.T. (International Telegraph Consultative Committee).
- 1927—Washington Radio Conference with 80 States. Establishment of C.C.I.R. (International Radio Consultative Committee). **First allocation of radio frequencies to the various radio services.**
- 1932—Madrid Conferences. Organisation's title changed to International Telecommunication Union. First single International Telecommunication Convention. New Radio, Telegraph and Telephone Regulations.
- 1938—Cairo Administrative Radio and Telegraph and Telephone Conferences.
- 1947—Atlantic City. Plenipotentiary and Radio Conferences. Creation of International Frequency Registration Board (F.R.B.). New International Frequency List. Creation of the Administrative Council. Agreement with the United Nations approved.
- 1948—Seat of the Union transferred to Geneva.
- 1952—Buenos Aires Plenipotentiary Conference.
- 1956—Geneva. C.C.I.F. and C.C.I.T. merged into new C.C.I.T.T. (International Telegraph and Telephone Consultative Committee).
- 1958—Geneva Telegraph and Telephone Conference.
- 1959—Geneva Plenipotentiary and Radio Conference.
- 1962—New headquarters building opened in Geneva.
- 1963—Geneva Plenipotentiary, Radio, and Space Conferences.
- 1966—C.C.I.R. Plenary Conference.

THE WORKINGS OF THE I.T.U.

A brief outline of the organisation and functions of the Union will serve to establish an understanding of its operations. See organisation chart on opposite page.

AUSTRALIAN AMATEURS AND THE I.T.U.

From the chart a general appreciation can be obtained of the whole organisation, and it is possible to show how the Radio Amateur fits into the scheme.

Over 100 nations attend the meetings and **each has one vote**. No consideration of national prestige, population or the number of its Amateurs can change this. Needless to say, there are differences in the influence that nations can exercise, but when the votes are taken they have only one vote each.

Of equal importance to votes is the content of proposals submitted to the Conference. Before the convening of the Conference each nation formulates its own plans which embody the changes it would like to see made and the regulations which are needed to cover them. In Australia this is done in a series of preparatory meetings, and attended by representatives of the main user organisations. The representatives come from Government Departments, the Defence Services, and the W.I.A.

It is at this time that national policy is formulated for approval by the Government, and this is the brief which the Australian team presents at the I.T.U. Conference. If the policy is favourable to Australian Amateurs, the battle is half won. If it is not, the Australian Amateur will probably be the loser. There can be no question of Amateurs as such going to Geneva and

"fighting for their rights". Only nations have a vote, and the Australian Amateur point of view must be incorporated in the Australian national brief before the delegation leaves for Geneva. In the same way, Amateurs in every other country can only present their case through their country's national brief.

A moment's thought will disclose a very unhappy situation here. In the last ten years a large number of new nations have emerged from old colonial empires and in most cases Amateur Radio is unknown to them; to some, it is suspect. As their numbers increase, it is conceivable that they could vote Amateur Radio out of existence! And they would, too—if only to secure the frequencies for their own national h.f. broadcast systems. Every new nation seems to require its national voice on the air, and there is no frequency space available.

W.I.A. REPRESENTATION

To ensure that Australian Amateurs are adequately represented at I.T.U. Conferences, the Amateur's national organisation, the Wireless Institute of Australia (W.I.A.) has appointed a Federal Liaison Officer to attend the preliminary Conferences and to accompany the Australian Delegation to Geneva. He is Air Commodore George Pither, VK3VX, and he has been heard on the air by many Amateurs, reminding them of the need to preserve the Amateur bands.

SUPPORT FOR AUSTRALIA'S I.T.U. DELEGATION

There is obviously a need for the Australian Delegation to be properly briefed on Amateur matters, and it becomes the duty of every Amateur, as far as it is within his capacity, to ensure that every facet of the problem is known by the W.I.A. The Institute is organising an intruder watch to control the inroads of frequency pirates. The watch will also serve to keep us thoroughly up to date in this field. Reports are also needed from members on every aspect of the Amateur Service, so that, overall, the Institute can present a complete case as part of the Australian brief for the next I.T.U. Conference. This can only be done with the help and support of every Australian Amateur.

WHAT DOES THE I.T.U. CONSIST OF?

The I.T.U. is an organisation, a Union of Member Countries. In 1963 there were 119 Members and 2 Associate Members. The Union's Headquarters are in Geneva, on the Place des Nations. In this building are to be found the four permanent organs:—

- General Secretariat,
- International Frequency Registration Board (I.F.R.B.),
- International Radio Consultative Committee (C.C.I.R.),
- International Telephone and Telegraph Consultative Committee (C.C.I.T.T.).

The present Secretary-General is Mohamed Mili.

MEMBER COUNTRIES OF THE UNION: (1963) Afghanistan, Albania, Argentina, Australia, Austria, Belgium, Bielorussian S.S.R., Bolivia, Brazil, Bulgaria, Burma, Burundi, Cambodia, Cameroon, Canada, Central African Rep., Ceylon, Chad, Chile, China, Colombia, Congo (Brazzaville), Congo (Leopoldville), Costa Rica, Cuba, Cyprus, Czechoslovak S.R., Dahomey, Denmark, Dominican Rep., Ecuador, El Salvador, Ethiopia, F.P.R. Yugoslavia, F.R. Germany, Finland, France, Gabon Rep., Ghana, Greece, Group of French Territories, Guatemala, Guinea, Haiti, Honduras, Hungarian P.R., Iceland, India, Indonesia, Iran, Iraq, Ireland, Israel, Italy, Ivory Coast, Jamaica, Japan, Jordan, Korea, Kuwait, Laos, Lebanon, Liberia, Libya, Luxembourg, Malagasy Rep., Malaya, Mali, Mauritania, Mexico, Morocco, Monaco, Nepal, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Overseas British Territories, Pakistan, Panama, Paraguay, Peru, Philippines, Poland, Portugal, Portuguese Overseas Territories, Rhodesia and Nyassland Federation, Roumanian P.R., Rwanda, Saudi Arabia, Senegal, Sierra Leone, Somali Rep., South Africa and S.W. Africa, Spain, Spanish Provinces in Africa, Sudan, Sweden, Switzerland, Syrian Arab Rep., Tanganyika, Territories of U.S.A., Thailand, Togolese Rep., Tunisia, Turkey, Ukrainian S.S.R., U.S.S.R. (Russia), U.A.R. (Egypt), U.K. (Britain), U.S.A. (America), Upper Volta, Uruguay, Vatican City State, Venezuela, Vietnam, Yemen. **ASSOCIATE MEMBERS:** British East Africa, Singapore-Borneo Group. **ADDITIONAL COUNTRIES SINCE 1963** include many of the new African nations, and bring the total up to **130 for 1967!!**

THESE COUNTRIES MEET every five years or so at a **Plenipotentiary Conference**.

This is the supreme authority of the Union, ultimately responsible for all policy, which—

1. **Revises the I.T.U. Convention.**
2. **Elects the Secretary-General** (who directs the General Secretariat, which is responsible for administration and finance, publication of International Radio Telegraph and Telephone Regulations, arrangement of conferences, provision for technical co-operation, financial and admin. arrangements for I.F.R.B., C.C.I.R., C.C.I.T.T.).
3. **Elects the Administrative Council of 25 Members** (which meets in annual session, when it acts for the Plenipotentiary Conference between the latter's meetings, and it supervises the administrative functions and co-ordinates the activities of the four permanent organs at I.T.U. Headquarters in Geneva).

THESE COUNTRIES PARTICIPATE IN:

- (a) Extraordinary Administrative and Special Conferences,
- (b) Ordinary Administrative Conferences;

FOR: (1) Telegraph and Telephone (Revise Telephone and Telegraph Regulations),
(2) Radio (Revise Radio Regulations, and elect the 11 members of the I.F.R.B.).

The I.F.R.B.—International Frequency Registration Board—serves as "custodians of an international public trust"; it records assignments of radio frequencies throughout the world after technical examination and it advises Members of the Union on technical matters concerning harmful interference between stations. They are assisted by a specialised Secretariat.

THESE COUNTRIES JOIN WITH PRIVATE OPERATING AGENCIES in the work of:—

- (a) The C.C.I.R.—International Radio Consultative Committee,
- (b) The C.C.I.T.T.—International Telephone and Telegraph Consultative Committee.

These hold **Plenary Assemblies**, normally every three years, which set up study groups to study technical, operating, and tariff questions, and issue recommendations on them; they also elect Directors who are assisted by specialised Secretariats, equipped with technical apparatus and laboratories.



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VK2 Rep.: **MOSMAN RADIO SERVICES**
11 Ruby St., Mosman, N.S.W., 2088. Phone 96-5342 (Day and Night)

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"THE THING"

(Continued from Page 8)

rather tiresome but has to be put up with.

The other pitfall results from the use of a very wide sweep. It is usual to employ a wide sweep during the initial alignment, say 10 Kc. per cm., giving a total sweep width (on my equipment) of about 50 Kc. This gives a pass band curve that is about 0.3 cm. wide. It was noticed that the top of the curve was rather peaked instead of flat. However as the sweep is reduced so is the above effect, until 3 Kc. per cm. is reached when it disappears altogether. About 1.5 Kc. per cm. was found to be about the optimum.

The distortion arising from the use of wide frequency sweeps is probably an extension of the first trouble mentioned, i.e. the rate of change in frequency through the filter is high even though the actual sweep speed is low.

The use of a marker generator was originally considered. "Finnagle" again reared his ugly head and this idea did not pan out as hoped. The trouble being that it was practically impossible to discern the zero beat point on the sides of the pass band curve due to their steepness.

That's all for this month, the remainder of the exciter will be described in a later article. I have not been able to do any further developmental work

on the transceiving side of the project. This has been due to the time taken in writing up the story so far. However, the receiver described in the August and September 1966 issues should provide a basis for individual experiments.



NEW CALL SIGNS

MARCH 1967

- VK1BA—R. J. Mirdas, 149 Mugga Way, Red Hill, Canberra.
- VK1LN—L. C. F. Whyte, 16 Bannister Gardens, Canberra.
- VK1ZJW—J. B. B. White, Reid House, Allara St., Canberra City.
- VK2BQ—M. Blackstone, Flat 8K, 85 Elizabeth Bay Rd., Elizabeth Bay.
- VK2BFC—F. C. Collins, 100 Lucas Rd., Burwood.
- VK2BGC—G. H. Carruthers, 9 Macarthur St., Parkes.
- VK2BKE—B. K. Brown, 9 Bank St., Meadowbank.
- VK2BKE—K. E. Hicks (Dr.), 2/51 Cremorne Rd., Cremorne.
- VK2BNC—N. C. Bell, 49 Campbell St., Boorowa.
- VK2BRO—R. W. O'Grady, 13 Girraween Ave., Warilla.
- VK2BUB—B. Unsworth, Wyee State Mine, C/o P.O., Doyalson.
- VK2BZZ—G. A. Bentz, Flat 7C, M.Q., R.A.A.F., Richmond.
- VK2ZMX—M. A. Runagall, 5 Catherine Ave., Hillview.
- VK2ZON—B. Robinson, 47 Hall St., Cessnock.
- VK2ZUF—P. J. Ford, 4/86 Alt St., Ashfield.
- VK2ZWT—A. J. Wright, Oak St., Dorrigo.
- VK2ZZB—R. Hodgkinson, 49 Vernon Ave., Gympie Bay.
- VK3JS—R. C. Whitaker, Flat 5, 9 Thames Prom., Chelsea.
- VK3AER—A. F. Leversha, Station: Harcourt; Postal: P.O. Box 50, Harcourt.

- VK3AUB—R. N. Buzacott, 19 Hobbs Cres., Reservoir.
- VK3AVM—V. R. McKenna (Rev. Bro.), 1 Beryl St., West Essendon.
- VK3ZFS—B. S. Farmers, Tarranginnie, via Nhill.
- VK3ZQP—P. S. Carne, 3 Thurling St., Mentone.
- VK5HB—T. T. Hopgood, 28 Everard Ave., Keswick.
- VK6NK—C. Waterman, 20 Tavistock Cres., Lynwood.
- VK6VG—J. V. Griffin (Bro.), St Patrick's College, Geraldton.
- VK7ZLR—S. L. Radford, 6 Bain Tce., Launceston.
- VK8XI—B. Hannaford, Eldo Tracking Station, Gove.
- VK9CR—R. J. Conway, Station Kaia Pl., Port Moresby, P.; Postal: C/o. Posts and Telegraphs, Port Moresby, P.
- VK9ZAF—A. Freitas (Bro.), Catholic Mission, Kavieng, N.G.



FEDERAL CONTEST COMMITTEE REGRETS

In the John Moyle N.F.D. Contest results, 24-hour division, the entry for section (b) should read nil, and section (c) VK5ZF/P, 561 points, 64 contacts.



OVERSEAS CONTEST RESULTS

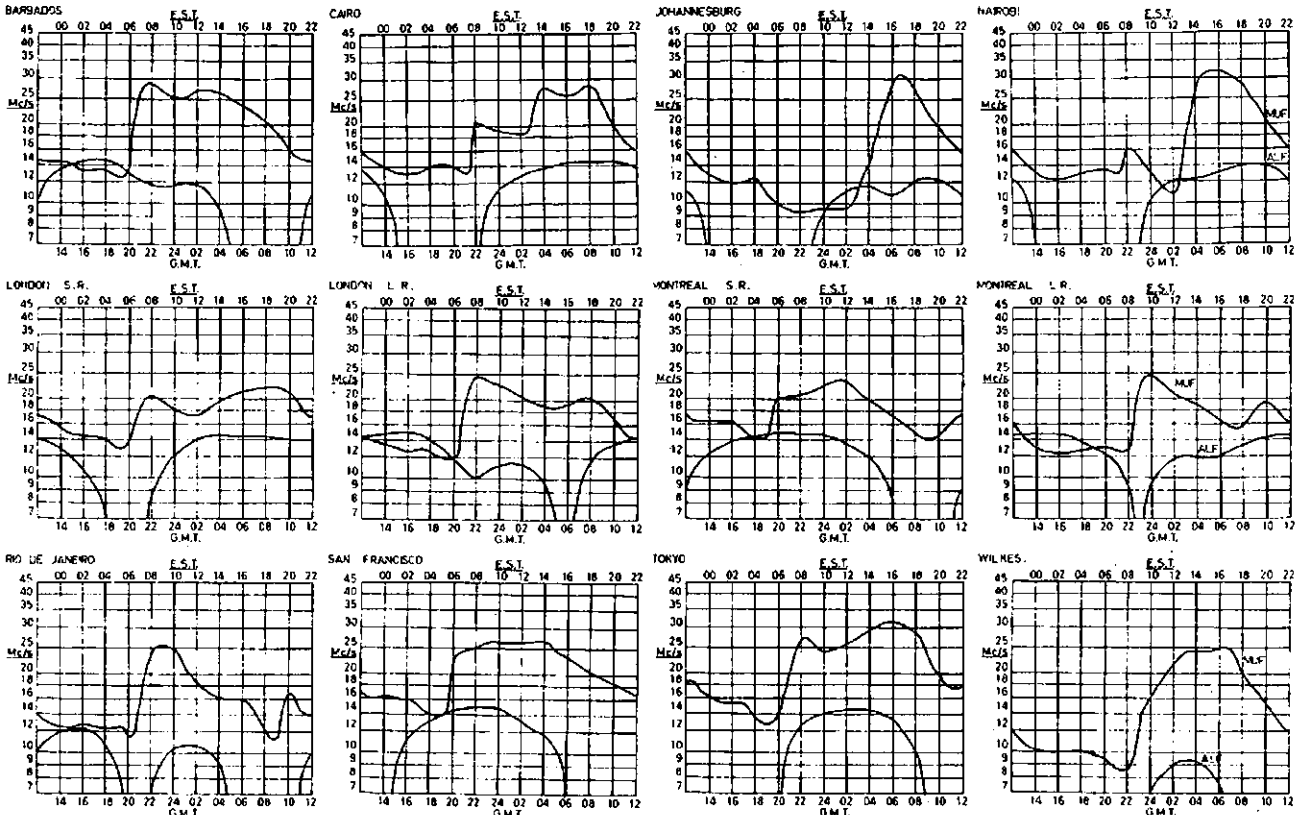
FIFTH R.S.G.B. 7 Mc. DX CONTEST (1966)

C.w. Section: VK3APJ, 50th, 850 pts.; VK5KO, 66th, 700 pts.; VK3XB, 124th, 400 pts. There were 185 entrants in this section.

Phone Section: VK3XB, 37th, 200 pts. There were 38 entrants in this section.

Receiving Section, c.w.: G. Allen, Western Australia, 1st, 1740 pts.; BERS-195, E. Trebilcock, 3rd, 1300 pts.

PREDICTION CHARTS FOR JULY 1967



(Prediction Charts by courtesy of Ionospheric Prediction Service)



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Book Review

RADIO AMATEUR'S HANDBOOK 1967, 44th Edition

Published continuously since 1926, during which time almost four million copies have been sold, this handbook has become the standard manual of Amateur Radio communication, as well as being an excellent reference work and training text for students.

The chapters on radio communications theory are up to date in all phases of the art, and the material on equipment construction includes transmitters and receivers for every level of cost and constructional ability. Very few special components are used and the frequency ranges catered for are similar to Australian Amateur frequencies.

Much helpful information is provided on mobile operation, antennae, test equipment, sideband and teletype.

The information on tube and semiconductor characteristics, and tube base diagrams, provides one of the most complete such listings to be found.

Perhaps the only criticisms are that this edition is little different from the 1966 edition and the attention given to semiconductor circuitry is still only slight.

Published by American Radio Relay League, Connecticut, U.S.A. Review copy from the A.R.R.L.

WORLD RADIO T.V. HANDBOOK 1967, 21st Edition

Over the years this handbook has become a must for every serious short-wave listener. The first section contains interesting articles relating to broadcasting, information about broadcasting and television organisations, technical articles and tables of practical value to listeners.

The main section of the book contains detailed information, by country, of the radio stations of the world, including addresses, frequencies, transmitting power, call signs, and station names. Also included is detailed information of programmes, including time, frequency, and beam areas of broadcasting in each language.

Not the least interesting section of the book lists the shortwave stations of the world in frequency order, enabling rapid identification of received signals.

Published by World Radio T.V. Handbook Co. Ltd., Denmark. Australian price \$5.40. Review copy from Technical Book and Magazine Co., 289-299 Swanston St., Melbourne.

HOW TO BUILD AN INEXPENSIVE TRANSISTOR RADIO

Although of a standard well below usual Amateur Radio standards, this book would be an excellent answer to the many queries most radio enthusiasts receive from young people wishing to start out in electronics.

The radio described is a simple one transistor regenerative unit employing an OC44. The text is simple and clear, and extremely well supported by excellent diagrams and photographs. So much so, that a young schoolchild should have no difficulty in following the instructions without assistance.

Published by Beta Books, N.S.W. Australian price 75 cents. Review copy from A. H. & A. W. Reed Pty. Ltd., 51 Whiting St., Artarmon, N.S.W.

Galaxy V. Mark II. and Swan SW350, latest models, all-band SSB Transceivers **\$550**

Gonset full Two Metre SSB Transceivers **\$400**

Heath HW-32A 20 Metre SSB Transceiver Kits **\$180**

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D X

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

Although 28 Mc. has slipped and is now for the winter seemingly quiet, 21 Mc. continues throughout the daylight hours to be good. Most continents can be heard and worked during each 24-hour period. Europeans around 2200z, then various areas of U.S.A. at 0000z. The South Americans and Asians appear about this time also. During the late afternoon period a few West Asians also appear, with an occasional signal from Africa. 20 mx is open mainly to U.S.A. from the late afternoons.

NOTES AND NEWS

Madeira: Hal CT3AS is very active from here. He works 7, 14 and 21 Mc. Says he will also work 28 Mc. next northern winter. QSL via G2MI or R.S.G.B. His frequencies are mostly on the low end of the c.w. segment.

French Oceania: FO8BU and FO8BJ both QRV. The former 14035 and latter 21040 from 0800z. Also FO8BT.

Tanzania: 5H3KJ 21055 2000z. About 449 here. QSL Bureau.

Mongolia: UA1CK/JT 14115 s.s.b. 0730z. (VK-4MY)

Br. Guiana: 8R1S 14150 0640. QSL P.O. Box 739, George Town. (VK4MY)

Turkey: TU2AY 14103 s.s.b. 0730z. (VK4MY)

Also TA2AC still said to be QRV 14 c.w.

Gabon: Max TR8AD was on 14212 at 2200z. Also TR8AG is active. If you want a sked with the former, drop him a few lines in French. (LIDXA)

Brunei: V5SMH is back on the air again. He skeds WIDGJ each Wednesday at 1100z on 14250 transceive. Also skeds VK8EZ on Mondays.

Trucial Oman: Roger MT4BTO regularly on 14190. Listening 200-205.

Canton Is.: Rick KB6CZ 14209 0530z. QSL K4MQG.

Turkoman: UH8BO, Eugene, is very active 14195, listening 14203.

Cameroon: TJ1AL, TJ1AK, TJ1AJ all on the air as of now. Also TJ5MG on 14010 and 21010 at various times. (LIDXA)

Tromelin: FR7ZL/T on daily 1130z. He is xtal controlled 14118. QSL FR7ZD.

Sao Thome: AI CR5SP 14188. Listens 14200, 0630z. (LIDXA)

Niger: SU7AL transmitting 14192, listening 14204, 0345z. (LIDXA)

St. Lucia: VP2SAB, 0425z, 14107. (LIDXA)

Antigua: Barney VP2AA 14170, 0410. QSL VESACD.

Ghana: 9G1GA 21273, 2300z. (LIDXA) Also 9G1HM 14040 c.w., 0800z.

Gambia: ZD3L. This call will be used by the Yasme DX-pedition, Lloyd and Iris. Listen for the pile-up.

Fernando de Noronha: PY7APS/0. This was reported unofficially to be a Don Miller stint. If so, QSL W4ECL.

Jordan: 9Q5BD will be active from early July from this spot. The prefix will be JY of course.

Malta: 9H1M 0140z, 14200 using a.m. mode. (LIDXA)

Neutral Zones: Vic Crawford, HZ3TYQ, plans to operate from 8Z4 and 9K3 later this year. More info when it comes to hand. (LIDXA)

Kuwait: F9DF is trying to get a licence to operate as 9K2 next Sept. He will use 21310 as the main frequency.

Br. Phoenix: K8CAA hopes to operate from this island very soon. More info later. (LIDXA)

Monaco: PA0GHB will be active during July 13-16. The ZB2 2-8 Sept. and FX1 27-29 August and Sept. 13-16. 14 s.s.b. main mode. (LIDXA)

Isle of Man: GD3ENK is on 14332 at 2050. (LIDXA)

Jan Mayen: JX5AK 14060 2000z. Very QRL with lots calling.

Marcus Is.: KG0IF on 14204, 0450. QSL via W6ANB.

Crozet: FB8WW on 14200 transceive. QSL W4MYE.

Saudi Arabia: HZ38J, 14245, 0500.

Ceylon: 4S7NE on 14200 around 1200.

Chad: TT8QQ 14025 1800 and sometimes on 7 and 21 Mc. Also active is TT8AB 21140 a.m.

Faroes: OY5H 14212 2150. Also OY4M at 0100 on 14053. Another is OY7S 14225. (LIDXA)

Swaziland: Archie ZD5R is taking on all comers on 14167 around 0600.

Swan Is.: KS4CC using all bands. However he is easily workable on 14254 0530z. (LIDXA)

Syria: YK1AA 14220, 0600 and 1900z.

Bahrain: MP4BBL 14225, 2000. (LIDXA)

Canary Is.: EA8CB 14305, 0545.

Qatar: MP4QAL was reported active but latest on this one is that he is bootlegger.

China: JA3IU/BY will be active for about a month commencing beginning June. 14 s.s.b. and c.w.

5LA2, 3 is being issued to Liberian ops. and 4Z4 will be the call of Israeli Amateurs.

Pakistan: Report to hand which says that the AP Govt. is restoring Ham licences.

VE2KPO is the call of the Canadian Expo 1967.

Nauru: Bob W4CHA, who was planning operation from here, will not attempt the trip until next year.

FP8DD: 14204, 2315z. QSL WB2RSW.

Lebanon: OD5LX 14157, 0300z; OD5BA 14226, 0300z.

Afghanistan: YA1FV 14206, 0300z; YA1DAN 14175, 0300z. QSL KP4CL.

Sp. Morocco: EA9AZ 14250, 0600z. Has wobbly s.s.b. rig.

Yemen: 4W1L 14230, 0645z.

Monaco: V5SAPV will operate as 3A and later as FX. Keep listening 14 s.s.b.

Brunei: 9M6MG and 9M6JP are planning activity from here using calls V55CQ and V55DX. They will transmit on 14150 and listen on 14200.

Lichenstein: HB0LL 14198. QSL WA4VQV.

Balearic Is.: EA6AR active during June and possibly later. QSL DL7FT.

Mauritius: VQ8CC 14030, 1100z. QSL W1STW.

VQ8CA 14182, same time.

Sth. Orkneys: VP8JD 21043, 1750z. QSL CX2AM.

Malagasy: 5R8AS 21070, 1400z.

Bassas das India Is.: A short stint is coming up from this one. No call known as yet. QSL W4VPD.

Cyprus: ZC4CI 14235, 0330z plus several more on all bands. (Courtesy LIDXA)

Sikkim: AC3PT is active 21030, 1100z.

Sao Thome: CR5SP QRV s.s.b. 14195, 1600z.

Also CR5CA on c.w. 21065 2045z.

Egypt: SU1AR 14018, 2300z. (Late news) Fr. Guiana: FTYYG 21376, 2030z. QSL W2CTN. (By courtesy, J. Coote, GSUGT, Ed. "Air Waves")

Hebrides: Dave Laing, ex VK4, is now reported active on 3680 a.m. after 0700z. Also 20 c.w. from 0500z. FUBAG also active.

Mauritius: VQ8AX 14215, 1300z. Also one or two others.

Egypt: SU1AR 14017, 0430z, also 2100z.

Kure Is.: KH6EDY 14235, 0830z.

ACTIVITIES

Dud VK4MY has not been very active and using for the time being a home-brew rx which restricts him to 14 Mc. Nevertheless, he worked these nice ones: 20 s.s.b.: UA1CK/JT1, IS1VAZ 14155 0645, SP7HX 14100 0550, LA9TJ 14115 0610, PA0HBO 14120 0650, G1G7K 14170 0500, VK2AVA/LH 14180 0600, etc. On c.w., CP5AA 14021 0640, PA0MUG 14020 2050, GW5TW 14028 0650, DK1CU 14005 0700, DK1HP 14064 0600, plus other Europeans. Some that got away were G130L, TU2AY, FB8YJ, KS-6CL, KG6NAA, EA9AZ, UN1CF, EL2D, FO8BU, 8R1S, KG6A/YA, 5W1AA.

Jim VK4UC, from Nth. Qld., reports 14 Mc. open in the mornings to Europe around 2000z. He logged the following on c.w.: DL8BD, FA2AG, UC2AL, HA2CI, U18KKT, UBSDV, ZSSAE, KL7FSA, UA9CZ, G3CCD and ZF5OG at 2115z.

Reg VK4VX, who has had a heyday on 10 mx these past weeks, reports these worked: CR7DS, DU1FH, DL9GF, DJ2BW, EP2GI, E16AS, F3IL, G3NMH, I1PGL, HPIJC, HB0LL, HK4DF, HL9DQ, HB9ZC, KV4EU, KP4BTM, KR6TAB, KZ5IK, KH6PRO, KR6WV, KX6DC, KL7DTH, KB8CZ, OE1HKW, OD5RX, OH0WI, OA4EM, PJ3CR, SM5BPJ, UG6ACV, UA3AYN, UC2AA, UH8AE, UR2EK, VE7PV, VP8HZ, VQ8AX, VP2KR, VS6ZF, VK9GN, XW8AZ, XE1YO, YV1FV, ZP5OC, ZE1BR, ZS1PJ, ZS-2ND, ZS3HJ, ZS4OI, ZS5EF, ZS6ARE, 3C3FJZ/SU, 5R8AS, 9M2PO, 9V1FF and more. (A mighty effort OM.—Al.)

Chas VK4UC, who now reports the state of his art as DXCC 178/141, WAS 50/49, WAZ 40/39, says the bands have quietened down somewhat. He lists the following on 20 mx c.w.: VO1AV, G8US, SP8CK, F9LX, CT1VB, UC2DN, ZD3I (Yasme), FM7WO, FK8BJ, YU-3EYZ, CT3AS, 5N2ABD, 9G1HM, HM5CL. All from 0600 to 1200z. On s.s.b., UA1CK/JT1, VK2AVA, CR4BC.

For those chasing W.A.S., the state of Delaware is always difficult. Chas reports these that that state on now: W3IYE, W3DRD, K3KGF, K3NHL, K3QVV.

Dave VK3QV, who covers the m.u.f. on ten consistently, logged on s.s.b.: DJ2SG, FW8RC, VQ8CQ, XE1DDP, ZE1JJ, ZS2AF, ZS5KS and all W areas, plus JA. Heard were G13IVJ,

EP2GI and OE2BSL. Dave says the band is now in a state of hibernation till spring.

Ken VK3TL, who admits to finding those last few hard to snare, did add a couple more to the score this month and they are contained in this nice list. 14 Mc.: CR4BC, CR6BX, EA-8BQ, EL2S, FW8RC, HB0GJ, IS1RUA, VO1FB, VQ8CA, ZD3I, ZD8RD, Z3SU (Lesotho), 3B1BD, 3CIUA, (P.E. Is.), 8R1S (Guyana), 9G1BF, 9G1TV, etc. QSLs received: HR1CF, HC1DX, GM2HCZ, H18LC, IS1FOL, IS1TWD, VP8BK, TI9JC, 6Y5GQ, EA68H, CN8BV, OX3BX.

Geoff VK3AMK says that conditions have fallen off on 28 and 21 Mc. He says many of the signals now have strong Auroral flutter due to the increasing sunspot activity. He lists these goodies all on s.s.b. 7 Mc. G3AOC at good strength around 0630z. 14 Mc.: CE1IU, CN8CB, E1AR, E19V, GWANZ, HB0AFM, HPIJC, HI-8XAL, IS1RUA, LX1WR, PJ2MI, PY2DWH, UC2AA, VP1LP, VP2SY, VP8RG, ZD3I, ZK1AR, 7Q7LZ and more. On 15 mx: G3BID/M, GC-3FKW, GM8AT, WO1CJ/KM6, SV0VV, SV0WX. Ten mx: DL1EC, G3IY, FO8BS, YV4IQ, and 9Q5EP. (Good four-band coverage, Geoff.)

Don VK3AKN writes to say that 10 mx has been better than predicted, working some 900 stations during last January and February alone. Mostly Europeans, but with a sprinkling of Africans, Js and Ws. Notched up these last few weeks were the following: ST2SA (Box 244, Pt. Sudan), K2IAT, I1HCJ, OK1AFV, SM5BNX, DL2JO, UM8AP, DJ8CZ, VK6MA, UW4IB, YO3AD, YO3JE, YO3QO, CT1LN, F3YR, UP2NX, DL4SA, UA8MR, WB6JPQ/MM (Californian Bear), 9J2GJ, UA9ZY, UA9ES, LZ1YV, UT5GP, 5Z5SS, GW3TIW, ZS6MM, ZS6JK, ON4CK, UD6KB, G5RI, UL7AIN, XE2AAG, OE4FS, UB5ES, LA7NG, F9HY, HL-8KB, ZE1BC, OH8RC, KH6FQR, KV4CI, SV-0WFF and more. All on 28 c.w. (Nice big list OM. Some more pse?)

SOME QTHs

EP2GI—G13HXV, 45 Erinvale Ave., Flnaghy, Belfast 10.

9U5ID—D.O.T.M.P.O.B. 7388. Newark, N.J., U.S.A.

5N2AAV—Marinus Verhoeven, P.O.B. 14, Minna, Nigeria.

4W1G—HB9NQ, Rene Schelling, Romerstrasse 22, Aarau A.G., Switzerland.

ZF1GC—VE4DO, Dr. James Hendry, 103 Clark Dr., Brandon, Manitoba, Canada.

VP2VW—KV4CR, P.O.B. 2126, St. Thomas, Virgin Is.

FO8BS—P.O.B. 376, Papeete, Tahiti.

KS6BZ—L. Rector, C/o Dept. of Education, Pago Pago, American Samoa.

KW6EJ—W2CTN (VK3QV)

VP5BP—W2CTN (VK3QV)

FM7WO—Box 575, Ft. de France. (VK4UC)

9G1HM—Box 2165, Accra. (VK4UC)

AWARDS

Benelux—This nice award is issued for confirmed contacts with Belgian, Dutch and Luxembourg stations as follows:

DX applicants: four QSOs each with the first two countries and two QSOs with the last named. Send a certified list of stations worked with 7 I.R.C. to Award Manager ON4NM, P.O. Box 381, Antwerp 1, Belgium. Any mode, any band. No endorsements.

Wireless Institute of Australia

Victorian Division

A.O.C.P. CLASS

commences

MONDAY, AUG. 21, 1967

Theory is held on Monday evenings, and Morse and Regulations on Thursday evenings from 8 to 10 p.m.

Persons desirous of being enrolled should communicate with—
Secretary W.I.A., Victorian Division, P.O. Box 36, East Melbourne (Phone: 41-3535, 10 a.m. to 3 p.m.), or the Class Manager on either of the above evenings.

SWL

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

In the column of the May issue of "Amateur Radio" I briefly outlined the "doings" of the short wave listener. The response to this has been such that we will continue this month, and elaborate a little on the subject of receivers, followed in a later issue by some data on antenna erection.

The choice of a receiver is governed by the field of operation which the S.w.l. chooses and the amount of money he has available. If he is intending to concentrate on the Ham bands alone, there are many commercial receivers available for this purpose, including a number of the Japanese receivers which are available in this country. I have used only one of these and it performed quite adequately on frequencies up to 20 metres, however performance dropped away on 15 and 10, which is to be expected. I was using this receiver for the R.D. Contest in 1963 when band conditions were well below their present level. If you intend to listen to anything and everything, a general coverage receiver is necessary, in fact there are general coverage receivers available which have bandspread on the Amateur bands. This of course is the ideal set-up for listening.

It is well to keep in mind that the receiver must be extremely sensitive in order to pick up and amplify the tiny portion of r.f. which the antenna feeds to it, and that any short-cuts in its construction will naturally impair the result. But to get back to the starting point, let's presume that the would-be S.w.l. has \$50 to spend on his first receiver and wants to listen to anything he can hear, with emphasis on the Amateur bands. If he is an experienced telegraphist he will be able to listen to Morse signals up to maybe 35 w.p.m. and these can be heard in abundance on a home-made regenerative or t.r.f. receiver. However, once again we must presume that our listener to be is not experienced and will have to learn to follow simple telephony before he graduates to operating single sideband. As there is very little a.m. (normal speech) on the DX (long distance) bands, he will have to listen to 160 if he is fortunate enough to hear a signal, otherwise 80 or 40 metres. Therefore his first need is a receiver capable of good reception on these bands, and up to say 10 Mc. This gives him general coverage up to a little higher than the 40 metre Amateur band and takes in many of the commercial stations and local point to point communications.

What has this receiver have? Firstly, it must have a stable beat frequency oscillator, and without going into theory, this is necessary to provide a means of making single sideband transmissions audible, as well as providing a readable note for Morse signals. I emphasise the need for a stable b.f.o. as the slightest shift in this circuit will at once detune the signal. The r.f. amplifier too is a crucial part of the circuit, once again I will leave the theory to the Youth Radio Scheme and speak only of results.

With no radio frequency stage you will hear images or repeats of any given signal in more than one place, the addition of the r.f. stage overcomes this by amplifying the basic signal and rejecting the image, whilst a second r.f. stage really puts the receiver in business. So, we must have at least one r.f. stage to give the set the necessary "sensitivity" to lift the weak signals. Then as well as all this we must have a "selective" receiver, that is one which has the ability to eliminate unwanted signals and this can become quite an expensive addition. But at these days of crowded bands it is essential that we have some device to perform this function, the said device is called a filter, and can be of the mechanical type or the older type using a quartz crystal. The simplest device however is a Q multiplier and details of this can be found in a handbook such as the A.R.R.L. Handbook, or the Novice and Technician Handbook, to name two of the regular ones.

So now we have a receiver which has stability, selectivity and sensitivity. It tunes between approximately 2 and 10 Mc. and is capable of receiving any type of transmission. This is a basic set and if a good choice is made, then you will have the basis for future operation and extension when you move into the DX bands on 20, 15 and 10 metres.

Now for the actual choice of a receiver. Watch the columns of this magazine, or even advertise in it. Listen to your Divisional broadcast and look in your W.I.A. Divisional Bulletin, or contact other members of the

various S.w.l. Groups, thus you will be able to buy a receiver more to your need and far cheaper than other sources.

Of the various receivers on the market at the present time, I had the use of several types of these wartime receivers and most of them are quite adequate for a beginner, and for further use on the DX bands when he has more experience. One of the most famous of these is the AR7. This set has two r.f. stages, an in-built crystal filter, power supply and all the features of a first class communications receiver, but one fault is that it sometimes lacks stability. Frequency range is from below the broadcast band to 25 Mc. This covers up to 15 metres, but at this frequency they tend towards instability. However for a basic set they are quite okay. The same applies to the AMR300 and the HRO. The BC342/348 series are also excellent if you can get an unmodified model, and the SX28, although old, will still match the best of them. Then we had the Super-pro, another excellent job, as was the CR100. Probably the best of the lot would be the AR88 series, and these even now sell at a price well above any of the others.

The types named up to here are all general coverage communications receivers which were the best of their day and which can be obtained fairly reasonably these days. There are others which served a lesser duty, for example the No. 4, with its cast alloy chassis and most stable b.f.o. This set was quite good for its purpose and would be ideal for a beginner who planned to extend its range with converters, a subject which we will cover later. In this category comes the No. 19 set, one of which I used with extremely good results when I first joined the VK2 S.w.l. Group many years ago.

There is little more I can add at this point. As space permits I will continue this series, but in the meantime I would like to hear any comments from users of current commercial gear, giving their opinions and suggestions which I can pass on to the newcomers who frequently write in for information on this subject.

DIVISIONAL NOTES

VK2 Group: The construction night which formed the May meeting was attended by only half a dozen members, which to say the least was disappointing. R. Girdo was elected Vice-President and Liaison Officer. All QSL cards received by the QSL Officer have been despatched to their owners.

VK3 News: A recent development is the change to be made to the Victorian Group magazine "Zero-Beat". It has been decided to combine the Y.R.S. and S.w.l. notes in the one magazine, the circulation and income will go up, the S.w.l. Group is brought to the notice of the Y.R.S. members. It may be eventually possible to increase the number of pages in each copy, or even produce the magazine monthly. Recent correspondence from the Hamilton College indicates that possibly six of the boys will join the VK3 S.w.l. Group, a nice increase to our country membership. The Group would like to see a better attendance at the meetings. Don't worry about the cold rooms, for plenty of heating is available and the lectures are interesting.

AROUND THE SHACKS

Alan Raftery, L5065, has QSLs from UB-5ARTEK, HP1JC, XW8AX, XW8AZ, G2AKQ, OH5NW, JA8BJO and IICAM. Ted Gregory, ex VS6EC is at R.A.A.F. HQ Penrith, and I have made his acquaintance. His XYL is Inge VK6OV.

Such is life. Last month I was abusing everybody for not writing. Eric L3042 is very

happy about the number of VK3 chaps whose cards are passing through the Bureau, but is not doing too badly himself either with a score of 300 countries in 40 Zones, and 295 confirmed in 40 Zones. Inward cards: DM2AQF, DM3WSO, DL4SA, F8TT/FC, G3IAR, G3KSH, HB9AFI, SP2KA3, TA2AC, VE8WT, VK3AOY, VS9ARV, VS9KR7, VS9MB, YU2KYZ, 7X0AH, VK5AX/M, G8UJB/MA, G3UJB/MM.

Our overseas correspondent, Art Borreidale, now transfers from W to EA, and hopes to do active listening from there, whilst John Simons who has been providing some interesting news on v.h.f. doings in G land, now moves to another country. That winds it up for this month chaps, 73 for now, and don't forget the R.D. Contest. Don L2022.

★

YOUTH RADIO SCHEME

It is with pleasure that we announce that Mr. Keith Howard, VK2AKX, President of the Westlakes Radio Club, will be taking over the duties of Federal Co-ordinator from Mr. Rex Black, VK2YA. Keith has been a very active promoter of Amateur Radio for many years and devotes many hours each week to the club including Saturdays for Y.R.S. Keith is also a teacher by profession and is an excellent and logical successor to Rex. Our best wishes to you, Keith—and for the future of the Y.R.S.

The first Y.R.S. Conference was held over the week-end of June 3 and 4 with a general meeting of officers and club leaders, at Sydney Grammar School on the first day. On the second day, the W.I.A. headquarters at Crows Nest was open for a get-together of those interested in the Postal Groups. Roger VK1RD, Postal Group Supervisor, was there to meet as many people as possible.

Rex Black, VK2YA, has written from England to say that he will be back in Australia and at work some time around August 1. Rex had a bit of news about various youth activities in England. Y.R.S.'ers should feel very fortunate in being able to use radio gear under supervision of a licensed Amateur for in England this is absolutely illegal. G3TGS is the call sign of the Scout Radio Club operating from Baden-Powell House in Kensington. It appears that the revised training methods of English Scouting will include some attention to Amateur Radio.

Speaking of Scouting, do not forget that the Jamboree-on-the-Air takes place August 6 and 7. So if you know of a Ham in your district do not hesitate to approach him. A little preliminary instruction on the use of the mike, what to say, etc., helps keep mike shyness at bay and leaves a good impression on the other half of the QSO party.

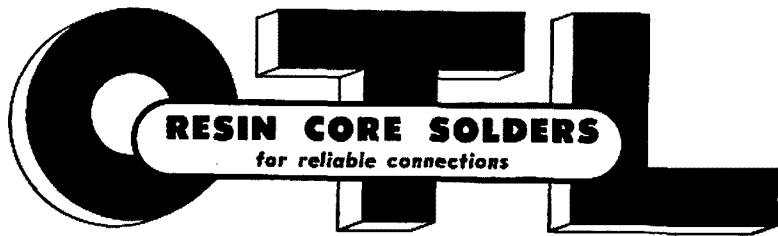
Allan Nutley, of the Meadowbank High School Radio Club, was formally presented with the O.T.C. book prize for gaining 95% in the Elementary Certificate at the last meeting of the Wireless Institute.

John Flynn, of Canterbury Scout Radio Club, advises that his club is following a construction programme this year which will give the boys very valuable experience.

There have been several more successes for the Elementary Certificate. C. Zvirblis, of Roger Davis' P.G., gained 95% and, therefore, will be eligible for the O.T.C. prize.

Don't forget to send me your news by the last Wednesday of each month. The address is Mrs. M. Swinton, VK2AXS, P.O. Box 1, Kulnura, N.S.W. Best 73, Mona.

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VHF

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

Well activities over the past month seem rather varied, ranging from plenty of DX to a state of complete inactivity.

V.H.F. CONTESTS IN AUCKLAND, N.Z.

Two metre contest, Sunday, August 20, from 1800 to 2200 hours N.Z.S.T. This contest is divided into four periods, each of one hour. U.h.f. Contest, 432 Mc. and above to be held on Sunday, November 19, from 1900 to 2200 hours N.Z.S.T. and will be in three periods, each of one-hour duration.

The Auckland V.h.f. Group will be holding a V.h.f. Field Day on Saturday and Sunday, 9th and 10th December. Hours of operation are: Saturday 1600-2200 hours, Sunday 0600-1200 hours N.Z.S.T.

NEW SOUTH WALES

52 Mc.: Activity on the lower end of the band is mainly confined to the week-end, peaking on Sunday morning. A dozen or more stations are now quite active on the 53.866 Mc. a.m. net. The activity is centred in the Blue Mountains with good signals being received in Sydney. The new 53.95 Mc. f.m. net has got away to a slow start owing to a shortage of "low-band" transceivers, but good coverage is reported by the stations on this net. The monthly 6 mx fox hunt for May was held on Sunday, 14th, with VK2ZVL acting as the fox. A small attendance was the result of inclement looking weather, although little rain was experienced. Place getters were VKs 2ZAU, 2ZPJ and 2ZEV. Interstate and country visitors are always welcome at our monthly 6 and 2 mx fox hunts.

144 Mc.: Over the past couple of weeks the activity on this band seems to have hit an all time low. Perhaps this may be attributed to the eager gathering on the frequency of the slow Morse broadcasts, as after these sessions more stations put in an appearance. Crossband contacts 144 to 432 Mc. seem to be on the increase and plans may be heard of bigger and better u.h.f. signals to come.

432 Mc.: On Saturday, May 13, a meeting was held at Wireless Centre of 432 Mc. enthusiasts. There were 12 in attendance and it was decided to form a 432 Mc. Moonbounce team whose purpose will be to conduct Moonbounce experiments and generally endeavour to increase the interest in 432 Mc. operation. Further details may be obtained from Gordon 2ZKD who was elected chairman at the meeting. Progress of this team will also be given, from time to time, on the Sunday broadcasts.

The new V.h.f. and T.v. Group Committee are anxious to hear from country members who either require assistance in v.h.f. matters or wish to offer constructive criticism of Group activities. At present plans are in hand to extend v.h.f. coverage of country areas during Sunday broadcasts on both 52 and 144 Mc. If you have plans for visiting Sydney in the near future, drop our Secretary, Norm 2ZXC, a line letting him know the dates and frequencies on which you may be working. This information will be made public so that members can be on the lookout for your signals. Information of v.h.f. activities during your proposed visit is also available from the same source.

The May meeting of the V.h.f. and T.v. Group celebrated the 20th anniversary of the post-war Group and was brightened by the presence of some of the inaugural members. Some very humorous and interesting tales of the early days was related by five of these stalwarts in the form of Horrie 2HL, Roy 2HO, Carlie 2NP, Fred 2ABC and Dave 2AWZ. Unfortunately some of the other early members were unable to attend owing to illness or prior engagements. Thanks chaps for making this meeting something to remember.

Our apologies for the non-appearance of N.S.W. v.h.f. notes in the May issue, these notes were posted on Anzac Day but evidently came to grips with the mechanical monster which delights in devouring important letters.

Some re-iteration of points in the missing notes, we hope, will be excused under the circumstances. The April meeting saw a closely contested election of officers and out of fifteen nominations the following candidates were successful: Peter 2ZPC, Chairman; Tim 2ZTM, Vice-Chairman; Norm 2ZXC, Secretary; Keith 2ZAU, Treasurer; Bob 2ZMM, Broadcast and Publicity; Phil 2ZPI, Contest Liaison.

The V.h.f. and T.v. Group hold their meetings on the first Friday of each month at Wireless Centre, Atchison St., Crows Nest, and visitors are always welcome. Business during the meeting is kept as brief as possible and interesting lectures are the main event of the evening. See you there. 73, Keith 2ZAU.

HUNTER BRANCH

52 Mc.: This band has been very quiet, with very little activity on the Saturday and Sunday nets. Two new stations have come on six metres during the month. These are Frank 2ZFX, who uses a two-way ex disposals, and is putting out a very fine signal and is testing out a high power final, and Henry 2ZGK, of "Dora Creek".

144 Mc.: This band has been in fair shape during the past month and some good openings to Sydney have been noticed. QSB has played havoc with the signals some evenings. Dave 2ZFR has been busy with the local Shire Council getting their Civil Defence radio gear going.

Kevin 2ZKW is still doing well with the Y.M.C.A. Radio Club in Maitland with the prospects of a second YL member. 73, Mac 2ZMO.

VICTORIA

Six metres has been quite active although most of this has been on the nets, both a.m. and f.m. There have been a couple of openings, the biggest being on 28/5/67.

Two Metres: This band has not been too active but it is not bad enough to call dead. There have been a couple of minor openings but nothing of note. The fox hunts and scrambles held on this band are still very popular, even though the evenings are getting cold. The fox hunts are held on the fourth Wednesday of each month at 2000 hrs. E.A.S.T., and the scrambles on the second Sunday at 2045 hrs. E.A.S.T. Interstate visitors are welcome to participate in these events.

V.h.f. Group Meeting: The May meeting of the Group, held on the 17th of May, saw the attendance of about sixty members and visitors who heard Alan 3AE, of the Department of Civil Aviation, speak about the communications systems of the Department. Alan used slides and tapes to assist the presentation. Some tapes were made of communications made between Australia and the U.S.A. and a Qantas plane flying across the Pacific. The noticeable point was that the frequencies used were very close to two metres and were relayed via the ABS2 satellite which is orbiting over the Pacific Ocean. The satellite is over the equator at 151 degrees west at an altitude of 22,300 miles.

The V.h.f. Group has started a v.h.f. converter project and prototype models are now being tested. More news of these will be given in future issues of "A.R." 73, Cyril 3ZCK.

EASTERN ZONE

6 Metres: On Sunday 28/5/67, between 1300 and 1600, we had a very good opening to VK5, VK4 and VK2, with such stations as 5ZLP, 4NG, 4ZFR, 4ZL, and 2ZFB. Also heard some ZLs and ZL t.v., and Fort Erie Channel 1. The opening was observed after noticing some skip on 28 Mc. with 5HP working 2AXB and ZLs on this band.

2 Metres: The f.m. net is very active in the Zone. On Sunday 7/5/67 George 3ZCG heard the VK5 beacon peaking S8-9 QSBing to S4. The opening began late at night after 1030 p.m. when t.v. ch. 9 and 10 Adelaide caused local t.v.i. After GLV10 closed, Ch. 10 Adelaide was watched with very little snow in Morwell and Mt. Tassie and was also observed by Art 3ZAT who works at Ch. 4 and 10.

The next day, there was no sign of the beacon but that night George worked Alan 2ZEO at Deniliquin and David 3ZKU at Katlunga. Alan stated that he too had heard the beacon and after calling his head off, managed to work 5ZKR at Mt. Gambier and later heard 7ZAE.

Two a.m. activity in Gippsland is just fair with most activity on Friday and Sunday evenings. As yet no signals have been heard at this QTH from the VK0CR beacon. 73, George 3ZCG.

QUEENSLAND

The monthly meeting of the Brisbane V.h.f. Group was held on Friday, 19th May. Our former President, Roy 4ZRM, resigned at the meeting and George 4ZMG was elected our new President. New face at the meeting was Peter 4ZPG. Another Peter, 4ZPC, brought along the start of a transistorised 5 Mc. s.s.b. exciter. Speaking on s.s.b., Dane 4ZAX has just acquired a Collins v.h.f. s.s.b. transverter and radiates a clackbuster signal on 144 Mc. Newcomer to 144 Mc., Graham 4ZGB, is finding out how sharp 144 Mc. beams are and is lucky in having a rotator. Another newcomer to 144 Mc. is Eddie 4ZWA.

In Brisbane lately has been Eric 2ZEN, an O.T.C. man, working at Brisbane Island. In the Brisbane power race this month is Malcolm 4ZEL, doing some work on his 4-125 driver, I mean, final. Royce 4ZRH also has a new final and soon will have it on the air. Roy is also active on 432 Mc. using a 6/40 into stacked 13 element Yagi. 4HD, of Woombie, is thinking of 432 Mc. but I would suggest something a little better than an 815. Suggest he beams Brisbane and talk to the 432 boys on 144 Mc. Speaking of 432, Alan 4AI has given up Amateur t.v. for other things.

Band openings into Brisbane these days are few and far between. 52 Mc. is open sporadically to Victoria and Japan if one really listens. Melbourne ATV0 was recently copied in Maryborough and North Queenslanders are having a ball with the Pacific DX. 73, 4ZMW.

SOUTH AUSTRALIA

Once again the winter months are with us and as expected the VK5 V.h.f. Group has again commenced a hibernation period. However, this year it appears that there are quite a few light sleepers as high activity has been noted at various times, especially of a week-end. Perhaps the prospect of JA activity is maintaining this interest in the bands, but however optimistic we are of this it is considered that August will be the earliest opportunity for the VK5s to avail themselves seriously to scratching the DX out of the noise. Contrary to any other reports previously published, no confirmed contacts between VK5 and JA have been recorded, but scatter signal reports are numerous.

A recent fox hunt on 146 megs. f.m. had the hounds completely bamboozled. Barry 5ZMW won the first hunt, but nobody could locate Jim 5ZGV, the fox, in the second hunt. During this hunt all the cars participating found themselves adjacent to a new housing area complete with vacant allotments. Not a trace of transmitting equipment was to be seen, although an S9 signal appeared to come from one particular vacant block. Eventually frustration reigned supreme until one of the hounds decided to let fly at a surveyor's peg. To everyone's amazement the signal dropped. Investigation of this surveyor's peg revealed a hollowed out section containing a vertical quarter wave dipole, fed via coaxial cable from the transmitter, which was conveniently buried in a nearby site. Notwithstanding the time had crept on and no time was available for a third hunt, and Barry 5ZMW was declared the winner on the result of the first hunt. 73, Colin 5ZHJ.

WESTERN AUSTRALIA

Can it be that the winter season has revived the v.h.f. bands? Often the moan is heard that there is not much activity in this neck of the woods, but things seem to be improving. Our Amateur t.v. is on the air with Warren 5WJ/T and Kevin 6ZCB/T both running test signals on 432 Mc. There is a very good article in the May West Australian V.h.f. Bulletin showing how to construct a suitable converter.

A big local do was the Hamfest at Kalgoolie which catered for everyone, both h.f. and v.h.f., a.m., f.m. and s.s.b. and even those who did not have any gear. Maybe more about this later.

The last scramble went well in the morning but there was some lack of activity in the afternoon.

The boys at Wesley College Radio Club are building up a helix with which they hope to track Australis, that is when it gets aloft.

Oh, yes, s.s.b. in the scramble in the shape of 6TU and with a very nice signal. S.s.b. signals have been spanning the hills and dales from the shack of Max 6ZFM in Bridgetown and received in Perth before and after the Sunday news at 0930.

A.m. phone on six metres is having a revival with more a.m. units becoming available ex commercial use, but how about several channels chaps, if you must use one channel, please don't all talk at once. (Note, try staggering the units by 3 kc., then it's a real mess when everyone talks at once.—Sub-Ed.) 73, Laurie 6ZEA.

Correspondence

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

ROSS HULL V.H.F. CONTEST

Editor "A.R.," Dear Sir,
An Amateur perusing the results of the 1966/67 Ross Hull Contest could be forgiven for concluding that the Contest could be discontinued because of apparent lack of participation. However, the Federal Contest Committee cannot be pardoned for allowing "irresponsible sensationalism" to be published as its official report on the Contest.

The F.C.C. begins its report in a gloomy fashion: "Again this year we saw a very poor response to a national contest". The 1965/66 Contest, held during a period of sunspot minima, attracted an entry of approximately 20 logs, whereas the 1966/67 Contest attracted about 40 logs—an increase over the previous year of 100%! How, therefore, is the F.C.C. justified in using the phrase "again this year"?

The F.C.C. report then continues, "When only 0.7% of licenced Australian Amateurs participate in a contest, perhaps it is time to either re-write the entire set of rules or discontinue the contest."

Upon checking the results of the 1966 John Moyle National Field Day Contest, it was found that in this case only 0.7% of all licenced Australian Amateurs submitted logs to the F.C.C. Further, a check on the phone section of the 1966 VK-ZL-Oceania DX Contest produced a participation figure of 0.6%. The F.C.C. reports printed with the results of the above two Contests did not mention the possibility of discontinuing them because of the apparent lack of participation. Why, therefore, does the F.C.C. choose to single out the Ross Hull Contest, which they agree has a participation figure of 0.7%?

In recent times, the rules of the Ross Hull Contest have been re-written so that the present Contest is very different to the Ross Hull of a few years ago. But the F.C.C. blatantly suggests that the entire set of Contest rules should be re-written again! How can the spirit and tradition of the Contest flourish from year to year if the rules are being continually changed?

The F.C.C. report goes on to say, "It is difficult to understand the apparent lack of interest and apathy on behalf of the other 99.3% who did not enter the Contest." On the contrary, it is not difficult to understand why so few logs are submitted. Because the Contest runs for a month and as the most active stations swap contest numbers nearly every day, the probable results of the Contest are known even before the Contest finishes! If an Amateur knows he has a lower score than someone else, what then is the use of spending hours writing out a contest log when he knows he cannot win?

The F.C.C. should note that in this respect the suggestion that anyone who submits a log with over 100 contacts should be given a certificate, is of merit. Precedent for this has been established by the John Moyle Field Day Contest. Of the 40 entries received by the F.C.C. in 1966, 20 received certificates.

On the question of Ross Hull participation, the F.C.C. states that 99.3% of VK Amateurs did not enter. A simple fact can be written in different ways in the Queen's English to imply a different meaning. Thus the text of the above can be re-written in the following manner and still remain true. Writing as VK4 Division winner, I can say that I made and heard many contacts during the Contest. Of all the hundreds of v.h.f. stations who operated during the Contest, not one was heard to refuse to give a contest number when so asked.

Thus I can only draw the simple conclusion that the Ross Hull Contest entertains 100% participation from all Amateurs active on the v.h.f. bands during the Contest. How then can the F.C.C. conclude its report by asking that the Contest be made more popular than it is now? Because of the 100% participation by all Amateurs active during the Contest, the Ross Hull must be the most popular of all the National Contests.

It is now an opportune time to record some of the proposals that have been mentioned in VK4 as a means to improve the Contest:—

1. A certificate to be issued for logs showing more than 100 contest contacts.
2. Delete sections A and C from the Contest.
3. U.h.f. contacts not to be counted in determining the trophy winner.
4. Adapt the R.D. Contest idea to this Contest, viz. State V.h.f. Groups should compete for a trophy.

Readers of "A.R." have noted the F.C.C. report on the 1966/67 Ross Hull Contest and will by now have read this par. Is the opening remark "irresponsible sensationalism" in fact a fair comment?

—P. J. Lindsay, VK4ZPL.

PREDICTIONS

Editor "A.R.," Dear Sir,
In reply to VK2QL, that forecast was made by Dr. King-Hele, Royal Aircraft Establishment, Farnborough, England. I read it in early February, it would have been published in England in early January, so it would have been made some time in December. As it seemed most unlikely to me that it was worth much in view of current sunspot numbers, I am afraid I made no record of where I read it. I think it was in "New Scientist," but I am not sure.

In discussions on the air it is obvious that VK2QL's excellent article on short range month to month predictions was widely read and appreciated. There would be equally great interest in a sequel on long range forecasting, especially if it got to that famous one, "we would not again reach high sunspot activity in the present century"; who made it; how did they make it; and is it worth anything more than the paper it is written on?

—A. K. Head, VK3AKZ

THAT LAST 500 Kc.

Editor "A.R.," Dear Sir,
I have been on the air for just on a year, mainly on six metres, and have heard many discussions with regard to the use of the last 500 kc. of six metres and 146-148 Mc.

At the risk of being howled down by the masses, may I add my plea to those of other Amateurs who feel these frequencies are in danger of being lost if not activated and activated soon. In "A.R." we read "Amateur frequencies—use them or lose them"—and once lost can never be regained.

Surely there are Amateurs who would like to start up new nets on these frequencies, even if it means a bit more effort in retuning the rig. I am sure that if there were enough support, the top end of 6 and 2 metres would become active in no time at all.

—David Thomas, VK3ZVT

SIDEBAND

(Continued from Page 13)

The method of generating the sideband at final frequency was used in the Heathkit SB-10 s.s.b. generator, so this is not new, but the 7360s appear to be much more stable as balanced modulators than the 12AT7s. Handle your 7360s with care at all times as many people have told me that they can become intermittent with grid-cathode shorts, particularly after rolling off the table. "Wireless World" may be seen in most local libraries, if you are unable to find March and April copies on the bookstalls.

It is quite interesting to note that surplus external anode tubes such as the 4X150A and its later versions such as the 4CX250B, may be used in ceramic "loktal" sockets, if screen supply feed and by-passing to chassis are improvised in the best VK tradition. The blower should not be forgotten—cheap a.c. motored hair-dryers with heaters removed are ideal, and the anode may be boxed in with "red fibre" insulating board to ensure that the air blows through the fins to achieve the best cooling.

Even if you are one who does not approve of phasing type exciters for s.s.b., the above articles may give you some rather different, new ideas.

73 for now, Phil VK5NN.

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FEDERAL AND DIVISIONAL MONTHLY NEWS REPORTS

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

FEDERAL

FEDERAL INFORMATION BULLETIN

From J. Battreik, VK3OE, Federal Secretary

QSL Bureau: Mr. Ray Jones has decided not to give up as Federal QSL Officer, but will continue under a new system suggested by himself.

I.A.K.U.: Conference is to be held in Montreal from 1st to 4th July, 1967. Any Amateurs who are attending "Expo '67", or for other reasons will be in Canada during that period, are asked to contact the Federal Secretary.

Booklet, "Bow to Become a Radio Amateur": David Wardlaw, VK3ADW, has agreed to take over this project, and see it to fruition, and will incorporate suggestions from Divisions received last year.

A.R.R.L., President Dennison: Unfortunately, his trip to Australia has been postponed because his wife is ill. W.I.A. has conveyed its regrets and sympathy, hoping for a speedy recovery, and hoping he eventually does come to Australia.

A.B.E.L. re D.X.C.C.: A supplementary statement has been received from A.R.R.L. Awards Committee re the suspension of W9WNV, Don Miller's membership in D.X.C.C. and credits for various DX-peditions, pending further information.

A further communication from A.R.R.L. announced as follows:

(a) Navassa Island (KIIMP/KC4): D.X.C.C. credits withdrawn.

(b) Laccadive Islands (VV2WNV): D.X.C.C. credits withdrawn.

(c) Aldabra (VQ9AA/A): Suspension lifted.

(d) Des Roches (VQ9AA/D): Suspension is lifted.

(e) Glorioso (FR7ZP): Suspension lifted.

(f) Minerva Reef (1M4A): Suspension lifted.

In regard to items (c), (d), (e) and (f) the D.X.C.C. credits will continue to be granted.

A.R.R.L. Technical Merit Award: The Board of Directors, A.R.R.L., at a recent meeting, unanimously voted to grant the A.R.R.L. Technical Merit Award jointly to Ray Naughton, VK3ATN, and William Conkel, W6DNG, for their outstanding accomplishment in the moon-bounce field of v.h.f. signal propagation.

B.D. Contest 1967: Executive has approached the Hon. Allan Fairhall, Minister for Defence, to open this year's Contest. He has gladly agreed, and the VK2 Division will be asked to prepare and distribute the necessary tapes.

S.S.B. Equipment: The P.M.G. Dept. has indicated in a letter of 2/5/67 that it is prepared to accept as meeting the proposed 400 watt p.e.p. output limitation, the Swan Electronics Transceivers, Types 240 and 500.

DEATH OF FEDERAL AWARDS MANAGER

We regret to announce the passing on 26th May of Alf Kissick, VK3KB. Executive sent floral tributes and condolences.

Alf was a well-loved and well-known DX operator and gave many years of devoted service to W.I.A. and the Amateur Service generally.

A very good friend of Alf's was Bill Hempel, VK3AHO, also a well-known DX'er. Bill has agreed to accept appointment as Federal Awards Manager. His address is Kyvalley, Tongala, Vic.

JAMBOREE ON THE AIR

This year's Jamboree will be held on the week-end of August 5 and 6—which is two months earlier than usual—and the week-end before the R.D. Contest.

The Australian Boy Scouts Association has appointed Branch Organisers in each State who will have all the relevant information, viz:

New South Wales: D/S/S/L Brian H. Anderson.

Victoria: Mr. Jack Nicholson.

Queensland: H.Q. Commissioner Barry Smith.

South Australia: Field Commissioner Basil Dennis.

Western Australia: H.Q. Commissioner John Leach.

Tasmania: G/S/M Ray Jeffrey.

Papua-New Guinea: Mr. Peter Whitlock.

This year K7WSJ—"World Scout Jamboree"—will be set up at Tarragut State Park, Idaho, U.S.A., from August 1 through to August 9.

This year is the Diamond Jubilee year of Scouting, and Scouts from 80 countries will be attending the World Jamboree. Station K7WSJ will be manned continuously during the week-end of August 5 and 6 and will use the following frequencies on phone: 3.850 Mc., 7.290, 14.290, 21.290, 28.590 Mc.

INTERNATIONAL AWARD "CHRISTOFORO COLOMBO"

Each year this award is given by the Istituto Internazionale delle Comunicazioni di Genova, Italia, to Radio Amateurs who distinguish themselves:—

(a) "For offering their activity as an Amateur and their co-operation to highly human and social works" (collaboration with public authority on occasion of public calamity, etc.).

(b) For their contribution with experiments, constructions, etc., to the development of the technology of communications—not a professional one.

Nominations for this award could be sent to Executive for consideration. (It was interesting to note a picture of W. Orr, W6SAL, receiving this award in "QST" or "CQ" recently on behalf of the Project Oscar—it is a highly prized award—any worthy VK activity?)

NUMBER OF LICENSED VK AMATEURS

(From VK3RN, Call Book Compilation)

	January—					
	VK1	VK2	VK3	VK4	VK5	VK6
Full	67	1293	1114	458	476	282
Limited	14	391	502	166	200	121
Total	81	1684	1816	624	676	383

	VK7	VK8	VK9	VK0	Grand Total	
Full	129	15	81	7		382
Limited	67	5	7	0		1473
Total	196	20	68	7		5355

	February—					
	VK1	VK2	VK3	VK4	VK5	VK6
Full	67	1295	1115	456	476	265
Limited	14	392	517	170	202	121
Total	81	1687	1632	626	678	386

	VK7	VK8	VK9	VK0	Grand Total	
Full	128	16	83	7		3888
Limited	67	5	8	0		1496
Total	195	21	71	7		5384

MEMBERSHIP RETURNS FOB APRIL

	VK2	VK3	VK4	VK5	VK8	VK7
Hon.	—	—	—	—	6	7
Life	15	15	—	—	233	143
Full	859	813	No	—	67	80
Assoc.	396	243	Returns	—	—	—
Others	10	—	—	—	—	—
Total	1282	1071	—	—	306	230
(Pre. Total) (1298)	(1061)	—	—	—	(303)	(229)

NEW SOUTH WALES

COUNCIL NEWS

The N.S.W. Council has again tried out a new idea, that of meeting at 6.30 p.m. The first meeting didn't start until 7.15 p.m. due to the fact that the President and Vice-President both had transport difficulties. Subsequent Council meetings have been started almost on time, but have not concluded much earlier than before, due mainly to the vast amount of accumulated correspondence requiring attention.

SILENT KEY

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

VK3KB—Alf Kissick.

An upsurge of interest in Amateur Radio clubs is apparent with the formation of clubs in country centres. Clubs are being formed at Parkes, Muswellbrook and Maitland. Council wishes to remind clubs to send full details to the Division at 14 Acheson St., Crows Nest. Councillor Henderson is the Country Liaison Officer and Cyril will see that the club gets good publicity on the 2WI broadcasts and in the Bulletin; this being in order to inform Amateurs in the local area of the club which they may care to join and support. Should the club wish to embark in training or catering for juniors, then clubs are recommended to the Youth Radio Scheme conducted by the W.I.A. in N.S.W. If this is the case, then Councillor Dave Jeans will assist in the Y.R.S. liaison area.

Council is very anxious to assist and encourage clubs to be formed in country areas, both to foster the interest in Amateur Radio and as a by-product to provide a station for future W.I.C.E.N. use should it ever be required.

MAY GENERAL MEETING

Despite the lack of railway transport on this occasion the meeting was well attended and was opened by the President Keith Finney. Following the usual formalities, the President reported to the meeting on the appointment of a Secretary. The President advised that Council had passed a motion that a paid Secretary be engaged. Discussion ensued on this matter and resulted in a motion that the appointment be deferred for further discussion at the June meeting. The President then stated that this motion was in effect a vote of no confidence in himself or Council; and then said that he was resigning and left the meeting. Vice-President Bill Lewis then took the chair and suspended business. Then a series of slides taken in Vietnam by VK2AIF/VK5 were shown. Following the slides a film was shown on the manufacture of valves and transistors. An intermittent fault in the speaker lead didn't assist the screening.

Following the film, Bill then re-opened the meeting for business. After a short discussion, a motion was moved and passed to the effect that Keith reconsider his decision to resign. The meeting then concluded. Because of the business involved, it was not possible to admit new members at the meeting so the applicants will now be presented to the June meeting. No additional appointments were announced and the Hon. Secretary, Mrs. Gerdes, is continuing on until the question of the Secretary has been resolved.

Subsequent to the general meeting an informal meeting was held between the President and Councillors on the 29th May. At this meeting Keith agreed to carry on as President, and the Council decided to make the general meeting in June a Special Meeting and in view of the events at the May meeting it was decided to notify all members by mailed notice of three items to be presented to the meeting for discussion. The three items being:

1. To hear a report of the Auditor on the financial ability of the Division to employ a Secretary.
2. To hear a statement on the legal obligations and powers of Council.
3. To consider a motion of confidence in Council.

Your correspondent was not able to obtain an up-to-date statement on the situation for "A.R." as the President is overseas for several weeks and does not expect to return before the June Special General Meeting which will be held on 23rd June as previously announced.

ILLAWARRA BRANCH

The members of the Illawarra Section have again been holding meetings in Wollongong, and in reply to a letter to Council, two Councillors, Messrs. Campbell and Henderson, went to Wollongong and met the Amateurs concerned and amongst many things discussed the procedures for the Section becoming a Branch. Subsequent to further meetings of the Section, an application was made to Council for approval for the Section to become a Branch. Council unanimously approved the request so that the Division now has an Illawarra Branch.

Amateurs in the Wollongong C.D. area are eligible to be members and are asked to assist the new Branch by attending meetings and helping out with the many jobs involved in getting the new Branch firmly established. It

is hoped to be able to publish a list of office-bearers and the details of meetings, etc., next month. 73, Stan VK2ZRD.

HUNTER BRANCH

What a wonderful thing is bright dip! You don't know what this is? Then you couldn't have been at the May meeting of the Branch when Lionel Z2LD gave his excellent lecture, "Professionalising your Amateur Equipment". Lionel went to great lengths to describe the various methods of preparing metalwork for chassis and panel construction. One of the preparations needed for the cleaning of steel sheets appears to be a very violent liquid called bright dip which contains equal quantities of just about everything excluding pure flourine. It is just the shot for de-rusting panels, etching aluminium and boring holes in the sides of battleships or whatever. In addition to all this, Lionel gave plenty of information about dressing up the home built gear to look just like Mr. Collins makes.

The attendance at the meeting was a record, there being fifty present. President Frank Z2FX expressed his pleasure at the large attendance and issued an invitation to everyone in the room to bring along a friend to the next and subsequent meetings. Despite this kind invitation, the attendance at the June meeting was not as great, but since the weather is a determining factor at this time of year, this is perhaps understandable.

At the June meeting, Tony Z2CT described and demonstrated his now famous 5-transistor transmitter, built on a printed circuit board. This little unit is a masterpiece of design and construction and just how Tony manages to coax 1/2 watt out of it is a mystery, but he does! The transistors employed are all the silicon planar 2N3564 types. It seems that these will work well from audio to about 750 megs. and Branch members are able to buy them at meetings at a very reasonable cost. To support his talk, Tony issued all present with three sheets of circuit diagrams outlining not only the transmitter but also other applications of the 2N3564. This meeting was another of those "shouldn't be missed" events, but, should it have been impossible for you to get there you can still have the notes and diagrams on application to Tony at his Call Book address. Please enclose a stamped addressed envelope for the reply.

Both the lectures were accompanied by films of interest to Amateurs and those shown in May and June were "Printed Circuit Story" and "On Solder". It has become policy to show a film at the commencement of each meeting and an interesting programme has been arranged for the remaining months of 1967.

Perhaps you think you're a good c.w. operator. Maybe your faith in yourself would have been shattered if you had seen a demonstration given by visiting Japanese Amateur Nubuo JASAPI who is well known for his mobile marine activities off the coast. Nubuo came to visit several Newcastle Amateurs on 18th May and while in the shack of one well known Novocastrian he asked if it were commonplace to work Ws on 40. The WKN answered that it was not so; Nubuo proceeded to call CQ and immediately worked a Texan. The others in the shack could hear a good deal of noise but a signal—no chance. Nevertheless, experience won through, as it generally does, and JASAPI portable VK2 made it with ease. So, you see, the WKN will now receive his first W QSL!

Over in the U.S.A., Jim ZAHT is having a great time and working all and sundry from the various QTHs that he visits. Paddy 2AXU is reported to have his tx back in working condition again and soon he will be looking for contacts. Kev Z2KW, having used f.m. for the first time while on the trip to the Y.R.S. Conference with his two wild mates, now says that he is anxious to get going on this mode as quickly as possible. He didn't realise how simple v.h.f. operation can be.

The W.I.C.E.N. helped out with a genuine emergency on the way back from Sydney on that night. The car with 148 gear came upon a bad accident which had just occurred and by means of a relay to David 2BSC, the ambulance was summoned to take the casualties to hospital. Those who were not injured showed some degree of amazement at the speed of the operation.

Preparations are well in hand for the Field Day which will be held on Sunday, 15th October, in Bolton Point Park. The details of this will be given next month but before that there is the next meeting. If this arrives in time, please note that Friday, July 7, is the date to remember for Gordon Z2SG and his talk on Command receivers. In August the meeting is on 4th and both will be held in room 6 of the Clegg Building, Newcastle Technical College, commencing at 8 p.m. Why not come along and bring a friend? See you there, 73 2AKX.

BLUE MOUNTAINS BRANCH

The May meeting of the Blue Mountains Branch was held at the Lawson Council Chambers on Friday the 19th. 15 members were present. After several changes of vice-presidents, the president himself arrived and things eventually got swinging. The Scout Jamboree on the Air was discussed and the Upper Mountains area is all set, but the Lower Mountains area has yet to be organised.

After general business was disposed of, the president of the V.h.f. Group, Peter Z2PC, gave a short talk on some of the v.h.f. activity and some types of v.h.f. taxiphones which are now available. He then departed in a cloud of dust for the Orange Radio Club meeting.

The meeting decided not to proceed with the purchase of 146 Mc. f.m. equipment as the club is already committed for 2 mx a.m. equipment.

The remainder of the evening was spent in constructional activity, the object being to get the h.f. transmitter going.

The previous meeting saw the loss of one of our oldest members, Ron 2ADA. Apart from being the publicity officer, Ron was also the chief stirrer. He is soon to be a VK5. 73, 2TM.

CENTRAL COAST (RADIO CLUB) BRANCH

The May general meeting of the club was held on Friday 19th and was followed by a most interesting lecture by Barry Z2AH. The subject for the lecture was the outline of a number of methods of variable frequency control by crystal synthesising. It proved to be of great interest since the methods described had a very wide application. The appreciation of the meeting goes to Barry for travelling from Sydney to give a fine lecture.

The club outing to Mummorah Power Station, that was to have been held on 4th June, had to be postponed, but it is hoped that a new date can be arranged as soon as possible.

The next meeting which will be held on 16th June should prove to be another most interesting night and should not be missed.

Mr. Ronald, of Fairchild Semiconductors, is to give a lecture, supported by a 45-minute film, on the manufacture and application of silicon planar transistors. 73, Bill 2TS.

VICTORIA

OFFICE-BEARERS 1967-68

President: Ken Pincott, VK3AFJ.

Vice-Presidents: Michael Owen, VK3ZEO; Jack Taylor, VK3ZJF.

Secretary: Keith Roget, VK3YQ.

Assistant Secretary: Alf Chandler, VK3LC.

Treasurer: William Faul, VK3AGZ, ex-officio member.

Councillors: John Beckett, VK3FE; Cyril Maude, VK3ZCK; John Spicer, VK3ZEL; Dean Blackman, VK3ZPS; Ken Seddon, VK3ACS.

Federal Councillor: Michael Owen, VK3ZEO.

Other appointments are as follows:—

Librarian: Bill Roper, VK3ARZ.

Inst. Librarian: Cyril Maude, VK3ZCK.

Editor "A.R.": Ken Pincott, VK3AFJ.

QSL Officers: Inwards, E. Treblecock; Outwards, Ivor Stafford, VK3XB.

Class Instructors: Theory, C. Pickering, VK3ATP, and M. Tarrant, VK3LF; Morse, J. Lancaster, VK3JL; Corres., K. Seddon, VK3ACS, and D. Pinson.

Transmitting Officer: Peter Linden, VK3BX.

Disposal Committee: L. Fowler, VK3ZGF; J. Stewart (Secretary), VK3AS; J. Batrick, VK3OR; J. Kelleher, VK3AJJ; J. Spicer, VK3ZEL; T. Cuthbertson, VK3ZIQ.

Broadcast Committee: J. Wilson, VK3LM; P. Downey, VK3APD; L. Poynter, VK3ZGP; R. Fisher, VK3OM; W. Roper, VK3ARZ; C. Edmonds, VK3AEE.

W.I.C.E.N. Co-ordinators: M. Owen, VK3ZEO; J. Batrick, VK3OR.

W.I.C.E.N. Controller: H. Hepburn, VK3AFQ.

W.I.C.E.N. Technical Officer: J. Spicer, VK3ZEL.

T.v.i. Committee: J. Taylor, VK3ZJF; W. Rice, VK3APB; G. Farthing, VK3AFR.

Y.R.S. Liaison Officer: D. Blackman, VK3ZPS.

Programme Committee: K. Roget, VK3YQ; K. Seddon, VK3ACS.

Publicity Officer: C. Maude, VK3ZCK.

The Divisional Council is planning another drive to increase the membership of full and associate members. If any readers of "A.R." know of any Amateurs or S.w.l.'s who are not members of the Division they are asked to make an effort and introduce to them the advantages of membership.

I.T.U. Fund: The Victorian Division is still lacking donations to bring its quota up to the mark, so what about it chaps, send in those odd cents. If every licensed Amateur in Victoria sent in TEN CENTS we could almost fill our I.T.U. quota. 73, Cyril Z2CK.

EASTERN ZONE

We hope that everyone who was able to get along to the Eastern Zone Convention at Maffra enjoyed themselves and that all arrived back home safely. Reg 3AVV is back from his short trip to VK9 Port Moresby and VK4.

S.s.b. is becoming quite popular now in the Zone, one of the latest stations to come back on the air after a long spell is Martin 3AMV, of Warragul, with a very clean s.s.b. signal. His mustn't be confused with our other Martin at Bairnsdale, who is also very active using s.s.b., as his ex-call was 3ANV, very similar to Martin of Warragul. Martin of Bairnsdale has a new call—3JV.

Don't forget the 80 mx Zone hook-up at 8 p.m. on Friday evenings where we can keep in touch with one another and arrange Zone outings and contests or field days for the warmer months ahead.

146 Mc. f.m. channel A is very active now in the Gippsland area, sometimes at week-ends with four conversations taking place at the same time. Friday evening is usually quite active also. We would like all of our Zone members to have a f.m. set either in their shack or car, so should you seek one or want further details, just ring George Z3CG at Morwell 4-3953.

Harry 3ZX has moved into Traralgon and is active on Ch. A. George 3AOD and Harry 3ZWH are now both active on Ch. A with good signals. George has just built a new shack including a battery room, and a high steel self-supporting tower with a cubical quad and 2 mx beams on top. He is now fitting out the shack and building up ten metre gear. Max, who lives at Traralgon and works up at the t.v. transmitters, has got his call sign, 3ZXM. He is a brother of George 3ZJQ and Ivan 3ZDI. So keep up the good work and activity fellows. 73, George Z3CG.

WESTERN ZONE

The Zone has two new Amateurs awaiting call signs, Norman at Rupanyup and Lionel near Nhill; also several others sat for the April examination. Brian 3ZFS near Nhill is active on 2 mx with a dipole only at the moment as he crashed his beam attempting to get it higher. Bill 3ZAX and Jim 3ZMS both improving aerial systems—better signals from Nhill in the near future.

Bob 3ARM working some DX on the h.f. bands as well as keeping in touch with Rodney 0CR on Macquarie, also on 2 mx and we hope 6 mx before long. Roy 3AOS apparently having a fair amount of success on 10 mx by the number of times I hear stations working him on that band. Herb 3NN still manages to work into Adelaide regularly on 2 mx.

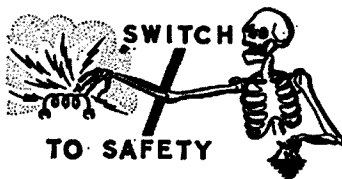
Harry 3ZX, our Zone President, will have left the Wimmera by the time this is printed and we wish him well in Gippsland. Gavin 3AEJ at Rainbow reported to be going 2 mx f.m., good show Gavin, be pleased to hear you. Very little on the air activity from this QTH, new 75 ft. tower constructed and foundations poured. When new aerials are made expect better results than existing 7 elements at 25 feet on 2 mx. Even getting some QSL cards printed at last. 73, Roy 3ZYG.

MOORABBIN AND DISTRICT RADIO CLUB

A great deal of interest has been shown in the "work of art" which now adorns one wall of the club rooms. A symbolic painting, it illustrates the dilemma of the Ham who, through absorption in his hobby, may be inclined to overlook other attractions. Some XYLs who have viewed the work have applauded the artist's depth of perception, while observing that the object of competition for the Ham's attention could perhaps be wearing some clothes.

It has been suggested that a reproduction of the painting might make a suitable adornment for club members' QSL cards!

It was noticeable at the May meeting that the attention of some members was wandering from the business in hand as they discovered a new interest in art, nevertheless business proceeded smoothly, and the meeting was fol-



lowed by a Question and Answer session, when members were invited to ask questions on any aspect of their hobby.

Among the visitors to the meeting was David G3UFO, who is operating M/M from the "Clan Malcolm" around the coast at present and is looking for a.m., c.w. or s.s.b. contacts on 40, 20, 15 and 10.

Max Patman, who is soon to line up for National Service, was granted honorary membership for the term of his service.

A prototype of a 2 mx converter, which has been developed by the club for use with the club project transistor receiver, was passed around at the meeting and members were informed that the first project meeting for those interested in constructing the converter would be held on 2nd June. A special advice has been issued to all participants in the receiver project.

Noel 3NR, Peter 3XK and David 3QV were among those who managed to contact Kevin 3ARD during Kevin's recent visit to W-land.

Phil SAPO reported that there are a number of 50 ft. wind-up towers going begging in certain country areas now serviced with local t.v. Prices are apparently quite low if you have the facilities to dismantle and cart them away.

Visitors are always welcome at the Moorabbin Club at meetings on the first and third Fridays of each month. How about dropping in some time? For directions on how to get there, see last month's "A.R." or phone 96-2414 or 83-6285. 73, Alan 3ASL.

QUEENSLAND

IPSWICH AND DISTRICT RADIO CLUB

A recent article in "Amateur Radio" by the Bundaberg Amateur Radio Club has prompted me to let the Ham fraternity know a little about the Ipswich Radio Club.

This club has been in operation for almost five years now, and was originally started by a few keen S.W.'s who invited the local Hams of the city to join them. Since then the club has expanded until, at the present time, it has 30 members.

In just five years, we have erected our own club house on a piece of land donated to us by the Ipswich City Council. This allotment is situated on top of one of the highest hills in Ipswich and has commanding views to south, west and east, and best of all—it is almost noise-free. A beautiful spot for Hamming, and last but not least, only half mile from city centre.

After levelling the scrub on the site, we erected our club house. The donation of an old office block from a disused coal mine helped us considerably with the building which measures 38 x 18 ft. and contains a well-appointed kitchen, complete with refrigerator, built-in cupboards and stainless steel sink, and painted in gay colours; also the shack, our pride and joy, is 12 x 9 ft., but a little bare at the moment, as we only have our EC342 in it, but by the time you read this we hope to have our tri-band sideband transceiver, which Jack 45F is constructing. The antenna system, at present, is a 20 mx dipole and an 80 mx inverted vee. We hope to improve this in the near future.

The remainder of the building has just been recently celled and is used as our meeting hall and comes in very handy for the numerous social functions the club has. Our meetings are held every fortnight on Tuesdays, and all are welcome to attend, especially Interstate Hams who may be passing through Ipswich. A call to our Public Relations Officer, Bill Jehn, at Phone 81-3829, will soon get you all the information re meeting nights, etc., and I can assure you a rag chew will be welcome.

Although the club is not strong numerically, we all pull together, which is a big thing in such a small club. We have 11 full licenses, 3 limited licensees and 8 s.w.'s, also not to forget our YL and XYL members who bring up the strength and who come in mighty handy on meeting nights making the supper and washing up. I only hope this plug for them does not go to their heads and we have a strike on our hands—only in fun girls.

Club nets are held every Monday at 8.0 p.m. on 3650 Kc. and the members would like as many outsiders as possible to give us a shout and join in whenever we are heard. Our other net on 53.032 Mc. was once very popular, but now activity on this band is confined to almost every morning at 8 a.m. and after the VK4 Divisional news on Sunday morning. Our odd hours of operation are necessary because of the recent building and antenna installed on Mt. Cootha.

A certificate is available to any operator or s.w.l. who works the club station VK4IO and any two members and, on receipt of QSLs to all three stations, the certificate and special QSL will be forwarded. We have sent a number away to v.h.f. stations in VK4 and very

few to any h.f. stations, and only one away to a DX station, namely WIDBEM.

Without a doubt, much of the club's success has been accomplished by their social activities, which enables both members and their families to participate. This has allowed the members to get together and talk radio while allowing the XYLs the chance to talk over latest fashions or the latest DX country the OM worked recently. These social outings are barbecues, picnics or a night at the club house, and our duster hockey games are famous throughout the districts, usually XYLs versus OMs, and this is a fine opportunity for XYLs to break even on the OMs under the name of sport. Also numerous Sunday round trips are had, all cars working mobile on 6 mx all the way.

Office-bearers in the club are Norm 4KO, President; Rog. 4RG, Vice-President; Alex 4QT, Secretary; Joan XYL of 4ZLG, Treasurer; Wayne 4ZN, Station Manager; Bill W1A-L4001, Public Relations Officer. Other licensed members are Jack 4SF, Dave 4HW, Col 4ZMA, George 4ZLG, Stan 4SA, Bill 4UB, Phil 4ZPE, Bob 4JR and Warren 4GT, and numerous other S.W.'s and XYLs.

Bill, our Public Relations Officer, recently retired from work. I don't know if his recent appointment of outward QSL Manager had anything to do with it, but Bill reckons the VK4s are getting their share of DX by the number of cards he ships out. Dave 4HW may soon have to move from his antenna farm at Lake Manchester, the next QTH may not be as good Dave, so get all those countries for D.X.C.C. before you leave. Wayne 4ZN, our Station Manager, may have to delay his new s.s.b. transceiver project since he has taken up b.c. operators' course at college. 73, 4GT.

TOWNSVILLE AND DISTRICT

As promised in my last notes, the trip to Cairns did eventuate. Basil 4ZW was called upon and he reported that there was hardly any activity in the district except on 52 Mc. and that the Z boys were having a whale of a time working the JAs with some openings towards the south of their district. A very distinguished visitor to the north was 2SG. While in Townsville he was the guest of Teddy 4EJ and sojourned to Magnetic Island for the week-end. He also found time to visit some of the other boys and took the advantage of calling for the evening on the writer and tried my brew of tea.

Merv 4DV back again at work after the annual camp of C.M.F. Put most of the time in at Sellheim.

It appears that one of the local High Schools is starting the Radio Scheme, while Norm 9NT informs me his lad at the local Grammar School has the principal also interested in the same set-up. Norm is donating a receiver for this purpose to the School.

The local club has two sessions going on Saturday morning, 8.30 to 9.30 (new class) and the second for the advanced classes, 9.30 to 10.30 a.m. The instructors are to be commended for their enthusiasm. It is reported the president of the club, Peter 4ZEE, is resigning from the R.A.A.F. and going back to VK3 land to take up Church work. He will be missed as he was very keen on the club activities. 73, Bob 4RW.

BUNDABERG AMATEUR RADIO CLUB

Another month gone and not terribly much activity, radio-wise. Most of the time and energy of the club members was spent organising the State W.I.A. Convention at Alexandra Headlands and a static display in the Bundaberg Civic Centre for Youth Week. The Youth Week display proved very popular with the young people of the city, and as a result, we hope to recruit some new members.

Glad to hear Frank 4UK back on the air after a long absence. With the wet year we have had, Frank could not use the old excuse of irrigating his fruit trees any longer. Heard last week that John 4ZJT is moving to Pialba, much to the disgust of Les 4XS, at Kingaroy. Les tells me he just gets a fellow Amateur in the town and he is transferred. We should be able to work John easily on 6 mx. But, be prepared, you 8 metre fiends, John is coming up on s.s.b.

Les 4FX is temporarily off the air with another burnt up transformer. That is two in two months, Les, better take a long deep look this time.

Six metres is open spasmodically to VK3 as late as last week. Crazy sort of turn-up with the Southern stations breaking up our coxy little 8 mx nets at this time of the year.

Congratulations to Dave McGrory on the allocation of his call sign, VK4DJ. Dave should be heard on 80 mx c.w. very shortly. He has made a very nice job of re-vamping his h.f. disposals receiver.

We had quite a club old boys' reunion the other night with Les 4XJ at Brisbane, John

4XC at Nobby, and Bill 4XZ at Charters Towers. Just as well they have moved anyway—too much QRM if they were still here. 73 for now, Rusty.

SOUTH AUSTRALIA

The monthly general meeting of the VK3 Division was held in the clubrooms to a good attendance of members and visitors, and when one considers that the night was almost a record for the cold this year, it was quite gratifying and also went to prove that the record low attendance of the April meeting was just one of those things due to the change of night, and is best forgotten.

The President, Murray 5ZQ, opened the meeting on time and disposed of the business side of the meeting in almost record time, had a short smoke-on, George 5RX distributed the QSL cards, and the lights were lowered for the purpose of screening the slides provided by VK2 which accompanied the tapes, also from VK2.

The first tape recording was on communication receivers generally, followed by the second tape on transistors, and VK2 are to be congratulated on the excellence of both tapes, and the great amount of technical information given, to say nothing of the circuits on the slides. Ron 5KS acted as slide putter-inner and taker-outer, and except for having us all stand on our heads once, he did his usual excellent job.

Among the welcome visitors were Mac from Christmas Island, one of the members of the club on the island which boasts the call sign VK9XI, who is spending his holidays in VK3 and faked the meeting night. The other visitor was Wally, ex ZL2ZCV, now a VK5 resident and soon to take out a VK5 call sign, who incidentally looks like a find for the v.h.f. section, as he is as keen as mustard on the v.h.f.s, and willing to be in everything that is going.

Another unexpected visitor, although he has been a member and licensed for a lot longer than I care to remember, was Allan 5ZX looking as young and active as ever, and accompanied by his harmonic number three, who is apparently responsible for his comeback to Amateur Radio after all these years. He told me that young Chris, was responsible for nudging him into putting the 8 mx mobile in the car and frankly admitted that he had not enjoyed himself so much for years and years. Just goes to show—nice to see you back OM—and you too Christopher.

Rob 5WA slunk away into a corner of the clubroom as soon as I came in, and when I cornered him eventually, he explained that he was not too sure that I would speak to him any more because he was now using "The Thing". Controlling my emotion and standing up to the situation in my well known soldierly manner, I explained to him that I was receiving so many stabs in the back these days that I had come to accept such acts of fate. He now has s.s.b., to say nothing of a slasho beam, is more than satisfied with results, but also informed me that all the pigeons in North Adelaide now come and perch on the said beam.

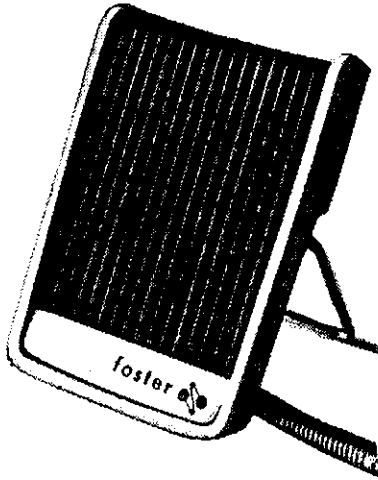
Our general Treasurer, only genial when the money is flowing in, reports that he contacted Tubby 8NO on 28 Mc. recently and Tubby's signal was S9 all through. Tubby is at the Eldo Tracking Station—QTH given as Gove.

Although there has been no sound from Fred 5MA since coming to the city from Renmark, my spies tell me that he often listens to all that is going on and no doubt will be bitten by the bug ere long.

Another ex River Murray call sign not heard in years is that of Hurtle 5RE, who lives at the foothills suburb of Linden Park. He is still particularly interested in photography and this has now become his main hobby to the detriment of Amateur Radio. Shame on you Hurtle!

Talking of hobbies, a particular dark horse is Arthur 5HY who is almost as well known in astronomy circles as he is in Amateur Radio. Understand that he is a lecturer of no mean ability on home constructed telescopes and the like, and for many years was much in demand for his advice on grinding the lenses and the like. Just how he could manage to lecture to an audience on astronomy and not slip in a few plugs for s.s.b. is beyond me!

Apparently Murray 5ZQ has one critical listener to his W.I.A. broadcasts because I understand that his XYL took him to task for leaving out certain W.I.A. activities of the week from the broadcast. Murray's reason was that he only had so much time in which to get everything in, and occasionally something had to go by the board. Apparently this satisfied the XYL, and going on my experience over a very long period, if one can succeed in this mighty task, then one is certainly above reproach!



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Incidentally, the W.I.A. broadcasts produce all sorts of requests. Did you notice that Edwin 5ZTS seeks the use of an old fashioned spinning wheel for a couple of weeks? My chief spy has been assigned to the task.

Up in them thar Eden Hills, a couple of true blue Hill Billies have bobbed up just recently, due to the fact that Charlie 5ON has acquired an electric organ and Keith 5KH has also got into the act as a musician on the same musical instrument. At odd and various times the sound of sweet music can be heard drifting through the crags and crannies, and if all is to be believed, a new t.v. act is in the making. One thing can be certain, if Charlie has anything to do with it, things will be well "organised"—oh, I am a one!

Anybody ordering text books, etc., from the Division should periodically contact Tom 5TL as to availability of the order. Just recently an overseas publication was ordered and when received was taken to the meeting three times, but the member was not present. A note was then sent asking him to contact the Publications Officer, which resulted in an appointment being made to call and collect from Tom's QTH, and so far the appointment has not been kept, and the book is still on the shelf. Fortunately, this is an exception, according to Tom.

Was interested to hear that the VK7 Convention was held in the Braille Library, and of course it was found that lighting was necessary because the normal users of the library don't need any light, and don't need any bills either. Until it was mentioned, I never gave it a thought, and only goes to show just how much we take for granted our ability to see and hear, etc.

Noticed a good turn-up of the boys at the funeral of Joe 5JO. Among those noted were Geoff 5TY, Jack 5JS, Dave 5BF, Roy 5AC, Arthur 5HY, Sess 5GP, Arch 5XK, Alan 5OH, Charlie 5ON, Reg 5RR, Joe 5ZJW and Laurie 5XN. This was a real good representation, and good old Joe would have been honoured, especially when one remembers just how much he thought of his Amateur Radio mates.

Talking to Laurie 5XN after the funeral, he told me that he was about to make a comeback to the game in the near future, but entirely spoilt the effect of the announcement by adding that he would be on s.b.

Was also happy to renew my friendship with Roy 5AC at the funeral, especially as made no reference to s.b., and told me that he was active nowadays on 6 mx. Good work, Roy, although I am not altogether happy because I noticed Arthur 5HY with a hammerlock on him as I left, and definitely was bending his ear and if he was not giving Roy the one, two, three on "The Thing", then I am a product detector's uncle. I fear the worst!

Eric 5ZEJ has expressed an interest in old radio gear, although he is not referring to the original "King Alfred's fleet models". Contact him if you have anything that you think might interest him. He will be more than grateful. I was thinking of offering him my spare coherer, but on second thoughts I decided not to be too rash, although it sounds impossible at the moment, I never know—the day might come when I am forced to tackle "The Thing"!!

Noticed that Gilbert 5GX, our genial and very co-operative disposals chairman, could not resist a plug for "The Thing" in his disposal notes in the VK5 Journal. I quote: "A recent customer in Mr. Jack Dew, 5JX, collected 18 of the 2N3565 as he intends to construct that very nice s.b. transmitter featured in Electronics Australia. We wish him every success with it." How cheeky can one get? Who wishes you success with s.b.? Jack, you cause me great pain! And as for you Gilbert, you are straining our friendship almost to breaking point—a very nice s.b. transmitter—there is no such animal!! Also have a bone to pick with the Editor of the VK5 Journal, Brian 5CA. There was I, perusing the said journal with avid interest, when out of the blue came—The Next Journal Will Be Your Last—see page 12. Rushing over to page 12, and trying to keep my palpitating heart from bursting with even the thought of no journal, I bump into—The Next Journal Will Be Your Last—if you are unfinancial. Fancy springing such a gimmick on me at my tender age. I am sure that my heart missed a couple of beats.

Sometime ago, the beam of John 5MX was observed in an unusual position. This was evidently with due reason, as it has since disappeared and a quad now decorates the landscape down Woodville way. Working the lot, Johnnie?

Here we go again. Lance 5XL is reported as making enquiries as to the do's and don'ts of transistor power supplies, so apparently there is something doing up at Clare, and to make matters worse, Tim 5TJ is hoping to put some s.b. on the air ere long, or so the story goes.

A little on the more cheerful side. Les 5NJ was heard saying that he has completed the 100 watt mobile—AND NOT SSE—preferring AM for such things—although I must play fair by adding that he is the owner of a transceiver which is used for DX exclusively. Trust you to ask—of course it is s.s.b.!

It is not often that I am able to catch Comps 5EF out, but recently in a letter to me concerning his willingness to write these notes during my annual vacation, he commented, among other things, that he supposed that the Mt. Gambier notes would come to him for the month instead of coming to me. Tut-tut—and a couple of diphthongs. This statement clearly proved that he never reads my notes, because the Mt. Gambier notes have been conspicuous by their absence since the scribe, Col 5CJ, took over the running of SSE, and consequently found himself too busy to oblige—and, if I might say so, he obliged for many years, to good effect. Anyway, committed out of his own mouth, or should I say, out of his own typewriter, Comps must be punished by being banished to his Tower of Babel—or should it be—Tower of Babble. Get it, Tower of Babble—s.b.—"The Thing". Get it? Okay, okay, I thought it was funny!!

Bob 5RI, from Mt. Bryan, is evidently an accomplished exponent of the Royal and Ancient game of golf, judging by his reported round of 66 and a hole in one. Most golf scores from the average amateur usually look like "The Dons" cricket scores when at his prime, and it is not long before they give the game away. The basket was too high up on top of the post for me, that's why I gave it away early!!

The other day I heard a certain station giving call signs in the appropriate places—"Just in case the R.I. is listening". This was without doubt gilding the lily, as the owner of the voice is so well known by that said voice that he could dispense with call signs and still not be unknown. To remain friends with my favourite Scotchman, I will refrain from mentioning names or places, and anyway, he is a bit on the big side to trifle with.

Brian 5BI, of Franklin Harbour fame (Cowell to you), has been doing a bit of public relations work for our grand old hobby. He recently went to Cleve by invitation and spoke to a meeting about Amateur Radio, and present indications says that at least one or two are more than a little interested in the possibilities. Nice work OM.

Just to make an earlier paragraph on Fred 5MA inaccurate, he was heard on 3.5 Mc. the other night, and it appears that he has been doing quite a bit of listening on 6 mx for some time. It is possible that his sudden return to the air is due in no small manner to the modicum of "arm twisting" on the part of about three fellow Amateurs who work in the same place as Fred.

Working Europeans on 14 Mc., Pete 5FM had some QRM troubles, but by means known only to himself, he was able to convince certain offenders of the futility of their antics. You can't beat an old dog for a hard road.

Tom 5TL—Uncle Tom to you—is the programme organiser for the Black Forest Methodist Church Men's Fellowship, and I notice that three of the local boys have assisted him by giving talks at the meetings. Hurtle 5RE on fruit growing, illustrated by 16 mm. film, Geoff 5TY on W.I.C.E.N., with a practical and unrehearsed demonstration from the hall, together with a display of gear, past and present, and John 5KX on the new station at Torrens Island, with drawings and views of the power station under construction. The talks by all three were very well received and Tom has now suggested as an anticlimax, that a well known, modest and unassuming Amateur, well equipped muscicularly, and quite tame, should give a talk on commercial radio. Tomatoes and eggs can be obtained at the door of the meeting and throwing practice can be had by anybody interested. Anyway, why should I not live dangerously? With my slim build, I would not offer much of a target, well not too much!

A scheme has been submitted to Council to teach the code by the "Language Laboratory" somewhere in North Adelaide, with 10 or more candidates required before a class can be started. Geoff 5TY will be going out to see just what makes it tick shortly, and take it from me, if he gives it his okay, then it certainly will be okay. As he said at the meeting, "It is worth looking into, everything else has been tried to knock the code into some people, so why not this, and after all, the results are what counts, not the method." We await his findings with bated breath—or something!

I understand that as the Co-ordinator of W.I.C.E.N., Geoff 5TY recently received an enquiry from a member in the country concerning W.I.C.E.N. The usual forms were posted off and returned pronto, together with a three-page letter. In the course of reading

same, Geoff was amazed to note that the party concerned had a disability—he had no hands! I cannot remember the call sign, but take it from me, I will certainly find out, but he has a 10 watt limit, and despite his disability, is willing to be helpful in the W.I.C.E.N. set-up. This is not written with any intention of publicity, it hardly needs it, but just to show that each and every one of us at times tend to think we are kicking against the wind, when really we don't realise just how well off we really are.

Best news of the month was that Ray 3RJ has decided to carry on with his job as Federal QSL Manager. They don't come any better than Ray, even if he is a VK3—and what better compliment could I pay than that?

Have just learned that Tom 5TL only allows 45 minutes for his speakers to strut their stuff—the reason being that everybody eats before the talk. Something along the lines of "The condemned man ate a hearty meal!" I wonder what it will be like to stop an over-ripe tomato or a vintage type egg. Keep tuned to the enthralling and tense VK5 notes each month (VK4 and VK6 please note) and possibly the writer will be in a position to give you a running description—get it?—a running description. Okay, okay, 73 5FS, PanSy to you.

WESTERN AUSTRALIA

Hello again! Well here we are again, past the half-way mark and heading down the back straight towards Christmas. Doesn't time fly? Winter conditions seem to be promoting a fair level of activity on all bands, hope it keeps up.

It's very nice to be able to welcome another YL to the Division, but don't expect to hear her charming voice too often, instead start brushing up on the Morse. This lady is a c.w. expert who makes the most of her 80 or so watts to get amongst the DX on 20 metres, so look for the call sign VK6OV.

Talking of c.w. reminds me of Allan 6MA. Heard him come in on the Sunday morning call-back with a burst of c.w. It appears that his modulator took the knock and it was a case of brass-pounding or else. Now he has turned his attention to keyers, both vacuum tube and transistorised versions. Just goes to show you don't it?

Russ 6LY has been laid low with sickness just recently—this is no good OM, I'll have to consign you a case of apples. An apple a day, etc.

It was quite a nice change to see some Interstate visitors at a recent meeting, among those present on this dark and wintry night were VK2NS, VK2NB and a visitor from overseas, ZS3HT. Welcome to the West.

During this same meeting quite a lengthy discussion took place as to which type of transceiver should be purchased for use by the official station. By the time this screed hits you, VK6WI should be operative on the band with a Swan.

Smoke signals received here from far off Kalgoolie suggest that Doug 6EP has bought himself a duck whistle and is patiently practicing in the hope of luring a Swan to his QTH also!

What is it that has attracted Graham 6GR to the South Western portion of our State? I understand that he is now a resident of Sleepy Hollow—sorry—Busseton.

Congratulations are the order of the day for David Priestley, who recently converted to his full call sign, VK6ID. He is now scratching his noodle, wondering just what gear to use on the "DC" bands.

Has anyone else noticed those couple of new intruders on 80 metres these nights, or is it just my receiver playing tricks?

Don't ever try to tell Bernie 6KJ that swans just naturally take to water. A report to hand indicates that during his recent trip north a certain amount of wet weather was encountered and the gear became somewhat sodden through the agency of an open scuttle or something. Fun and games for all concerned trying to dry out the transceiver in order to get back on the breeze. There's no doubt Bernie, our pioneers had it easy didn't they—only had to keep their powder dry!

Heard a whisper that Clem was carefully scanning all available literature on commercial sideband equipment. VK6CW going commercial?

There's no doubt about it—school holidays seem to bring out the best in people. I mean to say, how often do you hear Dave 6WT on the mike? Usually we admire his "fst" down on the c.w. end of the bands, but up he popped on Basil's rig the other morning.

Then there's John 6NJ, down in the big smoke, taking refuge after the rigours of Binnu. Must have found some new gear, too, because I heard him on 40 metres—c.w. too! May not have a receiver though—because he did not respond to my tremulous call.

It is most unfortunate that space cannot be found in the great halls of the Perth Airport for the Institute plaque intended to welcome and inform new arrivals. Never mind, perhaps the Overseas Terminal at Fremantle might offer some measure of compensation.

Ray 6WU has been busy constructing a cubical quad for operation on 10 metres and it seems to be working out quite nicely. A very popular antenna the comical quids! Quads don't hold any attraction for Bill 6WV, who has been getting extremely good results with his X-beam, however he is now turning his structural talent toward a three element tri-band. Hope it works out Bill.

Some of the more lucky members of the Division were recently able to avail themselves of the opportunity to inspect the satellite tracking vessels which visited Fremantle. There were several Hams among the technical bods on board, Vern WEOZO, Frank K4CCI and Keith KIBTD. Most of the visitors were very impressed by the equipment on the vessel and many an envious eye was cast on some of Uncle Sam's prize gear. They just don't make pockets big enough these days.

Obviously inspired by the success of the Narragin Hamfest, a very active group of Kalgoorlians (what sort of a word is that?) has arranged for a similar shindig during the Foundation Day long week-end. From the thought and preparation which has gone into this Hamfest and the very gratifying response from city and country members alike, this event should easily rival the mid-year racing carnival at the "Twin Cities". Having eavesdropped on 80 metres during the preparations, I have been in time to warn the appropriate authorities and am assured that all the necessary precautions have been put into operation. Wouldn't be surprised if some of those blokes forsake Ham Radio to go prospecting or two-upping or something after their visit to the "Golden Mile".

The recent v.h.f. scramble proved to be quite a popular event, with a sizeable number of stations taking part in both sessions. Rumour has it that a couple of dyed-in-the-wool 80 metre exponents were on the breeze. Ho hum!

Well that just about winds it up for now. 73 and good DX, Ross 6DA.

TASMANIA

As I mentioned last month, the lecture given at the Divisional meeting was to be by Len 7LE on a transistorised receiver. It proved to be a most interesting lecture and was well appreciated by all those present. Let us hope that by his excellent effort Len has set a ball in motion and a few others will roll along with their latest "gadgets" and give a talk on them.

This month the Divisional Council will make their annual sojourn to the Zone meetings. When this event was initiated last year it was greatly appreciated by the Zones and this forthcoming visit will certainly follow suit.

The mention of Council brings to mind a few bits of gossip about some Council members.

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First, the long awaited day has arrived when Tom 7AL has erected a respectable antenna and is now putting out a signal which can be heard by all. My spies inform me that Ian 7ZZ is thinking of firing up an s.s.b. rig. Whether inspired by Len's lecture or not, I don't know but Ted 7EB is starting to fiddle with a transistorised receiver which, after several false starts, is now progressing well.

Our newcomer from KL7, Nancy VK7ZA, is now heard quite often on h.f. and on 2 mx. While in the Launceston area, my spies tell me Dave 7ZAY is once again working there.

That appears to be all for this month except for a final urgent plea—please make sure you are not among those with unpaid subs. 73 7ZLP.

PAPUA AND NEW GUINEA

Hello there, I guess it will come as a surprise to see these notes from the Territories appear on these pages. I hope you enjoy reading them as much as we enjoy reading yours, especially PanSy 5FS' (even if he is a little one-eyed about "The Thing". In fact I'll even bet he didn't know anybody did read them.)

At present, the most active stations up here are: VKs 9DJ, 9GN and 9KS with 9AN, 9AG, 9BJ, 9GC, 9GW, 9GZ, 9JA, 9JD, 9JK, 9KS, 9MK, 9OM, 9TB and 9XI fairly active. There are a few others who are occasionally active and, unfortunately, some completely inactive.

The Territories have two Radio Clubs at present, Christmas Island Radio Club and Rabaul Amateur Radio Club, but unfortunately we do not have a Youth Radio Scheme. One of the factors which makes it difficult to get properly organised is the amount of short term Amateurs up here. On an average, a person coming into the Territory stays on for three to five years and many do not feel like getting tied up with organisations.

C.w. and s.s.b. stations seem to be equally popular and to the best of my knowledge there is no a.m. station active, at least I haven't had any cards come into the Bureau for any.

Due to recent representations by Sandy 9GC and myself, the Customs Dept. of the Territory of Papua-New Guinea has agreed to waive import duties on communications type receiving apparatus providing it is imported for the use of a licensed Amateur and is not put up for re-sale. The licensee must sign a Declaration to this effect. Let's hope that the Australian authorities will follow suit.

It is rather difficult to obtain spares here, nobody caters for the casual radio parts buyer. This means that the Amateur must obtain his parts from outside the Territory and is then slugged with the sales tax in the country of purchase, shipping charges and, if the purchase exceeds \$4, customs duties. We like to treat our gear with kid gloves, this keeps the db. in the pocket.

There will shortly be another three FT200Bs and one FT100 on the air from Papua-New Guinea and a few more db. in a certain Japanese bank account, so keep your ears on the three middle bands and perhaps we'll have a bit of yackitty with you. 73, Ted 9TB.

HAMADS

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SELL: Back issues: (a) "Electronics Australia": (i) Oct. '56, 20c; (ii) Aug. '57 to Nov. '57, 20c; (iii) Feb. '58, 20c; (iv) Aug. '59 to June '67 (complete, no copies missing), \$19. (b) "Amateur Radio": Sept. '60 to June '67 (complete, no copies missing), \$8.20. All magazines in brand new condition. Will not split items (a) (iv) or (b). P. G. M. Bruer, VK5ZGK, 95 Church Tce., Walkerville, S.A. Phone 65-1363.

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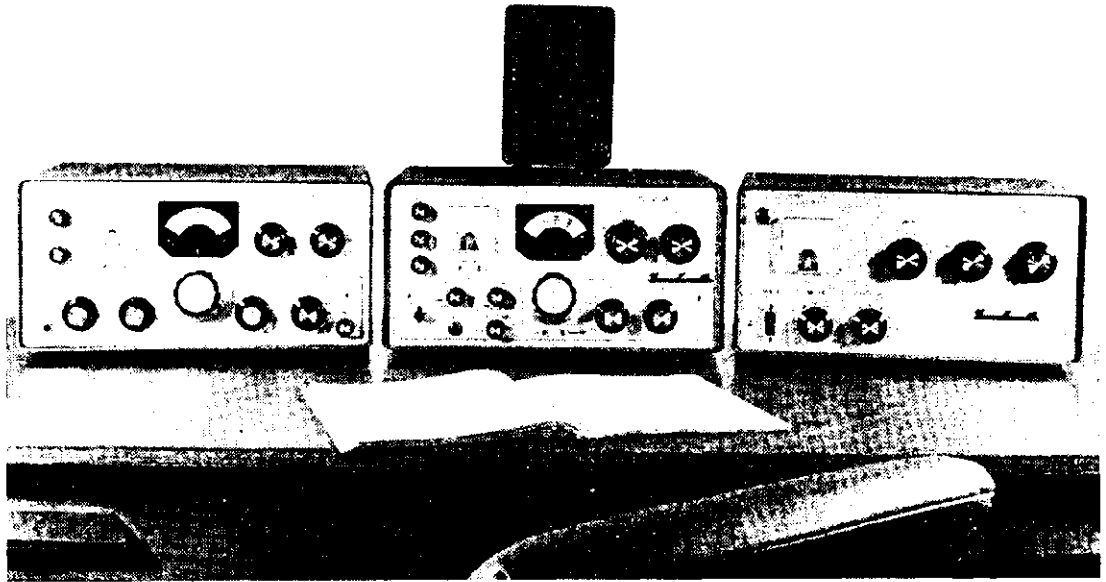
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AUGUST
1967

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8	500	50c	100	50	55c
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13	12	25c	100	350	\$1.45
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13	50	30c	200*	350	\$1.70
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15	450	55c	250	12	45c
16	500	65c	250	15	50c
24	350	50c	250	25	50c
24	500	60c	250	50	85c
25	25	30c	500	6	45c
33	6	25c	500	12	65c
33	12	25c	500	15	65c
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32	500	95c	1000	15	85c
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50	12	30c	1000	60	\$1.25
50	15	30c	2000	15	\$1.00
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50	50	40c			* P.V.C. can type

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"AMATEUR RADIO"

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AUGUST 1967
Vol. 35, No. 8

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W.I.A. OFFICIAL BROADCASTS

NEW SOUTH WALES	SOUTH AUSTRALIA
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VK4WI, Sundays, 0900 hrs. E.S.T. 3580 Kc. 53.995 Mc. 7146 Kc. 144.36 Mc. 14.342 Mc.	VK7WI, Sundays, 1000 hrs. E.S.T. 3672 Kc., and re-transmitted by representative stations on— 7146 Kc. 144.1 Mc. 53.032 Mc. 432.6 Mc.

THE INSTITUTE AND FEDERATION

AFTER five year of deliberations on drafts and re-drafts of a proposed Constitution designed to **FEDERATE** the Wireless Institute of Australia, the Federal Council has now reached unanimity; the differing opinion about many clauses have been amicably resolved; solutions to the wording of clauses affected by Company Law have been found; clauses protecting the rights of members have been written and re-written until all Divisions are satisfied; and so now after all this time and effort the Wireless Institute of Australia has a Federal Constitution which, when implemented in the next month or two, will make the W.I.A. a truly Federal organisation.

This has been effected in five years, yet the desire that it be so, originated many more years ago. Back as far as 1920 the "Wireless Institute of Victoria" moved to form a "federal council" of the Institute representing each State of Australia for the purpose of protecting the cause of Amateur operators at a time when the Navy was in charge of "wireless wavelengths" and not too disposed to issue transmitting permits to those interested in the growing art in an Amateur way.

Historical facts concerning the formation of this federal body in the Institute are currently incomplete, but it is obvious the move was partly successful because the 1st Federal Convention was held in Melbourne in 1924 and the 2nd Federal Convention in Perth the following year. Between 1920 and 1925 the majority of wireless clubs formed after World War I. to pursue the remarkable hobby of "wireless" joined together under the name of the Wireless Institute of Australia and the existing State organisations became a "division" of the Institute.

This "federal council" continued functioning—seemingly without a constitution—serving as a means for a representative or proxy from each State division to meet annually for the purpose of resolving mutual problems. At the Convention in Perth in 1925 the records show a strong desire for Federation when a move was made by the VK6 Division to "discuss suggestions for all the present divisions of the Institute to be incorporated under one Federal body". Coincidentally the original draft of the new Federal Constitution "got off the ground" at the Convention in Perth in 1963!

In 1925 the proposal was obviously discussed but there are no records of any plan getting under way at that stages. During these years the Federal Council—now firmly established—formed its Executive which varied its location between VK2, VK3 and VK5, finally settling down permanently in VK3 when the Federal Council resolved that its Executive "remain in the Division where the Central Administration of the Postmaster-General's Department was located" and that this Division become the "Headquarters Division" of the Institute.

There are obvious reasons why no useful plan to Federate could have been

implemented in these early days, the main one being the necessity for the Divisions to be incorporated under Company Law, which they were not, although not long after 1925 at least two Divisions had made this move. Company Law differed between the States too and only within recent years became uniform under the Uniform Companies Act. Secondly, there was no standardisation of divisional constitutions or articles and memorandums of association providing a basis on which true federation could be built. But the idea was on its way.

The very presence of a Federal Council and what it stood for exhibited a real reason for Federation, and so it was that in 1933 Federal President R. D. Elliott (the Executive was then located in VK5) commenced drafting a "uniform constitution to operate throughout the States". It was finally completed in 1939 but was shelved for the duration of World War II.

When Amateurs were licensed to again transmit, this draft was on the agenda for the 1947 Convention. Amendments were resolved and it was finally adopted in 1948 as "The Wireless Institute of Australia 1939 Constitution as Revised in 1947". Although minuted in this way, following its adoption and printing, it became known as "The Federal Constitution of the Wireless Institute of Australia (as Amended) 1947", and with various other amendments from time to time it has served a useful purpose right up to the present time; useful but with many disadvantages which Administrators of the Institute have found detrimental to the expansion and growth of the organisation; and although in name a Federal

been operating in most States under articles and memorandum of association alike in some respects but at variance in many respects and far from being uniform. The Divisions agreed with the idea and the draft tabled in 1950 was accepted, after many amendments, about two years later.

Following this, there were moves to combine the Uniform Divisional Constitution with the Federal Constitution (as Amended) 1947 to become the **Federal Constitution of the Wireless Institute of Australia**.

Major W. T. S. Mitchell prepared a draft constitution based on the combination of the two constitutions. Simultaneously M. J. Owen (VK3) prepared an entirely new draft Federal Constitution. Both were on the agenda of the Perth Convention in 1963, but the Federal Council elected to consider the legal draft prepared by M. J. Owen and this, in its amended form, is the Federal Constitution which has been accepted and ratified by all Divisions. And so ends a brief historical review of how this came about.

But why did it come about? What is it that has made Administrators of the W.I.A. seek, in effect, Federation ever since 1920? It seems that two references to the word "Federal" sums up the reason adequately:

"Of the form of government in which two or more States form a political unity but remain independent in internal affairs"

and—
"Of such political unity as distinct from the separate States comprising it."

Surely this is what has been sought after, for these definitions give force to the administrative requirement of an Institute such as ours—"that it have a strong central governing body distinct from the individual State administrations which remain independent in internal affairs but are united with the Federal body as their Federal representation". The old constitution did not provide for a strong central administration, the new one does.

The general member of the Institute will note little difference, if any, in the function of his Division and what it does for Amateur Radio. But to those who have laboured so hard for five years to bring to fruition the dream of 47 years of seeking an effective Federal organisation will go the unending thanks of the future administrators.

Amateur Radio will have a strong chance for survival under a truly Federal Constitution. Not because it will have any observable effect on the day to day activities of Amateurs, but because it will speed up the inside administration of the Institute and enable benefits to be derived in the long term which have been so protracted under the old system.

My congratulations are extended to all those—past and present—who have worked so unsparringly in achieving this goal.

—G. Maxwell Hull,
Federal President, W.I.A.

FEDERAL COMMENT

Constitution, in practice not a legal document under Company Law, but rather a satisfactory agreement between the Divisions as a basis for federal representation. This has been recognised by Institute Administrators for two decades or more. How to bring about a change was the problem.

In 1949 the Federal Executive, on behalf of the Federal Council, co-opted the late John Moyle to prepare the draft for a "Uniform Divisional Constitution" designed to bring about a uniformity of administration within the Divisions which had, up to this time,

AUSTRALIA'S FIRST ORBITING SATELLITE

The Package: The unit is 18" x 22" x 6", weighing 35 lbs. It utilises 20 lb. of manganese-alkali batteries from Union Carbide, U.S.A., which will supply for about three months. It is a completely solid-state package, and all components have been supplied free by Fairchild Australia.

Orbit: The expected orbit (approximate and subject to confirmation) is 500 miles circular, 70° inclination, period 100.9 minutes.

Stabilisation: A bar magnet, interacting with the earth's magnetic field, will stabilise the package to reduce fading of signals to antenna movement as the satellite spins. Magnetic hysteresis rods damp motion on two axes, dissipating the earth's magnetic field energy.

SOME TECHNICAL DETAILS

Electronics: V.h.f. 2 metre transmitter design, output 50 mW. on 144.050 Mc. A.m. telemetry modulation, crystal controlled.

H.f. 10 metre transmitter design, output 250 mW. on 29.450 Mc., commandable on/off a.m. telemetry modulation also (180° cut-off phase with v.h.f.).

Limiter: Schmidt trigger circuit limits the I/C audio signal, giving a square wave output with a well-defined peak-to-peak voltage. The peak-to-peak voltage must exceed 1 volt.

Tuned Amplifier: Series feedback voltage amplifier with tuned load converts I/C square wave to sine wave.

Level Detector: Schmidt trigger, which triggers if the input becomes more positive than the threshold. The threshold is set above voltage reached by sine wave due to third sub-harmonic, but is below that reached by correct tone with about 3:1 mark-space ratio. The detector provides a square wave output with a well-defined peak-to-peak voltage.

Delay Circuit: Diode pump circuit, with time constant 1000 cycles—i.e. output voltage is 1/e of final voltage after 1000 cycles of input.

Output Trigger: Triggers when input voltage exceeds threshold of Schmidt trigger. Together with the delay circuit, it provides a delay of 1/5 second between the application of a tone and operation of the output trigger. When tone is removed, the 0.47 uF. capacitor is discharged by the forward base current of the left-hand transistor, and takes about five seconds before the trigger resets.

Logic and Bistable: A diode gate produces a positive going pulse whenever both inputs go positive (i.e., both enable and execute tones received within 5 seconds of each other). Pulse turns on a pull-down transistor in bistable, which remembers the last command received. All circuits use either feedback or saturation to ensure that operation of the circuits is independent of transistor characteristics.

Telemetry: Audio tone measures 8-channel parameter, sequentially switched 10 secs. per channel. The channels could be in this order—1, HI in Morse Code identification; 2, 3, 4, horizon sensors (5% field of view); 5, 6, internal and skin temperatures; 7, battery current drain; 8, battery voltage.

HI Keyer: Produces HI in Morse Code, 2 or 3 per 10 secs.

Command Rx: Receives signals, and produces an audio tone which is passed on to the—

Command Decoder which decodes the signal and switches h.f. transmitter on or off.

The entire operation will be supervised by Project Australis, and not available to any Amateur. H.f. transmitter schedules will be published before the launch.



STATEMENT ON PROJECT

Richard Tonkin, Owen Mace and Paul Dunn arrived back from the United States on Saturday, 17th June, after their trip to formally deliver the Australis Amateur satellite to Project Oscar.

Detail discussions were held with Project Oscar personnel. These discussions covered the design and operation of the Australis Oscar satellite and also plans for a second Australis satellite carrying a repeater.

The design and construction of the satellite was highly praised by all Oscar project officials. Some minor improvements in construction techniques will be considered prior to launching. If necessary one or two back-up modules will be constructed and sent to the United States.

The package arrived in perfect condition and to the great amusement of those Americans and Australians present was found to be complete with "Made in Australia" labels and a large sign reading "God Save The Queen".

The satellite was thoroughly checked out in the Oscar laboratory and was found to be operating perfectly.

The hospitality of Project Oscar to the boys was most warm and friendly and thoroughly appreciated by them. They were afforded the opportunity to inspect a number of Aerospace Companies and facilities to observe first hand the latest satellite techniques which will undoubtedly assist in later Australis projects.

At this time, the date of launching is not known. However, it is expected that the announcement will be similar to those applying to previous Oscar launchings.

Adequate notice will be passed to all State co-ordinators.



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In writing, to—The Director-General, Posts and Telegraphs, Treasury Place, Melbourne, 3002, by 21st August, 1967.

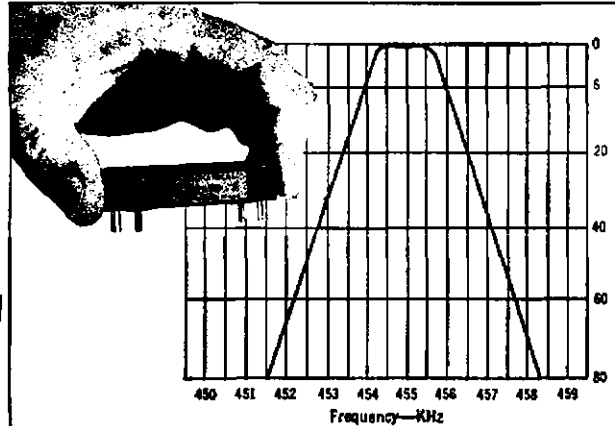


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TRANSISTOR AMPLIFIER DESIGN

PART FIVE

R. L. HARRISON,* VK3ZRY

R.F. POWER AMPLIFIERS

It is now possible to obtain transistors which are capable of producing up to several watts of r.f. power at frequencies into the u.h.f. region. Some transistors are capable of providing 30 or 40 watts of r.f. power up to 30 Mc.—at a price of course! Most transistors should be within the average Amateur's budget though.

The design procedure, especially for a.m., is somewhat different to tubes, but is not difficult and, once familiar with it, you should be able to complete a design fairly quickly.

In this article I will not cover s.s.b. and class A linears. This is not because I don't like s.s.b. (I do), it's just that I have not experimented with this particular type of amplifier.

The following design procedure will be for class B, zero bias, r.f. power amplifiers for the following reasons:—

- Ease of design (I'm lazy).
- Less components necessary (I'm a miser).
- Greater power gain than class C (less drive power necessary).
- No need to provide or develop a reverse bias source.

So much for the bumpf—on with it.

The first decision you will have to make is whether you want to build a c.w., f.m. or an a.m. transmitter. Having decided that, you now decide on what peak r.f. power output you want (carrier power for c.w./f.m. or peak r.f. power at 100% modulation for a.m.) at the desired frequency. Keep in mind that if you want more than 1 or 2 watts at v.h.f., then you must be prepared to pay quite a few shekels for the privilege. The same might apply at h.f., although more power can be achieved relatively cheaply at h.f.

The second decision you have to make is "which transistor will I use?" You should obtain the characteristics sheets of several suitable transistors (ask the manufacturers). Now pick the transistor(s) that will supply the r.f. output at the desired frequency. Check that the minimum gain-bandwidth product, f_t , is 2 to 4 times the desired frequency. If this leaves you with several transistors, choose one with the highest h_{fe} (high frequency current gain), or the cheapest.

C.W./F.M. DESIGN PROCEDURE

1. V_{cc} is determined from the following formula:—

$$V_{cc} \text{ less than or equal to } \frac{B V_{CES}}{2}$$

or

$$V_{cc} \text{ less than or equal to } \frac{\text{max. } V_{CEO}}{2}$$

where $B V_{CES}$ is the collector-emitter breakdown voltage, and $\text{max. } V_{CEO}$ is the maximum allowable collector-emitter voltage. V_{cc} is less than or equal to the max. allowable collector

voltage because the instantaneous collector voltage swings to twice V_{cc} on signal peaks.

2. Now the optimum collector load resistance is given by:—

$$R_o = V_{cc}^2 \div (2 P_r)$$

where P_r is carrier power as decided above.

3. Now you have to match the collector load resistance R_o to the output load R_L (see Figs. 1a, 1b, 1c). The problem here is to take C_o into consideration. At h.f. C_o will, with most transistors, not be terribly significant. It may become a problem though at v.h.f.

emitter voltage because the instantaneous collector voltage swings to four (4) times V_{cc} on modulation peaks (100% modulation).

2. Now the optimum collector load resistance (R_o) is given by:—

$$R_o = (3 V_{cc}^2) \div (4 P_r)$$

where P_r is unmodulated carrier power.

3. The matching network is the same as for c.w./f.m. procedure (No. 3) and the same remarks apply.

To modulate the stage of final amplification (p.a. to you) a number of techniques are available. They require whole articles in themselves and, for that reason, I suggest you read "73 Magazine"—Jan. 1965, page 12, and July 1966, page 58.

MATCHING NETWORKS

The Pi Network is shown in Fig. 1a. The equations for determining the reactances of the components are as follows:—

1.—

$$X_{C1} = \frac{R_o}{Q_L} [1 + (\sqrt{R_L \div R_o})]$$

where R_L is load resistance (antenna?).
 R_o is optimum collector load resistance.

Q_L is loaded Q of circuit. Practical values in the range 5 to 12.

The capacitance of $C1$ can be found from the nomograph on page 505 of the Amateur Radio Handbook by the R.S.G.B.

2.—

$$X_L \text{ equals approx. } X_{C1}$$

The inductance (L) can also be found from the same graph in the R.S.G.B. Handbook.

3.—

$$X_{C2} = X_{C1} (\sqrt{R_L \div R_o})$$

The value of $C2$ can also be found from the abovementioned nomograph.

The T Network is shown in Fig. 1b. In this circuit the loaded Q is increased by raising point Y above 1,000 ohms and then transforming down to the load impedance R_L . The reactances of the components can be found by using the following equations:—

$$(1) R_x = R_o (Q_L^2 + 1)$$

where R_x is the impedance at point Y.
 R_o is the collector load resistance.

Q_L is the loaded Q. Practical values in the range 5 to 20.

$$(2) X_1 = R_x \div Q_L$$

$$(3) Q_2 = \sqrt{R_x \div R_o}$$

$$(4) X_2 = R_x \div Q_2$$

$$(5) X_L = Q_2 R_o$$

$$(6) X_{C2} = R_L \div Q_L$$

$$(7) X_{C1} = (X_1 \times X_2) \div (X_1 + X_2)$$

The values of L , $C2$ and $C1$ can be found from the previously mentioned nomograph.

The parallel tapped Network in Fig. 1c is a parallel tuned circuit with the load tapped up the coil. The transistor

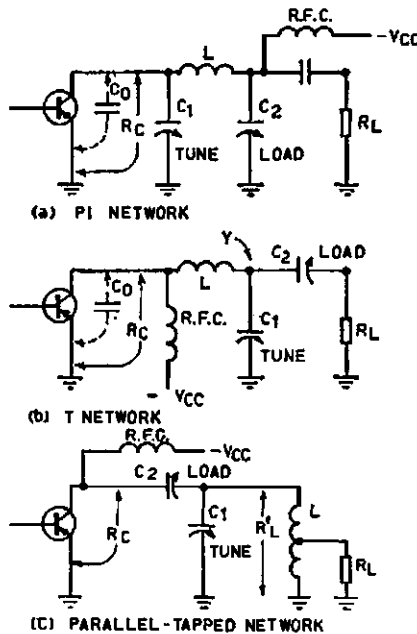


FIG. 1

Now Figs. 1a, 1b and 1c give circuits for the Pi, T and parallel tapped networks respectively. The Pi circuit is good where C_o is only very small or insignificant. Also the Pi network will feed through sub-harmonics of the output frequency more so than the other networks. This may or may not be important. The T and the parallel tapped networks are very handy at v.h.f. Note that they are easily adaptable to co-axial or trough-line configurations. For the design of these networks refer to the heading "Matching Networks".

A.M. DESIGN PROCEDURE

1. V_{cc} can be determined from the following formula:—

$$V_{cc} \text{ less than or equal to } \frac{B V_{CES}}{4}$$

or

$$V_{cc} \text{ less than or equal to } \frac{\text{max. } V_{CEO}}{4}$$

V_{cc} is less than or equal to one quarter the maximum allowable collector-

* 1 Mary Street, North Balwyn, E.9, Vic.

is capacitively coupled to the tuned circuit via C2. The coil L transforms R_L to a higher resistance R_L¹. Now in practical circumstances the turns ratio is around 3 to 1 or 4 to 1.

Thus: (a) R_L¹ = 16 R_L
or (b) R_L¹ = 9 R_L

Above 100 Mc. the equation in (b) should be used. Below 100 Mc. the equation in (a) should be used.

The reactances of the components can be calculated from the following formulae:—

- (1) $X_{C1} = R_L^1 \div Q_L$
Q_L in range 5 to 15.
- (2) $X_L = X_{C1}$
- (3) $X_{C2} = R_0 (\sqrt{R_L^1 \div R_0}) - 1$

The values of the components can again be taken from the R.S.G.B. Handbook.

DRIVERS

The driver has to deliver a certain amount of power to the base of the p.a. transistor, and this drive power (P_{in}) can be found on the manufacturer's data sheet.

A number of graphs may be shown. There may be graphs showing r.f. power output versus frequency for different values of P_{in} at certain values of V_{cc}. Or a graph showing P_{out} versus P_{in} for different values of V_{cc} at a specific frequency. By referring to the appropriate graphs the r.f. power needed to drive the amplifier (P_{in}) can be determined.

It will also be found necessary to match the driver to the p.a. base to achieve efficient power transfer. Keep in mind that these networks are not 100% efficient and allow for a reserve of power in the driver above that which is necessary to drive the p.a.

By referring to Figs. 2 and 3 it can be seen that the matching networks are similar to that in Fig. 1c.

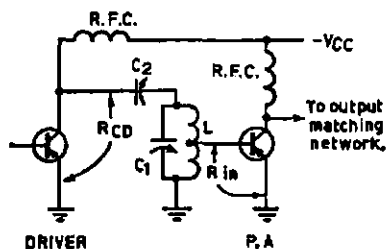


FIG. 2.

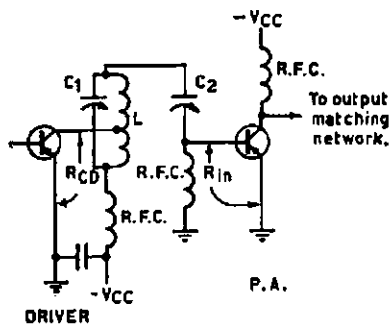


FIG. 3.

The equations for determining the components in Fig. 2 are as follows:—

- (a) R_L¹ = 16 R_{in}
- or (b) R_L¹ = 9 R_{in}

where R_L¹ is the resistance across the coil, and R_{in} is the base spreading resistance (r_{bb}¹ or h_{ie}) of the p.a. transistor. The same remarks apply here as before.

Now,

- (1) $X_{C1} = R_L^1 \div Q_L$
Q_L in range 5 to 15.
- (2) $X_L = X_{C1}$
- (3) $X_{C2} = R_{0D} (\sqrt{R_L^1 \div R_{0D}}) - 1$
where R_{0D} = V_{cc}² ÷ 2 P_{in}

Note: Make sure driver transistor can withstand 2 V_{cc}.

The equations for determining the components in Fig. 3 are as follows:—

- (a) R_L¹ = 16 R_{CD}
- or (b) R_L¹ = 9 R_{CD}

R_{CD} is the optimum collector load resistance of the driver. R_{0D} = V_{cc}² ÷ 2 P_{in}.

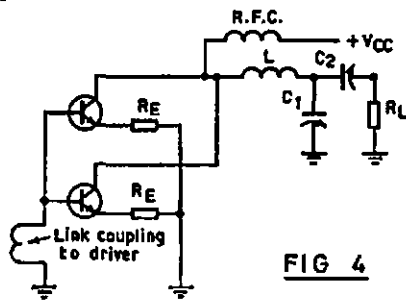
Now,

- (1) $X_{C1} = R_L^1 \div Q_L$
Q in range 5 to 15
- (2) $X_L = X_{C1}$
- (3) $X_{C2} = R_{in} (\sqrt{R_L^1 \div R_{in}}) - 1$
where R_{in} is the base spreading resistance (r_{bb}¹ or h_{ie}) of the p.a. transistor.

PARALLEL AND PUSH-PULL OPERATION

If you wish to achieve more power output than one transistor will supply, then parallel or push-pull operation could be employed to double the output.

Fig. 4 shows two transistors in a parallel configuration. The resistors in the emitters are to prevent one transistor from "hogging" the current. The value of R_E would be in the range of 2 to 10 ohms. They should be adjusted initially so that the emitter current of each transistor is equal during actual operation.



I would recommend that the T network or the parallel tapped network be used in the collector circuit owing to the increase in C₀.

The same equations can be used to calculate the components.

In choosing your transistor remember that the power it should be capable of providing ought to be a little greater than 1/2 P_r.

Fig. 5 shows two transistors in a push-pull arrangement. Note the similarity to tube circuits. L and C can be found by judicious use of a g.d.o. and the link coupling to the drive should be adjusted for optimum output. Make sure that everything is quite symmetrical to ensure that both transistors receive equal drive.

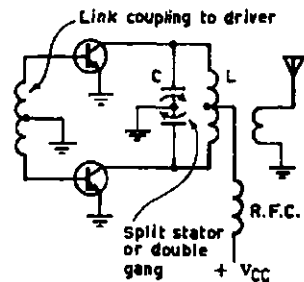


FIG. 5

CLASS C OPERATION

Class C operation can be achieved by putting a low value resistor in the emitter or base connections as shown in Figs. 6a and 6b. The drive required for class C is greater than that required for class B but class C efficiency is greater.

The value of the resistor and the drive power are best juggled in practice to achieve best efficiency and output. It appears to be a matter of individual adjustment, even for different transistors of the same type in the same circuit. Note that the emitter resistor is in the order of tens of ohms and the base bias resistor is in the order of hundreds of ohms.

FREQUENCY MULTIPLIERS

Frequency multipliers are just another application of a class C amplifier. The tuned circuit in the collector should be tuned to a frequency two or three times the frequency being injected at the base. I would suggest that a frequency multiplier should not be used as a final owing to the presence of sub-harmonics in the output.

When using a frequency multiplier as a driver, it should be no more than a tripler as it is difficult to get sufficient drive owing to lowered efficiency. When frequency multiplying it is probably better and cheaper to use doublers throughout owing to greater efficiency and output.

CONCLUSION

Well that concludes this series of articles. I hope that they have created (Continued on Page 10)

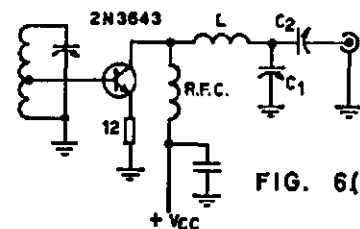


FIG. 6(a)

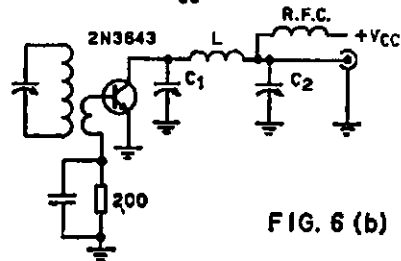


FIG. 6(b)

"THE THING"—TRANSISTORISED

AN EXPERIMENTAL SIDEBAND EXCITER

PART FOUR

K. A. KIMBERLEY,* VK2PY

HAVING successfully completed the filter section, we now come to the easy part. What could be easier than a crystal oscillator followed by a balanced modulator? Nothing, or so I thought!

It was first intended to use a common emitter oscillator (with the collector current set at 1.0 mA.) feeding into a series type balanced modulator employing two germanium diodes.

Things went well at first, the oscillator worked straight off, even the customary reversal of the feedback winding was not needed. The balanced modulator reduced the carrier down to an almost undetectable level. All this was accomplished without catastrophic failure of transistors or temper.

Next, audio from the transistor "squawk box" was fed into the balanced modulator. The station absorption wavemeter indicated r.f. output that appeared to vary in time with the broadcast band programme. Okay then, the double sideband signal was then fed through the crystal filter.

Up till now, no troubles were evident. However, upon listening to the signals all that could be heard was something that sounded like the wail of an off-tuned set of bagpipes. Closer listening eventually revealed that this noise was supposed to be the "Beatles" rendition of "I want to hold her hand". It certainly sounded as though it was being rendered all right (apart!).

Not having an ear for this modern music, the broadcast receiver was then tuned to the A.B.C. and the "Parliamentary Broadcast". The well modulated and articulated voices of our elected representatives would I thought provide ideal test signals. However, the sideband (?) signals still sounded shocking. The honourable member for "Whoop Whoop" raving on "about Strilias Gloria Sarah Tiche" could be just made out among the distortion.

What a let down after the easy start, my old "Finnagle" really had caught me this time.

Well we couldn't let a little thing like this stop us, so . . .

The first step in the investigation was to get out all available literature and do some real heavy reading. What was the nigger in the woodpile? The balanced modulator circuit used was identical with that of several commercial manufacturers. It seemed as though I was caught in a cul-de-sac.

At last the light dawned, being a tube man from way back, I hadn't realised the importance of signal levels when using semiconductors. Going back to fundamentals nearly always allows one to get to the bottom of things and such was the case this time. It appears that in a mixing (modulating) process that the carrier frequency level

should be at least (and preferably more) ten times that of the modulating frequency.

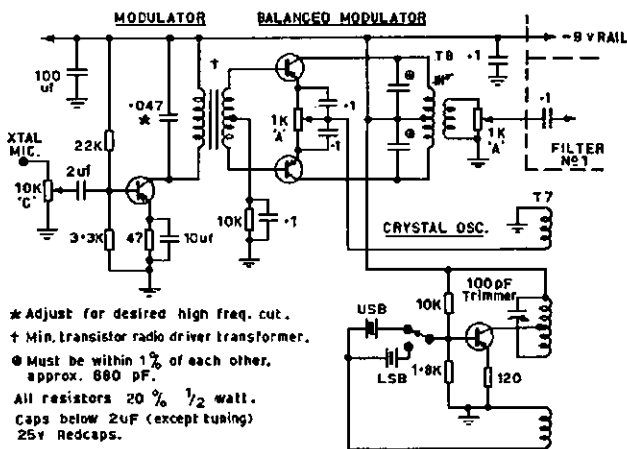
Out came the c.r.o. and a session of measurements followed. It was soon found that the ratio of r.f. to audio level was far from satisfactory. In fact the two levels were about level. Accordingly a pad was introduced into the audio circuitry, thus achieving the optimum r.f. to audio ratio. Unfortunately the resulting signals were still nearly as bad. More reading and brain scratching followed. What was the trouble this time? The carrier oscillator was quite stable, the modulator was balanced f.b. and the level ratios were okay. I was about ready to throw the whole thing out of the window until it was realised that transistor batteries falling from the second floor could have disastrous results to passing pedestrians.

Calming down somewhat, it was decided to have a look at the characteristic curves of all the semiconductor devices being used in this section of the

away with the diode modulator in favour of a transistorised one.

Referring to the circuit, it will be noticed that the transistor bases are in push-pull for audio, the emitters parallel for r.f., whilst the collectors are in push-pull for r.f. The theory of operation goes something like this:

Bias is supplied by the rectification of the carrier, the positive half cycles causes base current to flow and consequently collector current. As the collector circuit is connected in push-pull, the resulting signal should be cancelled out. However, this is not strictly true as both transistors differ from one another. The addition of a balancing pot. in the emitter as well as bifilar winding the collector coil will overcome this problem. When push-pull modulation is fed into the bases one transistor will conduct more than its counterpart and as the cycle reverses its mate will take over. Thus modulation of the r.f. takes place and we now have a nice drop of double sideband being produced.



exciter. In this manner, it was discovered that germanium diodes need about 0.25 volt to start them conducting and about 1.0 volt to get them into the region of their characteristics suitable for satisfactory modulation.

Here was the trouble in a nutshell, not sufficient r.f. Initially the r.f. level at VK2PY was about 0.3v. p.p., accordingly more turns were added to the output winding of the carrier oscillator coil. Yes you guessed it, the extra damping pulled the oscillator out of oscillation. Ach so, the operating conditions of the oscillator were changed so that the collector current now runs at about 10 mA., thus producing about 3.0v. p.p. of r.f.

The resulting sideband signals were vastly improved, but were still not good enough.

Rather than instal a higher powered transistor with a much higher collector current rating, it was decided to do

The balancing pot. obviates the necessity of using closely matched transistors in the balanced modulator, however they should not be too different.

The change to the transistorised balanced modulator produced very good signals except that the level was embarrassingly high for the crystal filter and its associated amplifiers. A 1K A curve carbon pot. across the output soon cleared up this problem.

For those Amateurs who have a fetish for getting the last ounce of carrier suppression, it is recommended that the carrier be moved about 300 or 400 cycles so that it falls further down the passband curve of the crystal filter. However, in this case it would not be desirable to curtail the low frequency response of the modulator as described next.

The audio section needs little explanation. Originally a pre-amp. was used in front of the OC72. However this has

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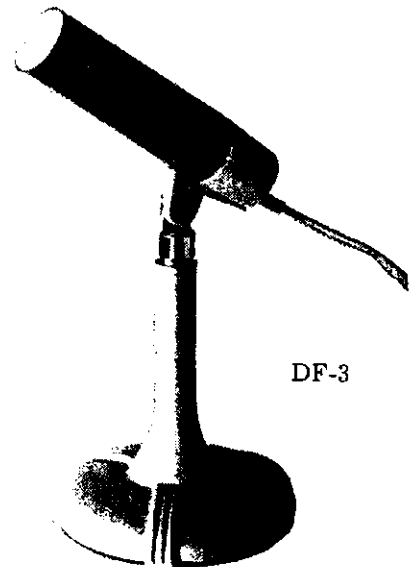
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since been found to be superfluous as sufficient audio was obtained when the microphone circuitry was fed directly into the base of the OC72.

The low frequency response of the modulator has been kept poor in order to improve the sideband suppression. This was done as follows: Use the cheapest and smallest audio transformer obtainable. The idea here being that the smaller the transformer, the less iron used in its core. This results in a lower inductance and hence the low frequency response is down. The audio coupling capacitor is kept low as is the emitter bypass.

signals generated, the lower the chance of spurious signals being radiated from the finished rig.

As this is an experimental (bread board) set-up, not much time was spent on the heterodyne (local) oscillator. It must be pointed out to the constructor that the heterodyning oscillator is extremely important and great care should be taken with its construction. The unit being described is intended to be developed into a transmitter and as such will transmit on the receiving frequency. This means that the transmitter stability will only be as good as the receiver, so make it good chaps!

lector circuit of the phase splitter. The exact value of the collector tuning capacitors are not important but should be within 1% of each other. 125 volt styroseals have been found satisfactory, both in respect of their smallness as well as stability.

Coil data will be given for 80 metres only. For 160 metres double the capacitor values and increase the inductance as required, whilst for 40 metres half the capacitor and reduce the inductance. The use of adjustable iron cored (or ferramic) coils makes this easy.

POWER SUPPLY

Up till now all experiments have been carried out using a dry battery as a power source. However there is a distressing tendency to leave the battery switch on for extended periods. This usually happens when things are not going "according to Hoyle". When one gets back onto the job, sometime weeks later, the poor old battery is deader than the proverbial "Do Do".

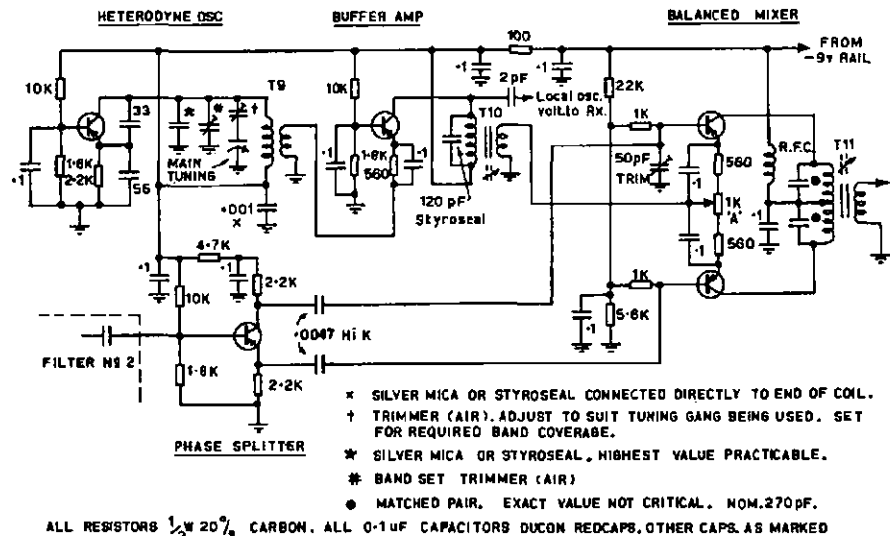
Having just done in the third battery in six months, it was decided to build a power pack. A suitable circuit is to be found in the "Mullard Voltage Regulator (Zener) Diode" Handbook, which is available from Mullards at a very reasonable price.

The following abstract has been taken from the above mentioned publication.

"The power supply shown was developed to replace the dry batteries normally used when a variety of transistor circuits requiring different voltages are handled in a workshop or laboratory. It has an output that is adjustable from 0 to 15v. at 0.5a., thus covering most transistor circuit requirements. Although not fully stabilised, the supply has an adequate performance for most uses, its output resistance being about 0.4 ohm. The supply can be finely adjusted to any voltage within its range and is not damaged by an accidental short-circuit provided that the transformer secondary can supply 2.5 amp.

"The voltage across the centre tapped secondary winding of the transformer is rectified to give two supply lines. One supply line is negative, V1, and the other positive, V2, with respect to the centre tapping.

"The negative line supplies only the voltage regulator diodes, D5 and D6, via resistors R2, R3 and R5. When the current through D5 and D6 is 10 mA.,



The use of a low value emitter bypass capacitor results in degeneration, and thus loss of gain, which varies inversely with the frequency. The 0.047 uF. capacitor across the primary of the audio transformer limits the high frequency response as well as distortion, however its use and or size is a matter of personal preference.

The foregoing completes the description of the sideband generation and the next step is to heterodyne this signal up to the Ham bands.

HETERODYNING SECTION

Preliminary work here suggested similar troubles might occur as were encountered in the low frequency balanced modulator. Accordingly plans for a single ended type mixer were abandoned. Diode mixers were not even considered.

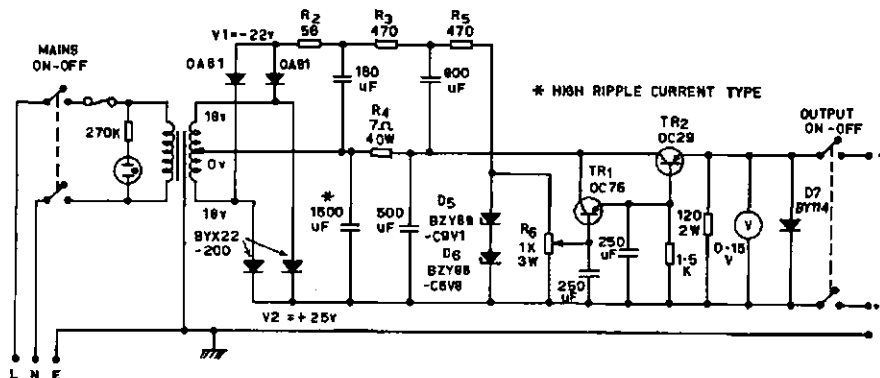
The balanced push-pull configuration worked so well in the low frequency balanced modulator, that it was decided to use it in the heterodyning section. A slight snag here is the need for sideband signal to be balanced, i.e. push-pull, when fed into the balanced mixer. Not wishing to disturb the output transformer in the crystal filter by a rewind job, it was decided to add a phase splitter between the filter and the bases of the transistors in the balanced mixer.

The use of a balanced type of mixer prevents the heterodyning oscillator signal from appearing at the output of the mixer. It will readily be understood that the less of these undesired

The receiver dial should be accurately calibrated so as to avoid out of band transmissions.

The use of a buffer amplifier after your favourite oscillator circuit provides necessary isolation as well as more drive to the emitters of the balanced mixer. The operation of the mixer is identical with that of the balanced modulator described earlier in the text, hence the mixer operation will not be discussed at length.

The main requirement seems to be that plenty of r.f. drive to the parallel connected emitters is required. The rough balancing out of the heterodyne oscillator is via the pot. whilst final balance is achieved by the careful adjustment of the trimmer wired to the base transistor fed from the col-



Bench Power Supply for Transistor Circuits.

the voltage across them is about 16v. By means of the output voltage control potentiometer, R6, this voltage or part of it is connected to the base of TR1. "The positive line supplies the output via the series transistor TR2, which is connected in cascade with TR1 to form a compound emitter follower. Hence, the output voltage at the emitter of TR2 closely follows that at the base of TR1 and is controlled by means of R6.

"Diode D7 is shown connected across the output to prevent damage which would be caused by connecting a reverse voltage to the output terminals. The diode may be omitted where this danger does not exist.

"Should the output terminals be short-circuited, transistor TR2 bottoms. The short-circuit current, however, is limited to just over 2a. by resistor R4 which, therefore, protects TR2. Resistor R4 has a value of approximately 7 ohms and dissipates nearly 40w. when a short-circuit occurs.

"At low output voltages the power dissipation of TR2 approaches 10w.; therefore, the transistor should be mounted on a heat sink having a thermal resistance of less than 2.5°C./W."

This about brings the story to an end. A lot of practical experience has been gained as well as some slight knowledge of semiconductors. Transistors now are cheaper than tubes and require little power for operation in low level applications. Semiconductors should, as a matter of principle, be used in all new equipment. The author, even though he uses them at his place of employment, has strenuously resisted the use of transistors in his own gear, but has at long last been converted. As mentioned previously, all transistors with the exception of the OC72 modulator, were similar to the OC45 series. The actual type used at VK2PY were Ducon SFT107s. OC45 should be interchangeable with the SFT107, however the base bias resistor network may need slight adjustment. Increasing the bottom resistor results in a larger collector current.

This resistor is adjusted to give the following results:—

Crystal oscillator 10 mA.
Balanced modulator .. self adjusting
Filter 1 amp. 1.8 mA.
Filter 2 amp. 1.5 mA.
Phase splitter 0.8 mA.
Heterodyne osc. 2.0 mA.
Buffer amp. 3.0 mA.
Balanced mixer ... self adjusting

COIL DATA

Oscillator coil, T7:—

Primary 75 turns No. 30 enamel covered wire; collector tap, 15 turns from battery end.
Feedback, 12 turns No. 30 enamel covered wire.
Output, 20 turns No. 30 enamel covered wire.

All windings are layer wound on a Ducon "Ferramic" Toroid Type Q1 F4040/2 with the primary nearest the core.

Note: This same coil is used in the test oscillator described earlier. If the test oscillator is not T9, then add series resistance or capacity to the feedback circuit until the note clears up.

Balanced modulator coil, T8:—

Primary, 37 plus 37 bifilar wound, using No. 36 posyn covered copper wire.
Secondary, 6 turns wound over primary, same wire.

This transformer is wound on a Ducon miniature i.f. assembly.

Heterodyne osc. coil, T9 (80 mx only): The inductance needed will depend somewhat on the circuit used as well as the capacity, both fixed and tuneable. I used a ½ inch diameter air core ceramic former. The number of turns were primary 50 and the secondary 6 turns of No. 30 gauge enamel copper wire.

Buffer amp. coil, T10 (for 80 mx only):—

Primary 40 turns of 42 gauge posyn covered copper wire with collector tap at 20.
Secondary 10 turns wound over the primary.
Wound on miniature Ducon Oscillator Coil Assembly Q1.

Balanced mixer coil, T11 (for 80 mx only):

Primary, 20 plus 20 turns bifilar wound, using No. 42 gauge posyn covered copper wire.
Secondary, 4 turns wound over primary. Former as for T10.

Note: The exact coverage required of T9 and T10 will depend upon the filter and will be equal to the band edges minus the crystal filter (or mechanical) frequency.

FINAL FINAL

After these notes had been written two excellent articles dealing with transistor oscillators have been published in local journals, i.e. the October issues of both "A.R." and "Radio and Hobbies".

ILLEGAL TRANSMISSION

Standby, I'm up on that soap box again. This time to record a case of illegal transmission, downright discourtesy and utter selfishness. A relative newcomer to the band had the "audacity" to fire up on a.m. on 20 metres, calling CQ. Up popped a voice, "We don't want a.m. on this band". No call sign.

I am not trying to "knock" sideband, it is a great technical advancement and here to stay for sure. However, I am speaking for a bit of common courtesy and some small measure of respect for the rights and feelings of others. Since when has not there been room for all modes on this and other bands? There may be circumstances which necessitate the use of humble gear. Why then should the state of a man's bank balance deny him the right to operate on any band, provided he operates within regulations?

While most operators are gentlemen, there is an uncomfortably large number of jackalls hiding 'neath the guise of Amateur operators. Fair go, Aussie—let's try and keep 20 metres as a happy hunting ground, not let it sink to the level of a "pig's paradise".

—Extract from VK6DA's notes, this issue.

TRANS. AMPLIFIER DESIGN

(Continued from Page 6)

an interest in the design and use of transistor amplifiers in Amateur equipment.

Think over your next project, can you transistorise it? Don't just "lift" circuits—design them. It's not difficult, don't let the equations fool you. Many of them are as simple as Ohm's Law equations (many of them are Ohm's Law equations). You don't have to own a slide rule or possess a communications engineering diploma. Just sit down and carefully follow the procedures—check your results, and there's your design. Now go to it—and the best of British luck to you.

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R.S.G.B. Publications and A.R.R.L. Publications available.

Send remittance to Federal Executive, C/o. P.O. Box 36, East Melbourne, Vic., 3002.

VK-ZL-OCEANIA DX CONTEST, 1967

W.I.A. and N.Z.A.R.T., the National Amateur Radio Associations in Australia and New Zealand, invite world-wide participation in this year's VK-ZL-Oceania DX Contest.

Objects: For the "world" to contact VK, ZL and Oceania stations and vice versa. Note: VK and ZL stations, irrespective of their locations, do not contact each other for Contest purposes.

Dates: Phone: 24 hours from 1000 GMT on Saturday, 7th October, 1967, to 1000 GMT on Sunday, 8th October, 1967.

C.w.: 24 hours from 1000 GMT on Saturday, 14th October, 1967, to 1000 GMT on Sunday, 15th October, 1967.

RULES

1. There shall be three main sections to the Contest:—

- (a) Transmitting—phone.
- (b) Transmitting—c.w.
- (c) Receiving—phone and c.w. combined.

2. The Contest is open to all licensed Amateur transmitting stations in any part of the world. No prior entry need be made.

Mobile Marine or other non-land based stations are not permitted to enter.

3. All Amateur frequency bands may be used, but no cross-band operation is permitted.

4. Phone will be used during the first week-end and c.w. during the second week-end. Stations entering both sections must submit separate logs for each mode.

5. Only one contact per band is permitted with any one station for scoring purposes.

6. Only one licensed Amateur is permitted to operate any one station under the Owner's call sign. Should two or more operate any particular station, each will be considered a competitor and must submit a separate log under his own call sign. (This is not applicable to overseas competitors.)

7. Entrants must operate within the terms of their licences.

8. **Cyphers:** Before points can be claimed for contact, serial numbers must be exchanged and acknowledged. The serial number of five or six figures will be made up of the RS (telephony) or RST (telegraphy) report plus three figures which may begin with any number between 001 and 100 for the first contact and which will increase in value by one for each successive contact.

Example, if the number chosen for the first contact is 021, then the second must be 022 followed by 023, 024, etc. After reaching 999, start again from 001.

9. Scoring:

(a) For Oceania stations other than VK-ZL, 2 points for each contact on a specific band with VK-ZL stations; 1 point for each contact on a specific band with the rest of the world.

(b) For the rest of the world other than VK-ZL, 2 points for each contact on a specific band with VK-ZL stations; 1 point for each contact on a specific band with Oceania stations other than VK-ZL.

(c) For VK-ZL stations, 5 points for each contact on a specific band and, in addition, for each new country worked on that band, bonus points on the following scale will be added:—

1st contact	.....	50	points
2nd	"	.....	40 "
3rd	"	.....	30 "
4th	"	.....	20 "
5th	"	.....	10 "

For this purpose the A.R.R.L. Countries List will be used with the exception that each call area of W/K, JA and UA will count as "countries" for scoring purposes as indicated above.

10. Logs:

(i) Overseas Stations:

(a) Logs to show in this order—date, time in GMT, call sign of station contacted, band, serial number sent, serial number received, points. Underline each new VK/ZL call area contacted. A separate log for each band must be submitted.

(b) Summary Sheet to show the call sign, name and address (block letters), details of station, and, for each band, QSO points for that band, VK/ZL call areas worked on that band.

"All-band" score will be total QSO points multiplied by sum of VK/ZL call areas on all bands, while "single band" scores will be that band QSO points multiplied by VK/ZL call areas worked on that band.

(ii) VK/ZL stations:

(a) Logs must show in this order—date, time in GMT, call sign of station worked, band, serial number sent, serial number received, contact points, bonus points. Use a separate log for each band.

(b) Summary to show—name and address (in block letters), call sign, score for each band by adding contact and bonus points for that band, and "all-band" score by adding the band scores together; details of station and power, declaration that all rules and regulations have been observed.

11. The right is reserved to disqualify any entrant who, during the Contest has not strictly observed regulations or who has consistently departed from the accepted code of operating ethics.

12. The ruling of Federal Contest Manager W.I.A. will be final.

13. Awards:

VK/ZL stations: W.I.A. will award certificates as follows:

(1) To the top scorer on each band irrespective of single band or multi-band operation and irrespective of call area, i.e. a maximum of five awards may be made for VK and ZL.

(2) To the top scorer in each VK and ZL call district, i.e. a maximum of 14 awards, 10 VK and 4 ZL awards may be made.

To be eligible for awards in either of the above mentioned categories an operator must obtain at least 1000 points or there must be at least three competing entries in the category.

Overseas Stations: Certificates will be awarded to each country (call areas in W/K, JA and UA) on the following basis:

(1) Top scorer using "all bands" provided that at least three entries are received from the "country" or the contestant has scored 500 points or more.

(2) Other certificates may be awarded, to be determined by conditions and activity.

N.B.: There are separate awards for c.w. and phone.

14. **Entries:** All entries should be posted to Federal Contest Manager, W.I.A., Box N1002, G.P.O., Perth, Western Australia. VK/ZL entries to be received by 16th December, 1967. Overseas entries to be received by 20th January, 1968.

RECEIVING SECTION

1. The rules are the same as for the transmitting section, but it is open to all members of any S.w.l. Society in the world. No transmitting station is permitted to enter this section.

2. The Contest times and logging of stations on each band per week-end are as for that transmitting section except that the same station may be logged twice on any one band—once on phone and once on c.w.

3. To count for points, logs will take the same form as for transmitting, as follows: date, time in GMT, call of station heard, serial number sent by the station heard, band, points claimed. Scoring is on the same basis as for transmitting section and the summary should be similarly set out with the addition of the name of the S.w.l. Society in which membership is held.

4. Overseas stations may log only VK/ZL stations but VK receiving stations may log overseas stations and ZL stations, while ZL receiving stations may log overseas stations and VK stations.

5. Certificates will be awarded to the top scorer in each overseas scoring area and in each VK/ZL call area provided that at least three entries are received from that area or that the contestant has scored 500 points or more.

☆

CONTEST CALENDAR

12th/13th August: Remembrance Day Contest.
12th/13th August: 13th W.A.E. DX Contest (c.w. section).
9th/10th September: 13th W.A.E. DX Contest (phone section).
7th/8th October: VK-ZL-Oceania DX Contest (phone section).
14th/15th October: VK-ZL-Oceania DX Contest (c.w. section).
14th/15th October: R.S.G.B. 21/28 Mc. Telephony Contest.
28th/29th October: R.S.G.B. 7 Mc. DX Contest (phone section).
11th/12th November: R.S.G.B. 7 Mc. DX Contest (c.w. section).

TUNABLE I.F. FOR CONVERTERS

R. A. ISAAC,* VK2ZA1

HERE is an inexpensive eight-valve receiver designed primarily for use with converters. It should prove interesting to Youth Radio Clubs and beginners. A feature of the receiver is bandspreading the first megacycle over half the tuning range (an advantage with any Ham band).

TUNING

The range covered is 6 to 10 Mc. Bandspreading (6 to 7 Mc.) is achieved by inserting fixed condensers in series with each gang and the coils. In my case 100 pF. S.M. with coil data shown.

The tuning condenser used is a miniature by Mullard, found in battery portables with the shut eye over the dial (on/off switch). Any miniature unit with the same capacitance should be suitable.

VALVES

The valve line-up is as follows: R.f. amp., mixer and osc., 6AK5; i.f. amp., 6BA6; det., half 12AT7; S meter, half 12AT7; noise limiter, 6AL5; audio, 12AU7 and 6M5.

and the lead as short as possible. It might be found necessary to place a shield on the underside of chassis in front of the back-to-back i.f. transformers. This is to stop r.f. pick-up from the oscillator.

I.F. AMPLIFIER

Back-to-back i.f.'s from the mixer on 455 kc. can be lightly coupled, say 2 pF., to give an increase in selectivity. I used a 10 pF. as there was a slight loss of gain.

An idea borrowed from "Matters Mobile," "A.R." 1962, is an oscillating i.f. valve to act as b.f.o. At 7 Mc. s.s.b. signals can be resolved quite easily with this arrangement.

Just before oscillation takes place with this control, sensitivity and selectivity increase without altering the passband of the amplifier.

NOISE LIMITER

Here again the circuitry was taken from "M/M" and can be made to operate well without too much trouble. All audio leads should be in shielded cable here!

and save on XSLs, try a 7.666. This should bring the band edge on both bands close to 6 Mc. This had one disadvantage. A strong oscillation appeared just inside the band on 6 mx. So I moved up to 7.12 Mc. for 52 Mc. with a 7.480 Mc. crystal. The oscillation now appeared about 50 or so kilocycles below 52 Mc. Another one came up about 53.3 Mc., but it does not bother me. Others may have more success.

CIRCUIT DIAGRAM FOR THE TUNABLE I.F. IS ON OPPOSITE PAGE

Two metres with a XSL converter is hopeless at this QTH. Channel 5A cross modulates everything, S8-9 right across the 4 Mc. So I have built up a tunable converter with good results so far. I forgot to mention that Channel 5A is a line-of-site here, about 12 miles as the crow flies, so I cop the peak 200 kW.

Getting back to the receiver, the power supply is conventional, using OA210 diode (space saver). Talking of space, the receiver measures 12" long, 7" deep and 5" high. I found enough room to fit a 3" speaker on the inside of the top cover. The metal work follows the design of the popular two-way gear, e.g. a box with a shelf say 2" up from one edge, one side being the front panel, a top and bottom lid completes the unit. This saves metal work and sheet metal!

COILS

The coil formers come from disposal gear. A battery transceiver using big old fashioned 2v. filament valves (don't ask me the type number of the gear). See Fig. 2 for dimensions.

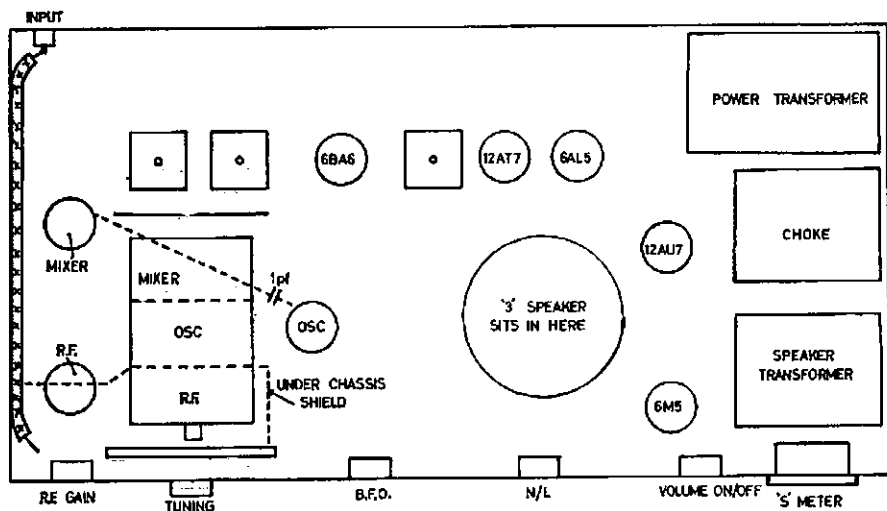


FIG. 1.

The r.f. section was taken from an article in a back issue of "A.R." describing the conversion of a SCR522 to f.m.

If care is taken with the shield across the 6AK5 r.f. socket and the aerial connection run in coax., no troubles should arise here. A grid condenser of 200 pF. was inserted to increase the Q of the coil as this was found too broad for my liking. A.v.c. was not applied to the r.f. or mixer although this could be an advantage!

If one follows the lay-out in the r.f. section, it should be able to be made neat and compact (see Fig. 1).

The mixer is basically the same as r.f. except that the 1 pF. coupling condenser should be at the oscillator socket

AUDIO

Again this comes from "M/M" with one exception. I did not have a 6BM8 so I went a 6M5. This gives me ample output.

This leads us to the next question—

PERFORMANCE

By courtesy of Mr. Noel Boyd, of Keire Street, Wollongong, I was able to obtain these figures. Sensitivity—

0.63 μ V. for 50 mW. at 10 Mc.

0.31 μ V. for 50 mW. at 7 Mc.

0.45 μ V. for 50 mW. at 6.05 Mc.

Signal to noise ratio: 17 db at 7 Mc.

A word here about the converters. I built a "R.T. & H." 6 mx XSL and tried two different frequencies. If you want to use a 2 mx converter as well

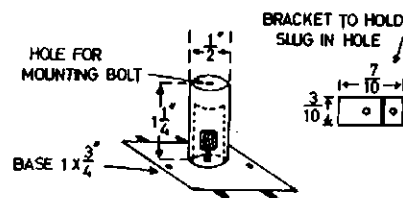


FIG. 2.

The r.f. and mixer coil data: 20 turns 26 gauge, c/w. Coupling coil, 5 turns fine interwound, same direction.

Oscillator coil, 18 turns 26 gauge c/w. Five turns fine, 1/16 inch spacing.

There is a disadvantage with this former, mounting them upside down as I did. The top plate hides the coils. So fix these, frequency wise, before applying coil cement, etc.

Details in Fig. 2 should enable those who want to duplicate this former. Everything else should be straight forward in constructing this receiver.

One last thought. I would like to hear from some who attempt this project. Let's know what results you obtain.

* 622 North Cliffe Drive, Berkeley, N.S.W.

HANDICAPPED INC.

Club Should Be Formed in Australia

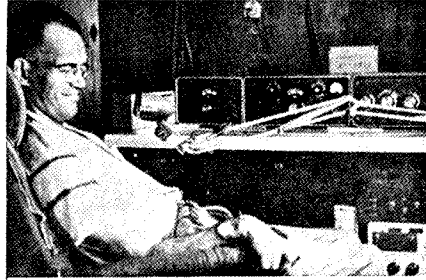
Take a good look at this photograph of Jim Watts, VE4VJ, of 137 Cordova Street, Winnipeg, Canada, who is a cerebral palsy sufferer (spastic). There, but for the benevolence of Providence, goes you.

Robin L. Harwood, S.w.I. WIA-L7022, wrote in May "A.R." that a national club should be created for the "Shut-ins" (presumably correctly constituted). Such a grand move would enhance Amateur Radio's public relations immeasurably. Those at a later date who read Amateur Radio's history in VK will see at this point of time that we are doing almost nothing in an organized manner for the countless thousands of "Shut-ins" over Australia. Will anyone dispute that this is to our shame. (The U.S.A. has several groups of clubs. One of the best known being the Professional Loaders' Club.)

A nationally founded organisation (call it Handicapped Inc., if you like) would need a considerable number of self sacrificial workers, whose hearts are primarily filled with charity and compassion (uncommon ingredients in today's egocentric world). Are we not big enough to meet this challenge and take Amateur Radio into a new field—that of the humanities? Times are

changing fast and Amateur Radio needs a new dimension.

Looked at from the handicapped person's point of view, can you imagine what enjoyment S.w.'ing or Amateur Radio is to the "Shut-ins"? You can't, because you are not in his shoes. The



indulgences of your daily life are filled with emotions and pleasures that he in a large part is forever denied.

Australia has a fast growing number of para and quadraplegics, besides the sufferers of multiple sclerosis, cerebral palsy and the like, not to mention the pensioners. All these, who are interested, would eagerly accept help in S.w.'ing and tuition for a ticket. It is possible that the P.M.G. might extend special privileges in some cases. The

machinery to set all this in motion is possible. As it is now, the average "Shut-in" must depend on the fraternalness of some nearby Ham for his Amateur Radio interest.

If on reading this, you are inclined to cynicism and feel that the ideals set out are not practicable, either inside the W.I.A. framework or out of it, let me point out that it is this lack of outlook and imagination that is the prime cause of apathy in Amateur Radio today.

—Al Shawsmith, VK4SS.

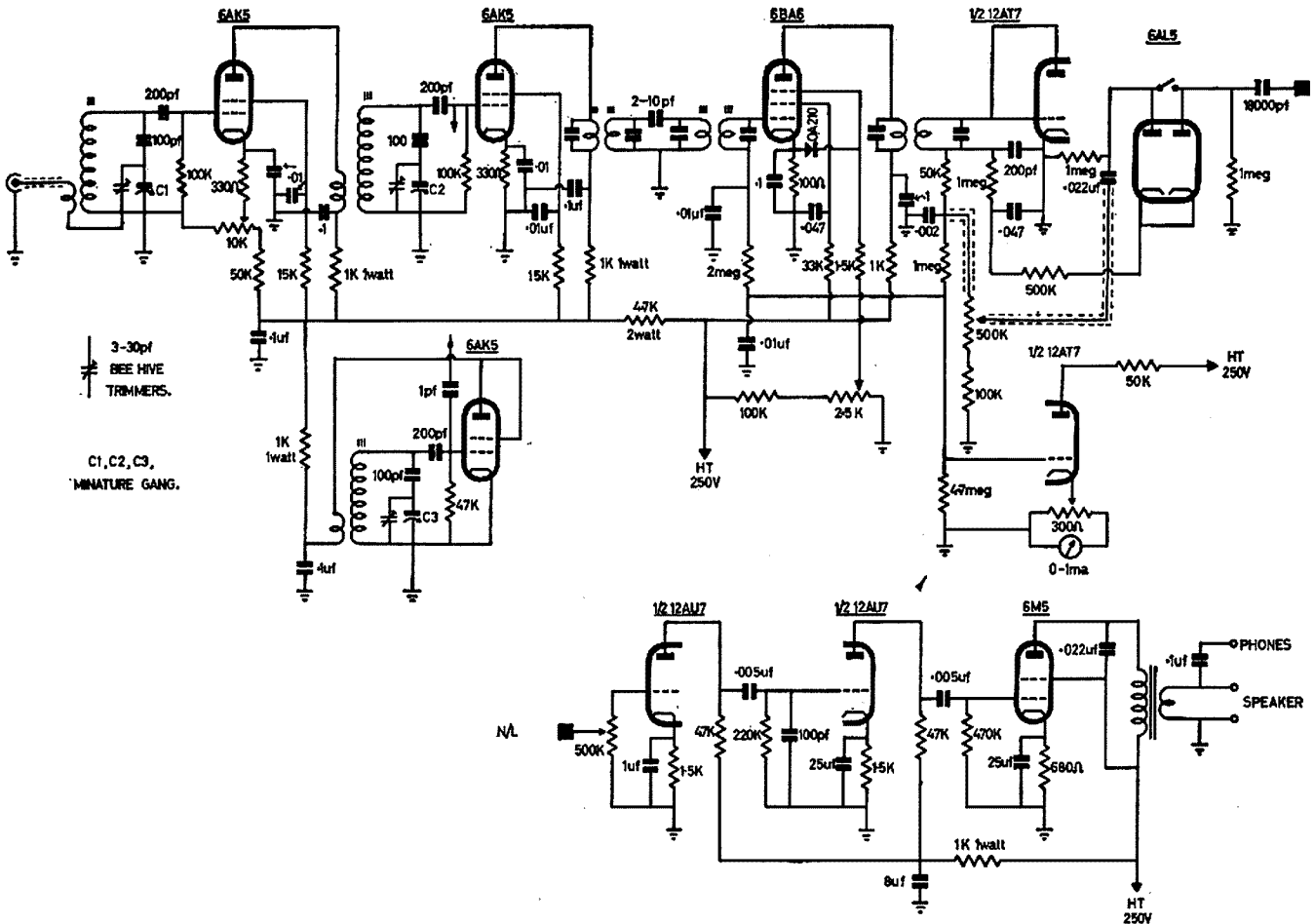
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CIRCUIT DIAGRAM OF THE TUNABLE I.F.



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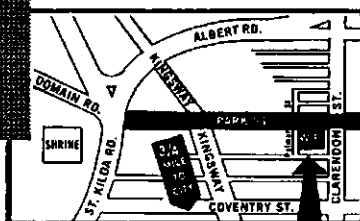
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WHAT IS AMATEUR RADIO?

JOHN BATTRICK,* VK3OR, FEDERAL SECRETARY W.I.A.

Of course we all know the answer to this! But do they all? "They" being the countries which did not appear to warrant placing in the "for us" column (if you did last month's homework).

What is the benefit to them in allowing an allocation of the frequency spectrum to a hobby? Place yourself in the position of an administrator of an "emerging nation"—you find your nation has emerged into a world where the frequency spectrum is already carved up and allocated. There is already a spectrum management organisation (I.T.U.) in existence, which may be able to allot you some frequencies for your communication services. You would press your claims for such allocations, but can you afford the luxury of supporting "ham radio" in other countries (and your own) at the expense of your country's other radio services?

The answer to that question, and the attitude in those countries, is one of the vital things affecting Amateur Radio both here and all over. It would be fair to state that Australia is "Amateur-oriented"—we have over 5,000 licensed Amateurs, activity is widespread and sophisticated, in fact if you notice the cover of our "Handbook," it is for operators in the AMATEUR SERVICE.

This, I believe, is the image that Amateur Radio must project within this country and more importantly, in the developing countries; the image of a SERVICE, not just a "hobby"!

Perhaps then we can take our place alongside other radio services in the spectrum allocations. With all the righteous indignation and all the protestation of our "rights" we can muster we cannot expect to retain valuable spectrum space unless it can be demonstrated that a country can benefit from having an Amateur Service. This must be demonstrated especially to the newer nations who vote at I.T.U.!

It is with this philosophy as background I would like to refer to a 110 page research report, published by the Stanford Research Institute in U.S.A. entitled:—

"Amateur Radio: An International Resource for Technological, Economic and Sociological Development."

This was commissioned by A.R.R.L. and the objectives of the research were:

1. To develop information relating to the technological, economic, and sociological contributions of the Amateur Radio Service to the national welfare.
2. To examine and assess the position of the Amateur Radio Service in relation to other vital radio services.

3. To present the information in a form suitable for dissemination primarily to:

- (a) Telecommunications officials of other nations and their delegations to international radio conferences.
- (b) Telecommunications officials of the United States and its delegations to international radio conferences.
- (c) Officials of the A.R.R.L.

(This research did not include any attempt to rank the relative values of the services contending for spectrum space. Rather, it attempted to examine the performance of the Amateur Radio Service in the United States and elsewhere in the light of its stated purposes.)

The Institute project team examined the Amateur Radio Service in terms of its ability to contribute to a nation's welfare in three broad categories:

1. **Technological.**—As an actual and potential resource for the development and maintenance of a nation's scientific, engineering and technically trained manpower.
2. **Economic.**—Its impact, both direct and indirect, on a nation's economy.
3. **Sociological.**—Its impact on a nation's sociological structure, including its value as a cogent and credible projector of a nation's image abroad and as a contributor to international goodwill.

The report contains over 100 pages of detailed findings and includes tables, charts, diagrams, etc. (A copy has been sent to each Divisional W.I.A. Library by Federal Executive.) In June "QST" the summary which appears, on pages 60-61, is a reproduction of a diagram indicating the history of frequency allocations to the Amateur Radio Service 1912-1965. This indicates clearly that as a result of increased demands by other users for space, some of the original Amateur assignments have been reduced, and Amateurs have been required increasingly to share parts or all of some of the bands with other services in all the regions of the world. This is especially evident in the 160, 80 and 40 metre bands.

Today, Amateurs have access to a total of 3,500 Kc. in six bands between 1,800 Kc. and 29.7 Mc. However, only 2,600 Kc. of the 3,500 Kc. is exclusive.

While a relatively large amount of spectrum space in the region above 120 Mc. was allocated exclusively to the Amateur Service at the 1947 I.T.U. Conference, virtually all of the exclusivity was withdrawn 12 years later at the 1959 I.T.U. Conference, and a new trend may have been established. The Amateur Service may have permanently lost an opportunity to retain exclusive allocations in v.h.f., u.h.f. and microwave bands since radiolocation and

other services established themselves more rapidly and were therefore in a strong position to achieve primary allocation.

One thing is apparent: further reductions or even relatively modest changes in spectrum allocations at future radio conferences are likely to result in the reduction or loss of many of the vital functions that are now performed by Radio Amateurs and could change the nature of the Amateur Service permanently!

Both broad-scale innovation and investment could be discouraged, because the effort to overcome new constraints caused by reduction of spectrum space, has become increasingly costly. Thus it appears that a long term net loss to all nations might result, rather than any hoped-for improvement in benefits received for spectrum space invested in other services.

The S.R.I. Report concludes in summary: "The information developed in this study leads to the conclusion that the Amateur Radio Service is a national and international resource whose curtailment would constitute a serious loss to the technological, economic, and sociological welfare of all nations. Its status as a non-profit, voluntary public service organisation suits it uniquely to its primary purpose, to serve the public interests in the countries in which it operates. But of equal importance is the effect of the service as a stimulus to economic growth. In addition to the economic stimulus resulting from the manufacture and sales of Amateur equipment, the service has indirectly influenced economic development, as equipment and techniques developed for Amateurs have been adapted for commercial and governmental uses. Radio Amateurs have also played a significant role in the development of the state of the radio art, and, even with the advanced stage of current technology, they are continuing to make major contributions both to basic radio theory and to practical applications.

"Importantly, the costs of the services rendered by Radio Amateurs are borne by the Amateurs themselves, without any commitment of public funds. This fact, in combination with the professional quality of the technical expertise of Radio Amateurs and the impetus to all phases of national development that results from their activities, makes the Amateur Service an especially desirable adjunct to the communications plants of new and developing countries."

The following is a listing of specific contributions made by the Amateur Radio Service. Although the contributions are closely interrelated, they are grouped according to the category of their primary influence.

TECHNOLOGICAL

• Constitutes a source of new techniques and new technology in commun-

ications and electronics and stimulates the development of these in other fields.

- Provides a broad base for experimental test of theoretical predictions and for participation in large scale investigation in a variety of scientific areas.

- Provides a medium for self-training in, and improvement of, communications and electronics skills.

- Provides a medium for rapid and widespread exchange of communications, electronics, and other special knowledge and techniques.

ECONOMIC

- Advances the economy through the manufacture and sales of Amateur Radio equipment.

- Advances the economy indirectly through extension of Amateur Radio and related equipment into the professional, consumer, and government markets.

- Provides a source of trained manpower and impetus for an expanding communications and electronics manufacturing capacity.

- Appears to play a significant role in raising the general level of technological knowledge.

SOCIOLOGICAL

The contributions made by the Amateur Service in this category are of two types: communications services and indirect contributions to the general welfare. Some of the contributions in this category are unique to the Amateur Service; many have come to be regarded as vital.

Vital Communications Services

- Provides emergency communications in support of disaster relief organisations (e.g. fire, police, other public service agencies).

- Disseminates news when other communications systems have temporarily failed.

- Broadcasts warning of potential natural or other disaster.

- Provides special communications support for medical crises and other medical functions.

Non-Vital Communications Services

- Provides short, medium, and long distance point-to-point communications of a specialised nature, such as for scientific expeditions and for servicemen and other emissaries of a country abroad.

- Projects a nation's image abroad more credibly than do international broadcasts.

- Assists in the development of international understanding and goodwill through person-to-person contacts.

- Provides communications support for special community and other functions (e.g. Boy Scout Jamborees, etc.).

Indirect Contributions to the General Welfare

- Provides incentive for scientific, engineering, and technical careers.

- Provides a reservoir of trained communications and electronics specialists.

- Provides impetus for a broader and more technically sophisticated education system.

- Where commercial telecommunications are minimal, helps to bring people of isolated regions of a country together under a common national bond.

- By self-policing, lightens the administrative burden of a nation's spectrum managers.

The Amateur Service is exceptionally conservative of spectrum space when the ratio of services rendered per kilocycle of spectrum allocations is considered. Any other radio service, performing the same functions to the same degree, would require not only a larger commitment of public funds, but also significantly more spectrum space than is now allocated to Radio Amateurs.

SIGNIFICANT CONTRIBUTIONS

While the above image is one which, generally speaking, has been projected successfully in technically advanced countries (such as U.S.A., U.K., Australia, etc.)—and it must continue to be so—how is it to be so projected in newer developing, I.T.U. voting countries?

Firstly by establishing an Amateur Service.

The Amateur Radio Service can make significant contributions to new and developing countries in every sector that has been discussed in the S.R.I. Report. Moreover, the contribution in some sectors can be relatively greater for these countries than for countries that have progressed further technologically. For instance, the relatively modest diffusion of the telecommunications plant in developing countries can benefit greatly from Radio Amateur message-handling operations. The more extensive the Amateur system, the more benefits will accrue. To encourage the maximum growth of the Amateur Service, a country may undertake one or all of at least six actions:

1. Encourage and officially sponsor the organisation of local Amateur Radio clubs.
2. Encourage equipment purchases for licensed Amateurs by reducing or eliminating tariffs on certain components and equipment.
3. Assist in the dissemination of technical literature.
4. Design licensing requirements so that a variety of operating preferences will be accommodated.
5. Increase the number and scope of technical courses in the curricula of the educational systems.
6. Support allocation of adequate frequency bands for Radio Amateurs in international radio conferences.

The last point is the crucial one.

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VHF

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

Well there's nothing new to report this month except that a couple of new beacons are in operation. The first is a two metre beacon and is located at Devonport, Tasmania. This beacon has a power input of 15 watts to a QEQ3/12 feeding stacked cloverleaves 10 feet high, 100 feet above sea level. The transmitter is keyed c.w. and 400 c.p.s. tone and is using the call sign VK7VF. Its location is at Don Heads at the transmitting site of 7AD Devonport. The beacon is operating on a frequency of 144.9 Mc.

The second is Launceston's t.v. channel 1 repeater, the sound of which is on 62.75 Mc.

In the near future I hope to give an accurate and up to date list of beacons and net frequencies in use in Australia and New Zealand. Correspondents could assist by letting me have the appropriate information as early as possible.

It would be most helpful if the following details are given: mode, polarisation, and frequency to the third decimal place. Cheers and 73, Cyril VK3ZCK.

NEW SOUTH WALES

Owing to a sudden recall of Peter Ford to New Zealand the June meeting of the V.h.f. and T.v. Group was left without a lecturer. The evening was not lost, however, as Phil VK4ZEE expounded the position of v.h.f. activity in Townsville, Qld. Some hearts must have been broken as Phil went on to such subjects as how to handle a dog-pile of JA stations on 6 metres.

During the business portion of the meeting a motion was carried to the effect that originating stations on the v.h.f. broadcast should use a.m. unless a good quality relay using this mode was available. Your scribe must plead guilty to the charge of radiating 75w. of s.s.b. as well as 25w. of f.m. during recent v.h.f. broadcasts. In defence, I must admit that even Amateurs using Command receivers had no difficulty in resolving the thing. Your cue, PanSy, how much was the bride?

The big news of activity in N.S.W. is the approaching V.h.f. Cabaret to be held on Friday, 15th September. This is the social event of the year and the four-course supper and professional entertainment should satisfy both gourmet and connoisseur. Accommodation is limited to 200 persons and it is expected that all seats will be sold by the time this is printed. If you have not already acquired your tickets contact Norm VK2ZXC as some unfortunate person may have been forced to cancel his bookings. The proceeds from this event will help pay for improvements to the v.h.f. facilities at Dural.

One of the new items under way for Dural is a 144 Mc. converter with low cross-modulation characteristics. This should go a long way towards removing objectionable spotting from t.v. channel 5A. Also under construction for Dural is a 432 Mc. varactor multiplier.

Our new section, 432 Mc. Moon-bounce team, is sponsoring a 432 Mc. converter kit and interested parties should contact Gordon ZZXD.

Interstate and country operators please note that the N.S.W. V.h.f. New Year Field Day will take place as usual so start making plans to join in the fun and reserve your favourite mountain top.

At the time these notes are being written it is understood that the August meeting will have the services of George VK2ZDR as lecturer. His topic will be Practical Equipment Construction with the emphasis on metal-working. I've booked a front row seat for this lecture. Remember visitors are always welcome on the first Friday of the month at Wireless Centre.

Other activities of the Group include monthly fox hunts on 6 and 2 mx and new "hounds" are eagerly sought. At the end of each 12 months prizes are awarded to the contestants amassing the most points in these events.

A final thought for the month. Have you refreshed your memory of Amateur Regulations lately? If not, why not do so and avoid the risk of an official QSL card. Remember, on the air as well as the road, "courtesy is catching". 73, Keith VK2ZAU.

HUNTER BRANCH.—6 mx: This band has been very quiet, in fact there has not been much activity at all, even the Saturday and Sunday hook-ups have had poor attendance. Paul Lindsay, of the West Lakes Radio Club, heard some VKs on the t.v. set at his home QTH (what channel?—Sub. Ed.) Maybe his luck is better than most of us.

2 mx: At times activity has been quite good with Sydney being heard. VK2ZCT, VK2YJ, and VK2ZSG seem to be the only ones who have been able to work the big smoke. Sydney appears to be a dead loss from this QTH. Bill VK2XT has a fair signal from his Lakeside QTH at Carey Bay. Bill's portable location. A newcomer to the district is Bob VK-2ZTR, using a 522 from Warners Bay. 73, Mac VK2ZMO.

VICTORIA

Both six and two metres have been fairly active with a little DX activity. On two the DX signals have been coming from Eastern VK5, Northern VK3, Southern VK2 and Northern VK7. As far as six metres is concerned, they have been very sporadic and have been to Queensland. One report has been received that a Geelong station has managed to work a JA on this band. The date was the 21st June and the time about 5.30 p.m. E.A.S.T.

There appears to be an increase in popularity for s.s.b. on v.h.f. here in Melbourne, with 10 stations using this mode of transmission.

The V.h.f. Group's converter project is now well under way with completed prototypes for both 6 and 432 Mc. showing more than adequate gain and quite reasonable noise figures and low cross-modulation characteristics. These converters are using semiconductors including v.h.f. FETs. These converters should cost no more than the popular valve types at present in use and well within the reach of all v.h.f. Amateurs.

The V.h.f. Group Field Days for the coming summer season are: Oct. 15, Nov. 19, Dec. 17 (not finalised), Dec. 31 and Jan. 1, Jan. 20, Feb. N.F.D., and Mar. 17.

Until next month, 73 and good DX, Cyril VK3ZCK.

GIPPSLAND: 6 metres: The following DX signals have been heard:

5/6/67—1415-1445	hrs. N.Z. Ch. 1 t.v.
19/6/67—1400-1705	" " " "
20/6/67—1330-1445	" " " "
21/6/67—1240-1300	" " " "
1545-1615	" VK Ch. 0 t.v. Brisbane.
1600-1635	" VK Ch. 1 A.B.C. test pattern, programme.
1615-1630	" another Ch. 1 beating with above.
1943-1948	" Ch. 0 Brisbane with several strong peaks.
25/6/67—1015-1030	" Ch. 0 Brisbane rapid flutter type QSB.

2 mx: Nil DX. Some local a.m. activity and a lot of Ch. A and B f.m.

At our convention held this month at Maffra we decided to hold the Eastern Zone hook-up on v.h.f. at 2000 hrs. E.A.S.T. every Sunday evening on Channel A. The Zone is using Ch. A as the listening frequency and Ch. B as the over flow channel as it does not suffer Ch. 4 QRM. 73, George VK3ZCG.

TASMANIA

Not a great amount of news this month but activity is on the increase, so we can expect more news in the coming month. As mentioned a couple of months ago, two television translator services would be starting and have, in fact, done so. These translators have been installed to cover the eastern section of Launceston, which is a bad signal area for the transmitters at Mt. Barrow. Channel 9 is translated to Channel 11, and Channel 3 is translated to Channel 1.

Two Metres: The activity on this band at the moment is usual for this time of the year. Up until the time of these notes being compiled, no mid-winter openings have been reported to me as yet. Mike VK7ZMC has recently installed a new wind-up tower of approx. 80 feet to support a 10 el. yagi on 2 mx and a ground plane on 6 mx. Mike's two metre frequencies are 144.059 and 144.33, running 75w. input. There are a number of f.m. mobiles becoming available in the north-west and

northern zones in the near future, so a two metre f.m. net will soon be starting up.

432 Mc.: The only stations on this band to my knowledge are Reg VK7RL, Len VK7BQ and Colin VK7LZ. Collin VK7ZCP will be building gear for this band in the near future.

1296 Mc.: There are two Launceston Amateurs who are in the process of building gear for this band. They are Collin VK7ZCF and Colin VK7ZLX. Both these stations hope to have equipment going on this band in about 2 or 3 months, so you 1296 Mc. enthusiasts keep an ear open for these two chaps in the near future. 73, Brian VK3ZBR/F/VK7.

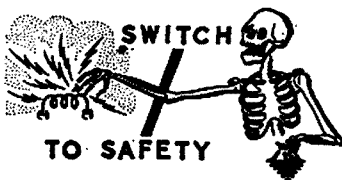
NEW ZEALAND

The New Zealand Post Office has announced that approval has been given for the establishment of v.h.f. beacon stations in the 144, 432 and 1296 Mc. bands. The Auckland V.h.f. Group intends to apply immediately for the 144 Mc. licence as the transmitter is operational but needs minor modifications. More details will be given when they become available. Eric ZLIADÉ has just received his VFCC for 432 Mc. (What about that you Australians!) Reprinted from the Auckland V.h.f. Group (Inc.) Newsletter.

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NEW CALL SIGNS

APRIL 1987

- VK1ZDZ/T—J. F. Ingham, Station: 18 Blair St., Watson, Canberra; Postal: C/o. T.V. Station CTC7, Black Mountain.
- VK2KJ/T—K. L. Finney, 1 Hill St., Baulkham Hills.
- VK2RZ—V. B. Aldrich, 8 Westbourne Rd., Lindfield.
- VK2ABI—T. W. Barnes, 74 Cabbage Tree Lane, Fairymeadow.
- VK2AIR—A. J. Smith, 111 Northcott Rd., Seven Hills.
- VK2BCW—C. H. Wall, "Lyondale," Coonamble Rd., Gilgandra.
- VK2BHG—M. A. Harrison, 14 Market St., Rockdale.
- VK2BKJ—K. A. Jays, 27 Grover Ave., Cromer.
- VK2BMR—R. Miller, 70 Sydney St., Concord.
- VK2BTK—S. King, 171 Tamar St., Ballina.
- VK2BWC—A. W. H. Cox, 15 Edmund St., Lindfield.
- VK2ZLQ—L. E. Peasley, 127 Byangum Rd., Murwillumbah.
- VK2ZMJ—L. F. G. Miller, 47 Russel St., East Gosford.
- VK2ZQD—R. L. Davis, 30 Gormly Ave., Wagga Wagga.
- VK2ZWI—W. E. Dunn, 2/43 Station St., West Ryde.
- VK3LJ—J. P. Baker, 16 Glendowan Rd., Mt. Waverley.
- VK3AOC—J. R. Torrington, 4 Thistle St., Pascoe Vale South.
- VK3ZED—P. R. Harden, 33 McComas Gr., Burwood.
- VK3ZSY—R. L. Baker, 14 Davies St., Altona.
- VK3ZVG/T—G. A. Cohen, 10 Lemana Cres., Mt. Waverley.
- VK3ZVX—G. K. Swan, 5 Thurleigh Ave., Croydon.
- VK3ZWA—G. S. Byass, Flat 14, 274 Domain Rd., South Yarra.
- VK4ZDN—D. J. Abel, King's College, St. Lucia.
- VK4ZJT—J. N. Thornton, 28 Edward St., Kingaroy.
- VK5QD—T. N. Diviney, 6 Veronica Cres., Lockleys.
- VK5ZG—L. A. France, Station: 22 Braeside Ave., Holden Hill; Postal: 209 Gover St., North Adelaide.
- VK5ZEP/T—R. J. Foxwell, 129 Henley Beach Rd., Mile End.
- VK5ZGJ—G. L. Johnston, 8 Pirie St., Port Pirie.
- VK5ZKP—K. J. Pearce, 28 Elizabeth St., Tea Tree Gully.
- VK5ZLW—L. E. Wood, Flat 9, 20 Cassie St., Collinswood.
- VK5ZNW—G. F. Wheadon, 22 Selth St., Albert Park.
- VK6IZ—K. Khuen-Kryk, 7 Regent Ave., Mt. Pleasant.
- VK6OV—J. Gregory, 58 Upton St., St. James, Bentley.
- VK6UT—T. G. Miller, Jr., U.S. Navcomsta, North West Cape.
- VK6ZBK—R. J. Howard, 53 Birdwood Ave., Como.
- VK6ZCO—L. E. Cox, 16 Oxford St., South Perth.
- VK6ZCW—M. P. Ryan, 8 Farris Pl., North Innaloo.
- VK6ZDA—J. T. Hart, Flat 4, Squire Flats, Morris Rd., North Innaloo.
- VK6ZDF—R. T. Fisher, 48 Purslove St., Glendalough.
- VK6ZEF—R. F. Frost, Port Hotel, Carnarvon.
- VK7ZA—N. L. Dittmann (Mrs.), 16 Kerry Crt., Summerdale, Launceston.
- VK7ZDP—D. M. Potter, 5 Darling Pde., Mt. Stuart.
- VK7ZGR—F. R. Groom, 44 Ashwater Cres., Penguin.
- VK7ZPW—P. G. Waterhouse, Tarelton, via Latrobe.

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Amateur (Sound) Licences A	12,055
Amateur (Sound) Licences B	517
Amateur (Sound Mobile) Licences A	2,194
Amateur (Sound Mobile) Licences B	9
Amateur (Television) Licences	176

There were also 10,463 model control licences in force.

(Extract from "R.S.G.B. Bulletin," March '87)

- Galaxy V. Mark II. SSB Transceivers \$550
- Swan SW350 SSB Transceivers \$550
- Swan SW500 de luxe SSB Transceivers \$660
- Heath HW32A 20 Metre SSB Transceiver Kits \$180
- Gonset Sidewinder 2 Metre SSB/AM/CW Transceivers \$400
- 240 Volt AC Power Supply/ Speaker Units, heavy duty design, matching to and for use and purchase with Galaxy and Swan Transceivers \$70
- Heath HA14 Linear Amplifiers, assembled, tested, with 1800V, etc., power supply unit \$275
- Hy-Gain fully imported Beam Antennae:

- TH3JR junior tri-band, 3 el. beam \$100
- TH6DX senior tri-band, 6 el. beam \$210
- DB24A senior 20-40 M. 4 el. beam \$225
- 402BA 40 Metre 2 el. beam \$150

Newtronics 4BTV 10 to 80 M. self-supporting base-station vertical \$70

Webster Bandspanner, all-band, complete \$50

CDR Ham-M Antenna Rotators, heavy-duty \$180

Coax-Baluns 500W rating, 72 ohms, for dipol. & G5RV \$10

Crystal Filters, plug-in type, 5165-5325 Kc., with matched carrier crystals \$15

Set of 10 FT243A Crystals, 5385 Kc. with toroid coil, etching salt and filter construction instructions \$6

Eimac 3-400Z zero bias linear amplifier tubes \$35

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YOUTH RADIO SCHEME

WANTED: Leaders with knowledge of Radio to lead small Y.R.S. correspondence course groups. Write Supervisor, R. Davis, VK1RD, 14 Hovea St., O'Connor, Canberra, A.C.T.

The Y.R.S. has grown steadily with activities mainly in N.S.W., Victoria and South Australia. In order to collate information the first Y.R.S. Convention was held in Sydney over the week-end of June 3. This proved to be a very fruitful event and many ideas were exchanged. One important change was made in the correspondence section which has been made a separate entity for administrative purposes and the following objectives were set down:

- To develop in young people an interest in radio and electronics as a vocation or as a hobby throughout life.
- To provide school students with a hobby activity which will reinforce their school activities in science and mathematics.
- To assist present and future Group Leaders of Correspondence Groups to instruct student members of such groups by providing ready-made programmes of activity.
- To co-ordinate the activities of all Group Leaders and to promote co-operation and interchange of ideas among Group Leaders.
- To give encouragement and recognition to members who attain certain specified standards of skill and knowledge in the field of radio by award of certificates.
- To provide all State Divisions of the Youth Radio Scheme with the facilities of an efficient and acceptable correspondence programme of study for the proposed members of the Youth Radio Scheme who are unable for some reason or other to join in the said State's Youth Radio Scheme.

Foundation office-bearers of the correspondence section are as follows: Supervisor and Secretary, Roger Davis, VK1RD; Treasurer, Miss Alison Stewart; Publicity Officer, David Jeanes, VK2BSJ; Committee: Howard Rider, VK3ZJY, the Victorian Y.R.C.S. Supervisor, and Michael Plummer, Vic. Y.R.C.S. Sec.-Treas. Enquiries re membership should go to Roger Davis, VK1RD 14 Hovea St., O'Connor, Canberra City.

It has been found that the Y.R.S. is becoming well known in the electronics trade and a boy who has Y.R.S. certificates as well as his usual school qualifications has a decided advantage when applying for a job. Also the Y.R.S. is a big help in doing the actual school work.

There are many boys who have a keen interest in radio but are not able to join a club for various reasons. This is where the correspondence course comes to the fore. Printed lessons are available for the Elementary and Junior Certificates and very shortly will also cover the Intermediate. Also, kit sets are available for some of the construction projects. All that is needed now is more leaders to look after these boys.

Actually, with the services available to a correspondence group leader he can do a tremendous amount of good for his hobby with only a little outlay of time each week. Any expenses incurred are reimbursed by the treasurer so you can see things are arranged for a leader to enable him to do a maximum of good work with a minimum of labor and accomplished at your own convenience. Therefore, drop a line to Roger asking for more details. He will welcome you with open arms and you will be richly rewarded when you see how keen the boys are.

The Convention was well attended and included Keith 2AKX, our Federal Co-ordinator, several leaders from Newcastle, Gosford and Sydney, and also Howard Rider and Mike Plummer—all the way from Victoria. This is to be an annual event with next year's meeting to be held in Victoria. On Sunday, June 4, W.I.A. headquarters at Crows Nest were taken over for the day and many students and leaders were able to meet and talk with the various officers.

A new monthly journal, called Coryra, for the correspondence section is to be issued in the future.

CLUB NEWS

VK1: Roger has a couple of volunteer correspondence course leaders from among his former students. This is a very good effort and shows appreciation on the part of the young men.

VK2: Kev. VK2ZKW, President of Maitland Y.M.C.A. Radio Club, advises that they now have 29 members and even publish their own newsletter. This is very good going as the club has only been operating since February this year. Much work has been done on the club rooms and the workshop has now been

completed so members can get practical experience for their various certificates. The club intends to build its own radio gear which should create a lot of interest for some time. I think we can expect a nice sprinkling of new Hams from here in the future.

VK3: There are two new member clubs—Moorabbin Technical School with Mr. L. Taplin as Club Leader and Kingswood College Y.R.C. with Roland Roper as Club Leader. We will look for more news from this quarter later on.

Gowrie Park State School Y.R.C. has members studying for the Elementary, Junior, Intermediate and Senior Certificates with boys from Grade 6 and up. The club has a 50w. transmitter which is used for teaching operating procedure under the guiding hand of a licensed operator.

A.P.I. Radio Club, P.M.G. Technicians School: Dave VK3ZMX recently paid a visit to Scotch College Radio Club with his mobile 2 metre f.m. gear. The boys worked a bit of 2 mX DX and had a good time doing so. A 10 el. 2 mX beam is being built at the A.P.I. Club so the boys are getting a lot of practical experience by putting their theory to work. A contact has been made on the present aerial with Harcourt, which is a haul of about 70 miles.

VK5: Fort Pirie Y.R.C. has two more successful Elementary candidates. Elizabeth Amateur R.C. has been very successful with its first sitting for the Elementary with six passing. There are also a few adults doing the Elementary and so far three out of four have passed. Welcome to another new club at Gladstone High School under the direction of Bob Stunell and starting with a good membership of 20.

Many thanks for all the news sent. Please keep it up. Address: Mrs. M. Swinton, VK-2AXS, P.O. Box 1, Kulnura, N.S.W. 73, Mona.



1966 "CQ" W.W. CONTEST VK Results

Phone—	Band	Total Points	Con-tacts	Zon.	C'tries	
Call				Wkd.	Wkd.	
*VK2WD	A	35,088	138	35	51	
*VK2FU	A	17,605	172	14	21	
*VK2APK	A	147,964	432	33	89	
*VK3ZR	A	61,722	195	50	77	
*VK3XB	A	7,728	49	25	31	
*VK3ABA	A	22,001	162	20	29	
VK3LW	A	2,940	29	12	23	
*VK4CK	A	17,145	129	17	28	
*VK4SD	A	70,560	219	34	78	
VK4DO	A	4,114	51	12	22	
*VK5LC/5	A	3,157	31	17	24	
*VK6RU	A	660,393	902	88	175	
*VK6GX	A	12,384	90	16	32	
*VK7SM	A	31,341	140	41	52	
*VK9DR	A	8,460	63	22	55	
All the above						were single operator stations.
VK9XI	—	149,640	440	45	75	This was a multi-operator station.

C.W.—	Band	Total Points	Con-tacts	Zon.	C'tries	
Call				Wkd.	Wkd.	
*VK2EO	A	530,640	884	75	126	
VK2GW	A	203,000	500	62	78	
VK2PV	A	117,852	295	59	79	
VK2RA	A	1,350	19	12	13	
*VK2BKM	A	32,040	242	19	26	
VK2QK	A	7,449	67	15	24	
*VK2APK	A	114,837	402	30	71	
*VK3AKK	A	154,845	481	46	65	
VK3XB	A	6,410	51	21	25	
*VK3ABR	A	3,432	56	12	10	
*VK3RJ	A	7,424	90	14	15	
VK3ADN	A	84,456	435	22	46	
VK3ABF	A	31,161	224	16	31	
VK3OP	A	5,712	112	9	8	
VK4UC	A	2,592	36	12	15	
*VK4SS	A	8,700	103	14	15	
*VK5KO	A	2,730	33	17	13	
VK5WC	A	16,358	70	15	19	
VK5RX	A	798	14	8	11	
*VK7SM	A	308,967	589	69	112	
All the above						were single operator stations.

* Certificate winners.

Single Band Leaders (Oceania only)

Phone—	Points
28 Mc. VK2FU	17,605
21 " ZLIAGO	95,680
14 " KW6EJ	375,193
7 " —	—
3.5 " KH6EPW	5,040
1.8 " —	—
C.W.—	
28 Mc. VK2BKM	32,040
21 " K6CAA/KH6	50,032
14 " VK2APK	114,837
7 " VK3ADP	84,456
3.5 " KH6EPW	7,068
1.8 " —	—

13th W.A.E. DX CONTEST, 1967

PRECIS OF RULES

Period: C.W.—0000 hours GMT 12th August to 2400 hours GMT 13th August. Phone—0000 hours GMT 9th September to 2400 hours GMT 10th September. N.B.: A minimum operating time of four hours is required to be eligible for an award.

Bands: 3.5, 7, 14, 21 and 28 Mc.

Calls: Non-Europeans "CQ WAE de . . ." or "WAE de . . ." Europeans "Test de . . ." or "DX de . . ."

Objects: For European and non-European stations to contact one another. (N.B.: UF, UG and UD are in Asia.) This is allowed once per band except for QTC traffic.

Cyphers: (a) A control number consisting of RS(T) report and three numbers representing the QSO must be exchanged for a valid QSO. (b) A QTC may be passed to a European by a non-European only. It consists of the time, call and QSO number of a previous contact.

Scoring: (a) For each complete exchange of control numbers, 1 point. (b) For each QTC transmitted and acknowledged, 1 point. Up to 10 QTCs may be passed to the same station per band. (c) Multiplier. Each European call area counts one country point per band. The addition of all countries on all bands gives the total multiplier.

Final Score: All contact points plus QTC points, if any, multiplied by the total multiplier [(c) of previous para.].

Entry Classification: (a) Class A, up to 50w. input. Class B, 51 to 150w. input. Class C, more than 150w. input. If not stated, logs will be graded in Class C. (b) Single operator station. Multi operator station.

Awards: (a) Winner in each continental area. (b) Further awards to the highest scorers in classes A, B and C—if the participation warrants.

Logs to be postmarked not later than 15th September 1967 (c.w.) or 15th October 1967 (phone) and addressed to: Dr. H. G. Todt, Chlodwigstr 5, 1 Berlin 42, Germany.



Publications Committee Reports

As the June meeting was held so late in the month it was not possible to report on this meeting in the July issue. Correspondence was received from VKs 4SS, 4NZ, 3AKZ, 3ABP, 3ZVI, 2ZRD and 2ZPC. Technical articles were received from VKs 3AMK, 2ZEL, 6XY, 2AMA, 2FY, 2TG and 5WD.

Considerable time was devoted to the next issue of the Call Book and various suggestions given consideration. All Divisions have been written to and asked to bring Divisional information up to date.

Among suggestions considered was one that a number of prominent radio clubs be invited to supply information for inclusion, to enable country and interstate travellers to have a ready reference of "who and where". It was decided to write for this information.

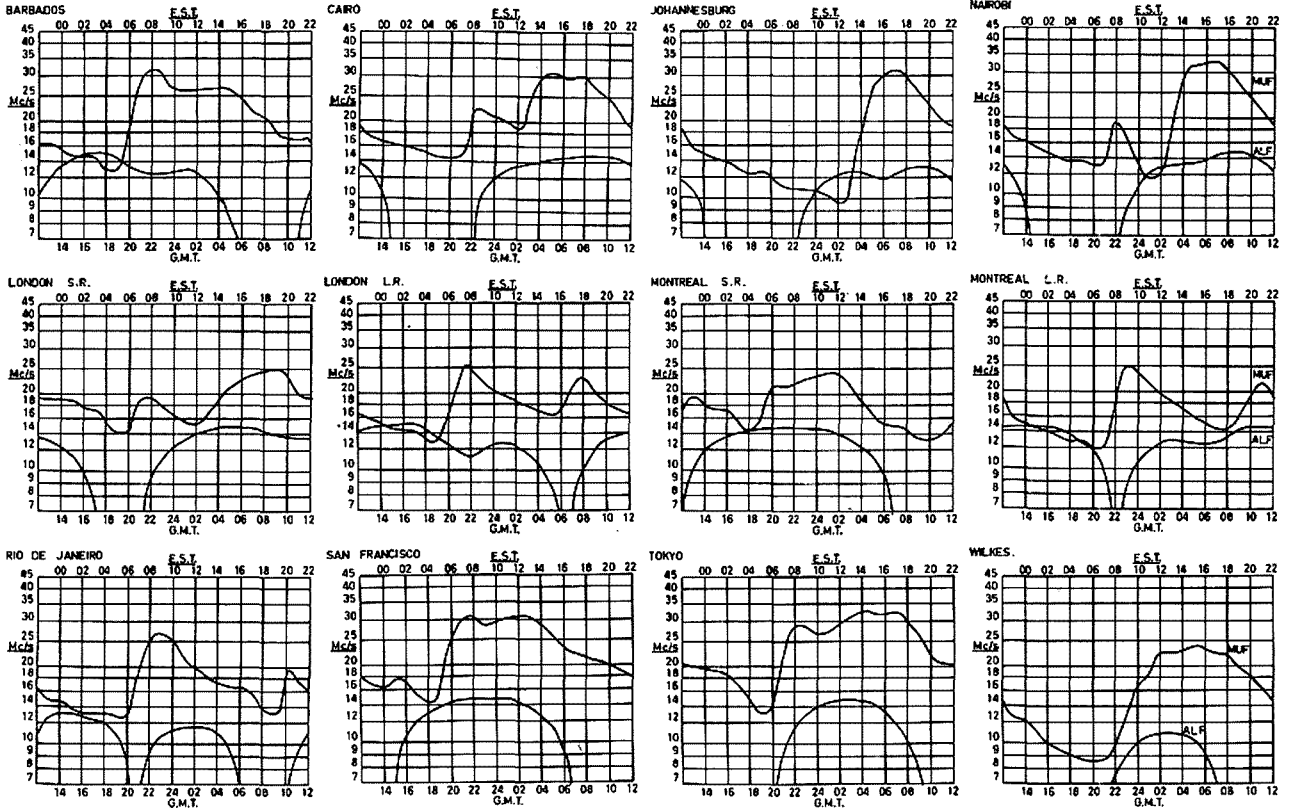
The Call Book will include additions and alterations up to and including the May list issued by the P.M.G.'s Department. No amendments or new calls after this list can be included in the 1967 issue.

Some changes were agreed upon regarding the lay-out of "Amateur Radio", the most important being the re-location of "Federal Comment". With the growing importance of Federal matters it was felt that more prominence and space should be made available as from this, the August issue.

It was noted that notes correspondents are tending to submit material in forms other than that outlined in previous issues of "A.R." and those concerned are asked to go back over previous issues to ensure they are complying with the requirements of the committee.

As the July meeting of the committee was devoted to the checking of the proofs of the Call Book time was not available to handle any other business. This report is therefore restricted to listing the correspondence and technical articles received. Correspondence received from VKs 2ZJH, 3LM, 5ZMT, 4NK, 5JT, 2NA, 5OD, 1QL, 3IC, 3ANR, 2ZIF, 6AG and W. Jehns. Technical articles were received from VKs 3ZRX, 4AT and 1AU.

PREDICTION CHARTS FOR AUGUST 1967



(Prediction Charts by courtesy of Ionospheric Prediction Service)

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DX

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

By the time this reaches your mail box conditions may have begun to stir from their winter somnolence. Great expectations are held for this spring. It is to be hoped that your gear is in "go" order.

Fifteen metres has held up rather well. Here it has signals on it all day long from divers places. Not too much rare stuff but more will begin to use this good band.

Listening on 7 Mc. around 0900z and later a few South Americans have been weakly workable but this band is now but a shadow of its former self because most DX has vacated it, for less QRM'ed pastures.

NOTES AND NEWS

Willis Island: VK4HG will commence operation from this bird infested coral strip on or about 25/8/57 and will continue until early December. This should be more than enough time for everyone to make a QSO. Mode and band will be 14 s.s.b. mainly, but other bands will be used. Operator is John Hamilton, 37 Byfield Street, Reservoir, Vic., ex VK3AYH. Send all QSLs via the VK3 Bureau. John will attend to them when he returns. He will be using a Yaesu FL50.

Fr. Guiana: F77YG 14200 2100z. QSL W2CTN.
Cuba: C02FA 14200 0000z. (LIDXA)
Monaco: 3A2BY 14037 2040, and 3A2AV 14056 2400z. (LIDXA)

Gambia: New operator now on from here. ZD3G 14185 0300z.

Mauritius: VQ8CG 14214 1200z.
Tonga: VR5RZ ex VK4RZ is active s.s.b. 14 Mc. Listen around 14200 at 0300z.

Maldives: Still being kept on the DX map by VS8MB 21042 1500z. (LIDXA)

Turkey: Latest from here is TA2OB 14030 2310z. (LIDXA)

Martinique: FM7WO is active and his QSL manager is WB2SSK. Listen daily 2000z and 0100z 14 c.w./a.m. operation.

Mongolia: JT2AA has been workable here on 7 Mc. 0900z and later; low end.

Greenland: OX4AA 14232 0500z. QSL via K6REG.

Palapagos: HC8JG 0440z 14206.
Tristan de Cunha: ZD9BI 14256 1700z. Mostly week-ends. QSL W2GHK.

Ivory Coast: TU2BA 14220 2030z. (LIDXA)

Sth. Georgia: Dave VP8IE now said to have s.s.b. gear. Very active.

Bear Is.: EI0BI 21400 1500z. QSL EI2AW. (LIDXA)

Nepal: Father Moran works transceive on 14123 1100z.

Canary Is.: EA8CB 14220 2044z. Big sig. here.

Somali: 601GB 14208 2115z. QSL American Embassy, Dept. of State, Washington, D.C.

Wallis Is.: FW8RC reported 14240 0600z, but heard here 21040 0630z.

Sudan: Remember ST2AR? He gave many VKs their first ST QSO. Now active again 14020 2100z.

Malawi: 7Q7EC 14228 1140z. (LIDXA)

San Andre: HK0AI still QRV on 14 s.s.b. Sometimes around 0400z and later.

Comoros: FH8CD 14200 1130z. Also sometimes at 0300z. (LIDXA)

Egypt: SUIAR 14018 2300z. (G3UGT)

Sao Thome: CR5SP still at it on 14195 1600z. CR5CA 21065 2045z.

Sikkim: AC3PT 21030 1100z. (G3UGT)

St. Helena: ZD7KH 14195 1830z. QSL 860 Atlantic St., Lindhurst, L.I., N.Y. (G3UGT)

Salpan Is.: KG6SL 14300 1100z. QSL W4FRO. (G3UGT)

Much of the following is by courtesy of ZL2AFZ, Geo. Studd, DX Editor for "Break-In" magazine in ZL. This news is received on the usual exchange arrangement.

Expo VE2 Station operating from here is VE2XPO. 14014 1632z.

Ceylon: 4S7EC 14043 1800z. 4S7NG 21015 0800z. 4S7PB 14140 1800z.

C.A.R.: Herman TJ8QQ now has permits to operate from here and Gabon and later Tchad. He will be TL6QQ, TR6QQ, TT6QQ. QSL to W4DQS. Gear will be s.s.b. and 3 el. beam. Other activity from C.A.R. is reported also.

Mauritius: Steve VQ8CC ex ZC4AK QRV 14055 1430z. QSL direct to P.O. Box 14, Curepipe.

Malawi, Tromelin and Geyser: CR7GF will be the man behind calls from these rare ones. Keep listening. QSL W4VPD with s.a.s.e. or SAE/IRC.

Keremeeocs: ZL1AI still going on 14260 a.m. from 0300z. Rumoured that he will be QRT soon and go to Br. Phoenix as VR1B with better gear.

South Orkneys: VP8JD 14127 asks that his QSLs go via CX2AM.

Scientific Studies Committee: This group is asking for reports on the Propagation Research Beacon on 28983. There is also a beacon on 50 and 70 Mc. Info to R.S.G.B. Hdq., 28 Little Russell St., London, W.C.1.

Sunspot Predictions: August 104, Sept. 108. (ZL2AFZ)

Virgin Is.: KV4AA, Dick Spencely, now reported back on the air. 14075 1100z. (VK4UC)

Bermuda: WB2PKZ/VP9 and WA8SVU/VP9 both QRV 14 c.w. 0700z. QSL Bureau. (VK4UC)

Rarotonga, Cook Is.: Group: ZK1CI is about to be active from here and will use bands 80 through 15 mx. His duration of stay will be three years. One of the QRP gang, so keep an ear out for him. QTH, P.O. Box 103, Rarotonga, Cook Is. (VK5BS)

ACTIVITIES

Harry VK8HA reports 28 Mc. now poor but did work these on the last solar flare: UWOSK, UF6DZ, 4Z4AG, OK3DG, Y06AJF, KABAAX, MP4BEU, UV3AAM, ZL2AUM, UW41B, ZS6D, 9YMKX, UT5LE, ZS6BMH, UA6RBT, 9J2WH, VS8ME, IS1FIC plus loads of Js and Ws. On 21 Harry reports his best catch for the month was 4U1TT. The band has been open but not much rare stuff heard up there in Darwin. On 14 Mc.: 6W8DD, HP1BR, VE3CQB, SP8YA, VU2TS, I1YS, 6W8CQ, UJ8AC, KR6MB, G3OHG, ON5ZO, OZ5DP, PA0DV, HB9AD, V9QCC, PY1BYK, OK3KGL, UA1SP, UV5XQ, OK1FF, UN1CF, F90B, OZ4FF, etc. (Nice list, OM.)

Dud VK4MY not on much but did manage EL8B as his best on 14 for the month. These goodies were heard: ZD3IZ 14050 0745z, GC8HT 14180 0700z, FG7TE 14030 0615, 6W8DD 14050 0740, SU7AC 14110 0700z, 6W8DX 14110 0700z, ZL1AI 14250 0630z, EA8ET 7020 0645z, 5W1AA and VR5RZ (ex VK4RZ) 14135 0700.

Ken VK3TL reports bed as better than chasing DX these cold nights. However these were logged: CR6EC, CR6BX, EL7B, ZD3I, ZD7DI, 5N2AA, SU7AC, 9G1BF, 9Q5CZ. All on 20 mx. Best QSL received were PI1J, VP2AZ, VQ9AA/D, VQ9AA/F, FH8GF, 5Z4SS, CP3CN, CR6EG, FR7ZN, 5TK5G, ZD3I, ZS8L, FB8YY. QTH of EL8B is via SM5MC. 5N2AA P.O.B. 3380, Lagos. (Thanks Ken.)

Trev VK2NS has sent in a very interesting letter. Most will know that Trev is an active 7 Mc. DXer with a score of 180 worked on this band. He writes to record a Marathon Activity: 1000 QSOs with WA6UNF since 17/5/63. Only on two occasions were the skeds not made. This was due to Ed, WA6UNF falling asleep on the job. As the QSOs were made always at 0800z, this meant that Ed was mostly up till midnight. (No wonder he fell asleep occasionally.) Freq. was on 7023 and usually established with a 1 x 1 call. The 1000th QSO took place on 21/6/67. This is quite a feat when it must be remembered that Trev is a QRP man, relatively speaking.

Trev also supplies some information about the O.O.T.C.—the Old, Old Timers' Club. For membership you must have held a Ham ticket for 40 years. This puts one into select company. A few in U.S.A. are Barry Goldwater, Gus Browning, Col Elser, H. Hoover (all famous names). VK members are VK4VR, VK-5JT, VK2NS. More information will be given on this later but in the meantime a letter to Trev VK2NS will bring all the dope you want.

Chas. VK4UC not very active this month. Conditions on 20 were down this past week or two. His c.w. score is as follows: TI2PZ 1300z, KE2IH 0900z, WA8SVU/VP9 0600z, 9H1AE 0640z, 6W8RC 0800z, G8JR 0600z, CO3CW 0600z, YU1NOH 0600z, F9VN/FC 0615z, 9J2MX 0600z, FB8YY 0530z, HA3MB 0600z. Worked on 15 c.w.: VU2DIA 1200z, WH6GEG 0100z, 9V1MS 0300z, HM81WB 0600z, CO2BE 0300z.

SOME QTHs

5R8AM—K2KTK.
5R8AS—W6ZPS.
5R8AX—TG9EP.
5R8AZ—G3TGT.
TU2BQ—P.O. Box 1617, Abidjan.
HC2FN—W42WUV.
9Q5SR—W1BPM.
9U5DP—W2NSM.
GD6UW, GD3VBL, ZD9BH, VP8IE—All via P.O. Box 7388, Newark, N.J., 07107.
GB2DSF—W3WAO.

(All by courtesy of ZL2AFZ.)
CN2AS—Box 6896, Havana.
5M2APD—C/o, 6 Gelford Close, Worthing, Sussex, England.
8R1S—P.O. Box 739, Georgetown.
FM7WO—WB2SSB.
WB2PKZ/VP9—via VP9 Buro.
KJ6BZ—Box 937, Detachment 1, 1957 Command Group, A.P.O., S.F. 96305.

TL8DL—American Embassy, P.O. Box 924, Bangli, C.A.R.

ZD9BH—GB2SM, Science Museum, London, U.K.

VR1Q—G3NMH.

AWARDS

W.A.J.A.—Worked All Japan Prefectures
This award is not easy to obtain. There are 46 prefectures in JA. (A list of same can be had by sending a s.a.s.e. with one I.R.C. to QTH below.) All contacts must be made after 1/8/52. Any mode or band may be used. QSOs must be with National J stations only. Application and QSL cards must be sent to Overseas Committee, J.A.R.L., P.O. Box 377, Tokyo, Japan.

My thanks again to all the contributors and the many helpful letters. 73, Al VK4SS.

DX'ER OF THE MONTH



Meet Rod Champness, VK0CR, who is at present very active from Macquarie Island, Antarctica. His home call is VK3UG. Rod is in big demand as a rare one. He operates mainly between 14150-14180 after 0700z. However, he uses other bands and has been on 28610 when conditions permit. QSL cards go to G. Johnston, Inglis St., Newtown, Hobart, Tasmania. Rod has installed a beacon at Macquarie Island on 52.9 Mc. Reports on this would be valued greatly. Give him a buzz. All VKs are gladly worked but please exercise care and do not interfere with Rod's daily skeds on 20 or 10. Any further info on Rod's activities can be had from his good XYL Deirdre, C/o. T. E. Reville, Garfield North Road, Garfield, Vic. The above photograph was taken in the shack on Macquarie Island. (That's a man-sized traditional beard, Rod—AL)

W.I.A. D.X.C.C.

Listed below are the highest twelve members in each section. Position in the list is determined by the first number shown. The first number represents the participant's total countries less any credits given for deleted countries. The second number shown represents the total D.X.C.C. credits given, including deleted countries. Where totals are the same, listings will be alphabetical by call sign.

Credits for new members and those whose totals have been amended are also shown.

PHONE

VK5MS	316/337	VK4HR	281/287
VK3AHO	314/326	VK4FJ	279/296
VK6MK	303/320	VK3TL	259/263
VK6RU	303/326	VK2AAK	246/250
VK5AB	300/314	VK4TY	243/244
VK2JZ	285/300	VK2APK	234/237

C.W.

VK2QL	295/315	VK3NC	266/286
VK2ADE	291/313	VK3ARX	262/270
VK3CX	291/312	VK6RU	258/279
VK4FJ	291/313	VK4HR	256/278
VK2AGH	282/295	VK3YL	251/268
VK2AHQ	281/293	VK3XB	249/252

OPEN

VK2AGH	311/329	VK4HR	296/318
VK6RU	307/330	VK2EO	295/316
VK2ADE	305/329	VK4TY	286/298
VK6MK	305/322	VK3TL	279/283
VK2VN	300/315	VK2ACX	276/300
VK4FJ	296/318	VK3ARX	276/284

SWL

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

Following the comments I have made in recent issues of "A.R." on the elementary facts of Short Wave Listening, and equipment, we continue this month to mention ways and means of improving reception results from a basic receiver design. In passing, I would like to thank those who have commented favourably on these introductory notes, which are designed solely for the beginner.

Last month I mentioned the use of a basic receiver, such as the wartime communications receivers, which in many cases had only one r.f. stage. While this will give fairly good results, it is necessary to have another r.f. stage in order to hear those low power stations which are buried at times under a mass of screaming signals. This piece of equipment is quite easy to build, in fact it is a project which, using a pre-wound coil, could be completed at a group construction night.

Several years ago, I built one designed by VK5AX and published in "A.R." many years ago, Sept. 1957 I think. This used a home wound coil, broadcast condenser, two 6AC7 tubes and a few minor bits and pieces. Power was obtained from the receiver power supply and the whole unit built on a 4 x 3 inch chassis. The difference this unit made to three receivers—AR7, CR100 and a No. 19—had to be heard to be believed. Another popular unit uses a single 6AK5, whilst a transistorised version came to my notice recently. These units cover a frequency range from around 2 to 30 Mc.

To extend the frequency range of a receiver such as a No. 19, which tunes from 2 to 10 Mc., a converter is used. This is a simple device which, when connected between the antenna and the antenna terminal of the station receiver, increases the range of the latter, as well as improving the performance of full h.f. coverage receivers in their higher frequencies. The converter is virtually the front end of a standard communications receiver and is of two types. The tunable converter feeds into a communications receiver which is tuned to say 2 Mc., the tuning is then done on the dial of the converter. The fixed tuned type is coupled to the receiver, which is tuned in the normal manner.

Technical explanations for these can be found in any standard handbook, as well as a variety of circuits and designs which space does not permit me to go into here. But regardless of the improvements which we can make to our receiver there are two factors which control the final results. The antenna used and the ability of the operator. Operating is a specialised field and I am at present trying to get one of our best known operators to cover this for us. The antenna, however, I will try to cover here.

The most important feature of any antenna is height. Again I refer any beginner to a reliable handbook. I will comment only on the types of antenna I have personally used, or have been associated with. There are two types of antenna, the fixed or long wire type in its various forms, or the rotatable beam similar to the t.v. antenna, but designed for Amateur frequencies. The latter is turned by means of a motor or by hand, until it faces the direction of maximum signal and at the same time it reduces the strength of signals coming from other areas, thus giving a better readability to the desired signal.

The cubical quad is by far the best of the turnable beams and is not over hard to construct. Many of our top DX stations use this beam as their transmitting antenna and Rod de Balfour, one of our leading S.w.l.'s of 10 years ago had remarkable results in the receiving field with a quad. Yagi type beams are used extensively on v.h.f., but become somewhat large on the lower frequencies. A ground plane is almost useless when compared to other types of fixed antenna. If a large area is available, the vee beam and rhombic are outstanding. I used a vee beam from 1957 to 1960 when operating from the Riverina. This one had 200 feet legs and was pointed on Europe over Central America. The results are well known and for what it's worth, I have just erected a similar one at this QTH, however the legs are only 130 feet long.

Any form of long wire will give good reception, but height rather than direction is the predominant factor, from my experience N.W. to S.E. seems to be the ideal direction. Pages could be written on this subject from the theoretical angle, but in actual practice get your antenna high and away from any source of possible electrical interference.

NEW SOUTH WALES

No report of the June meeting has been made available to the publicity officer, Mac Hilliard, who was unable to get to the meeting. QSL officer reports that all cards received have been despatched to their addressees and wishes to remind VK members that if you are likely to be getting cards returned through the VK Bureau, please use your official WIA number, or an ISWL call if you have one. Both are easily identified, but some of the weird and wonderful s.w.l. prefixes which come to light will never be identified if the listener persists in using a prefix from other societies.

An unexpected and very welcome piece of publicity for the Group was obtained when I was interviewed by the magazine staff of the Postal Institute. The gear and a display of cards and awards were set up at the Penrith Post Office, and photographs taken for inclusion. I have been requested to write an article outlining s.w.l. activities in relation to Amateur activity, and this is being undertaken at the moment.

VICTORIA

From Ian Woodman comes news that the cold weather seems to be affecting Group meetings. "Numbers are dropping below the 30 mark. Remember the room heaters fellows, and turn up at the meetings." The Group wishes to thank Harold Hepburn, Geoff Thompson and other persons for the three separate groups of radio parts donated to the younger members. Things are moving in the planning for the R.D. Contest and I believe WIA-L3100, the general listening section, and WIA-L3333, the DX section, have challenged one another, and the other States as well. It should be interesting to see the results. It will be an interesting Contest this year with George Allen over in VK6 and possibly Ernie Luff joining in the fray, and WIA-L2022 with gear on all bands to 2 metres, plus a vee beam and over 2000 ft. of altitude. It would appear that the VK3 Groups would want to be on their toes.

DX NEWS

The following are new members of the ISWL, and can be QSL'ed via their bureau: K6EVR, KOCGE, DL5YG, WB2QKG and WB-2TYR. JTIAG is on 14 c.w., whilst UA1CK was to have made a trip to JT in April, signing JTIAT or UA1CK/JTI. I have heard nothing of him but understand QSLs were to go via Box 88, Moscow, or Box 939, Ulan Bator. Looking for EA9? Try EA9EJ on 21200 a.m. at 1800z (yes 15 is often open then) or 14124 s.s.b. Watch FR7ZL, he is all over the place with some good spots such as Juan de Nova and Europe. 5TKG was Lloyd and Iris who were listed for TZ and ZD3. QSL via Yasme, Box 2025, Castro Valley, California 94546, U.S.A. Certain QSL, ZD7KH, heard at good strength here in VK2 on June 28. Says QSL via K2HVN, HC8FN via WA2WUV. K2HML/MM says QSL via JA1EZZL.

POSTAL DIRECTIONS

Justly ushered in the new postcode system in Australia. This will be a milestone in postal history and one which is of the greatest importance to anybody who uses the mails as frequently as an s.w.l. in pursuit of QSLs. There are two major points, firstly include the code number of the town to which the letter or card is being sent, secondly, include your own postcode in all communications. All letters to my QTH should include the number 2750. It is most important that no metal objects such as pins, be enclosed, as these tend to tear as well as interfere with the decoders.

AROUND THE SHACKS

Ernie Luff, with a score of 217/141, is climbing rapidly up the ladder and at the same time trying to add to his list of awards. Best loggings of late were 9Y4AR, VP1LB, VP1SB, VC1FB, VPSAB, and K00XV/CE0A. Inward cards: W7QPK, UA3KB0, U05PK, D08FC, DL8DX, UA3DR, DJ3QX, UA0NM, UA1JG, YU2NFI, Y03AFT, UA1CK, VK8DI, PJ2MI, VK5RO, VR2FC, VR2FF, K1BRE, VE2ANK, VK5DS, ZB2AX, CR6GO, DL6EZA, DJ9GD, DL9NF, DJ3GG, IITRA, FL8RA, VE7BMC, UA8KHV, I1LAG, I1CZE, XE1EH and ZS1JH.

Bob Mutton down in VK7 has inward QSLs from K8HUX, CR6CQ, UL7BG, JA1KHK, VK-218A/LH, PY1NBF, taking his score along to 118/81.

Over to VK5 and once again I was very pleased to hear from George Allen, WIA-L6043, and to hear of his doings on the lower bands. I have always maintained that there are plenty of calls to be heard on 80 m.c.w. and recent reports from Eric match up very well with the list George has mentioned. DJ-9CF, HA1KSA, UA1DCA, UA1KUQ, and UA-3LS were logged on 80, but to go one better, George has been looking at 160 metres. Now I often look at this band, but as yet I have heard very little other than VK5KO and VK-3AWI. Not so George, have a look at this lot, remembering that L6043 is an experienced telegraphist and has the advantage of being in VK6. His loggings on top band are: G3IGW, GW3OAY, OLAAFI, OK1WT, OL5AD, OK2KGV, OK1AES, DL1FF, 9V1LP and VK5KO.

Here in VK2 things are not so hot DX wise, 10 m.c.w. has fallen away although quite a bit of DX remains on 15 if you can get through the JA. QRM. Strangely enough, 20 has been somewhat patchy, although despite comments on the air from VKs that the band was poor. I managed to fill two pages of log this afternoon with such calls as Y08DD, UW6, K17, PY1CL, TJ1QQ/AM, U05GN, CT1DJ, VK0, VE, II and most of the normal Europeans as well as Pacific and South American stations. These between about 4 and 5 p.m. local time. FM7WD and ZD7RH were heard here a few days ago. Inward QSLs here were CO2JE, 9X5FS and at long last KG6IF, taking the score to 304/189.

All the best in the R.D. and on the DX front. 73, Don WIA-L2022.

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FEDERAL AND DIVISIONAL MONTHLY NEWS REPORTS

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

FEDERAL

RATIFICATION OF FEDERAL COUNCILLOR'S VOTE

In addition to Divisions previously mentioned, written indication has also been received from VK5 and VK7 as to ratification of their Federal Councillor's vote. The VK2 Federal Councillor indicated verbally on the 3675 Kc. sked on 25/6/67 at 2200 hours that his Division has also ratified his vote on all motions.

CONSTITUTIONAL MATTERS

(a) No Division has indicated opposition to changing clause of 1967 1.4 to read:

Times 41: "The date and time prior to which completed voting papers must be received at the office of the Institute in order to be counted shall not in any case be less than 28 days nor more than 48 days from the date on which voting papers are sent to members."

Accordingly that clause is so amended in accord with 1966 motion 1.3.1

(b) The above action was taken at the request of VK4 Division who have indicated through their Federal Councillor that they will ratify the constitutional items once the above point is cleared up.

(c) It is apparent therefore that the discussions over the past five Conventions have at last come to a satisfactory conclusion, and it now only awaits formal ratification from VK2 and VK4 for Executive to initiate the moves to produce the final form of the W.I.A. Federal Constitution, in accord with the arrangements agreed to in Hobart and previous Conventions. Executive extends its congratulations to all Divisions on this very pleasing result.

BROADCASTING STATIONS

The Australian Broadcasting Control Board has informed us of the following additions to the list of Broadcasting Stations:

Kc.	Station
560	4AM, Atherton Tablelands Area.
530	4KZ, Innisfail-Tully Area.
1200	4GG, Gold Coast Area.

These stations are not yet in operation.

AUSTRALIS

Mr. Richard Tonkin has contacted the Federal Secretary on his return from U.S.A. He thanked the W.I.A. for its initial sponsorship of the project and stated that Oscar is very happy with the package. Due to the delayed departure of the package, it was given time to be put in "go" condition by Les Jenkins, VK5ZBJ, and others. It was unfortunately not possible to arrange free transit, so Executive agreed to pay the freight after they were satisfied it had been rendered technically satisfactory.

AMENDED INWARD QSL BUREAU ADDRESSES

VK3 QSL Bureau: Mr. E. Trebilcock, 340 Gillies Street, Thornbury, Vic.

VK5 QSL Bureau: Mr. Geo. Luxon, VK5RXK, 27 Belair Road, Torrens Park, South Aust.

FEDERAL QSL BUREAU

Ken Cantrell, KIOTA advises: Plans for a DX-pedition are now final. I will be operating from Luxembourg with the call KIOTA/P/LX from July 25 to August 4, 1967. Operating frequencies will be—c.w.: 26,015, 21,015 and 14,015 (main operation here), 7,015; a.s.b.: 28.65, 21.35, 14.2. And from Gibraltar with a ZBZ call on the same frequencies as above from August 5 to August 15. QSL via home QTH: 36 Pembroke Street, Quincy, Massachusetts, 02169, U.S.A.

FR7ZG advises there is no QSL manager in Reunion Island. All QSLs should go direct or via R.E.F.

OKIKBN writes that their club station OKSTOL will be active from Chudrim City from 13th to 28th July on all bands, from 160 to 10 metres. They solicit QSLs to Box B22, Pardubice, Czechoslovakia.

Stuart Meyer, W2GHK, manager of the DX-pedition of the month, for several years, has forwarded a comprehensive list of all the logs held for past expeditions. Details from this Bureau.

Although it appears a little too soon to expect a large drop in the volume of cards through the Federal Bureau, the total for June showed a 50 per cent. reduction to 6,000.

—Ray Jones, VK3RJ, Manager.

NEW SOUTH WALES

SPECIAL GENERAL MEETING

On Friday, 23rd June, the Special General Meeting of the N.S.W. Division was held. This meeting was the one notified to all members in the mailed circular. The business to be dealt with was:

1. To hear a report of the Auditor on the financial ability of the Division to employ a Secretary.
2. To hear a statement on the legal obligations and powers of Council.
3. To consider a motion of confidence in Council.

The meeting was opened at 8.10 p.m. by the President K. Finney, VK2KJ. The delay in opening the meeting was caused by the best attended meeting at Wireless Institute Centre for many years. Seating accommodation was quickly filled and conservative estimates placed the attendance at some one hundred and fifty.

Members came from many country centres, and some well known Amateurs from the Hunter Branch, the Canberra Radio Society, Orange Radio Club, Nepean Radio Club, and the newly formed Illawarra Branch were present. The questions to be discussed were, judged by the attendance, of considerable importance and the writer suggests that the future of the Division would ultimately depend on the outcome of this meeting.

The President in a brief statement said that the meeting would be conducted according to the notice paper and then had the minute secretary, Warwick Johnstone, read out to the meeting the three questions to be discussed as given on the notice. Following the reading of the notice, the President then called on the Auditor to proceed with the financial statement. However, the Auditor had been delayed and was not available. This being the case, the proceedings were temporarily halted and the presentation of a prize took place.

Following the prize giving, the Auditor still had not arrived so the President (chairman) arranged for the legal officer, Mr. Clark, to give a report on item 2 of the notice. Mr. Clark commenced by saying that he would speak on the aspect of hiring a Secretary and the legal position of doing so. He emphasised that he was speaking as a legal man and not as a member. Mr. Clark said that the award for Secretary was a salary of \$36 per 40-hour week of office hours 9 to 5. Work carried out at meetings and on Saturday requirements would be subject to various penalty rates. Provision would have to be made for one week sick leave and three weeks annual leave. Workers' compensation insurance and public risk insurances would be required and after five years' employment of staff long service leave would have to be provided for. Mr. Clark went on to say that from a legal point of view no problems should occur, and the decision to employ would be governed by the costs involved and the ability of the Division to meet this cost.

Mr. Clark then spoke on the powers vested in Council by the constitution. He stated quite categorically that decisions made by Council were legal and binding and that general meetings could not undo any decisions made by Council. As an example, Mr. Clark said that as Council had passed a motion to employ a Secretary, this meeting could not legally prevent them from doing so. However, Mr. Clark hastened to point out that although Council had legal right to proceed without the approval of general meetings it must be remembered that a general meeting could dismiss the

Council subsequently at the next general meeting so that the Council would be foolish to proceed on a matter without the support of the members.

President Finney then said that this was the reason the question of a paid Secretary was brought to this Special Meeting. He then invited members to ask questions directed to Mr. Clark to reply to aspects regarding his report. 2ZDD asked the position regarding part-time paid assistance. Mr. Clark, in reply, said that a minimum of 20 hours was required and he thought the rates were about 90c per hour. 2OI then spoke on the need for the Secretary and in reply Mr. Clark replied that it was a matter of cost. 2QL then asked if a stenographer might be more suitable, keeping in mind meetings and conventions, etc. Mr. Clark replied that the costs would be about 3 dollars more but that a clerical type would be more flexible and economical, and as for conventions additional help would be required anyway and this could be a part-time stenographer as required. 2APQ said that conventions were taped and F.E. arranged the minutes. 2VN then said he didn't know what the Council's proposals were. The minute secretary then read out the minutes of the earlier meetings to clarify the position.

The President then stated briefly that Council had passed a motion appointing a Secretary, but that the negotiations had not been started until the outcome of the present meeting was known.

The Auditor had still not arrived and the Legal Officer then read out a report from the Auditor which laid out the duties of the appointee and recommending that the appointment was a necessity if the Division was to become more efficient and attract more members. Mr. Clark then read out an attached financial statement of the Division's position at present.

Mr. Rohan then arrived and explained the financial statement more fully and said that the costs of the Secretary would be an additional \$1,100 per year at least but this year's cost would be about \$800. Mr. Rohan then called for questions.

2VN then came right to the point and asked could the required cost be met using the present balance sheet as a guide. Mr. Rohan, in reply, said that some small savings in cost must occur due to increased efficiency, and it must be considered that this may increase members and hence income. To further questions Mr. Rohan went on to say that the re-arranging of all the various bank accounts to one account properly administered would show funds which should cover this contingency. 2VN went on to say that the formation of the federal company could cause a rise in per capita and increases in operating costs could lead to difficulties. Mr. Rohan, in reply, said that subscriptions may then need to be increased but again he emphasised that better management could limit the increase to 50c or \$1.

2AGO then suggested that if \$1 was all that was needed then go ahead. Various members then spoke in support of the idea of going ahead, they included 2AGN, 2AQJ, 1VK, 2AWA, 2CH, and 1RD. 2APQ suggested that as someone would be present during business hours it may be possible to hire the hall and the Secretary's time. Mr. Rohan in reply said that considerable capital was tied up in Atcheson Street and this would certainly be a way to increase income. He went on to say, however, that such income could involve taxation but if sufficient letting took place then tax notwithstanding it would be worthwhile. The President and Councillor Dave Jeans said that several organisations were interested in using the facilities at Atcheson Street and were prepared to pay for the service.

2VN then asked Mr. Rohan that in view of all the information available could the Division afford a paid Secretary? Mr. Rohan said that the Division could afford a paid Secretary. 2MP and 2ANT and several other members then spoke on the subject.

2APQ then moved a motion that the meeting endorse the action of Council taken so far and endorse any action to appoint a full time Secretary. 2KP seconded the motion and it was put to the vote. The entire meeting was for the motion and the writer did not see anyone vote against it. 2APQ then moved a vote of thanks to Messrs. Clark and Rohan for their efforts, which was carried by applause.

SILENT KEY

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

VK2AGL—Warren Lumb.

VK3VZ—Jack Duncan

VK5JK—James Sullivan.

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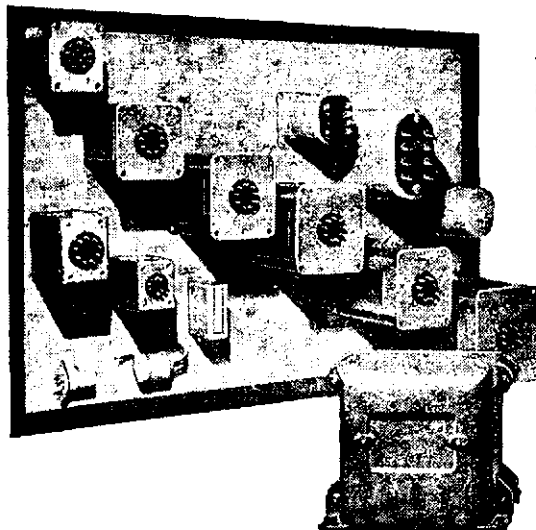
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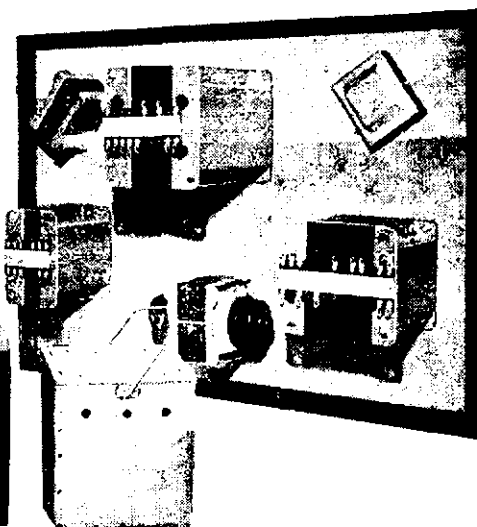
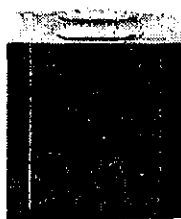
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L.M. 51

The President then referred to the third item on the notice, and explained briefly why he left the previous meeting. He also gave a short report on the illness of Vice-President Bill Lewis, VK2YB. After a short discussion, 2AIM moved a motion of confidence in Council which was seconded by 2ZFX. The motion was again carried unanimously. The general feeling at this time was one of achievement and the writer feels that most present felt that a great step forward had been undertaken and on this note of confidence the President closed the meeting at 9.55. He then declared the June monthly meeting open.

JUNE MONTHLY MEETING

The meeting opened at 9.55 with the reading of the minutes which were adopted. Applications for membership were then presented to the meeting and a total of 36 full members and 15 associate members were accepted.

Dave 2EO then moved a motion that a token of thanks should be forwarded to Mrs. Gerdes for her efforts in the past as Secretary-Treasurer, a task which became too much for her to handle on a part-time basis. 2AKX seconded the motion which was carried by acclamation. President Finney said that a suitable token would be sent to Mrs. Gerdes.

Federal Councillor Pierce Healy then tabled the minutes of the last Federal Convention for ratification, discussion then ensued and in response to a question by 2ZFD regarding the payment of I.T.U. Fund quota, Pierce read out the minute. Dave 2EO said that as a member of the Constitution Committee he would like

to read the minutes first. Pierce said that the ratification was only a formality, and all the other States had ratified them and as usual VK2 was hindering the Federal body by delaying ratification. 2AKX agreed that VK3 was often accused of this at Conventions. A short discussion then ensued on the motion to ratify the minutes, and when finally the motion was put to the vote, the motion was carried with only five voting against. The minutes of the Federal Convention have been ratified by the Division.

Federal Councillor Pierce then gave a short report on the Australls Project. Frank Hine reported on prediction chart and drew attention to a Computer Printed Prediction Chart which was on display showing conditions to some DX hotspots.

Shortly after 10 o'clock the President declared the meeting closed and all retired to the tea and biscuits for the ragchew to follow.

PRESENTATION OF O.T.C. PRIZE TO DAVID FRASER

At the general meeting held on 23rd June, Mr. Woods and Mr. Thatcher, of O.T.C., were in attendance to present the O.T.C. Y.R.S. prize to David Fraser of Westlakes Radio Club for obtaining his A.O.L.C.P. Mr. Thatcher, in speaking on this occasion, said that O.T.C. was well aware of the work of the Y.R.S. and that the scheme produced excellent material for the recruitment of technical staff. He went on to say that many fine technicians made a good career out of Amateur Radio and that quite a few technicians made a good hobby out of radio after twiddling knobs all day at work they went home and did the same thing as Amateurs! In conclusion, Mr. Thatcher said that David's achievement was very notable and he hoped to hear him on 20 metres c.w. before long with a full call, and then presented David with a G.E. Transistor Handbook. Mr. Thatcher remarked that all solid state men should not be without one.

PUBLIC RELATIONS AND PUBLICITY OFFICERS

Council is still seeking two willing workers to fill the positions of Public Relations and Publicity Officers. Both the positions would require some experience and the location would have to be in the Sydney area. Those interested should contact the Secretary or any Councillor.

AMATEUR RADIO CLUB REGISTER

Amateur Radio Clubs in N.S.W. are again reminded to forward details of their club to the Secretary for inclusion in the Radio Club Register. It is hoped to eventually have the particulars of all clubs in N.S.W. The Division is continually receiving requests from individuals for information on the nearest club to their address. Quite often we are not able to assist by not having the information sought.

W.I.C.E.N. NEWS

During the last few months the N.S.W. W.I.C.E.N. Committee have obtained over 130 f.m. carphones suitable for conversion to 148 Mc. net operation and much to the committee's surprise they disposed of the whole lot to N.S.W. Amateurs within two weeks of the information being made available to members of the release of the equipment.

Previously it was thought it may have been necessary to contact the interstate Divisions to assist in the disposal of this equipment, but it was not anticipated that the members in this State would be so enthusiastic to join in this mode of communication.

Besides the Sydney area, major groups are or will be soon operating in the Newcastle, Canberra, Orange and Wagga areas so that Interstate and N.S.W. visitors travelling in the eastern side of N.S.W. should be able to find Channel B (148.00 Mc.) reasonably active.

A plan has been formulated for a Communication Centre to be established at Wireless Institute Centre at Crows Nest and the scheme should be under way in the near future.

ILLAWARRA BRANCH

Amateurs in the Illawarra district are advised that the Branch meetings are held on the second Monday of the month in the Coniston Scout Hall on the corner of Strathern Ave. and South St., Coniston, commencing 8 p.m. Visitors are always welcome and Amateurs in the district are urged to attend meetings and assist the Branch to consolidate.

The office-bearers for the current year are as follows: Lyle Patison, VK2ALU (Ph. 2-8984), President; Laurie Jordan, VK2ALV, Vice-President; Alan Ward, VK2VH, Sec.-Treas. (Ph. 84-3520); John Simenson, VK2ANO, Asst. Secretary; Committee: Peter Fackender, VK-2BJF; Eric Fisher, VK2DY; Bob Isaacs, VK-2ZAJ; Auditor, Basil Dale, VK2AW.

The Branch has an active net on 53.98 Mc. Any enquiries can be directed to Alan Ward to his call book address or phone on Sunday about 10 a.m.

CENTRAL COAST RADIO CLUB

The feature of the June meeting, held on Friday, 16th June, was a most interesting lecture by Mr. Lyle Ronalds, of Fairchild. Lyle, with the aid of a short film and a number of diagrams, outlined the "planar process" that is applied to the manufacture of silicon planar transistors. The mass production of tiny wafers ten thousandths of an inch square and four thousandths thick is an amazing process.

The lecture prompted many questions from the meeting, which were ably answered by Lyle. Despite very unpleasant weather, the meeting was well attended. 73, Bill VK2TS.

VICTORIA

EASTERN ZONE

I can now give you more details about our Zone Convention week-end held at Maffra on Saturday evening, 10th June, when 43 sat down to an excellent dinner. Forty attended the Zone Annual Meeting and the following office-bearers elected: George Francis VK3ZCC, President; Stan Platt, VK3ZPL, Vice-President; Reg Waters, VK3AWV, Immediate Past President; Stan Baxter, VK3ZAB, Secretary and Treasurer; Graham Collie, VK3QZ, Zone and W.I.C.E.N. Co-ordinator; Albert Cash, WIA-L3289, Zone Note Secretary.

David Scott, VK3DY, has donated a trophy to be presented to the Amateur in the Zone who uses the bands the most and does his best to increase Zone activity.

As your new Zone Correspondent I will do my best, if you will all co-operate and let me have the news, either on the 80 metre or 2 metre hook-up to which I shall listen, or by letter to 20 Alamein St., Morwell.

OBITUARY

ALFRED KISSICK, VK3KB

The Federal Executive of the Wireless Institute of Australia announces with sincere regret the death of Alfred Kissick, VK3KB, the Federal Awards Manager, on 26th May, 1967.

Alf had not enjoyed the best of health in recent years, but nevertheless his practical interest in the W.I.A. did not cease and he did not hesitate to take on the burdens of Awards administration when the post was relinquished by the late Gordon Weynton, VK3XU, in May 1960. Some recent material presented to the Federal Historian proved that Alf had taken part in the 5th Federal Convention in Hobart in 1928 as a proxy delegate for the Queensland Division. The present Executive had the pleasure of meeting Alf in person at a meeting on 17th April last so his association with the Federal sphere of the W.I.A. covers a span of some 40 years.

Alf took out his call in the mid 1920s, first as OA3KB then later became VK3KB when country prefixes were changed. His main interest was DX working and in his enforced retirement he achieved and maintained leadership in the Australian DXCC c.w. listing. He also became the highest rating Australian Amateur in the A.R.R.L. Honour Roll and, in addition, was the first VK operator to work and confirm 300 countries.

Members of the W.I.A. and Alf's many DX friends throughout the world extend sympathy to his family in their loss.

JAMES PATRICK SULLIVAN, VK5JK

The VK5 Division announces with sincere regret the passing of "Jim" Sullivan, VK5JK, aged 62 years, who had been in the Repatriation Hospital for some weeks prior to his death, in a serious condition.

Active on the air for many years post-war, he was keenly interested in Amateur Radio, both as a hobby and as a means of serving the general public, and with this in view he was solely responsible in organising W.I.C.E.N. against many obstacles both inside and outside of the W.I.A. in VK5, resigning from the position of Co-ordinator only when he felt it was a going concern and his sense of duty was satisfied.

A prisoner of war on the Burma railway line as a member of the 2nd/1st Fortress Signals, and a patient sufferer practically all of his life from the effects of the privations, he will be missed by all with whom he came in contact, most of whom were probably quite unaware of just how much he suffered at times.

To his sorrowing wife Maureen, and his daughter Paula, we extend our deepest sympathy and can only say that our thoughts are with them in this their hour of grief.

VICTORIAN DIVISION, W.I.A.

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Victorian Division

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MONDAY, AUG. 21, 1967

Theory is held on Monday evenings, and Morse and Regulations on Thursday evenings from 8 to 10 p.m.

Persons desirous of being enrolled should communicate with—Secretary W.I.A., Victorian Division, P.O. Box 36, East Melbourne (Phone: 41-3535, 10 a.m. to 3 p.m.), or the Class Manager on either of the above evenings.

We have been getting a good roll-up on our Friday night 80 metre Zone hook-up, and also our Sunday night hook-up on 2 f.m. channel A, both at 2000 hours. 73, Albert Cash.

WESTERN ZONE

Unfortunately, I have not been very active on the bands the last few months so I have very few notes. Bill 3ZAX is working on a new 6 mx tx using a pair of 6DQs. I saw it when he visited us and he has gone to a lot of trouble with the metal work. Bob 3ARM has been working with Rodney VKOCR down at Macquarie Island. Roy 3ZYG has got a new tower up 90 feet now so we can expect some good signals on 2 and 6 metres from his QTH. Believe Gavin 3AEJ is putting out a nice signal on the bands lately. Have not spoken to Herb 3NN for months, but I am told he is about as much as ever. Activities at this QTH have mainly been on the audio side of things. I have just completed a new stereo rig for the sitting room only to find that it demodulates 2 mx just as well as a stereo record. I will have to watch what I say now, caught the XYL monitoring me on the new amp the other night. 73, Tony 5ZAL.

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QUEENSLAND

CONVENTION AT ALEXANDRA HEADLANDS

The Queensland Division Convention, held at Alexandra Headlands on the week-end of June 3 and 4, was a great success in spite of the inclement weather. The Convention was organised by the Bundaberg Amateur Radio Club on behalf of the Queensland Division of the W.I.A.

Seventy-five points of rain fell on Friday night and more rain fell on Saturday afternoon, Saturday night and a shower late on Sunday afternoon. However, it takes more than a little rain to keep our VK4 boys away from their favourite Convention, as the attendance figures of 203 very clearly demonstrates.

Those who attended were rewarded with a beautiful day on Sunday and even on Saturday, our enthusiasts were not deterred by the somewhat bleak conditions, especially the v.h.f. boys who ran most of their contests late on Saturday night, after the Doughnut factory closed down, and who were heard returning home just before daylight.

The organised contests commenced after morning tea on Saturday and finished at lunch time on Sunday, giving everyone plenty of time for rag-chewing, etc. All the usual contests were held for both v.h.f. and h.f. members, plus competitions for the XYLS and harmonics.

Probably the best of the new competitions this year was the c.w. contest. Jeff 4XP, as c.w. operator, and Vince 4VJ, as assistant, did a colossal job. This event attracted a big entry from h.f., v.h.f., A.O.C.P. class members and Y.R.S. lads. The spectator gallery was crammed with people, and the hushed and interest-laden atmosphere certainly lent to the event. The Morse started at a speed of 4 w.p.m. and finished at a sizzling 33 w.p.m. One by one the competitors dropped out, till about four or five of the real experts were left.

Organised activities for the harmonics were a new feature that was badly needed, and a big thank you to Tina Stegink who took charge of this department. The ladies' novelty hat competition was well supported and the ladies showed ingenuity as well as excellent taste in their creations. The contest was judged by Peggy VE4PE, a visitor from Canada, who, incidentally, was a natural for the most distant visitor.

The home-brew contest entries were a record. Our sincere thanks to Eric Gardiner, the judge, who had the unenviable task of choosing from the really excellent work displayed in all sections. Our thanks also to all those who entered this competition—without all your entries, this contest would lack any real interest. The standard and range of entries was unbelievable, compared to other years, and included a t.v. camera, s.s.b. transceiver, and other fully transistorised gear, as well as a remarkable range of test equipment.

Among the many willing helpers who materially assisted to make the Convention the success it was, special mention must be made of Max 4DA for his adept handling of the White Elephant Sale and other disposal equipment. Paul Rudachoff, with a rare combination of fact, humour and brute force, was indispensable in getting people to the right places at the right time. Reg 4VX and Vince 4VJ did the 4WI broadcast with their customary efficiency and finesse. Jocelyn 4JJ and Marie WIA-1A026 handled registration with charm and efficiency and extracted a huge amount of db from the record crowd—a very cunning move on the part of the organisers. Bob 4ZRC and XYL Joan, being old hands at the game, came to the rescue of Rusty when required. Our thanks to Don 4NK, our Club Secretary, who handled a mountain of corres-

pondence in the weeks preceding the Convention. George 4ZMC proved himself the right man to handle the v.h.f. activities. Our thanks to Bob 4UB, Danny 4ZDD, Bob 4ZZE, Eric 4ZR and Tom 4ZAL, for the help they gave.

Total registrations—203; total meals served—in excess of 500; cups of tea must number several thousand. Among the congratulatory remarks heard in the closing stages were "Best Convention ever" and "A record in all departments".

Looking to the future, B.A.R.C. would like to see another club top our efforts next year. This would give us a higher mark to measure ourselves against on some future occasion. There is nothing like friendly rivalry to bring out the best in all of us. 73, Rusty 4JM and Roy 4ZWR, on behalf of the organisers.

IPSWICH AND DISTRICT RADIO CLUB

The 1967 VK4 Convention is now over for this year and I am sure it will linger long in the memories of all the OMs and XYLS who visited Alexandra Headlands. This Convention was hailed by everyone as the biggest and best ever staged in VK4 and all the success is due to the splendid effort and planning done by the Bundaberg Radio Club, who deserve a pat on the back for their labours. The Bundaberg Club challenged all clubs to see who could field the most members. They won with 32 members, however we came second with 28 members present, so we had to concede defeat and see the "White Lady" return back to Bundaberg. She would have been most welcome at our Annual Birthday Party in July. Once we were neck and neck with equal members present but Bundaberg seemed to pull members out of thin air or perhaps square bottles would be more appropriate.

One of our members who wishes to remain anonymous was most annoyed. It appears his bedroom was only one with a door on it; how news travels! That stopped him roaming the halls at night ringing that bell he carries.

While en route to the Convention, three members were heard on 53 Mc. by George 4ZLG who called in, but alas their signals were lost to George as he moved into the tall buildings of Brisbane, so George had an eye ball QSO later in the afternoon with the same three members at Alexandra Headlands.

Wayne 4ZN now has a 40 mx mobile installed in his VW. The car looks like a mobile communications centre for some space project. If any more gear is installed XYL Jeanette will have to ride in the back seat.

I am sad to say our only rep. in the c.w. contest at the Convention was Dave 4HW, but he was handicapped by the four plates of jelly and seven hamburgers he had eaten; seems they slowed his Morse handling down considerably. While on the subject of food, I suppose it was noted by all present which club was always first at the table at meal times and last to leave?

The Club's pro, Bill Jehn, WIA-1A001, was very busy up there, and was much in demand looking after his s.w.l. group.

The XYL of one of our new members was caused some embarrassment while en route home due to a case of car sickness with a harmonic. This called for a change of apparel from slacks to more conventional dress on the roadside. We can assure all intending members this is not the initiation ceremony the club usually does.

The club members would like to take this opportunity to congratulate our fellow member Col 4ZMA on his promotion to Sergeant and wish him a happy holiday in Townsville. He will be 6 mx mobile all the way and will be looking for contacts. Col's only complaint with the promotion is the fact that increased social status is called for now in the mess, but seems that a tie was all the extra required.

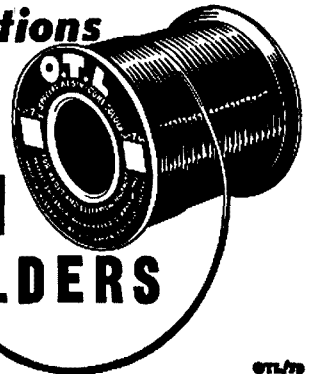
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SOUTH AUSTRALIA

The latest bug to bite a few of our members is 40 mx mobile and helical whips, d.c. converters, etc., are the order of the day for discussion. I am afraid it has bitten me also, and I will be mobile on 40 mx in August while on my way to VK3's snowfields. So how about a few contacts, so the log book won't look too bare.

The Club's Annual Meeting and 5th Birthday Party is to be held in the Club House on 11th July. This is the first time it has been held in our Club House. Last year we did not have any steps or lights in the Club House. We are expecting a big roll up of visitors and all will be welcome. Next month I hope to be able to give a full report on the new office-bearers and a brief report of the event. 73, 4GT.

BUNDABERG AMATEUR RADIO CLUB

The Club has been running along very quietly this month, after the hectic last few weeks with the Convention organising and the Youth Week Display, however, there is still plenty of activity, particularly on the v.h.f. side of things.

Club members recently purchased I5 Pye Mk. 3s to be converted to the 6 metre band. The net frequency is 53.032 Mc., the transceiver will have either xtal locked or tunable front ends. The upsurge of activity should give a lot of satisfaction to the members who have always been plugging for 6 metres.

About 4 or 5 of the sets have been converted so far and are very satisfactory. The 6 metre beam at Elliott Heads was dismantled to make way for the new 60 ft. tower for the quads. Looks like a nice little antenna raising party in store.

As reported last month, Frank VK4UK is back on 80, 40, 20 s.s.b. Frank is not happy with the vertical and is taking a hard look at the quad as the answer to his problem, for 20 anyway.

Our latest call sign, Dave VK4DJ, is very quiet—the lull before the storm, perhaps. Dave vows he is going on c.w. for a start, learning by other people's mistakes.

The club offers its congratulations to the new Y.R.S. State Supervisor, Danny VK4ZDD, for the flying start he made. It seems the Club will have to buy a h.f. tx now to get into those Y.R.S. hook-ups each month.

The July meeting at the time of writing is almost upon us. The item of interest for the night will be a talk, together with colour slides, of a recent trip through Japan by Tina, XYL of club member, Clem.

After months of frustrating work on the part of several members, including myself, to develop a 24-hour clock, it was something of a shock to have the job done very smartly by club member, Clem Stegink. The result of Clem's work is a joy to behold—"just like a bought job" I may persuade him to write an article on it some time, but not before he builds me one.

The Jamboree-on-the-Air is almost upon us again. There will be several stations operating from the various Scout Dens around town. 73, Rusty VK4JM.

TOWNSVILLE AND DISTRICT

The June meeting of the local radio club was very well attended, which speaks well for the effort put into it by some of the members to round up over 20 members to hear a lecture by Professor Boyd (University of London), who had the members enthralled as he spoke to them on the various Sunspot Cycles, behaviour of the "D" Region and the upper atmosphere. The meeting went on to the late hour of 10.45 p.m. It is to be hoped that the club will be able to get further speakers from the Townsville University to lecture on various matters of interest to all.

Very sorry that I heard too late about the VK3 boy who has become a VK4 and going to do a stint of 12 months on Willis Island. A pity, as I would have liked to take him around the various shacks, also show him the surrounding sights that tourists rave over; better luck maybe on his return.

Evie 4EQ called the other day to inform me that the 4WI news was coming through on 14.32 Mc. So once again I was able to call back to the boys in Brisbane. Did notice that there were very few call backs when asked. Doesn't seem like old times when the boys do not call in to air their grievances. Maybe all are contented with the way things are being run, or maybe it is too much of a chore to help out in any way?

Very happy to report that the City Council has approved of the local club being granted a lease of Council land on which to build their club house. It now behoves all to get together and get the necessary finance to build their club rooms. So boys, the ball is at your feet. May you soon have your building. 73, Bob 4RW.

The monthly general meeting of the VK5 Division was held to what is known in theatrical parlance as a "sell-out". So much so, that four new rows of seats had to be brought in from the storeroom, and even so there were one or two latecomers who did not manage to get a seat at all. In view of the fact that it was a particularly cold night, it was quite unexpected and only goes to show the present enthusiasm of the Division for its monthly meeting night.

The night took the form of a buy-and-sell, or as it is more politely put these days, a jumble sale night, and this probably was the answer to the unexpected crowd, because through the years this type of night has always been a success. The meeting was opened on time by the chairman, Murray 5ZQ, who immediately referred to the death recently of Jim 5JK and not so recently, Joe 5JO, and asked members present to stand in silence for one minute in their honour.

There was no correspondence, no Federal business, and very little Divisional business, and aside from a little commentary on W.I.C. E.N. from Geoff 5TY, a little discussion on disposal matters from Gilbert 5GX, and one or two matters of general business, the business side of the meeting gently faded out. A smoke-off followed together with the distribution of QSL cards by George 5RX, and the stage was then set for the "piece de risting" of the evening.

So much has been written about buy-and-sell nights, that much to the surprise of VK4 and VK6, I will not labour the point, but suffice to say that the auctioneer for the night was a very modest, unassuming, muscular, and athletic type, who must remain anonymous, if only to spare my blushes. If the chuckling and laughing that took place throughout the auction was any indication of the success of the evening, then all I can say, with my usual modesty, the night was something of a riot. Phil 5NN and Ron 5KS assisted both manually and technically toward the enjoyable evening, which closed at 10.45 p.m., after the disposal of almost a record number of bits and pieces at varying prices.

Quite a number of the older members present at the meeting, among whom were Pete 5FM, Leith 5NN (looking younger than ever), and Leith 5LG, who admitted that now he was once again on "the police force", felt that he should show up at the meetings now and again, and last but by no means least, Max 5GF who usually manages a couple of visits a year.

Reference was made by Rob 5WA in apologising for the absence of Marshal Hider (he was at the newly started code class at the School of Modern Languages in North Adelaide) to the fact that the class had become so popular that a Saturday morning class had now started, also a new Tuesday night class, which with the Thursday night class, was proving just how successful the venture had become. Phil 5NN remarked to me that it would appear that at last we had struck oil in our search for code classes in VK5, and Geoff 5TY also reminded those present that if they were thinking of joining any further classes that might be started, not to forget to mention that they belonged to the W.I.A., because members would receive preference and every consideration. Anybody desiring information concerning these classes should contact Geoff 5TY who, at the request of Council, paid a visit of inspection and was quite impressed with what he saw.

Leith 5LG, mentioned earlier as not having been along for some time to the meeting nights, suffered from the same trouble as do all members who are missing for a while—that of not knowing all of the younger members present—and as the younger members by now greatly outnumber the older ones, he was no orphan. However, I noticed him get among the crowd and it was not long before he was nodding his head and shaking his fists in the air, so can only believe that he was once more at home!

One of my espionage agents, well planted in the middle of the v.h.f. Group, tells me that a recent importation from VK5 was present at the last meeting of the Group, none other than Rod ex 6ZDS, who has taken up residence in our fair city, and if all is to be believed, he is well clued up on v.h.f. and associated techniques and will make a splendid addition to our Group. I understand that one of his mates in Charlie 6LK is also on his way to take up residence here, which is all to our good. Rod's new call is 5ZSD, and the reason that I have given him such a build-up is because he is reported as saying that he only came to VK5 for two reasons, the first I have forgotten, the second is that he wants to meet PanSy!! Rod—this is so seldom!!

The recent W.I.C.E.N. fox hunt on 53.1 Mc. was a huge success, so I am told by one of

my spies disguised as a fox, the cunning rascal, but I also believe that Barry 5ZMW ran out of foxes before the others even found any. Everything was checked, speed, etc., and he came through with flying colours.

Lance 5XL seems to like the South Coast, judging by his usual week-end signing over as "Portable at Encounter Bay". I wonder if it ever becomes a case of fishing interfering with Amateur Radio or vice-versa.

Jack 5LN heard calling Athol 5LQ on 7 Mc. the other Sunday morning without much response. Also heard someone else chipping in with the statement that it would be just as easy to try throwing a stone on his roof, probably it would have been just as effective. I knew that they lived in the same general direction from my QTH, but I never thought they lived that close.

George 5CV, better known as the co-ordinator of the "Thunderbird Club" in the Pacific area, is on the move again. It seems no time since he was over Wyndham way, but when heard the other morning he was in the high country in southern VK2, Cabramatta, or some such thereabouts. No reports of snow as yet in that area, so if he was contemplating a little skiing, it would be no dice.

Heard a certain well known Amateur telling his friends not to telephone him during "Homicide", and in the same breath talking about a power supply of 1400 volts at around 300 mA. No names mentioned in case it leads to homicide!

The 53.1 Mc. boys seem to keep things alive dally, judging by the way that they can be heard regularly moving to and from work, as well as at other times. Garry 5ZK was recently heard "mobile on the Anzac Highway", and sure enough, according to one of my mobile espionage agents, there he was, but going in the opposite direction.

"The man from Franklin Harbour", Brian 5BI, has been heard using the better known name of Cowell as his QTH. One of my spies in the Postal Section—he has an important job painting the sticky stuff on stamps—suggests that Brian should try and confuse us a little bit further by using "County Jervois" at times. He further informed me that he believed the hospital at Cowell was known by that name at one time, if not now. Was he right Brian? Understand that Brian has been giving his AR7 the once over and is complaining about some spot weld failures. I am posting him up some large nails and a small hammer, or should it be some small nails and a large hammer?

Talking of AR7s, Phil 5NN appears to have "lost" some coil boxes from his AR7, and is suggesting, in his usual polite and tactful manner, that a little searching in the pockets by a person or persons unknown might yield the answer. The grin with which it was said, took out the sting from the suggestion, but I did not quite like the fixed look that he gave me, and it was not my conscious ticking over, either!

Vern 5VB—The Admiral to you—is reported as having recently paid a visit to son-in-law Brian 5BI at Cowell—or Franklin Harbour—or County Jervois—have it which way you like. Don't know if it was just a week-end jaunt or a holiday visit, but I understand he was accused of causing QRM to Brian—using an electric drill I am told. Fancy a visitor placing himself in such a situation, but then these naval characters are a bit on the devil-may-care side anyway!

Mos 5TU called on Tom 5TL—our genial publications officer—seeking a certain publication on Tom's shelves. Uncle Tom was not at home, so Aunty Tom—oh I am a one—invited him in to search for himself. His particular want was out of stock, so Mos went on his melancholy way, but it did prompt Aunty Tom to tell Uncle Tom on his return that having dealt with three enquirers that day she felt that she now qualified for the title of honorary publications officer. Tom's reply is not known at the moment, more's the pity, simply because he would not tell me. Cowardy-cowardy-custard!!

Reports to hand tell of the fact that Ron 5KS is taking steps to get the rest of his tower sky-borne in the near future. Don't know just when, but will certainly be visible for miles around when complete. I wonder just what kitchen utensil belonging to his XYL will be included in the set-up. What's this about kitchen utensils? Well, Ron always boasts that he never builds a piece of equipment without including at least one kitchen utensil belonging to his XYL, such as a cake tin, or a baking dish, etc., etc., and says it in such a brave manner that we are almost convinced of his heroism—almost!

In talking to Jack 5JS recently I happened to mention to him that "Old" Roy 5AC was still going great guns and did not look a day older than when I saw him last, about five

years or so. "What do you mean old?" said Jack. "He is not much more than 60 years old." Well, this somewhat staggered me because as long as I can remember Amateur Radio, "Cookie" has been on the scene and I would have said he was about 90 years old. So what about it Roy, just how old are you? Oh, come on, don't be coy, I won't tell anybody, you know me—PanSy the oyster they call me!

Talking of the "oldies", I notice that Joe 5JT has been getting plenty of publicity in the local newspapers concerning his reaching the grand old age of eighty years. Photographs of him at his operating position in the shack, headlines concerning the greeting cards he received from his many world friends, and lots of pats on the back for his past exploits in Amateur Radio. All in all, a great boost for Joe and Amateur Radio in general, which is all to the good. My well known modesty prevents me from saying too much, but whoever is handling the publicity for Joe is doing a wonderful job, I wish I could do as well —ahem.

Met Al 5MF the other afternoon and we had quite a chat concerning radio and Radio Amateurs, and I could not but notice that with his usual poise and diplomacy, he only had a few shots to open the conversation concerning "The Thing". When he could see that I am not rising to the bait, he changed the subject to that of his new crank-up mast for his beam, and waxed quite eloquent on the subject. My information on the subject tells me that he has been trying to talk his XYL into the idea for some time, without much luck, but in a weak moment she said that it might not be a bad idea and before she had time to take a second breath, the workmen from Hills Holsts were in the backyard throwing cement in all directions! She knows now that if you give an Amateur an inch, they will quickly take over the backyard!

One of my trainee spies, right in the middle of the R.I. section, tells me that Phil Traynor, who recently retired from the Superintendent's chair, is leaving VK5 for greener fields interstate, just where and what state was not stated. All I can hope for is that he is not going to VK3, just what they do to ex VK5s is nobody's business!

Les 5FN seemed to enjoy himself at the meeting. He was telling me that although he has not been active for about a year or so, he definitely has not lost his interest in our grand old hobby, and sometimes feels the old itch.

Brian SCA, who acts as the base station for W.I.C.E.N., recently heard a signal from Price on 53.1 Mc. the other day, and called back again and again, but with no signs of contacting the said signal from Price. Eventually he woke up and switched the a.c. on and frantically called again. Need I prolong the sad tale, even Brian admits now that the lights on the panel look extra swell at Xmas time!

Have you taken out your Electrician's Licence yet? If you have not, don't forget under the new licensing bill introduced into Parliament this year, for electrical workers, after January 2, 1968, anyone who wants to do any work on the 240v. mains in the shack or house wiring must have one of the three grades of licences —A, B and C. Amateurs should have no trouble in securing a class B licence, so go to it, either to E.T.S.A. at the corner of Rundle and Pulteney Streets, or to the Hilton Service section, where the necessary forms are available. Don't forget—you might regret.

The passing of Jim 5JK was not altogether unexpected, as he had been in the Repatriation Hospital with his heart, and seriously at that, for about six weeks or so, but even so the news was a little sudden. He never completely lost interest in Amateur Radio, and often

would bob up on 40 mx for a short QSO, quite often with his old mate Rex 5KY. Words at a time like this mean little, but as my grandson said when he heard the news— "Uncle Jim was a kind man"—and what better epithet could anyone want?

Well, this is no good, I can't end the notes in such a sad vein, so I will tell you just what Phil 5NN said to me when I warned him that I was writing a little paragraph about him and "The Thing". Lifting his head in a gesture of disdain he said, "Write what you want anytime, I only take it with a bag of salt." I pointed out that he meant a pinch of salt, not a bag. "That's what you think," he said, "with what you write, only a bag of salt would fit the bill." Oh dear, oh dear. 73 de 5PS, PanSy to you!

— . . . —

WESTERN AUSTRALIA

Well, here we are again doing battle with old father time, the Commissioners of Taxation and all and sundry. There's no doubt about it, the guy who coined the phrase about to save time is to lengthen life knew what he was saying.

That Kalgoorlie Hamfest a few months back was certainly a well planned affair and congratulations are due to all concerned. Unfortunately, or perhaps fortunately for Kal, I was unable to attend, but a note from Doug 6EP has brought me up to date on these matters. The whole thing kicked off on the Saturday with a 41-mile tour of the Goldfields areas, covering all points of interest. Ten cars participated with four radio check points to keep them from straying.

The bachelor quarters of John 6ZBY became the meeting place on Saturday evening.

After listening to the Sunday news broadcast and call-back, some 32 Hams and XYLs went on a tour of inspection of the School of Mines, which proved very interesting. The Geological Museum was inspected and the electronics section was very ably explained by guide John Foxton.

After lunch all visitors gathered at the b.c. station 6KG, the domicile of VK6JF, before proceeding to the Hampton Hill property of Mr. Barton Jones, who kindly permitted the use of his shearers' quarters, kitchen and conveniences. Mr. Jones gave a talk on the district and described two ghost towns.

Then it was time for the cooks to come into their own. Mrs. Young (mother of John 6ZBY) and Graham 6ZEZ struggled with a wood-burning monster to cook some 120 chops and 120 sausages. Wow!

Troubles never come singly—so an old saying goes—and Bill 6DR can surely confirm this. It appears that Bill had just recently completed construction and testing of a transceiver and was bearing it proudly homeward, comfortably resting on the seat of his motor vehicle. Alack and alas, another car tried conclusions with them and succeeded in upsetting their equilibrium. Bill was projected out through one door, the transceiver through the other to be neatly bisected by the open door as the car started to roll. Both car and transceiver are write-offs. Hard luck Bill, but stick with it OM, there are better times ahead.

A little bird told me that new beams are the order of the day for both Glenn 6ZGO and Ron 6ZDF. Excuse me while I replace the speaker cone in my receiver.

Heard a couple of "old" call signs operative again recently, Harry 6HS spraying the sunny metropolis with r.f. from a vantage point on Lesmurdie Hill. Then, on another occasion, John 6IW on the 8 metre a.m. net. Mai 6MU sidebanding on 80 metres also drew my attention.

Standby, I'm up on that soap box again. This time to record a case of illegal transmission, downright discourtesy and utter selfishness. A relative newcomer to the band had the "audacity" to fire up on a.m. on 20 metres, calling CQ. Up popped a voice, "We don't want a.m. on this band". No call sign. I am not trying to "knock" sideband, it is a great technical advancement and here to stay for sure. However, I am speaking for a bit of common courtesy and some small measure of respect for the rights and feelings of others. Since when has not there been room for all modes on this and other bands? There may be circumstances which necessitate the use of humble gear. Why then should the state of a man's bank balance deny him the right to operate on any band, provided he operates within regulations? While most operators are gentlemen, there is an uncomfortably large number of jackalls hiding 'neath the guise of Amateur operators. Fair go, Aussie—let's try and keep 20 metres as a happy hunting ground, not let it sink to the level of a "pig's paradise".

Turning to a much brighter topic, news to hand indicates that yet another Youth Radio Club has commenced operation. The boys

from Christ Church Grammar School are settling down to a study of things electronic. Nice work fellows!

Rumour has it that Rivervale has been the centre of some very strange goings on just recently. Folk are whispering about a strange young Radio Ham (aren't ALL Radio Hams a little strange?) who has been seen to climb to the tippy top of his tower clutching a beach umbrella. What the heck? No, it's okay, relax—relax—it was only Les 6ZFE preparing for his sojourn to the Eastern States to do a bit of parachuting. Many happy returns to earth Les!

David 6DI has been operating on 10 metres with a single loop quad. Not by choice though, he was unlucky enough to lose the other half in a devastating storm which struck the area wrecking many homes.

Farmers in the region presided over by the "X-Group" are zealously guarding their dairies. Since the success of Aub's (6XY) rotating mechanism, separators are at a premium in this district.

At this juncture I will endeavour to beat a dignified retreat—cheers and best 73, Ross VK6DA.

HAMADS

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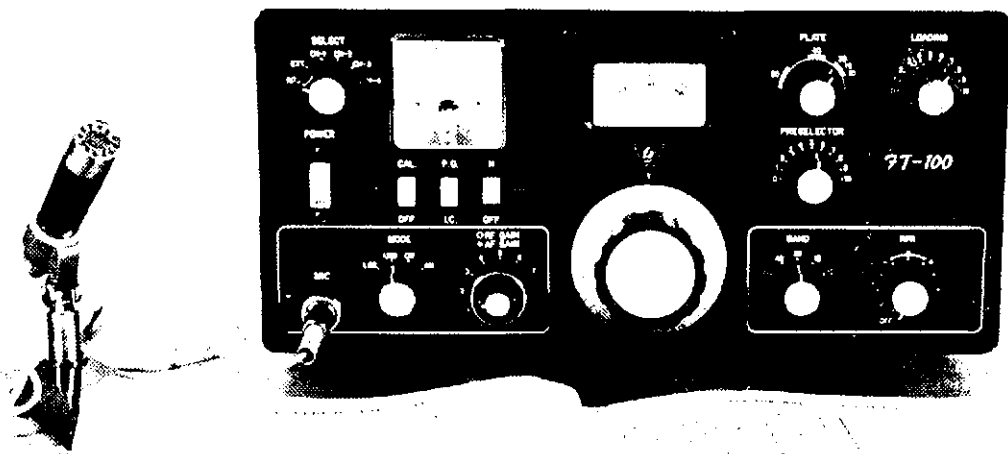
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Vol. 35, No. 9
SEPTEMBER
1967

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24	500	80c	250	50	45c
25	25	30c	500	6	45c
25	50	35c	500	12	65c
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"AMATEUR RADIO"

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★

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CUSTOMS DUTY

LAST year, before he journeyed overseas, our then Federal Treasurer (Kevin Connelly, VK3ARD) began to collect some data relating to the incidence of customs duty on imported s.s.b. equipment. Together with other members of Executive he also investigated the availability of Australian made equipment which would comply with a standard of design, finish and construction equal to imported units.

Independently of this action, and on their own initiative, Sandy VK9GC and Ted VK9TB approached the Customs Department of Papua and New Guinea with a case for the reduction in duties on commercial radio equipment imported into the Territory. The Customs Department of Papua and New Guinea is completely separate from that of Australia and it has agreed to waive all import duties on communications type radio receiving apparatus where it is being imported into the Territory of Papua and New Guinea by a licensed Radio Amateur, under certain conditions, viz.:—

The Amateur licence must be produced by the licensee/importer and a declaration must be signed whereby the licensee/importer undertakes that the equipment is not for re-sale and is for the personal use of the importer only.

In making these representations, Sandy and Ted pointed out that the receiving apparatus under question was not designed for entertainment purposes, but for serious non-commercial radio experiments and communications, and the particular equipment in this case was designed for s.s.b.

Meanwhile, back in Australia, Federal Executive had passed on to Allen Fairhall, VK2KB, the file on Customs matters and he agreed to make application to the Minister for Customs and Excise on behalf of the W.I.A. for "By-Law admission" of s.s.b. equipment for Amateurs.

It should be stated at the outset that in Australia it is the policy of our Government to afford tariff protection for the express purpose of protecting Australian manufacturers who find themselves at an economic disadvantage against overseas suppliers. This has long been the policy of Australian Governments, and the Tariff Board—a statutory Board which advises the Government in matters relating to trade and customs—has expressed the key principles as follows:

"The Tariff Board recommends assistance, when necessary, to industries on the basis of their being economic and efficient and showing sound prospects for success." Ref. Tariff Board; Annual Report 1958/9 p. 9.

Over the years, the Board has built up a scale of maximum rates considered appropriate for various types of industry, and although the Board has always resisted the invitation to state what is meant by "economic and efficient" assistance would be given to industry which, for instance, aids de-centralisation, creates opportunities for manu-

facturing employment, or which uses Australian inputs, or which saves foreign exchange, or which contributes to defence, or whose development is in accordance with Government policy, etc.

On those bases, protection in the form of Customs Tariff on imported equipment has long been given to the Australian radio and electronics industry. The situations that exist in Papua and New Guinea and in Australia are therefore, on many grounds, vastly different.

Nevertheless, in the representations to the Australian Minister for Customs and Excise, on behalf of W.I.A., it was pointed out, among other aspects, that the Amateur Service went beyond a scientific hobby. Rather, it provided an avenue through which radio technicians and scientists could in their own time, and at their own expense, become experienced in advanced electronic techniques ahead of the general application in civilian and the defence fields.

Reference was made to the number of high executive and scientific positions filled by Amateurs in the community, and also to the number of Amateurs who are currently research and design officers for nearly all radio manufacturers. The value of the Amateur Service as a means of supplementing normal channels of communication in emergencies, and its defence significance, were cited as additional reasons for the encouragement of our activities.

The limited spectrum space and consequent band-crowding which has led to the need for development of narrow bandwidth techniques was given as a reason for the increased demand for s.s.b. equipment. This equipment was described as being of necessity, very well engineered, also expensive and of a type which must continue to be imported for some time yet. The incidence

FEDERAL COMMENT

of duty and sales tax was making the cost of s.s.b. equipment prohibitive for non-commercial operation by Amateurs and was tending to discourage the use of s.s.b. and limit the opportunities for familiarisation with the mode.

The Minister was requested to consider that if the case against duty free admission was marginal, then the matters referred to above should carry some weight. He was also acquainted with the fact that Federal Executive of the W.I.A. had canvassed the Australian electronics industry to ascertain the possibility of supplying suitable Australian made equipment, without significant result. The only source of supply quoted a price in excess of the duty paid price of comparable imported equipment, with a long delay

in filling orders, and a "one off" approach to manufacture. It was submitted that the response to our enquiries indicated no possibility of development of local manufacturing capacity.

There is a need to encourage Australia's industrial capacity—this is freely admitted—but it seems clear that efficient local production of soundly engineered equipment must await a quantity demand. This in turn would be best encouraged by duty free admission of imported equipment subject to review from time to time. In essence, that was the submission which was presented recently to the Minister for Customs and Excise on behalf of the W.I.A. by Allen Fairhall, VK2KB.

With considerable regret, we state that the Minister for Customs and Excise has rejected the application for by-law admission of s.s.b. equipment for Amateurs. Rejection of the application was clearly based on the nature of the use of this equipment by Amateurs and the fact that there is available from Australian sources equipment which might be regarded as reasonably equivalent.

The Minister, referring to representations, re-iterated that the usual considerations governing by-law admission were that:—

1. Suitably equivalent goods of Australian manufacture are not reasonably available, or if waiver of preferential Tariff margins is involved, suitably equivalent goods of British and Australian manufacture are not reasonably available;
2. The goods are for an essential purpose.

He indicated that he was in accord generally with the view put on the desirability of encouraging the activities of Radio Amateurs. However, he found difficulty in accepting that in all cases normal pursuit of our hobby constituted an essential purpose as envisaged in the by-law legislation. Information was obtained by the Minister that there is a Company in Australia currently supplying s.s.b. equipment under Government contract for civil defence use, thus, for purposes of by-law administration, suitable equivalent goods of Australian manufacture were deemed to be reasonably available!

Hence, he felt that the by-law provisions of the Customs Tariff were not the appropriate means of according the Amateur Service encouragement and assistance.

So, notwithstanding the efforts of Federal Executive and notwithstanding the wonderful advocacy of Allen Fairhall, VK2KB, the status quo is maintained in Australia. Rather than have a mass migration of s.s.b. enthusiasts to Papua and New Guinea, we will re-approach the matters, perhaps on appeal, and perhaps from some other point of view, in the near future.

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

Note.—Correspondence or comments on the above matter should be directed to the Federal Secretary at his private box—P.O. Box 365, Frankston, Vic., 3199.

SOLID STATE H.F. CONVERTERS

HAROLD L. HEPBURN,* VK3AFQ

THIS is a further article in the series on the Moorabbin and District Radio Club transistorised receiver project that has appeared in these pages over the last year.† It presents a design for h.f. converters suitable for use with the original 3.5-4.0 Mc. receiver but which can be used with any other receiver having the appropriate tuning range. Other tunable i.f.'s can be used by simple changes to crystals and coils. Suggestions are made later in the article.

To a very large extent the h.f. converters have been developed in collaboration with the v.h.f. section of the VK3 Division who, concurrently, have been working on transistorised converters for the v.h.f. bands.

It had been hoped that a full description of a 52 Mc. "F.E.T'ised" converter would have appeared in this issue of "A.R." as a companion article. However, other commitments made such a desirable course of action impossible, but it is anticipated that the article will appear in the near future.

In keeping with the original concept of the Moorabbin receiver project the aim has been to produce a series of h.f. converters which are complete in themselves, simple to build and get going, which use parts which are freely available in Australia, which can be used with any tunable "back end" and which are adaptable to other i.f. ranges.

"FET" TRANSISTORS

Reference to the circuit diagram—Fig. 33—shows that for the r.f. and mixer stages use has been made of 2N3819 "N" channel field effect transistors. In r.f. amplifier and mixer service FET's have several advantages over the bi-polar transistor, the most notable being their higher input impedances and their ability to handle quite large signals before cross modulation occurs. The higher input impedances and the fact they are voltage operated devices, frees the user from the compromises between coil efficiency and power transfer which are necessary with bi-polar transistors. In (very!) general terms a field effect transistor can be looked upon as a low voltage substitute for a valve. Indeed some work recently done by one of the club members has shown that in the case of an old A.W.A. battery operated "Mod. Osc." direct replacement of the oscillator valve by a 2N3819 worked excellently. Further experiment showed that the Type 10 crystal calibrator could be completely "FET'ised" with a substantial improvement to its h.f. performance.

So far as noise figures are concerned the real impact of internally generated noise only becomes felt over about 20

Mc. and—within reason—is of lesser importance in h.f. than in v.h.f. converters and front ends. Suffice it to say that the 2N3819 can be used at 432 Mc. with noise figures that are an improvement on the valve types normally used at those frequencies.

THE CIRCUIT

Reverting to the circuit diagram, it can be seen that a low impedance (50-70 ohms) winding transfers the incoming signal to the tuned circuit (L2/C2) in the gate of the first 2N3819. After amplification a double tuned circuit (L3/C3, L4/C4) couples the signal to the gate of the 2N3819 mixer stage. It may be argued that a single tuned circuit might have been used, but it was felt that the double circuit did enable a greater degree of control to be exercised over the passband.

Since the r.f. stage is virtually equivalent to a triode valve r.f. ampli-

fier it has been necessary to neutralise it. A bridge configuration has been used to avoid the need for coil tapping. It is recommended that, initially, a 3-30 pF. trimmer be used at Cn and the limits between which it is effective determined. Subsequently, the variable can be replaced with a disc ceramic of the correct value.

The oscillator circuit is quite straightforward and requires little comment.

The output of the mixer is at 3.5 Mc. and a pi-network is used to couple to the output socket. Normally L5 is peaked up in the centre of the band and should require no adjustment except when the length of the co-axial lead to the tunable i.f. is changed.

The complete unit is mounted on a 4" x 2½" printed circuit board which uses d.c. supply rails which are earthed for r.f. by liberal use of decoupling condensers. The r.f. grounding is to a central earthy mat. This technique

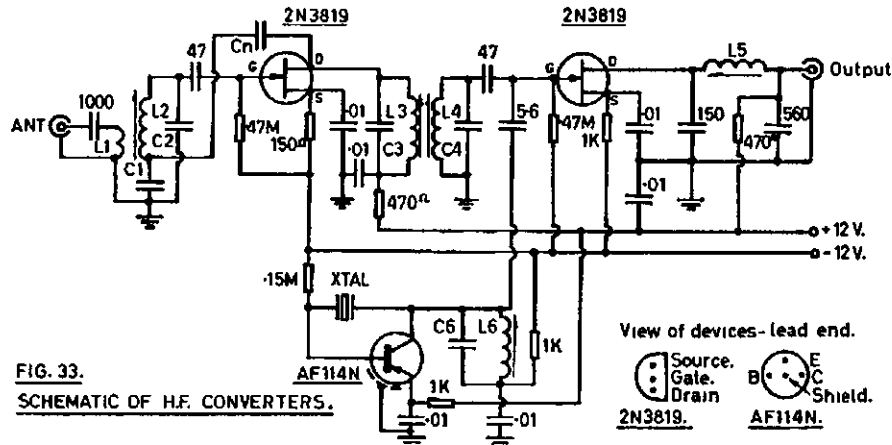


FIG. 33. SCHEMATIC OF H.F. CONVERTERS.

MOORABBIN & DISTRICT RADIO CLUB-RECEIVER PROJECT.

Band	L1	L2/L3/L4	C2/C3/C4	L6	C6	L5 (for 3.5 Mc. I.F.)	Crystal Freq. (for 3.5 Mc. I.F.)
80	4 turns 35 B. & S.	50 turns 35 B. & S. F16 core	68 pF.	—	—	—	—
40	3 turns 35 B. & S.	30 turns 35 B. & S. F16 core	39 pF.	29 turns 29 S.W.G. F16 core	47 pF.	60 turns 35 B. & S.	11.00 Mc.
20	2 turns 29 S.W.G.	29 turns 29 S.W.G. F16 core	22 pF.	29 turns 29 S.W.G. F16 core	47 pF.	60 turns 35 B. & S.	10.50 Mc.
15	2 turns 29 S.W.G.	25 turns 29 S.W.G. F29 core	15 pF.	25 turns 29 S.W.G. F29 core	22 pF.	60 turns 35 B. & S.	17.50 Mc.
10	2 turns 29 S.W.G.	20 turns 29 S.W.G. F29 core	10 pF.	15 turns 29 S.W.G. F29 core	22 pF.	60 turns 35 B. & S.	24.50 Mc.

Table 1.—Coil Data.

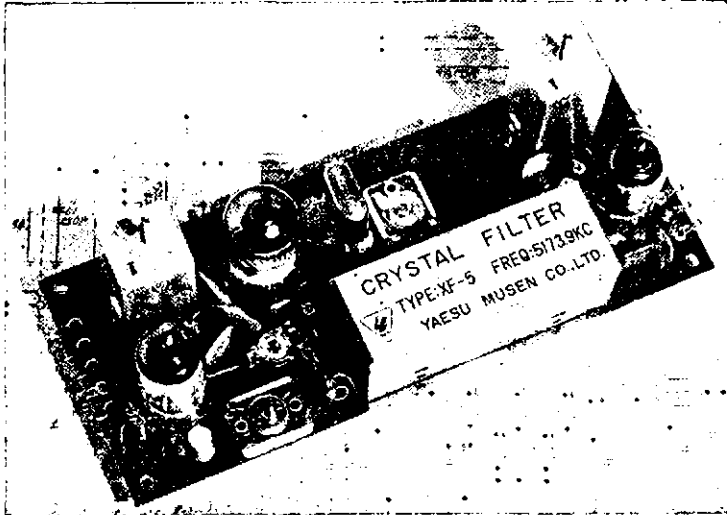
Note that the data for all r.f./mixer coils for 80 metres has been included to assist those using other than a 3.5 Mc. i.f.

* 4 Elizabeth St., East Brighton, Vic., 3187.

† "A.R.," August 1966, page 2.
 "A.R.," September 1966, page 2.
 "A.R.," October 1966, page 11.
 "A.R.," November 1966, page 7.
 "A.R.," March 1967, page 8.
 "A.R.," June 1967, page 5.



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Output Impedance 50 ohms or 50K ohms
Effective output level -55 db. [0 db. = (one) 1V. Microbar]
Frequency response 50 to 15,000 c.p.s.

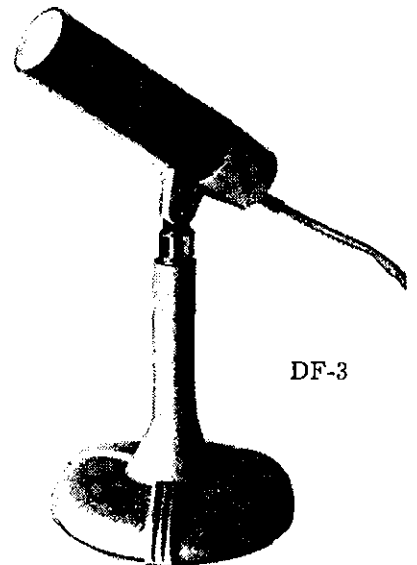
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enables the converter to be used with either supply rail connected to real earth.

All coils are wound on Neosid Type 722/1 bakelite formers (approx. 3/16" diameter) and use either F16 or F29 screw cores. Full coil winding data in given in Table 1.

A.g.c. can be applied to the earthy end of the 470K gate resistor of the r.f. FET, but it is suggested that a separate r.f. gain control is preferable, and can be obtained by returning the earthy end of the r.f. source resistor (150 ohms) to the slider of a potentiometer across the supply rails.

Checks made on the 14 Mc. prototype of these converters showed it to have a sensitivity of better than 0.5 uV. on a.m. and roughly half this value on c.w. The noise figure at 14 Mc. was 7 db.

The current drain of the unit is 14.0 mA. at 12 volts. The r.f. stage draws 7.0 mA., the mixer 3.0 mA. and the crystal oscillator 4 mA.

ADJUSTMENTS

Getting the converter on tune is fairly straightforward. Check that the crystal is oscillating with a receiver that covers the appropriate frequency. Adjust L6 until the crystal output is heard. Peak the r.f. coil (L2) and the output coil (L5) in the centre of the band. Peak L3 at the high end of the band and L4 at the low end of the band. You may find L3 quite "broad". The neutralising procedure was outlined earlier in this article.

CHANGING THE I.F.

Although these converters have been designed for use with a 3.5-4.0 Mc. tunable i.f., they can be changed to other i.f. ranges quite easily. No modifications are necessary to the r.f. and mixer gate coils but L6/C6 and the output coil L5 will need to be brought on to the new operating frequencies. In the event that the new tuning range is between 2.5 and 6 Mc., no change will be necessary to L5—only the core will need re-peaking.

On 28 Mc. only one crystal will be needed if the tunable i.f. covers 3.5-5.5 Mc. but in the event that only a 500 Kc. band is available, some crystal changing will be needed.

KITS AVAILABLE

As has become the custom over the past 12 months, the Moorabbin and District Radio Club will be pleased to assist those interested in making these converters. Full kits of parts including crystal, printed circuit boards, full instructions and diagrams will be available from the beginning of September 1967 at \$18.00 post paid or \$13.00 less crystal. Printed circuit boards, instructions and all diagrams will be available separately at \$2.00. Boards only will be \$1.00.

Enquiries should be addressed to the Hon. Secretary, 4 Elizabeth St., East Brighton, Vic., 3187.

A SIMPLE SILICON A.G.C. CIRCUIT

CLEM MALOOF,* VK2AMA

This is a description of a solid state a.g.c. system freely adaptable to existing audio amplifiers and providing 40 db. compression capability at negligible harmonic distortion.

Using it, the writer is able to maintain maximum sideband output from his phasing rig without the more modern refinement of an automatic load control system. It is but necessary to set the a.f. gain control to the drive required to just produce flat topping in the r.f. envelope pattern as displayed on a c.r.o. or a calibrated output meter. From then on the a.g.c. takes over.

In the writer's shack speech will fully modulate the final and reliably pull in the v.o.x. at two feet from the microphone. Even close shouting fails to cause over-drive and subsequent splatter. No critical adjustment is necessary as long as r.f. is kept out, ground loops are avoided, and the d.c. supply is adequately filtered—conditions necessary for all transmitter low level a.f. stages.

at 0.8v. r.m.s. Audio input of 10 mV. at point "A" produces, at 10 db. compression, distortion of less than 1%, while at 40 db. distortion is approximately 5%. Lower input levels cause correspondingly less distortion.

Rarely more than 14 db. compression is needed in the shack. This represents a change in gain of five times. The actual amount of compression obtainable from any existing pre-amplifier will depend on the gain available and the proportion of the output voltage fed back.

Any microphone whose output is about -55 db. (0 db. = 1v./dyne/cm²) will suit this system without modification. This includes most 50K ohms impedance dynamics in the lower price class. Apart from their dependability dynamic microphones have an advantage for sideband operation because of their smooth response avoiding the peakiness of crystal, ceramic and controlled magnetic types. Average s.s.b. output will rise since intelligible audio sets the level of flat topping rather than peak responses which degrade intelligence.

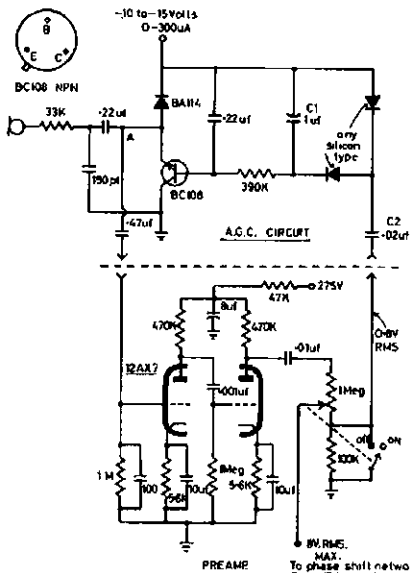
This a.g.c. system does not clip in any sense. Power supply and tube dissipation ratings are as for normal speech and should be observed. Clipper type compressors on the other hand increase demand on the power supply and will over-rate dissipation of the final if it is already operating near peak dissipation—which is the case in most commercial class B and AB linears since this allows maximum efficiency and minimum size.

The attenuator is freely adaptable to any amplifier provided input to point "A" is less than 10 mV. r.m.s. and 0.8v. r.m.s. is available to drive the d.c. transistor amplifier. It was first described in Mullard Technical Communications No. 79 for incorporation into transistorised tape recorders. However, a voltage doubler and low leakage titanium oxide capacitor have been substituted to render it compatible with high impedance valve circuits and to provide an attack and decay time suitable for the Amateur Service. With the constants shown, attack time is about 30 msecs. and decay time is about 10 seconds. Doubling the capacity of C1 approximately doubles both times.

Should a.g.c. not be required, as for example when undue noise is present in the shack, a pot. with a pull switch and wired as shown will lend versatility.

The power supply for the attenuator should have low ripple although regulation is not critical. At VK2AMA the existing relay supply is applied through a two-stage capacitor input filter of 4.7K ohms and 100 uF. in each leg. Current drawn by the BC108 varies from zero up to 300 uA. at 40 db. compression.

The whole unit and power supply filter fit neatly on a small phenolic board mounted on the side of the chassis between the microphone socket and grid pin of the pre-amplifier. All earth connections are made to the microphone ground lug.



No longer will it be necessary to ride the a.f. gain control when visitors speak or when the OM is obliged to squeeze all he can out of the final to punch through QRM to reach the DX. An a.g.c. system smooths out v.o.x. operation also.

Basically the principle employed is to shunt the input to the pre-amplifier with a silicon transistor working as a d.c. amplifier whose gain is inversely proportional to the audio output voltage. Harmonic distortion products due to the non-linear characteristic are balanced out by inserting in series with the transistor a silicon diode of similar characteristics to the emitter-base diode.

The input impedance of the attenuator is approximately 7K ohms. The system's compression threshold begins

* 7 Harrow Road, Bexley, N.S.W.

A SIMPLE TWO-TONE TEST GENERATOR*

ROBERT C. CHEEK, W3LOE

THIS little two-tone generator can be duplicated for a parts cost under eight dollars. It has admirably filled a need for a convenient source of one or two adequately-pure audio tones for single and two-tone testing of complete single-sideband transmitting set-ups.¹ We keep it near the operating position at all times. Transistorised and completely self-contained, it can be quickly plugged into the microphone jack to provide a single tone for tuning, a check on unwanted-sideband suppression, and a check on carrier suppression under dynamic conditions. Alternatively, it provides two tones of adjustable relative amplitude for conventional two-tone testing of overall system performance. We continuously monitor transmitter output with an oscilloscope as a matter of operating practice, and a dummy antenna is kept handy. With the scope already connected, making such checks is a quick and simple procedure.

The unit uses two R.C.A. 2N406 germanium transistors, each in a Twin-T oscillator circuit. The symmetrical Twin-T circuit differs somewhat from the bridged-T circuit used by Baxter²

able range, however, by changing R2 alone. The output at C2 is a relatively pure sine wave, with no perceptible distortion under oscilloscope observation.

The component values shown in Fig. 1 were chosen to give tones of approximately 750 cycles and 1800 cycles for the two oscillators with standard values of available capacitors and resistors. The output mixing circuit is arranged so that the 1800-cycle tone appears at roughly constant amplitude, approximately the peak output level of a crystal microphone, at any setting of the output control. The latter controls the amplitude of the 750-cycle tone in the output from zero to nearly twice the higher-frequency amplitude. Thus, with the control at full counter-clockwise position, the unit is a single-tone generator. For two-tone testing, the control is advanced as required to balance the amplitudes of the two generated sidebands. Balance is indicated by sharp-cross-over points in the resulting oscilloscope pattern. In either case, the desired absolute level is controlled by the regular gain control of the speech amplifier.

the self-tapping screw used to assemble the cover to the box. The battery is held in place by a home-made clip, which is secured to the front panel by the switch mounting. The output phono jack is mounted at the rear of the box, just above the top circuit deck.

The schematic diagram, Fig. 1, shows the circuitry contained on each oscillator deck. Wiring of the decks is a quick and simple procedure. The component leads themselves provide all of the internal interconnections except for one separate lead which picks up the ground points. In most cases, the leads of components which have a common junction are pushed through the same hole, twisted slightly together, soldered, clipped to about $\frac{1}{8}$ " and bent down against the underside of the board. The usual precautions apply to the soldering of junctions involving transistor leads. These should be held close to the underside of the board with a pair of long-nose pliers while the soldering iron is applied and until the joint cools.

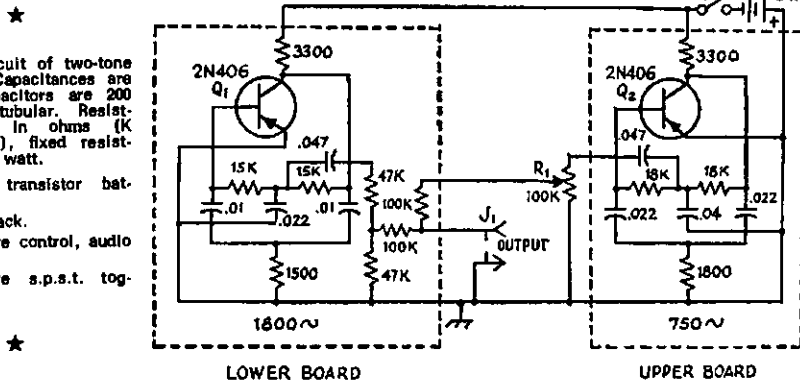
Capacitors with 200-volt rating are suggested in the schematic diagram because they are generally less expensive and available in wider variety of ratings than lower voltage units, which could be used. Capacitors of ratings from 100 to 400 volts were used in the actual construction. This was done simply because they were available from the author's parts box at the time the unit was being developed.

Before the boards are mounted in the box, two insulated leads should be soldered to the outer (battery) end of the 3,300-ohm collector resistor of the lower board. One of these should be long enough to reach one side of the on-off switch, the other long enough to reach the corresponding end of the 3,300-ohm resistor of the upper board after mounting. Similarly, an output lead, long enough to reach the phono jack, should be attached to the junction of the two 100K output resistors on the lower board. The ground lug of the phono jack is used to terminate similar extensions of the ground bus from each board. Examination of the circuit diagram will indicate the external leads that must be provided for the level control.

The negative (black) lead of the battery terminal clip goes to one side of the switch. After assembly of the boards to the box, the external connections are completed and the positive (red) lead of the battery clip is soldered to any convenient point on the ground bus of the upper board.

A rough check of the operation of the oscillators can be made with a pair of high-impedance earphones. With the level control fully counter-clockwise, the higher frequency tone should be clearly audible in a quiet room. As the control is advanced, the lower frequency should appear and become perceptibly louder.

(Continued on Page 10)



in his general-purpose audio oscillator. Two complementary symmetrical T's, bridging each other, are used in the RC network. The upper T is a low-pass network, the lower a high-pass network, and at the oscillating frequency there is a 180-degree phase shift across the combination.

This circuit has been analysed by Maynard,³ who states that for optimum feedback conditions, C2 should equal 2C1, and R2 should equal 0.1R1. These proportions are not unduly critical, but limits on R1 for a given type of transistor are imposed by bias considerations. The output frequency depends on the entire combination. The frequency can be varied over a consider-

The higher tone is used for single-tone testing so that sideband frequencies resulting from harmonics generated by distortion in the audio system will fall outside the pass-band of the usual filter type of exciter. The resulting single-tone pattern thus will deviate from normal only because of inadequate suppression of the carrier or opposite sideband.

CONSTRUCTION

The unit is contained in a 4" x 2 $\frac{1}{2}$ " x 2 $\frac{1}{2}$ " minibox. Each oscillator is built on a 3 $\frac{1}{2}$ " x 2" piece of phenolic vector-board. These are mounted as two decks in the box, supported and separated by $\frac{1}{2}$ " metal spacers, two at the rear corners and one at the front centre of each board. The boards are mounted far enough to the rear of the box to leave room for the battery, the on-off switch, and the miniature level control. In mounting this control, be sure to place it so that it will not be damaged by

* Reprinted from "QST," August 1966.

¹ Blakeslee, "Testing a Single Sideband Transmitter," "QST," September 1965.

² Baxter, "A Transistor Audio Oscillator," "QST," February 1965.

³ Maynard, "Twin-T Oscillators for Electronic Musical Instruments," "Electronics World," June 1964.

THE COUPLED TUNED CIRCUIT R.F. PHASE SHIFT NETWORK

R. W. MARTIN,* VK2AH1

IN some Ham-built phasing type s.s.b. exciters using coupled tuned circuits, or so called two coil, r.f. phase shift networks, the construction and adjustment of such a network does not always turn out to be an easy or straight forward project. Quite often a lot of fiddle and much cut and try is resorted to before something near the desired result is obtained.

Perhaps one of the reasons for this could be due to the inadequate and sometimes sketchy details supplied in some constructional articles. However, in certain articles it is my opinion, based on some experimental work and a little theoretical consideration, that the methods of adjustment advocated are technically suspect and misleading.

Therefore, this article has been written in an attempt to shed more light on the actual operation of the circuit, and to apply this knowledge to the construction and adjustment of practical networks.

The circuit, stripped to the bare essentials, is represented by Fig. 1. This depicts the application in an s.s.b. phasing exciter where two low impedance links supply equal r.f. voltages differing in phase by 90 degrees to the balanced modulators.

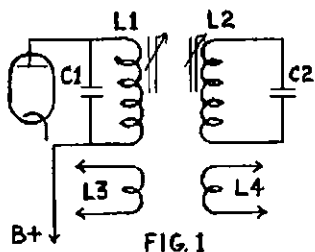


FIG. 1

The following analysis, which uses elementary coupled circuit theory and simple vectors, is confined to the particular application already mentioned and deals only with factors considered necessary to provide a knowledge of its operation.

To simplify the analysis, resistance is ignored, because resistance in circuits of reasonable Q and of the type which would normally be used in such a network, will have an insignificant bearing on the required results. Therefore, for practical purposes Fig. 1 can be re-drawn as Fig. 2. It will also be assumed that the coupling between L1 C1 and L2 C2 is loose.

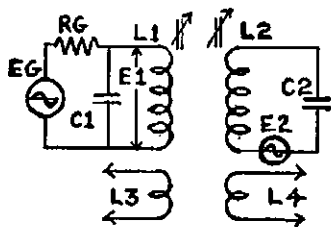


FIG. 2

Referring to Fig. 2, the generator E_G , R_G , supplies a voltage E_1 across the parallel combination of C_1 L_1 , which, if tuned to resonance, will offer a high impedance to the generator. The generator current will be the vector sum of the coil current and the condenser current. In a practical circuit these two latter currents will be approximately the loaded "Q" times the current from the generator, and will therefore be large. The large coil current at resonance will lag 90 degrees behind E_1 and the condenser current will lead by the same amount. This is illustrated vectorially in Fig. 3.

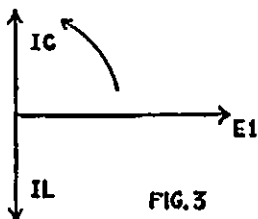


FIG. 3

At this point, for the sake of clarity, it is perhaps as well to review some basic elementary theory. Starting from the fact that if a varying magnetic field created by a varying current in a conductor cuts another conductor, a voltage will be induced in the second conductor. The magnitude of this voltage will be determined by the rate of change of current in the first conductor, being large for large rates of change and small for small rates of change.

The above condition applies to the current in the coil L_1 which, being a sine wave current, as illustrated in Fig. 4(a), creates a flux which cuts the turns of L_3 and induces in it a voltage, proportional at each instant to the rate of change of current in L_1 . By inspecting Fig. 4(a) it can be seen that the rate of change of current corresponds to the slope of the curve and is changing all the time from instant to instant. A tangent drawn to meet the curve at any point gives the slope of the curve at that particular point.

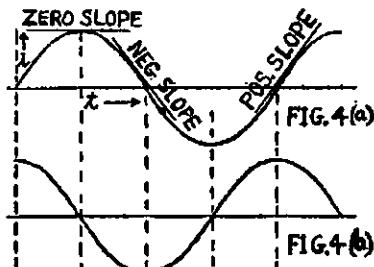


FIG. 4(a)

FIG. 4(b)

If it were possible to accurately draw a sufficient number of these, and their individual slopes were to be plotted on a graph, considering slopes upwards from left to right as positive slopes and slopes downwards from left to right as negative slopes, it would be found that the curve of Fig. 4(a) had:

(i) the greatest slope where it crossed the zero axis, and (ii) zero slope where it reached its peak upwards or downwards. The result of plotting such a curve is shown as Fig. 4(b).

Now since Fig. 4(a) represents the instantaneous value of current in L_1 plotted with respect to time, the new curve, Fig. 4(b), represents the rate of change of this current with respect to time. Consequently, as was previously mentioned, this determines the voltage induced in L_3 , which will therefore be proportional at each instant to the new curve. From an inspection of Fig. 4(b) it can be seen that this new curve has the same shape as the original but is displaced from it by a quarter cycle or 90 degrees, and therefore the voltage induced in L_3 will be displaced 90 degrees from the current in L_1 .

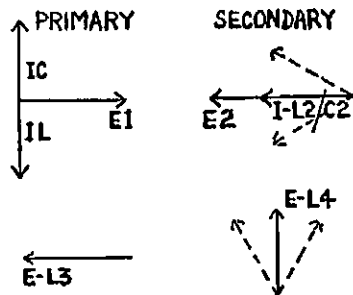
Incidentally, and as a matter of interest only, the results above are derived mathematically by differentiating the function represented by the curve of Fig. 4(a), the result being known as the first derivative or in this case, di/dt . Thus di/dt represents the rate of change of current with respect to time and when multiplied by the mutual inductance possessed by L_1 and L_3 will determine the actual instantaneous voltage induced at any instant in L_3 provided the correct units are used.

Returning to L_1 , the current flowing in this coil will also induce a voltage in the secondary coil L_2 , in exactly the same manner as just described for the link L_3 , and bearing the same phase relationship to the current in L_1 as the voltage of link L_3 does, i.e. both will be displaced 90 degrees from the current in L_1 . This voltage can be considered to act in series with L_2 and C_2 and is denoted as E_2 in Fig. 2.

If L_2 C_2 is resonant at the frequency of the induced voltage a current will flow which will be in phase with the voltage. This current flowing through link L_4 a voltage which at each instant is proportional to the rate of change of current in L_2 . This voltage, in the same way as explained for the induced voltage in L_3 , will be displaced 90 degrees from the current in L_2 .

Adding all these results to Fig. 3, we obtain Fig. 5, which clearly shows that the desired 90 degrees phase

FIG. 5



* 140 North Street, Casino, N.S.W.



WARBURTON FRANKI

NEWMARKET PACKAGED CIRCUIT AMPLIFIERS

SPECIFICATION DETAILS:

Data	PC1	PC2	PC3	PC4	PC5	PC7	PC9
Power Output mW.	150	400	400	400	3W.	800	Pre-Amp.
Input Imped. ohms	1.5K	1K	2.5K	220K	1.5K	1.5K	1M
Outp. Imped. ohms	40	15	15	15	3	8	600
Supply Volt. —volts ..	9	9	9	9	12	9	9
Typical Distortion % ..	2	3	3	3	3	3	1
Frequency response	300-15K	200-12K	200-12K	200-12K	50-12K	50-12K	20-20K
Overall Dimensions	2x1	2½x1½	2½x1½	2½x1½	5½x1¾	3x1¾	2x1
All ¾" high.							
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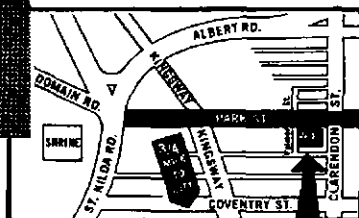
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relationship between link output voltages has been achieved. The dotted vectors for I (L2 C2) indicate the variation in phase of the secondary current for small amounts of detuning above and below resonance, the resulting link voltage, E-L4, phase shifts are also shown dotted.

The all important conclusion to be drawn from the foregoing analysis is that the secondary tuning is the controlling factor in phase adjustment. This follows from the fact that the current I1 is the vector from which every secondary affect is referenced. For the same reason the primary tuning should have no material effect on the phase relationship existing between the link output voltages. What the primary tuning should do, if the generator impedance is taken into account, is to vary both link voltages up or down, as it is tuned to, or detuned from, resonance respectively. Again stressing that the coupling to the tuned secondary is loose.

A point of practical interest, which emerges from the above, is that the primary tuning will effect the phase relationship between the link output voltages if it has any effect at all on the generator frequency.

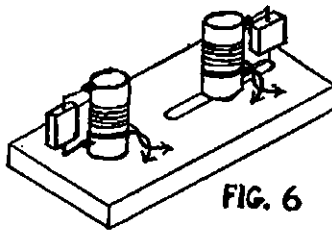
TUNED CIRCUIT COUPLING

Factors which influence the degree of tuned circuit coupling are now discussed. A basic property of the network is that with loose tuned circuit coupling the link output voltages differ in phase by 90 degrees when the secondary is tuned to resonance. However, if the coupling is very loose, insufficient energy will be transferred from the primary to the secondary. Alternatively, if the coupling is tight, say critical or greater, two effects concern us. Firstly, as the tuned circuit coupling is increased the effect on the mutual coupling between each link and the tuned coil not intentionally associated with it, ceases to be insignificant. Secondly, in order to determine the desired secondary resonant point, amplitude response indications are used, but with circuits whose coefficient of coupling is greater than critical, the primary has two pronounced peaks, and for coils of equal "Q", so has the secondary. Under these conditions amplitude response measurements are useless as indications of resonance.

Therefore, to strike a balance between the too loose and too tight conditions, and to provide a margin for variation, a suggested suitable range of degrees of coupling, expressed as a percentage of critical, could be those couplings lying between 80% and 50% of critical. An arbitrary figure to try initially would be the mid-range figure of 65%. This should be quite satisfactory because even at 50% of critical the loss of secondary amplitude amounts to only 2 db, i.e. the secondary amplitude is 80% of the maximum attainable with critical coupling.

The construction of the network can take any form which allows the coupling between the tuned primary and tuned secondary to be varied, but with provision for locking the coils in the correct positions once this is determined. A suggested method is for the two coils to be wound on slug tuned formers, and mounted vertically side

by side on a metal plate or chassis by means of a screw or stud in each former. A long slot instead of a hole is provided for mounting one of the coils so that the spacing between it and the other coil can be varied and then locked in position, see Fig. 6.



An inspection of a universal resonance curve will indicate that there is quite a large shift in phase around the resonant point of the secondary for small amounts of detuning. Typically for "Q's" of 100, this amounts to approximately 11 degrees for 0.1% detuning, with an approximate amplitude variation of only 2%, for the same amount of detuning. In other words, tuning around the resonant point allows relatively large phase shift adjustments with small amplitude effects, which is desirable.

The above also indicates that, for stable sideband suppression, the tuning should not wander to any extent, consequently, rigid construction and stable components should be used. The coils are, of course, susceptible to pick-up from stray fields, and the usual precautions should be observed in this regard.

Apart from the points just mentioned, and that it is desirable that the tuned circuits have reasonably high "Q", nothing else is very critical. For 9 Mc., 1/4" diameter, or thereabouts, slug tuned formers with sufficient turns to resonate with 100 pF. condensers will prove satisfactory. Some circuits using this system of r.f. phase shift show h.t.+ connected to the bottom of both coils. This is not necessary, instead, the second coil can be earthed at one end and the link wound at that end.

Any secondary link movement will affect tuning, and hence, phase. It is therefore desirable that it be a fixed link of one or two turns, fairly tightly coupled to the earthed end of the secondary. I merely selected two turns for my links on speculation, which worked fine with the amount of output available from my driving stage. I also know that one was built using one turn which had ample output. Regardless of the choice, it is recommended that the secondary link should be in a fixed or semi-fixed position, as described above, during the adjustment procedure.

The primary link should be similar to the secondary link but not as closely coupled, and should be arranged so that the coupling between it and the primary coil can be readily varied.

CIRCUIT ADJUSTMENT

Once the network has been constructed, and with all the foregoing in mind, it is quite possible to juggle intelligently with the several variables and, eventually, to achieve the desired results.

However, it would be nice if the coupling and other adjustments could be carried out without the ambiguity which accompanies the cut and try method, particularly where many factors interlock. Happily, this is quite easily done with the help of a v.t.v.m. with an r.f. probe. But if this is not available, a reasonable job may be done with a simple diode arrangement such as that shown in Fig. 8, which is used with a v.t.v.m. or even a 20,000 ohms per volt voltmeter. This will be satisfactory provided enough r.f. is available so that the small signal non-linearity of the diode is minimised. This factor is only significant for the coupling adjustment because voltage ratios are involved.

One other small requirement temporarily necessary in order to set the coupling is that the first tuned circuit in the anode of the network driver tube must be capable of being tuned through resonance without any significant reaction on the oscillator operation. If the network is normally driven by a buffer tube, then this requirement has been met. However, if, as is the more common case, the crystal oscillator drives the network directly, it will pay to unplug the crystal and drive the grid of the tube with a makeshift Pierce or other convenient form of crystal oscillator. If a v.f.o. or signal generator is available with sufficient output at the frequency required, it could be used.

If all this is too inconvenient, then the coupling must be adjusted by trial and error with all its attendant uncertainty.

However, let us assume that the coupling is to be set to a definite percentage of critical, as recommended, and that some signal source at the correct frequency is available to drive the tube feeding the network, we then proceed as follows.

With the links connected to the balanced modulators and the coils set to maximum distance apart, set the balanced modulator to the balanced condition, i.e. carrier balanced out. Connect the r.f. probe across the secondary link output and alternately tune both primary and secondary until maximum output is observed on the meter. The probe is then transferred to the primary link and the actual deflection noted and tabulated as E1. The secondary is then detuned completely, or what is much easier, short circuited, i.e. a short circuit is placed across either L2 or C2. The deflection of the meter will increase as a consequence of this and this new reading is noted and tabulated as E2. The percentage of critical coupling can now be determined from the graph Fig. 7, where percentage of critical coupling is plotted against the voltage ratio $E2 \div E1$.

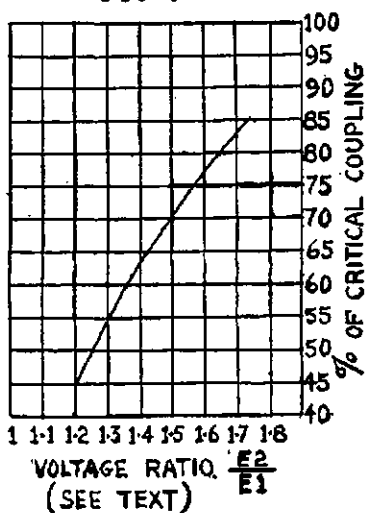
If the coupling, as revealed by the method described above, is too loose, the adjustable coil is moved progressively closer to the fixed coil, and with each movement, the above procedure is repeated in its entirety until the voltage ratio $E2 \div E1$ obtained indicates that the correct degree of coupling has been achieved. The coil is then locked in this position.

The makeshift oscillator or signal source, if used, can now be removed and normal crystal oscillator operation resumed. In which case the primary is tuned just off resonance, so that the crystal oscillator starts reliably, and the secondary is tuned to maximum secondary loop output.

If a buffer tube normally feeds the network, of course the above will not apply, and in this case both primary and secondary are tuned to resonance by alternately adjusting both primary and secondary until maximum secondary loop output voltage is obtained.

For either type of primary operation the next adjustment is to see that the secondary is peaked and to measure the output from the secondary link. If this is within the range of values required for the correct operation of the particular balanced modulator used, all that remains is to connect the meter probe across the primary link and adjust the coupling of this link until the same output voltage is obtained as was just noted across the secondary link.

FIG. 7



Depending on how much the primary link has to be moved, there will be some reaction on the secondary link voltage and perhaps on primary tuning. However, repeating the procedure just described one or more times in the order given will bring all conditions to the point where the primary is tuned to suit the requirements of the amplifier or crystal oscillator, the secondary is tuned to resonance for 90 degree phase shift and the loop outputs are equal.

The particular order of adjustment and measurement is important and can be summarised as follows:—

- 1) Primary tuned to suit the operation of network driver stage.
- 2) Secondary tuned to maximum secondary link output voltage.
- 3) Secondary link voltage noted.
- 4) Primary link coupling adjusted so that the output voltage equals the secondary link output voltage.

Final phase and amplitude adjusted is carried out for sideband suppression on the complete exciter in the approved manner, which, if no extraneous

phase shifts have to be compensated for, should only require a touch on the secondary tuning for phase, followed by a touch, if necessary, on the primary link coupling for amplitude. When completely satisfied, the links can be cemented in position.

All of the above takes very much longer to tell than to perform and with a little familiarity it is very quickly accomplished.

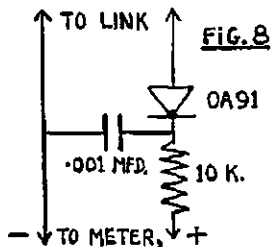


FIG. 8
PREFERABLY D.C. V.T.V.M. BUT
20,000 OHM/VOLT MULTIMETER
CAN BE USED—USE ONE RANGE.

Referring back a little to the point where the secondary link output voltage was measured for the first time. If this happened to be higher or lower than required, then the best method of overcoming this is to adjust the input to the network by varying the driver stage operating conditions or design.

Alternatively the secondary link coupling may be moved. However, if this is already of two turns and closely coupled and the output is too low, the input to the network should be raised. On the other hand, if the output is too high, then the secondary link may be adjusted, either by reducing the turns on the link from two to one or physically decoupling it from the secondary, or both. If a reduction from two to one turn is made, then the primary link should also be reduced to one turn. If decoupling the secondary loop is resorted to, and depending on the physical arrangement of the two tuned coils, there could be some limit to the amount which the link should be separated from its tuned circuit. The reason for this is that it is desirable, as far as possible, for each link to sample only the flux from the particular coil to which it is assigned. In cases where large secondary loop changes are made it would be as well to quickly recheck all adjustments from the beginning.

A test unit was constructed and, using a signal generator driving a pentode amplifier as a source, together with a wide band oscilloscope, having equal X and Y channel phase shifts, as a detector the familiar 90 degree circular phase shift pattern was quickly obtained. Tuning the primary then merely increased or decreased the size of the circle, indicating the correctness of the conclusions derived from the analysis regarding the effect of the primary tuning on the circuit's operation.

In conclusion, I feel that the network can be made to work, and work well, with very little effort. Periodic re-adjustment, if the network is well constructed using stable components, should be nil or very little and reduced to two, one for predominantly phase

and the other for amplitude. It has several advantages over some of the circuits used for the same purpose. It is very easily built and can be constructed of materials usually found around the shack, it does not require tight tolerance components, is materially unaffected by stray capacitances, is capable of a wide range of phase shift adjustment, has ample output at low impedance, and, with a little familiarity, is quickly and easily adjusted.

TWO-TONE GENERATOR

(Continued from Page 6)

It must be assumed that the builder has an oscilloscope, since the unit will not serve its intended purpose without it. Final checks on the waveform of the two tones should be made by observing each tone separately on the scope. The higher frequency tone can be temporarily eliminated from the output by grounding the junction of the two 47K output resistors on the circuitry of the lower board.

W.A.M.R.A.C.

World Association of Methodist Radio Amateurs and Clubs

By Courtesy of VK3LC

W.A.M.R.A.C. was born in 1957 out of G3LQK—the Huddersfield South Circuit Methodist Radio Club, the first Church Amateur Radio Club in the world—to help Radio Amateurs and S.w.l.'s to increase the enjoyment of their hobby by introducing them to each other, and strengthen their fine Christian service of spreading friendship around the world.

W.A.M.R.A.C. stands for the advancement of international understanding, goodwill, and peace through the world fellowship of Radio Amateurs united in the ideal of service.

The purpose of W.A.M.R.A.C. is, firstly, to find all the Methodist and other Church Radio Amateurs and S.w.l.'s in the world, and to introduce them to each other through the publication of the "World Methodist Register of Church Amateurs, Clubs and S.w.l.'s", and the circular letter issued free to all members; secondly, to encourage and to give guidance for the establishment of Circuit or Church Amateur Radio Clubs at home and abroad offering education in the use of Amateur Radio; and thirdly, to encourage fellow Christians to take up this wonderful hobby of Amateur Radio and S.w.l'ing.

There is a place in W.A.M.R.A.C. for everybody. Methodist as well as all other Radio Amateurs and S.w.l.'s are invited to become members. So far there are 750 members from 33 countries enrolled, and a register is being compiled listing these members so that a means of introducing each to his fellow is being devised. This register is a very useful tool to facilitate contact with fellow Radio Amateurs and S.w.l.'s throughout the world.

Because W.A.M.R.A.C. stands for Christian Radio Fellowship, whether it be local, further afield within one's own country, or abroad, Amateur members are asked to cultivate this fellowship from their stations in all their contacts, and especially with W.A.M.R.A.C. headquarters. The headquarters station, G3NJB, operated by Arthur G3NGF can be heard most afternoons working VK members on 14145 Kc. after 0800z. Any Amateurs hearing these contacts are invited to break in and enjoy a chat with Arthur.

The VK net is operated in the 3.5 Mc. band every Thursday evening and any Amateur is invited to join that net also. In addition, there are Tapespond and Folder Clubs devised especially to help the S.w.l. members to keep in touch with each other. The Christians are one people in all the world. Here by Amateur Radio is a way of enjoying our oneness with one another.

Further particulars may be obtained by writing to the Hon. Secretary, G3NJB, Arthur Sheppard, 1 North St., Crewe, Cheshire, England.

TRANSISTOR SIDEBAND—INCREASE YOUR TALK POWER

COL HARVEY,* VK1AU

One of the nicest things about Amateur Radio is the way in which every new project seems to generate additional avenues for experiment.

The transistor audio stages used in the VK1AU Sideband project ("A.R.," Feb. 1967) are no exception. Meditating about the need or otherwise for automatic load control, an inspiration prompted by an article in the Transistor Handbook (Stoner and Earnshaw) suggested that a form of audio limiting would be easy to add to the audio stages of the exciter. An evening's work soon proved the point. The block diagrams (Fig. 1A and Fig. 1B) for "before" and "after" show the basis of the inspiration.

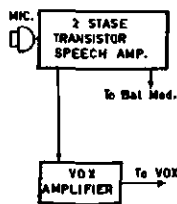


FIG. 1A.

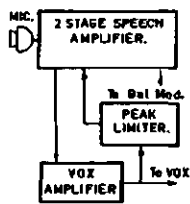


FIG. 1B.

The peak limiter merely takes some of the audio which drives the VOX unit, rectifies and filters it, and uses it to control the base of any general purpose transistor. The transistor is then shunted across the collector of the first speech amplifier. When the base bias potentiometer is set so that the limiter transistor is operating on the knee of its curve, any further negative bias from the diode lowers the collector impedance sharply and so provides an effective shunting or limiting action on the controlled stage. The circuit is simple, but it works.

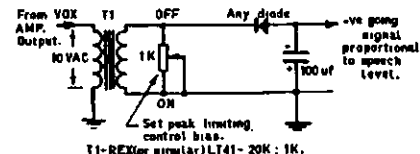


FIG. 2A.

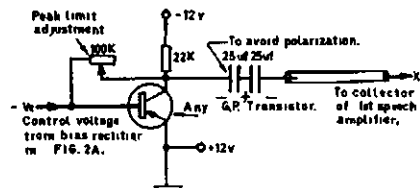


FIG. 2B. VARIABLE IMPEDANCE LIMITER.

Initial adjustment is simple: Set R1 so as to short input to the diode. Set R2 to maximum resistance. Apply a steady tone at normal speech level to the transmitter and adjust R2 until speech level just starts to drop (as observed across the VOX transformer or on a c.r.o., field strength meter, final plate current meter, etc.). Leave R2 set to cause about 5% drop in normal

output. Now open R1 until the base voltage on the limiter increases by about 0.1 volt on speech peaks. Increase the gain of the speech amplifier about 10%, to improve the talk-power.

Speech quality will deepen as gain is increased, and it may be desirable to re-adjust the amount of "top-cut" to a different level to that used without "compression" or peak limiting. It will also be found that the audio drive level to the VOX unit is reduced by the shunting effect of the additional transformer. However, there is still ample gain for even distant-speaking VOX operation.

No particular layout or shielding is required. The prototype worked well with no sign of r.f. feedback or hum, even when spread out all over the bench. However, it would be as well as to build the entire gadget on a strip of matrix board which can later be slipped into an i.f. transformer can. If miniature potentiometers are used, these can be adjusted initially and then left set, so there is no need for a front panel control, other than perhaps a compressor-disconnect switch.

About the only thing that can go wrong during construction is for the diode to be reversed. Check this by ensuring that the 10 volts or so of a.c. across the primary of the coupling transformer produces a negative going voltage at the base of the transistor. Under normal operation, the transistor base will swing up from about 0.2 volt negative to about 0.4 volt negative.

The c.r.o. pattern will show no "clipping" or "flat-topping" and there will be about 20% of the pattern displaying speech peaks superimposed on a solid low and medium level pattern. Although excessive gain cannot now

cause flat-topping of the r.f. amplifiers, excessive audio levels can generate distortion products which seem to show up as an enhancement of the normally suppressed sideband. However, even without a c.r.o., proper adjustment of speech level is easily achieved with on-the-air reports, and once determined, subsequently allows a very wide change in speech levels to be accommodated without causing splatter.

★

HINTS AND KINKS

IN-BUILT BATTERIES

Tonight I replaced the batteries in my transistorised band-edge marker. No experienced Ham will be surprised to hear this simple job took well over an hour!

The two pen-light cells have to be soldered into the circuit—common plan with home made gear. Go ahead, solder 'em in, and what do you find? No volts. Take 'em out, and try them on a meter; 1½ volts per cell. Put 'em back. No volts.

If you've plenty solder you can keep doing this for a long time. Only when I ripped the cell apart to see what was intermittent did the solution appear. The solder was not going onto the case at all, only onto a metal disc (size of a threepence) held by the cardboard covering tube.

In a pressure type holder, this disc would probably be held against the zinc case tight enough to ensure contact, but soldering a wire on just pulled it away from the zinc.

May every reader be spared this time-wasting gremlin.—Lee VK2AXX.

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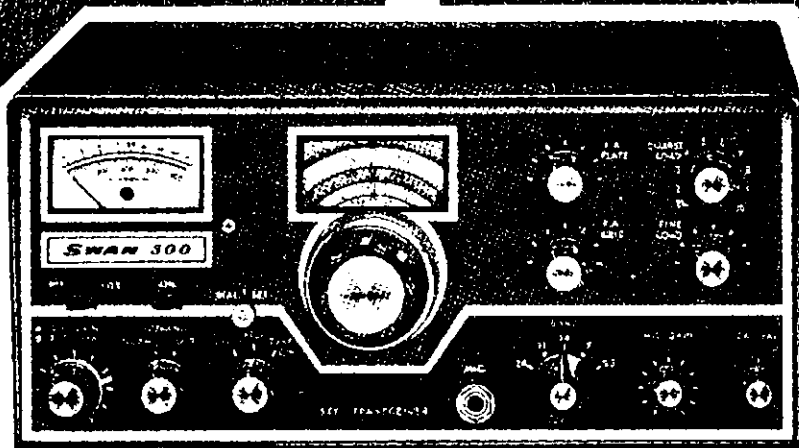
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SIDEBAND

Sub-Editor: PHIL WILLIAMS, VK5NN, 37 Winna Rd., Coromandel Valley, 5051

Radio activity in the VK5NN shack has been at an all-time low for the past few months except for the addition of a 2.1 Kc. mechanical filter in the Delta-het receiver in order to improve the selectivity for the R.D. Contest. A try-out on 80 metres in the N.Z.A.R.T. Memorial Contest showed its superiority over the four-crystal filter using FT241 surplus crystals, some of which are not according to label. Since they are now over 20 years old, this is not surprising, and they will need re-checking for frequency and re-activating, to see some more activity in the old AR7 for 2 metre s.s.b. work.

S.S.B. ON V.H.F.

The amount of 2 metre (and 6 metre) s.s.b. on the air is very pleasing and I am sure this will open up some new DX possibilities, especially when the new regulation linear amplifiers get going.

The 3-400Z grounded grid tubes with about 1800 volts on the plate, will give the 400 watts p.e.p. output, which, we understand, will be permitted, and several 6 metre linears have been described, with photographs, in the American periodicals.

For 2 metres there is but one economical choice, viz. the pair of 4X150s in push-pull with linear tank circuits—there are the later 4CX250Bs, etc., available new for more money, of course—and these will do very well with about 1500 plate volts, 250 volts on the screen and approximately 40 to 50 volts of bias, depending on the particular tubes in use.

Many of the surplus tubes of this type are a little low in emission, which is why they are surplus to requirements, and cheap, but a few hundred extra plate volts to a pair, will restore the output capability to 400 watts. It is well to remember that these tubes are quite efficient, and although the input on peaks may be about 600 watts, i.e. about the same as a 150 watt a.m. transmitter, the meters on typical male speech will kick to about half of this, and the transformer in the power supply may be smaller than this as far as thermal ratings are concerned.

If you are planning the amplifier and power supply, it is very useful to provide a "half" voltage from the power transformer so that loading and testing can be carried out at half voltage and half current, and then will be about optimum for the full voltage supply. The half voltage will then be available for c.w. operation, too.

It is desirable to keep the plate "test" voltage well in excess of the screen voltage—a point to be remembered with some of the European pentodes and tetrodes—otherwise screen grid dissipation will be exceeded.

In my opinion, the half voltage supply is quite necessary for v.h.f. linears, for which c.r.o. display of the r.f. envelope is not always possible unless you have a 'scope which will handle 144 or 432 Mc. with the deflection plates tuned as lechers.

The lower voltage supply is handy, too, for those rather protracted adjustments to get the darned things correctly neutralised. Adequate shielding with 400 watts of 2 metre soup in the shack is essential, or every little grid in the shack will get more than it bargained for, particularly those coming out to top-cap connections.

GROUNDING THOSE GRIDS

With the use of higher powered linear amplifiers for 10, 6 and 2 metres, the term "grounded-grid" is now out of fashion and "cathode-driven" is the term now preferred to describe this well known mode.

In an article on page 36 of June 1967 "QST," two well known authorities (Orr W6SAI and Sayer WA6BAN) discuss ways of using cathode drive at higher frequencies, when the grid is at neither a.c. (r.f.) nor d.c. earth potential. Some experimental curves for the 3-400Z with and without grid tuning, i.e. connecting one grid lead to chassis and tuning the other one, are given, and future articles on "Super-cathode-driven" and "semi-cathode-driven" circuits are promised—for those who wish to use tetrodes. I await these with eagerness.

FOUR-TUBE LINEAR AMPLIFIERS

These amplifiers have become very popular in s.s.b. circles. Where the drive available from the exciter is limited to 20 to 50 watts the increase in power output is worthwhile, but to put one of these on the end of a Swan 500 or 350, or a Galaxy V. is rather a waste, as there is not a great deal of difference in received signal for a

3 db. increase at the transmitter.

Tubes such as the 6DQ5 take quite a bit of drive because of the bias required and the high input capacitance. I have measured 31 pF. input capacitance for a tube in a socket mounted on a chassis, and allowing for say 125 pF. on 10 metres, provide a problem.

In the January 1967 issue of "73" Magazine, W7CSD describes a linear using four new Ampere tubes type 6KG6. As with many articles in American magazines, this one shows a rather "experimental" approach, without doing very much preliminary figuring and measuring.

You will see what I mean when I relate that he assembled the tubes in the "cathode-driven" connection, then ran them with 2000 volts at 100 mA. standing current—plates cherry-red. The rated anode dissipation of these 6KG6s is 34 watts each, which is about the highest of the line-timebase tetrodes—the 6HF5s are 28 watts.

I have no maker's data on the 6KG6, but it is a high transconductance type and I should think the heater current would be 10 or 12 amps. for four tubes in parallel. W7CSD's last sentence states that the 6KG6s have a promising future—to which I would add, but not with 2000 volts on the anodes, even in s.s.b. service. I would suggest that 1200 to 1400 volts should be the limit, at 100 mA. of standing current.

The question of heater-current for these four-in-a-square amplifiers should be watched. An example brought to me to check because its output was less than the exciter, was noticed to be a little "dim" inside the bulbs. The 6.3 volts, 5 amp., winding on the transformer was, of course, overloaded and the separate chassis power supply needed long leads and several plugs and sockets. Less than 5 volts remained at the heaters.

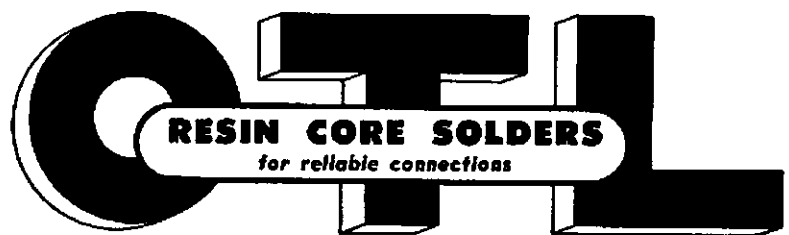
A temporary solution was affected by adding 2.5 volts from half of an unused rectifier winding. This also sat down on the job, being on the outside of the transformer, but the resulting 6.5 volts with mains supply to a 260 volt primary tap, gave the amplifier a new zest for life.

73 for now, Phil VK5NN.

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TRANSISTOR R.F. POWER AMPLIFIERS

Editor "A.R.," Dear Sir,

I have been following with much interest the series of articles on "Transistor Amplifier Design," by VK3ZRY in recent issues of "Amateur Radio." The articles have been competent and readable, and are a credit to Australian Amateur technology. I should like, however, to make a few comments on the most recent one (August issue), treating r.f. power amplifiers. Perhaps they may be useful to expand the subject somewhat. I shall refer to several articles published in the "Equipment Exchange Bulletin," but to show that I am (trying to be) modest, I'll designate them by numbers in brackets.

Class A operation is defined as the bias system which allows anode or collector current to flow for the whole 360° of the input cycle. Class B is defined for anode or collector current to flow for 180° or half of the input wave, for each valve or transistor. Class C allows anode or collector current to flow for less than 180°, ordinarily 120° to 150°. Class K is a special case, involving the shift of bias with signal, a subject I shall explore in detail one day.

Now, in a transistor, no collector current will flow until the signal at the base exceeds the voltage threshold of the base-emitter junction. This means that no (or very little) current will flow in the output until the input wave exceeds about 0.25v. for germanium or 0.5v. for silicon. Thus, for true Class B operation, a transistor must actually have a slight forward bias, to allow it to conduct for the whole half cycle of the input. If operation is "zero bias," the condition will not be Class B, but Class C. Since the reverse voltage limit of the base-emitter junction is limited by its very inflexible zener characteristic, and is of the order of 4-6v., and since no output current flows until the input rises to at least 0.5v. (for silicon), you can see that a 0.5v. threshold can represent a considerable fraction of a signal having a peak amplitude of, say 3v. Depending on the ratio of driving voltage to threshold, this can result in a collector current angle of 130-150° for an input signal of nominal amplitude. This means that with zero bias, you will have quite satisfactory Class C operation of a transistor r.f. power amplifier!

In order to obtain a smaller angle of collector current flow, it is necessary to apply some source of additional reverse bias between the base and emitter. The simplest way to do this is to insert a resistor in the emitter lead; if it is bypassed, the input impedance of the stage will remain the same, but the added bias (developed across the bypassing condenser) will reduce the angle of current flow. If, however, the emitter resistor is not bypassed, it will have the effect only of increasing the input impedance of the base circuit of a common-emitter amplifier. Increased input impedance will necessitate raising the tap or increasing the number of turns of coupling link in the base

circuit. Therefore VK3ZRY's emitter resistor in his Fig. 6A should be bypassed.

Another method of applying reverse base bias (other than applying a fixed potential from a bleeder) is to insert a "base leak" (analogous to grid leak) consisting of a paralleled resistor and condenser in the base-return circuit, as VK3ZRY shows in his Fig. 6B. This has the advantage of not robbing voltage from the collector supply, but if enough of the latter is available, the bypassed emitter resistor is preferable, because of the added d.c. stabilisation it affords.

After all this, however, one may well ask whether added reverse base bias is desirable for Class C operation of transistor amplifiers. The effect of the added bias is to decrease the angle of collector current flow. Theoretically this increases the collector circuit efficiency, but there are several dangers and difficulties involved. For one, more drive voltage is required, but an analogy with valve operation is dangerous. With a valve, you can drive the grid as negative as you please, and it matters only that the conduction occurs as the signal swings above cut-off bias. With transistors, there is a definite limit to the negative voltage you can apply to an (for example) NPN input. It is the abovementioned zener reverse characteristic of the base-emitter junction.

Thus, if your signal input is 3v. peak, for a max. BV_{EBO} of 4v., and if no bias is provided, conduction will occur when the input signal is between +0.5v. and +3v. (for NPN), and no conduction will take place when the input is between +0.5v. and -3v. Now, if you add another -1v. reverse bias, conduction will occur between +1.5v. and +3v., and non-conduction between +1.5v. and -3v. If you increase the drive to make up for this loss in average driving power, you stand the real danger of exceeding the BV_{EBO} . Thus we must interpret cautiously the statement that bias and drive "are best juggled in practice to achieve best efficiency and output". This is possible only when there is a margin of safety available between $-V_{EB}$ and BV_{EBO} . It also depends on the regulation of the driving stage, from which—let us not forget—appreciable power is being obtained. All of this is not mere theory, because one of our authors has destroyed several silicon transistors by base-emitter junction death, in an effort to apply more drive with added reverse base-bias. His devotion to the Cause of Progress has been duly noted!

Furthermore, when the angle of collector current flow is reduced, efficiency will be increased only if the Q of the output resonant tank circuit is sufficiently high to provide enough "flywheel" effect to keep a good amplitude of a.c. voltage when the pulse is shorter. That word "pulse" is important indeed, because that is the meaning of a reduced angle of collector current flow: a smaller portion of the collector current cycle is available to excite the

output tank. But what happens when you apply a very rapidly changing current to an inductance? $dE = L(di/dt)$, and the peak voltage increases. This is implicit in the definition of Q, where Q is proportional to L, for a given amount of loss resistance. Now this is no problem as long as the output tank is loaded sufficiently. But with a shorter angle of current flow and a higher tank Q, the system becomes more sensitive to variations of load. This is obviously important in Amateur systems, where the load is not always perfectly at resonance. If the load becomes inductive (e.g. when operating above the resonant frequency of an antenna), or is reduced, there is every good chance for the voltage at the collector to rise to a ruinous level. This has also been discovered the hard way at the workbench! Remember that there is no such thing as an "I.C.A.S." voltage rating for an exactly-rated transistor.^(2, 3)

If, on the other hand, Q is not sufficient in the output tank, a reduced angle of collector current will result in lower, not higher efficiency. The one advantage of increasing base reverse bias, is the possibility of making full use of what Q is available in the output tuning circuit at hand, but as you can see this has to be done with the proper load, and cautiously. In general, the Q of common-emitter transistor output circuits tends to be low, owing to the relatively high collector currents and inadequate size of wire in the inductance.

A CONCLUSION

It is safest to operate an r.f. power amplifier with zero additional bias, or at least to leave emitter resistors unbypassed, unless you are confident that you can stay within the base and collector voltage ratings under all possible conditions of operation. The feedback system described in the SC-12 edition of the "R.C.A. Transistor Manual," p. 436, will go far towards protecting the system from over-voltages, but only if the initial operating conditions are satisfactory. Negative feedback can only maintain control when performance limits of all systems within the feedback loop are not exceeded.

One further point should be mentioned. In choosing a transistor for an amplifier, or in choosing the supply voltage for a given transistor, one often sees the statement that the supply voltage should be less than or equal to $\frac{1}{2}BV_{CES}$ or $\frac{1}{2}BV_{CSO}$ if unmodulated, or half that amount if collector modulated. Now this assumes that the unmodulated collector voltage will rise to twice the supply voltage on peaks, but this is only true if there are no transient over-voltages present; i.e. if the load is sufficient, if the load is not inductive, if the power supply is well bypassed, and if there are no parasitics. All of this is possible, but it can be a lot to ask from a practical amplifier—and again this has been discovered by the Method of Despair. It is somewhat more practical to provide a margin of safety for collector voltage rating,⁽²⁾ not omitting to note that the actual collector voltage rating can decrease appreciably as the collector current increases.^(2, 5)

(Continued on Page 16)

WHAT IS THE I.A.R.U.?

THE I.T.U. and its efforts to establish spectrum management covering radio communication have been outlined in a previous article, and the Amateur Service's justification for making spectrum claims has been ably defined in last month's communication.

How then, can the Amateurs of a country convince their administration to support the allocation of adequate frequency bands at international radio conferences? To try to answer this question, let us look at one organisation designed to assist in this operation—the I.A.R.U. or The International Amateur Radio Union.

HISTORY

The I.A.R.U. had its 41st anniversary last year, having a total membership of over 70 countries.

Early in 1924 nine nations (France, Great Britain, Belgium, Switzerland, Italy, Spain, Luxemburg, Canada and the United States) met in Paris to discuss the formation of an international association of Amateurs. With considerable enthusiasm, a Congress was organised and held in 1925 with a total of 25 countries attending.

Initially, individual memberships were considered, but by 1928 the constitution only provided for national societies, of which the W.I.A. was one.

OBJECTIVES—HEADQUARTERS

With much foresight the objectives of the Union formulated forty years ago differ little from the present day requirements—"the affecting of co-operative agreements between the National Amateur Radio Societies of the various countries of the world on matters of common welfare; the advancement of the radio art; and the representation of two-way Amateur Radio communication interests in international communication conferences."

In practice, the I.A.R.U. has done just this and since 1927 has been one of the international organisations authorised to appoint observers to I.T.U. conferences, although it does not qualify for a vote.

Because of the A.R.R.L.'s predominance in size and scope of activities, it was designated the headquarters of the I.A.R.U., but in every other respect, the A.R.R.L. is simply a member organisation. No remuneration is received for the performance of its administrative function on behalf of the I.A.R.U., and no funds or dues are required of the other member societies.

REGIONAL ORGANISATIONS AND SIGNIFICANCE

The published map shows the world divided into three regions. This came about in 1947 when the aim of the I.T.U. was to permit differences in frequency usage between Europe and the Americas for frequencies below 4 Mc. However, it should be noted that the I.T.U. approach to frequency

allocations has been to have **world-wide uniformity** but difficulties in achieving this led to the formation of the three regions.

Region 1 is Africa and Europe, including Russian territory right across Northern Asia. Region 2 is the Americas and includes part of the North Pacific Ocean to take in the Hawaiian Islands.

For better or worse, what is left is Region 3 or our part of the world, i.e. the southern part of Asia and the South Pacific. Naturally enough then, this regional set up adopted by the I.T.U. is the framework within which the I.A.R.U. conducts its affairs.

Let us look briefly at the significance of the regions. An appreciation of the geographical and sociological factors leads to a better understanding of the problems facing the Amateur Service.

In Regions 1 and 2 the main areas lie north and south of the equator with a range of climatic variations and varying degrees of technical development between the extremities. Countries usually referred to as developing countries are mostly in the tropics with the more highly developed areas to the

north and south of them. There is a fair degree of **community interest** in these regions, i.e. countries are in the same continents, time differences are moderate and radio propagation between countries is favoured.

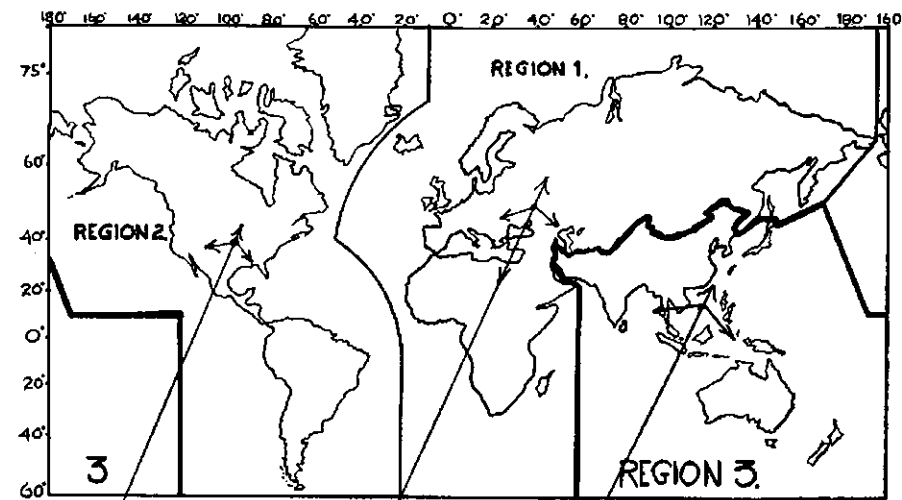
Region 3, South East Asia and Australasia, lacks the same kind of community interest as most of the countries are in the tropical belt and in common with countries in other regions at similar latitudes, most have become independent in the last 20 years, and in most respects are properly regarded as developing countries.

Region 3 is the largest in area although most of it is ocean and extends around 180 degrees of longitude, time differences are great and radio propagation is handicapped—it does not form a cross section of the world as others do.

A look at the map will show the population of Region 3 as nearly 2,000 million with Regions 1 and 2 combined making only 1,380 millions. Yet Region 3 only has one-seventh of the land area!

It is readily understood then, why there is a low level of living for most

I.T.U.-I.A.R.U. WORLD, REGIONAL DIVISIONS



REGION 2:

Population: 480 million.
Amateurs: 300,000.
I.T.U. membership: 24 countries.
I.A.R.U. Societies: 20.
Without I.A.R.U. Societies: Four countries.

Some Amateur populations:
U.S.A. 270,000.
Argentina 6,000.
Brazil 9,000.
Canada 11,000.
Uruguay 3,500.
Venezuela 2,300.
Panama 80.
Peru 810.
Costa Rica 550.
Dominican Republic 200.

REGION 1:

Population: 900 million.
Amateurs: 65,000.
I.T.U. membership: 82 countries.
I.A.R.U. Societies: 45.
Without I.A.R.U. Societies: 40 countries.

Some Amateur populations:
Ghana 40.
Israel 210.
Ivory Coast 31.
Lebanon 50.
Mozambique 110.
United Kingdom 12,000.
Zambia 77.

REGION 3:

Population: 2,000 million.
Amateurs: 54,000.
I.T.U. membership: 20 countries.
I.A.R.U. Societies: Nine.
Without I.A.R.U. Societies: Ten.

Amateur population, Region 3:
I.A.R.U. members—
Australia 5,100 Japan 45,000
Burma 25 Malaysia 125
Ceylon 53 New Zealand 3,350
Korea 75 Philippines 50
India 460
China (I.A.R.U. membership held up) ??
Non I.A.R.U. members—
Afghanistan 1 Nepal 2
Cambodia ?? Pakistan 50
Indonesia ?? Singapore 52
Iran 43 Thailand 16
Laos 7 Vietnam ??

of the population which is particularly relevant to matters of social development, such as the hobby of Amateur Radio.

WHAT IS THE I.A.R.U. DOING?

The foregoing material points a fairly gloomy picture as far as our own region is concerned, especially when we try to relate it to the question posed at the beginning of this article. Even where Amateur Radio is tolerated a look through the foreign section of the Call Book will show in many instances the lack of names and addresses of indigenous Amateurs, i.e. those native to the country. More often we find European names and/or addresses.

However, the problem of how to attract nationals to Amateur Radio has been tackled in other regions, with several conferences resulting in unanimity of agreement on plans for the Amateur Service in the region—expanded emergency nets, "intruder watch" details (A.R.R.L. receive over 1,000 intruder reports each month) and methods of promoting Amateur Radio in new and developing countries.

In an effort to encourage this promotion where Amateur Radio is not firmly established, the I.A.R.U. headquarters has been working with groups in Africa and Asia. Various items of training equipment have been shipped to groups sponsoring training classes for new Amateurs.

In Liberia a number of Amateurs have been created as a result of this programme and some progress has been made by the A.R.R.L. and the R.S.G.B. in Nigeria. Amateur Radio literature has been widely distributed in Africa and Asia through many organisations and clubs.

The latest I.A.R.U. Calendar or bulletin lists the following countries that have received literature, code practice oscillators and telegraph keys: The Gambia, Liberia, Sierra Leone, Morocco, Ghana, Nigeria, Malawi, Niger, Cameroun and Laos.

REGION 3 AND THE I.A.R.U.

It must be confessed that the I.A.R.U. and Region 3 as a whole have, as yet, not developed to the same degree as in the other regions. In the light of the fact provided earlier, this is to some extent understandable but efforts must be made to rectify the situation. A glance at the table shows the Amateur population to be nearly 55,000, but with 90% of this total in three so called "Amateur orientated" countries, viz. Japan, New Zealand and Australia.

The strength of active Amateur Societies in Regions 1 and 2, such as the R.S.G.B. and the A.R.R.L., and their proximity to other strong and active Societies have made their task a little easier and provided an example Region 3 would do well to heed.

CONCLUSION

This then is the story of the I.A.R.U. to date, a story which is by no means completed. Throughout these series of articles the main points made can be summarised as follows:

1. The voting countries comprising the I.T.U., the international frequency regulatory body, may vote to maintain

the status quo when Amateur frequencies are discussed.

2. The growth of the Amateur Radio Service in new and developing countries may lead to Amateur orientated administrations.

If one believes in what came first, the chicken or the egg, the converse may also be true when considering countries where nationalist Amateur Radio does not exist.

It would seem that Region 3 has some homework to do. The logical unit for the implementation of any "aid" programme in Region 3 is the I.A.R.U. In collaboration, the Amateur Societies best equipped for the task are the W.I.A., New Zealand and Japan.

Finally, in the English dictionary, "to dare" is to have the courage to try. The I.A.R.U. programme for promoting Amateur Radio is DARE—Developing Amateur Radio Everywhere.

P. D. WILLIAMS,
Asst. Fed. Sec., W.I.A.

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☆

TECHNICAL CORRESPONDENCE

(Continued from Page 14)

Furthermore, BV_{CB} (voltage from collector to emitter, with base shorted to emitter) will only be equal to BV_{CBO} (open base) for some transistors. For

most transistors, BV_{CBO} may be as little as 50% of BV_{CB} (though BV_{CB} is usually about = BV_{CBO}).^(2,5) This means that if the base circuit resistance is increased, as when adding a base leak, the collector voltage rating will decrease considerably above a certain value of R_{BB} . I have found the value of R_{BB} giving a V_{CB} half way between the shorted and open base value, to be of the order of 3K for small general purpose transistors, 30K for small (TO-18 case) fast switching v.h.f. transistors, but only a few hundred ohms for power transistors; the higher the power, the lower the value of R_{BB} for a given BV_{CB} .⁽⁶⁾ All the more reason for avoiding extra base bias, or at least putting it into the emitter rather than the base circuit.

Further information on transistorised transmitters has been published in several issues of "73", as given in the Bibliography by VK3ZRY, as well as the articles in the September and October 1966 issues of "A.R." and in the "E.E.B." (1-4, and continuing). In addition, quite a lot of good material is available from the Applications Notes published by Fairchild and S.T.C., particularly the latter if one can extract it from them.

—R. L. Gunther, VK7RG.

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2. "E.E.B.," May 1967.
3. "E.E.B.," June 1967.
4. "E.E.B.," August 1967.
5. "E.E.B.," October 1966.
6. "G.E. Transistor Manual," 7th ed., ch. 1. And don't overlook the excellent set of transmitters in the "R.C.A. Transistor Manual."

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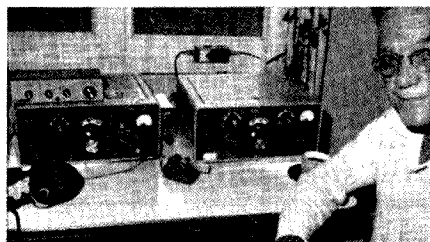


NEW CALL SIGNS

MAY 1967

VK1AN—R. C. Elliott, 37 Ingamells St., Garran.
 VK1GD—J. D. Phelan, 1 Beagle St., Bed Hill, Canberra.
 VK2KK—E. L. Groves, 47 Walder Rd., Hammondville.
 VK2AMW—Illawarra Section of N.S.W. Division of W.I.A., 21 Toorak Ave., Wollongong.
 VK2BFB—F. B. Crum, 19 Wyalong St., Burwood.
 VK2BJV—J. Vidale, 738 New South Head Rd., Rose Bay.
 VK2BPC—P. J. Corbett, 84 Yerrick Rd., Lakemba.
 VK2ZJU—D. B. Judd, 2 Skinner Pde., Roseville.
 VK2ZJZ—D. P. Johnstone, 5 Weils St., Adamstown.
 VK2ZMR—R. Miles, Station: 19 Oaklands Cres., Dundas; Postal: P.O. Box 36, Dickson, A.C.T.
 VK2ZTO—S. R. Olney, 6 Mimos St., Denistone.
 VK3QK—J. E. Loftus, 39 Malahang Pde., West Heidelberg.
 VK3TR—L. C. Sawyer, 86 Marine Pde., Elwood.
 VK3YB—R. R. Babb, Elmo Rd., Montmorency.
 VK3YO—M. L. Bartlett, 42 Boyd St., Dandenong.
 VK3AIH—C. Heemskerck, 122 Garden St., Portland.
 VK3AVH—V. W. Hercus, 3 Harrison St., Mitcham.
 VK3AYH—E. A. Hayward, 88 Abbotsford St., North Melbourne.
 VK3ZBW—J. Brough-Smyth, 58A Phillipson St., Wangaratta.
 VK3ZDZ—N. W. Cox, 20 Belford St., Ballarat East.
 VK3ZJC—J. L. Martin, 11 Victoria Ave., Mitcham.
 VK3ZLL—L. R. Ferris, Broughton, via Nhill.
 VK3ZMI—J. H. Mitchell (Dr.), 15 Willis St., North Balwyn.
 VK3ZPV—V. G. Punch, Jr., 8 Carlisle St., Preston.
 VK3ZQZ—J. McL. Bennett, 56 Lancaster St., Ormond East.
 VK3ZSO—J. A. White, 84 Winmallee Rd., Balwyn.
 VK3ZTP—P. C. Lakeman, 11 Tanjil Cres., Yalourn.
 VK3ZUA—A. E. King, 97 Campbell St., Heathmont.
 VK3ZUY—N. J. Guy, Railway St., Rupanyup.
 VK3ZVH—H. W. Anders, 325 Waverley Rd., Mt. Waverley.
 VK3ZVJ—J. E. Brown-Sarre, 31 Laurel St., Redcliffs.
 VK3ZWX—R. A. Williams, Station: Mobile; Postal: 91 Balmoral Ave., Pascoe Vale South.
 VK3ZXM—M. E. Crisp, 84 Breed St., Traralgon.
 VK3ZXR—J. E. Rising, 164 Centenary Rd., Melton.
 VK3ZXZ—D. B. Adlam, 60 Nunn's Rd., Mornington.
 VK3ZZS—P. R. Seddon, 3 Cobden St., Ballarat.
 VK3ZZW—D. I. Wallace, 14 Noyes St., Highbett.
 VK4CU—E. J. Coan, 7 Glendower St., Toowoomba.
 VK4DJ—D. J. McGrory, 74 Hanbury St., Bundaberg.
 VK4EX—L. B. Nosedad, 10 Rose St., North Ward, Townsville.
 VK4LG—L. C. Reynolds, Station: Hillcrest Ave., Hallmarkes, Caboolture; Postal: P.O. Box 153, Caboolture.
 VK4LZ—L. W. G. Bell, Station: Lelet Farm, Jubilee Pocket, via Proserpine; Postal: P.O. Box 290, Proserpine.
 VK4XC—J. R. Morgan, Station: Tooth St., Nobby; Postal: P.O. Box 9, Nobby.
 VK4XI—D. D. Kinnersley, 27 Oxley St., Edge Hill, Cairns.
 VK4ZGC—McC. G. McCulloch, 210 Banks St., Alderley.
 VK4ZMD—A. R. F. McDonald, Motelodge, Takaluan St., Bundaberg.
 VK4ZNC—N. C. Cooper, 40 Livermore St., Redcliffe.
 VK4ZRT—R. C. Atkinson, 136 Marshall Lane, Kenmore.
 VK5HS—K. J. Skewes, 11 Swan St., Risdon Park.
 VK5IC—D. H. Watkins, 11 Everard St., Glen Osmond.
 VK5KG—K. G. McCracken, 5 Spencer St., Mt. Lofly.
 VK5ZAK—A. O. Kwitko, 11A James St., Prospect.
 VK5ZAR—A. W. Attema, 11 Oxford St., Hillcrest.
 VK5ZAT—C. A. Pay, 641 Brighton Rd., Seacliff.
 VK5ZCQ—J. A. McLachlan, 7 Austral Tce., Morphetville.
 VK5ZED—J. B. Dennis, 9 Wainwright St., Clarence Gardens.

VK5ZIK—D. W. Carr, Jeffrey St., Lobethal.
 VK5ZKK—R. M. Pullem, 5 Eaton St., Cumberland Park.
 VK5ZKN—N. K. Kohler, 15 Jury Ave., Rosetrevor.
 VK5ZLJ—L. Janes, 2 Boothey St., Mt. Gambier.
 VK5ZLT—I. J. Cooke, 622 South Rd., Glandore.
 VK5ZNB—C. L. Bottrall, 136 The Terrace, Port Pirie.
 VK5ZRP—R. J. Phoenix, 53 Gloucester Ave., Belair.
 VK5ZSD—R. K. Graham, Flat 1, 53 Richardson Ave., Glenelg North.
 VK5ZSP—R. G. Payne, 6 Roynon St., Cowandilla.
 VK5ZUL—L. A. M. Voskullen, 26 Bakewell Rd., Evandale.
 VK5ZXR—G. A. van der Harst, 21 Dudley Cres., Marino.
 VK6ID—I. D. Priestley, 37 Amberley Rd., Balga.
 VK6PV—D. B. Shaw, C/o. O.T.C. Satellite Station, P.O. Box 98, Carnarvon.
 VK6US—North West Cape U.S. Naval Radio Station Club, U.S. Navcomsta, North West Cape.
 VK6ZBX—B. R. Pryor, 20 Canara St., Balga.
 VK6ZGP—G. J. Percival, 84 Blencowe St., West Leederville.
 VK7ZJM—J. M. G. Vout, 32 Coleman St., Moonah.



PACIFIC DX-PEDITIONER

Photograph shows Bob VK2BRJ/9 and ex W4CHA during his recent stint from Norfolk Island. He ran up 6,000 QSOs and approx. 100 countries in a matter of a few weeks. He is an AI c.w. operator. Next trip for Bob will be to Nauru if he can obtain a licence and arrange other details—early in 1968.

Equipment shown is a KWM2 and 75S-3 with a Q multiplier on top, electronic keyer is between. The antenna was a Hy-Gain 14AVQ with 20 radials. Bob always has a big signal from his home QTH at W4CHA. Give him a buzz, he's a nice guy.



Publications Committee Reports

The August meeting, being held too late in the month to report in this issue, we restrict ourselves to the following acknowledgments: Correspondence from VKs 2QL, 2AXK and 5JT. Technical articles from VKs 3ZRY, 3ZSC and 6KK.

We specially thank all those club and divisional secretaries who responded to our letters on the subject of the Call Book. These were far too numerous to list.

As at the time of writing, the printing of the Call Book is all ready to go, we are only waiting the final okay from the P.M.G.'s Department.



7th ALL ASIAN DX CONTEST 1966 OCEANIA RESULTS

(Australia)		(Philippine Is.)	
VK9GN	.. M 3210	DU1CL	.. .. 21 0
VK3AXK	.. M 2844		
VK7SM	.. M 2054		
VK3APJ	.. M 460		
VK9CJ	.. M 450	FO8BJ	.. .. 21 38
VK4LT	.. M 420		
VK3ABR	.. M 100		
VK3ABA	.. 21 64	KG6AAY	.. M 5124
VK4CK	.. 21 18	KG6AQA	.. 14 1199
VK2APK	.. 14 1703		
VK8HA	.. 14 615		
VK2QK	.. 14 111		
VK4JF	.. 14 15	KH6IJ	.. .. M 2820

CONTEST CALENDAR

9th/10th Sept.: 13th W.A.E. DX Contest (Phone Section).
 16th/17th Sept.: Scandinavian Activity Contest, 1967 (C.w. Section).
 23rd/24th Sept.: Scandinavian Activity Contest, 1967 (Phone Section).
 7th/8th Oct.: VK-ZL-Oceania DX Contest (Phone Section).
 7th/8th Oct.: W.A.D.M. C.w. Contest.
 14th/15th Oct.: VK-ZL-Oceania DX Contest (C.w. Section).
 14th/15th Oct.: R.S.G.B. 21/28 Mc. Telephony Contest.
 21st/22nd Oct.: "CQ" W.W. DX Contest (Phone Section).
 28th/29th Oct.: R.S.G.B. 7 Mc. DX Contest (Phone Section).
 11th/12th Nov.: R.S.G.B. 7 Mc. DX Contest (C.w. Section).
 25th/26th Nov.: "CQ" DX Contest (C.w. Section).

ARE YOU FAMILIAR WITH "73"?

"73 Magazine" was founded in 1960 in an effort to provide the Amateur with up to date reading material on the state of electronics. As most of you know, most of the Amateur journals are full of operating news, DX columns, and "who did what to whom." On the other hand, "73 Magazine" is devoted to the credo that Hams like to build, like to experiment and are interested in trying out new circuits. If you look through the last five years of "73," you will find over 2,000 technical articles. Right now "73" averages 35 technical articles per month; more than most of the other Amateur magazines put together.

It doesn't matter whether your primary interest is in SSB, RTTY, VHF, microwave, valve, transistor or integrated circuit, every single month the staff at "73" tries to have something for you. In addition, many electronic developments were first introduced to the Ham fraternity from the pages of "73," including field effect transistors, UHF transistors and integrated circuits.

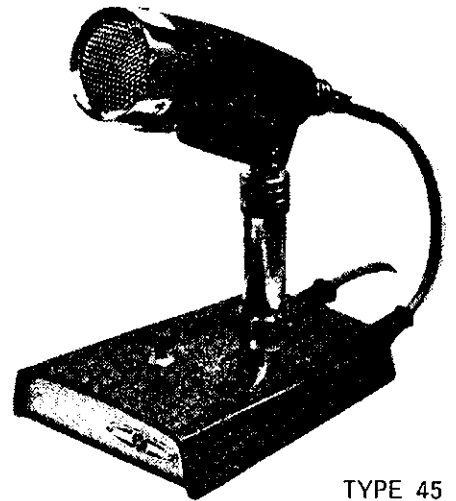
If you haven't seen a copy of "73," write to us here in New Hampshire, we'll be glad to send you a free sample. If you have seen "73," you are probably thinking that a subscription is expensive. No, it isn't. Why? Because we want you to try it and become addicted. \$5.00 U.S. per year world wide. VK Amateurs may subscribe direct to "73 Magazine," Peterborough, N.H. 03458, U.S.A., or through W.I.A., P.O. Box 36, East Melbourne, Vic., 3002, for \$A4.50.

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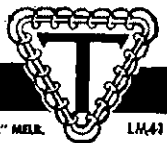
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LM41

VHF

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

News this month has been received from VK2, VK4, VK5 and VK6. The VK7 correspondent phoned to say that activity in the northern part of the Apple Isle is virtually non-existent mainly because of the weather and good t.v. shows. There is no DX activity to report.

Remember Noel VK3ZPQ would like any reports of the VK0CR 6 metre beacon on 52.9025. Until next month, 73, Cyril 3ZCK.

NEW SOUTH WALES

The July meeting of the V.h.f. and T.v. Group was treated to an informative and interesting lecture regarding the selection of components for use at v.h.f. The lecturer, Barry 2ZAG, has been employed in the components field for many years and spoke with authority on the subject. The v.h.f. committee endeavoured to arrange lectures of interest to members for all group meetings and at the same time keep business discussion to a minimum. Meeting night is the first Friday of each month at Wireless Centre, Crows Nest. Visitors are always welcome.

The sub-committee in charge of v.h.f. group communications at Wireless Centre are making good progress and at last report had nearly finished arrangements for 2 mx tunable reception at the Centre. Plans for the 144 Mc. transmitter are also well consolidated with some thought being given to other v.h.f. frequencies. This has been a labour of love by the sub-committee and offers of physical labour or donations of equipment, of reasonable vintage, would not be unwelcome.

On Sunday evening, 23rd July, after the evening broadcast, a scramble was held with separate divisions for net frequencies. The heterodynes, etc., on 53.866 a.m. and signal blanketing on 146 f.m. would have to be heard to be believed. With the population on 53.866 now reaching into the lower 20's it would appear the alternative use of channel 1 or 2 will soon be a necessity.

An upsurge in activity on 146 Mc. f.m. has been noted in country and city districts since the last release of f.m. carphones by W.I.C.E.N. Before long it may be possible to drive over very long distances throughout the State and remain in touch with at least one other 146 Mc. operator.

Of future events the most important is the New Year Field Day. This event will take place on Dec. 30, Dec. 31 and Jan. 1. Many portable and home stations will be active. The V.h.f. Contest Committee would like to hear of interstate v.h.f. stations who may be mountain-topping during this period.

Incidentally have you heard the latest information of research into plating of metal used in antennae. It seems that rust plating processes have a deteriorating effect on the radiating efficiency of antenna elements. Galvanising in particular has been reported by one laboratory to have caused a drop in efficiency from 13.5 db. effective gain to 6 db. effective gain. Untreated aluminium still rates high in the efficiency race but DO NOT treat it with metallised paint.

Plans are in hand to expand the population of the two metre band into the top two megacycles. Part of the general plan is to provide an alternative transmission of the Sunday v.h.f. broadcasts on approximately 147 Mc. Remember, use or lose.

The six metre population in Australia is well spread. As well as tunable transistors, net frequencies are established throughout the two megacycles. For those mobile stations passing down the southern coastal regions in N.S.W. an active net exists on 53.982 Mc. a.m., centred on Wollongong.

The 432 Mc. moonbounce team are still holding regular meetings at Wireless Centre and u.h.f. enthusiasts are welcome. Enquiries should be directed to Gordon Clarke, 2ZXD. 73, Keith 2ZAU.

Hunter Branch—52 Mc.: The band has been very quiet with only a few coming on the week-end hook-up at 10 a.m., the ones usually heard are 2ZWM, 2ZJG, 2ZMO and 2AYF. Channel 0 has been heard at times and Bill

2ZWN has seen signs of other channels coming across Channel 2, but no dice on 52 Mc.

144 Mc.: This band has been fairly good at times and some have worked Sydney. Two new call signs have appeared in the district recently, they are VKs 2ZSI and 2ZYK. The Hunter Branch has started 144 Mc. scrambles for their members only, with two scrambles a month until next March, when the winner will receive a good prize. 73, Mac 2ZMO.

VICTORIA

Activity on the bands has been reasonably good with quite a few new stations appearing both on 6 and 2 metres. There has not been much in the way of DX on either 6 or 2 mx.

At the July V.h.f. Group meeting about 70 members and visitors heard Les 3ZBJ give his talk and practical demonstration entitled "A New Look at V.h.f. Technique—doing it with Semiconductors". This was a very informative and easily understood lecture. Among the demonstrations given by Les were triplers to 432 and 1296 using varactor diodes and the use of a 80 cent transistor as a varactor diode to triple to 432. The r.f. source used for his demonstrations was a home built all semiconductor transceiver. The whole of Les' lecture was taped and country clubs wishing to use it should contact the Group President, Peter 3ZPA.

The Group converter project is well advanced and can now accept orders for the 6 mx converter which has more than adequate gain and a noise figure well below 6 db. For further information on these converters write or phone Peter 3ZPA or the undersigned. These converters use low cost FETs and silicon transistors and will stand a fair quantity of misuse. 73, Cyril 3ZCK.

Gippsland—Copy from log of DX received over the minor winter peak: 25/6/67, 2022-2035, Ch. 1 t.v. DX good picture reported by 3Z0Z via ground wave: 28/8/67, 1400-1545, t.v. DX via extended ground wave; stations received ABNT3, TNT9, ABRV3, BTW6, ABEV1, BCV8, and ABSV2 Swan Hill; 1450-1805, N.Z. t.v. Ch. 1, good pix; 2/7/67, 1547-1621, Es Brisbane Ch. 0 t.v. (nil Ham sigs).

Rod VK0CR tells us that he hopes to have a 6 metre transmitter going on 53.1 Mc. using c.w. 1830-2030 hrs. daily.

Main activity in the zone has been on 2 mx f.m. chs. A and B. That seems to be all the news for now, quite a few of the boys here are busy building or setting up new gear. 73, George 3ZCG.

QUEENSLAND

The months of June and July have not been very active, probably due to the cold weather keeping everybody glued to their t.v. sets. Anyhow the old regulars are still to be found on 6 and 2 mx but that second CQ may be necessary. Our new President, George 4ZMG, seems to be doing a good job keeping things together in Brisbane. The main topic of interest in VK4 at the moment is the 144 Mc. beacon and a committee has been set up to design, build and complete this long-awaited beacon. Briefly, the beacon will run 100w, keyed m.c.w. to an omnidirectional horizontally polarised array from the Bunya Mountains, which are 3,000 ft high and approx. 100 miles from Brisbane. More will be said on this later when the project is in full swing, but suffice to say that it is hoped that the beacon will be operational within six months.

Apart from the beacon, which is the main project, rumour has it that in the near future a 144 Mc. transistorised s.s.b. transmitter will be considered as a possible group project. 30 watts s.s.b. on 2 metres for \$30. Hmm! Sounds good!

On 6 metres DX is sparse and DX QSOs are rare still. ZL t.v. has been strong in Brisbane, but no VK4 contacts have been made. Peter 4ZPL in Townsville says the JAs are scarce now but the last few months have been quite rewarding. ATV0 Melbourne is heard in Brisbane every day. Channel 2 in Sydney can be seen on t.v. sets in Brisbane after ABQ8 shuts down at night.

Bert 4CP is using a Swan to put out a fine 144 Mc. s.s.b. signal, but Bert, please, easy on the carrier insertion! Phil 4ZEP has a new tape recorder but as yet we have not heard it.

Bundaberg Club reports that a 52 Mc. net has been set up on 52.032 Mc. and the group is active on Tuesday evenings at 8.30 and Sunday mornings at 10.30. The group has had several fox hunts of late, and has an active interest in W.I.C.E.N. Recent visitors to Brisbane from Bundaberg were Bob 4ZZE and Bob 4UD.

Finally, do not forget the V.h.f. Field Day on Sunday, 17th September, and the Sunshine State Contest on Sunday, 24th September. 73, Mike 4ZMW.

SOUTH AUSTRALIA

6 mx DX in June, traditionally labelled "Winter DX" was available on June 4 into VK4 and again on the 5th to VK7 when VKs 7ZKJ and 7ZMD were the most prominent signals heard. It would appear though that stations do not tune the band or "one way" skip has been the order of the season.

Doug 8KK has reported at various times he has heard VK5s on the band plus the ever-faithful beacon, but despite persistent calling Doug has not made his presence known. Similar reports between VK2 and VK5 have been rumoured. This is the price that one must pay when net frequencies take preference on bands.

Nonetheless, net frequencies are indispensable when correctly applied for a specific purpose, namely W.I.C.E.N. Under the auspices of the rotund VK5 Federal Councillor and W.I.C.E.N. Co-ordinator, Geoff Taylor, the v.h.f. mobiles on 53.1 and 146 megacycles have been moulded into an extremely capable and efficient emergency communications group. The most recent exercise was held on June 11 when a large scale operation was capably executed. A total of 26 mobiles participated in this exercise which primarily was to provide communications over three most difficult paths, namely Crafers to Victor Harbour, a path of 40 miles over the Adelaide Ranges; Crafers to Mootna, a virtual line of sight contact of 100 miles; and Crafers to Blanchetown, an extremely tough haul of 70 miles through the Adelaide Ranges once again. Troubles were encountered however not unsurmountable as reliable communication was established under emergency conditions.

Col 5ZKR has been dabbling on 432 Mc. 73, Colin 5ZJH.

WESTERN AUSTRALIA

There has been fair activity on the v.h.f. bands, most of it centred on nets in the 6 mx band. The announcement of a delay in the launching of Australis was somewhat disappointing. Interest in the project has not abated, however, and the extra time can be used to advantage for building and testing equipment.

Charles 6LK, technical editor of the V.h.f. Bulletin, is leaving for the Eastern States soon and Cedric 6CD will be the new editor. We thank Charles for his excellent services and wish him well in his venture.

Turning to s.s.b., there are now six or seven stations able to use this mode on v.h.f. John 6TU has had his arm twisted or something similar and is getting an article on s.s.b. ready for publication. Viv 6ZCM has built a very compact and simple sweep marker generator, he calls it the Sweemark. How about putting the details in for publication? 73, Laurie 6ZEA.

W.I.A. D.X.C.C.

Listed below are the highest twelve members in each section. Position in the list is determined by the first number shown. The first number represents the participant's total credits less any credits given for deleted countries. The second number shown represents the total D.X.C.C. credits given, including deleted countries. Where totals are the same, listings will be alphabetical by call sign.

Credits for new members and those whose totals have been amended are also shown.

PHONE

VK5MS	317/338	VK4HR	287/304
VK3AHO	314/326	VK4FJ	279/296
VK6MK	303/320	VK3TL	262/266
VK6RU	303/326	VK4TY	251/252
VK5AB	300/314	VK2AAK	246/250
VK2JZ	288/304	VK2APK	234/237

C.W.

VK2QL	285/315	VK3NC	266/266
VK2ADE	281/313	VK3ARX	263/271
VK3CX	281/312	VK4HR	260/282
VK4FJ	281/313	VK6RU	258/279
VK2AGH	282/295	VK3TL	251/254
VK2AHQ	281/296	VK3YL	251/268

OPEN

VK2AGH	311/329	VK2EO	295/316
VK6RU	307/330	VK4FJ	285/318
VK2ADE	305/329	VK4TY	281/303
VK6MK	305/322	VK3ARX	281/289
VK4HR	300/322	VK3TL	281/285
VK2VN	300/315	VK2ACX	276/300

New Member:

VK2PF 102

JOE KILGARIFF, VK5JT

Joe, who was 81 years old in May, is still active chasing DX and must be one of the oldest active Amateurs in Australia. He started his activities in Alice Springs in 1926, having bought an A.W.A. m.o.p.a. (parallel 210s) from one of the numerous expeditions looking for "Lasseter's Gold". One of these expeditions was that conducted by McKay. This expedi-



tion included the late Kingsley Love, and Joe contacted them on phone after they crossed the West Australian border. His receiver at the time was an American made Wasp.

When the R.A.A.F. Wireless Reserve was formed, Joe joined and relayed traffic to Perth, Kalgoorlie and Adelaide. He had already learned Morse code in 1916 when he was in the traffic section of the East-West Railway.

Returning to Adelaide in 1936, he obtained the call sign VK5JT and set up operations at Erindale, where he was active until 1939 when Amateur Radio ceased "for the duration".

In 1940, Joe (then aged 40) joined the R.A.A.F. and was sent to Parafield to set up his transmitter. At the time the R.A.A.F. was short of transmitters and Joe had an all-band 80 to 10 metre rig. With this equipment he maintained contact with Laverton and Point Cook for a couple of years until Adelaide W/T commenced service. While at Parafield, Joe met his two sons, Kevin (bombers) and Leo (fighters), training at Parafield. His son, Joe, was in radar in New Guinea.

After the war, he again started Amateur operations and worked the world with various types of antennae, etc. At present he is enjoying excellent DX with Europe, his equipment being a 100 watt all-band transmitter and AR88 receiver. His antenna is a TAZ3, thirty feet high. He is also experimenting with a 7 Mc. ground plane. With the beam south-east he can work Europe and U.S.A. at the same time. Uses ten and fifteen at times, but finds mostly JAs on these bands.

CHANGES FOR MOBILE RADIO TELEPHONE SERVICES

The Postmaster-General, Mr. Alan Hulme, has announced that the growing demand in city areas for Very High Frequency mobile radio services has put considerable pressure on the existing allocation of v.h.f. channels.

Mr. Hulme said that to solve this problem and to meet future demands, the Post Office is requiring land and harbour mobile radiotelephone services which have not already done so to change their channel operations from 60 or 120 Kc. to 30 Kc. by 30th June, 1967.

The new requirements which involve equipment changes, effect approximately 1,400 base stations throughout Australia serving some 14,000 mobile units. The type of services involved include public utilities, such as power and gas authorities, ambulances, police, and fire brigade departments and private organisations such as taxis, carriers, tow truck operators, doctors and building contractors.

Manufacturers of mobile radiotelephone equipment have already been consulted about the new requirements which are to be implemented completely by 30th June, 1967.

Mr. Hulme said it would be of considerable assistance if users of mobile equipment make the conversion as soon as possible, and avoid leaving alterations to equipment until the last months of the period allocated for this purpose. Early conversion will also assist manufacturers in meeting delivery dates for equipment.

Generally speaking it will be necessary to install new transmitter/receiving units at base stations, but adjustment only will be necessary in the majority of cases for mobile equipment.

In introducing the new frequency requirements the Post Office has been guided in its action by the recommendations made in 1961 by the Radio Frequency Allocation Review Committee under the chairmanship of Sir Leonard Huxley.

After careful consideration of the needs of operators and manufacturers, the Post Office has adopted the following programme for conversion, which it is anticipated will cause the least inconvenience to all concerned.

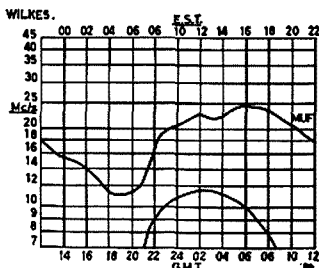
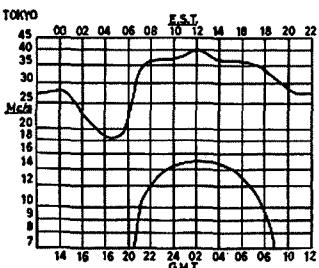
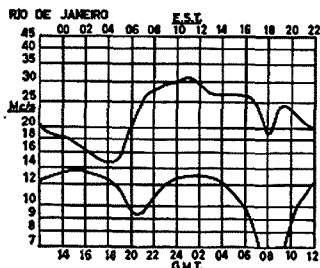
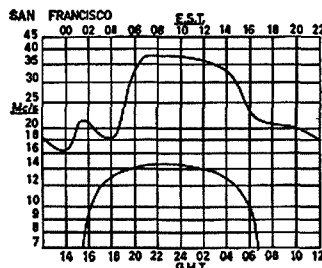
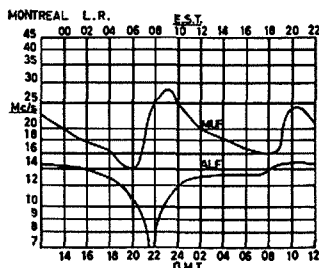
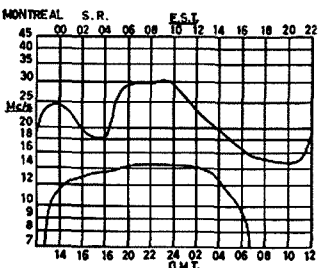
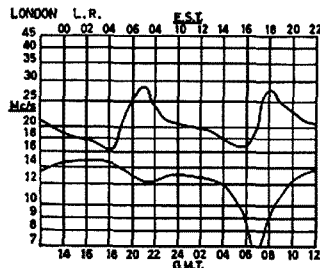
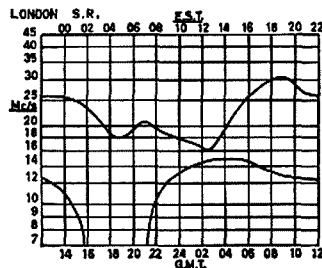
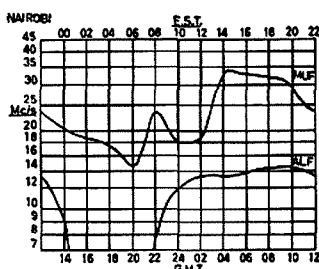
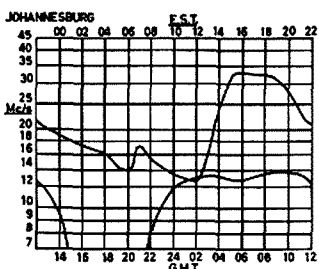
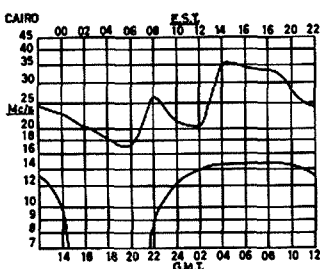
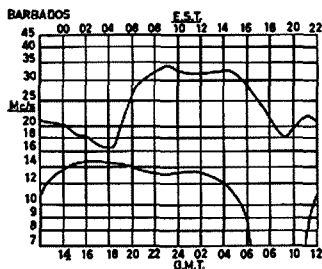
In 30 Kc. channelling areas v.h.f. mobile radiotelephone services (excluding the International Maritime Mobile V.h.f. Radiotelephone Service and the existing Departmental V.h.f. Radiotelephone Subscriber's Service) operating within the frequency bands 70-85 Mc. and 156-174 Mc. shall comply with the following arrangements:—

As from 30th June, 1967:—

- (1) All base station transmitter/receivers (both amplitude and angle modulated) employed in a base station installation shall be of a type complying with the relative Post Office Specification and approved for 30 Kc. operation, and shall be operated in accordance with the terms of that Specification.
- (2) All angle modulated mobile transmitters shall be adjusted to function with a maximum deviation of plus or minus 5 Kc.

Further details of these requirements can be obtained from the Superintendent, Radio Branch, P.M.G. Headquarters, in all States.

PREDICTION CHARTS FOR SEPTEMBER 1967



(Prediction Charts by courtesy of Ionospheric Prediction Service)

DX

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

Activity on 14 and 21 Mc. is reported as quiet this past week or two. However, the mail bag is bulging with DX info. So let's delve into it right away.

NOTES AND NEWS

LIDXA, Long Island DX Association: This club always has its bi-monthly bulletins right up to date and forwards the following:

S. Georgia: Dave VP8IE is now on s.s.b., usually around 0100z. Gear Galaxy V. Maldives: Colin VS8MB on daily 1050 14233.

Cuba: CO3BY 14060 1045z.
Gabon: TR8AG 14180 0600z. If QSO made after 1st July, send QSL to Jorge Brance, Rua Eng Carlos Amarante, 209 Porto Portugal.

East Malaysia: 9M8II 14040 1620z.
Canary Is.: EA8FG 21350 1625z.

Senegal: 6W8DX 14240 2000z.
Mozambique: CR7DS 14203 2400z.

S. Shetland: VP8XZ 14200 0430z. QSL R.S.G.B.
Libya: 5A2TZ 14200 0200z. QSL P.O. Box 1763, A.P.O., N.Y., 09231.

Guyana: 8R1G 14246 2300z.
Cameroon: TU1QQ will be here for three more years. Has various fqs. on s.s.b. Try listening around 0600 and 1900z.

Burundi: 9U5DP 21360 2000z. QSL W2SNM.
Cape Verde Is.: CR4BC 14234 2214z.

Rio de Oro: Active again 14125 2030z.
Jan Mayen: JX3W 14194 0230z. QSL LA1NG.
Gambia: ZD3D 14213 2100z. QSL P.O. Box 10, Bathurst, Gambia.

Tromelin: FR7ZL active again, s.s.b. and c.w. mode. 1700z and later.
Somali: 6O1GB 21350 1800z.

Mauritius: VQ8CA 14195 1210z.
Tunisia: 3V8BZ 14185 2330z. QSL DL7FT.

Saipan: KG6SA 14203 1425z. QSL C/o U.S.C.G. Navy 935, Box 338 F.P.O., S.F., 96950.

St. Vincent: VP2SAB 14205 2240z.
Niger: 5U7AL 14196 0300z.

C.A.R.: TL8DL 14180 2300z.
Iceland: TF2WKH 14217 0050z.

Turkey: TA2BK 14027 2330z. QSL DJ2FJ.
Bahrein: MP4BJL 21304 1900z.

Cyprus: ZC4PC 14193 1950z. ZD4IP 21040 0000z.
Aland Is.: OH0AA 14 s.s.b. 0400z. Also OH-0HM 14033 2100z.

Ivory Coast: TU2AY 21318 1200z.
Seychelles: VQ8BC 21419 1700z.

Isle of Man: GD3AIM 21020 2000z.
Basutoland: ZS8L 14136 1600z.

West Pakistan: AF2NMK 14300 1945 and 2035z.

Trucial Oman: Roger, who gave so many VKs QSO, is now QRT and back home. He made 20,000 contacts in the short time he was there.

Jamaica: 6Y5JB 14058 1200z.
Congo Rep.: TN8BB 14219 2000z.

Jerusalem: 4X8HW and 4X8TP are good for W.P.X. from here. Active s.s.b. and c.w. 14. (Tks. Howard, WB2EPG.)

Air Waves: This is the bulletin sent out monthly by J. Coote, G3UGT, DX Editor in the U.K. He supplies these items:

Gibraltar: ZB2AM is now back home in U.K. ZB2AB, ZB2AP, ZB2AZ are all QRV 14 Mc. c.w. ZB2F is a pirate.

St. Helena: ZD7WR is a beacon station 28983 sending test de ZD7WR. There are also active beacons on 50 and 70 Mc. from here. Reports to ZD7WR please.

Vietnam: K8HVN/XV5. This contact is acceptable for A.R.R.L. DX credit. (??)

Sakahlin Is.: UA0ER, UA0FF, UA0FM all busy on 14 c.w. now. Zone 19.

Port. Timor: CR8AH is on a.m. 21190 1245z. Will work s.s.b. stations.

Chatham Is.: ZLAMO, ZLAPM hope to be active from here in Nov. or Dec. next for a good stint. (Tks. Jim OB.)

Directory of Islands: More info on this 18-page booklet can be had from Geoff Watts who also puts out a weekly DX News-sheet and kindly supplied these items:

Tuamotu Arch.: FO8BU 14102 s.s.b. 0630z.
Guernsey: GC8HT. Dick very active on various bands, s.s.b. and c.w. Try these times, 0600z 14, 2300z 21 Mc.
Christmas Is.: VK9XI 14108, 21172, 14025. QSL W2GKH.
Curaco: PJ3CC 14255 2158z. QSL WB2POH.
Aruba: PJ4AE 21246 2035z. P.O. Box 186, San Nicholas.

Bonaire: PJ5BF 21380 2130z. QSL W2CCE.
Inner Hebrides: GM3TKX/F 21321 1855z.

QTH Isle of Skye.
Shetland Is.: GM3RFR 7077 2040z. Also GM-3SVK 14178 0640z.

The Fla. DX'er reports the following:
Sardinia: IS1VAZ 21357 1830z.

Luxemborg and Gibraltar: KIOTA/LX will commence operations in July through August and later. Fqs.: 21015, 28015, 14013, 7015; s.s.b. 28650, 21350, 14200. QSL KIOTA.

Corsica: F9RY 14120 2230z.
Muscat and Oman: VS9OSC 14 s.s.b./c.w. QSL K2KTK.

Wilhis Is.: John VK4HG, ex-VK3AYH, is working all he can and will be at it till some time in November. John advises to send QSL via VK3 Bureau. VK4HG will be mainly on 14 s.s.b. but will be on other bands as well. Listen for the pile up.

Toronto: VEFXFR, Rog. McNicoll, 44 Smithfield Dr., Toronto, says he is willing to act as QSL manager for any VK going on an expedition. Drop him a line.

From Geo. ZL2AFZ, DX Editor "Break-In", comes the following items:

Mauritius: VQ8CC expects to be on 1.82 Mc. this season. Keep an ear for him in Oceania.

Clear Is.: EI0R will be QRV from here very soon now.

lie d'Oleron: DJ8AU 14125 2030. QSL R.E.F.
Walney Is.: G3OPI, 14 and 21 at 0645 to 0730, from 1200-1230z.

Scilly Is.: GB2IS uses 21050 from 0800z.
Mongolia, Zone 23: UA1CK/JT1, Vlad, most days on 21345 s.s.b. at 0700z.

Marcus Is.: KG6IF, 14217 s.s.b., 0630z. KG6IJ on Volcano Is. closed down in July and KG6IC will remain active. KG6SN on Mariana uses 14210/220 at 1245. QSL via W7PHO.

Afghanistan: YA5RG frequently on 14, 21, 28 Mc. s.s.b. on sked 14300 Monday, Friday, at 1630z. QSL via DL6ME.

Hong Kong: VS6AZ, listening 14280 operating 14195 at 1500z weak days.

Ascension Is.: ZD8J on 14023 from 1530z. QSL via W4DQS.

Easter Is.: CE0AE 21340 at 0500z. QSL via "Ham Shack," Box 915-517, Albrook, A.F.B., Canal Zone.

Faeroe Is.: OY9IM s.s.b. 0300z, 14215. Also active is OY7ML 1800z, 14052 c.w.

Grand Cayman: ZF1GC 14189 s.s.b. 0300z. QSL to VE4DQ.

Activity coming up from Balearic Is. and Tunisia by DL7FT and VP8RH, also China by JA3IU, Andorra by W20RH (PX1EH) Star-buck Is. and Kingmans Reef by WA6ZZD. More info if it comes to hand.

Rarotonga: ZK1CI will be active for the next three years from here. All bands 80 15 c.w. and phone. He is ex-ZL1AWT. QSL to P.O. Box 103.

Wake Is.: WA4QXB/KW6 14050 1600z. (VK-4UC)

Cocos Keeling: Barry VK9ZCF writes to say that the report of activity by ZC2T is incorrect. The former call is the only one in use on the island. Barry does not have a full permit so he will be restricted to 6 mx. Keep an ear out for him. He sure would like to work VK when conditions are suitable on 50 Mc. He will be as active as he can. QTH C/o. D.C.A.

Next burst of activity by DX-peditioner Don Miller, W9WNV, is reported to take in the following choice ones:

VQ8 Rodrigues, VQ8 Brandon, FR7 Tromelin, FR7 Europa, IG Guysir, LA Bouvet, VU Laccadives, YI Iraq, ZA Albania, KC4 Navassa, VP8 three locations, EA9, 0 three locations, XU Cambodia, and more new ones.

By the time you read this, Don should have begun this frenzied trip, so keep an ear to the usual fqs.

Franz Josef Land active again. UA1KED 14005 2300z. Yemen: 4W1C 14102 1930z. Svalbard: JY8NI 14036 0300z. Laos: KW8CAL club station. Reunion Is.: FR7ZN 14210 1100z. Israel: 4X6 Gaza Strip. 4X7 Syrian Ter. 4X8 Jerusalem. 4X9 Sinai. Greece: All stations will be QRT from here. Afghanistan: YA1AN 14006 1200z. Taiwan: BV2A 14006 0830z. Nepal: Father Moran still going strong 14 s.s.b. on low end.

ACTIVITIES

David VK3QV reports 10 mx as relatively quiet, but patience does bring a QSO or two. The following are listed as worked: 9V1FF, 5A3TN (on l.p.), VK9OM, KX6DR, KH8NS plus all JA, ZL and W areas, including VK-3DL/W5. All s.s.b. mode.

Merv VK4DV says conditions still holding on 20 mx at his QTH in Nth. Qld. He has already earned himself the VE Centennial Award which is no mean effort. He lists these good 'uns: ZD7KH, ZD7D, ZS1CD, ZS-2RM, T12CAP, XE1BL, XE1KB, YS1JC, OK-1AGH, YU1YG, YJ1DL, ZD3G, CR6IV, CR6EW, CR4BC, K8NHV/XV5, etc. (Nice list OM.)

Chas VK4UC writes to say that the bands are only mediocre. He picked up the following on 20 mx: CR6EI 0630z, DJZPT 0500z, DJ-0RM 0400z, F8WK 0600z, G2DF 0620z, HB9GN 0600z, I1BRM 0700z, I1MOC 0630, I1KE 0630z, PA0CE, QZ3FO 0600z, UT5CC 0600z, UA1KAN 0200z, XE2XG 0515z, Y02AAF 0500z, YU1NBN 0730z, YV5BFJ 1200z, ZC4CN 0500z.

Best QSL received: EAACR, HS1HM, KV-4AM, ZS5EY, ZEB7W, OX3KM, VS9HRV, 5N2ABD, 5N2AAF, CR7IZ, CR7IC, CR4BC, ZE-4JS, KZ5JF, FB8WV, ZL1AI (Kermadecs).

Chas. reports ZD9B as active 14040 around 0600z and workable in VK4.

Peter VK4PJ says the band to Africa good around 0600z and later. Also Canadians in the early evenings of our time. He logged these QSOs on 14 s.s.b.: I1ARS, G3LNS, G3KDB, PY2FA, I1MCC, SM7CSN, OK1AMD, I1KRO, UY5XS, UA3AN, SM7TQ, YU2HDE, ITFEE, I1KXJ, 8R1G, OH3PE, PY1VG, UC2AA, IS-1VAZ, OE1GWA, OE1BFW, G3NMH, OZ8RH, VP8HZ, YU7LEB, F5CZ, SM2BHX, ON5DH, EA8FG, FK9BK, 9G1TV, TI2JCC, XE1AAN, EA8BQ, plus many VEs.

Dud VK4MY now back on s.s.b. (and c.w.) and notched these on 20: DJ7ZG, 5U7AC, 15113 0700, CR6XB 14110 0715, VE2IZ 14180 0645, YV1TP 14180 0720, VK9GC Rabaal 0730, TU2BD 14130 0755, CR6AI 14022 0800 on c.w.

An interesting letter from VK4DU (another emigrant to the Gold Coast from VK3), who appropriately signs himself "Viva la QRP". Using less than 9 watts and a simple antenna and doubling in the final, Keith really has been working the DX on 21 Mc. He lists these as a few samples: DL1ES, SP8HR, YV5BPJ, OK-1VK, CN8FB, CN8FV, UA0MT, OE8SWJ, I1GSP, CO2BB, YU1BCD, ZC4CI, JA4NDJ, ON5ZO, 9J2HZ, F8TQ, LZ2ZZ, 3C2AKQ, DJ6SI.

Keith asks "How QRP can you go?" He records the following experiment. I quote him, in brief, "After working W6GBI and getting S8. I reduced power at his request to less than 1 watt. He gave me 569. Then I took off my antenna, leaving about 5 ft. of it hanging over my head in the shack. Report was 559. I left the set-up as was, and next day again called CQ. Back came W6GBI with 569. The following day (still QRP 1), I was in QSO with W8TG when VK4DY and VK-4RZ arrived to verify the truth of things. I can work DX easily from this QTH with this power."

If you are holidaying on the Gold Coast, a peep at Keith's QTH is worth while. His shack is perched right on top of Currumbin Heights and commands a breath-taking panorama to the north and south and of the Pacific and all points east. No wonder DX is a piece of cake.

SOME QTHs (from Merv VK4DV):
ZD7KH—K2HVN.
ZD7DI—R.S.G.B.
7Q7EC—Box 207, Zomba, Malawi.
K8NHV/XV5—W6FAY.
YS1JC—P.O. Box 1368, San Salvador.
XE1KB—P.O. Box 907, Mexico City.
ZD3G—K8ENX.
YJ1DL—Dave Laing, Luganville, Esperanto, Santo, N.H.
CR6IV—P.O. Box 737, Benguela, Angola.
ZS8L—W4BRE.
CR4BC—P.O.B. 36, St. Vincent, Cape Verde Is.
KS4CC—WB6ITM.
9Q5BY—P.O. Box 1459, Kinshasa, Rep. of Congo.

OE1 AWARD

1. The W.I.E.N. Diploma (Vienna Award) is issued to all licensed Amateurs in two classes: Class 1, contacts with all 23 Vienna districts; class 2, contacts with 15 of the Vienna districts.
2. The contacts can be made on all bands. Mode: c.w., a.m., s.s.b., or mixed.
3. All QSOs after 1/4/54 are valid.
4. The fee is 1 U.S. dollar—or 8 I.R.C.
5. Mail QSL cards or certified list to Ernst Reisenauer, Vienna 18/107, P.O. Box 23.
6. On the QSLs must be shown the number of the district or the number of the Post Office. A full district list can be had by writing to the above QRA.
8. On the same basis, it is eligible to s.w.l's.

QRP CLUB

The July VK/ZL Newsletter issued by Barry VK5BS shows considerable growth and interest in the club in Oceania. Also, the W.W. membership list (try Barry if you want one) is impressive in calls and members. Some big sig DXers are QRP men. So if you're "an under 100 watt", join the fraternity and help show that you don't need a gallon for long haul DX.

Write to Co-ordinator, VK5BS, 18 Cornish St., Glenelg North, South Australia, 5045.

Once again my gratitude to the column's contributors. 73, Al VK4SS.

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ISWL

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

Many and varied are the requests which I receive for information on the various aspects of S.w.l'ing, they range from simple queries on how to obtain a listener's number to queries of a technical nature which, if I am unable to answer, are passed on to somebody who can. These queries are rarely discussed through these columns, instead they are answered directly and in many cases the writer is never heard from again. This month, however, I received one from a young lad who, in starting out to buy his first receiver, was saddled with what appeared to be a rather battered AR7 with only a D coil box and no power supply. What this cost him is not the point, even though it was more than I recently paid for my 2nd AR7 which is a complete unit with five boxes. The fact was that the lad had checked the tubes, noted that they were 6 volt filaments, and with his few remaining dollars bought a power tranny with a single 6v filament winding, a 6X5, two electrolytics and a choke, assembled same, with much care, clipped in a speaker (also an extra) and became quite disturbed when the thing didn't function.

At this stage he dropped me a note, and being more or less a local resident, I called and had a look. I pass the diagnosis along in case any newcomer should fall into the same trap. The receiver as I found it was the basic AR7 receiver, covered in layers of dirt, grease and dust. It was probably the worst example of a disposals set I have ever encountered, nevertheless, something had to be done to try and enable this lad to get something of use out of the pile of apparent junk he had obtained. As I had previously built a power supply for my original receiver, I knew that the filaments of the tubes were coupled in series in pairs, thus the filament voltage should be 12 and not the 6 volts our friend had applied. Likewise, his small transformer supplies around 150v. or less at 40 mills., barely enough to supply a small household receiver, let alone a large communications set.

At this stage we could go no further, so at a later date the owner returned to my QTH for further tests. Connecting my power supply produced more signs of life on voltage tests, but also revealed the need to replace four of the tubes, also the previous owner had removed the speaker transformer and this had to be replaced. After all these tasks had been completed, the set went quite well, considering that the coil boxes I used were not aligned to this particular receiver, being in actual fact the ones belonging to one of my sets. What is the point of all this? Well, it is a warning to the newcomer not to walk into the first receiver he sees unless he knows something about it, or at least knows somebody who does.

DX NEWS

The following can be QSL'd via the ISWL Bureau: G8AJ, K8SDR, WAHIN, VP5RS, G3VFK, VE3EUV and W2EQS. MP4TBO was scheduled to go QRT on June 26 and can now be reached at Roger Baines, "Moorefield," Handstoft Rd., Pilsley, Chesterfield, Derbyshire, England. LJ2X is a Norwegian station. V82A is the only licensed station in Taiwan. F8BU operates from Tuamotu Archipelago. QSL to Box 374, Papeete, Tahiti. F7Y7M's QTH is BP63, St. Laurent, Fr. Guiana. ZF1RD says QSL via K8LSC. T78QQ and his other calls used in the current jaunt all via W4DQS. UA9EG is in zone 19. Current pirates at the beginning of June or thereabouts were KS4AD, MP4QAL (who was reported to QSL although unlicensed), ZC2T, ZC2T/VK9, and 1G1HKP. 5LA2FD and 8FD QSL via EL8B. XWS 8BS and BZ via the U.S. Embassy, A.P.O. San Francisco, Calif. 96352, U.S.A.

BAND CONDITIONS

Things have been fairly quiet in the Eastern States this month, with 20 mx still being the main DX band with openings into Europe as early as 4 p.m. E.A.S.T. Over the past weeks some really good openings to South America on this band during mid afternoon, but by 8 p.m. the band has gone flat.

On 15 metres there is quite a lot of general DX prior to sunset, but the JAs seem to have predominance here. I personally have struck only two openings on 6 mx, one this morning

(30th June) when I heard 2WI, and some Sydney stations on 18th. The American side-band stations are on 40 metres by the carload, and the c.w. boys too are quite readable if you can tolerate the QRM.

160 metres is quite inactive up here, but over in VK6, George Allen heard KPH (2045) from San Francisco on July 14th. The sig was 339 and stayed in for an hour. George, by the way, is interested mainly in top band, and reminds us that there are three marker stations nearby, WCC (2036), KPH (2045) and WNU on 2048.

QSL LADDER

Name	Confid.	Heard	Zones	States
E. Trebilcock	293	300	40	50
P. Drew	197	265	38	41
D. Grantley	169	304	39	35
W. Smith	154	215	36	7
E. Luff	146	221	35	36
R. Kearney	117	180	37	8
G. Earl	107	171	34	18
M. Hilliard	100	250	33	14
B. Mutton	81	118	31	11
A. Raftery	79	197	31	13
R. Mackintosh	41	102	20	5

The QSL Ladder is based on the number of countries confirmed, and to become eligible for a position you must have a minimum of ten countries. Names are automatically removed when no letter is received for three months, or when a listener obtains his ticket.

That winds it up for this month chaps, all the best on the DX front and let's have a bumper entry for the VK/ZL Contest this year. It's a terrific contest for the listener, and a really good score can be obtained if you have the time to spare. 73, and all the very best, Don L2022.

YOUTH RADIO SCHEME

The first issue of "Coryra"—the voice of the Y.R.S. Correspondence Section—has been received and looks very promising. This journal will be a very useful adjunct to the study course and is part of the material each person receives along with the printed notes, and the many other services offered, upon joining the Correspondence Section. The extensive new services as well as many of the old are covered by a new arrangement whereby a fee of \$4.00 is charged. Now each member only has to pay his joining fee and nothing more—no s.a.s.e., etc., etc.

David Jeanes, VK2BSJ, Ayr St., Rockdale, N.S.W., is the Publicity Officer for the Correspondence Section and would welcome any pertinent news.

CLUB NEWS

VK2: David Fraser of the Westlakes Club has gained his A.O.L.C.P. and at a recent meeting of the W.I.A. in Sydney was presented with the O.T.C. book prize for proficiency.

Mr. Williamson, the examiner for the Elementary Certificate, advises that five boys recently gained their Elementary Certificates, three with honours and two with credits.

There have been several new registrations of clubs in New South Wales and I presume that this progress will be apparent in other States as well. I would be very interested to hear about this.

VK4: Mr. Danny Dwyer, VK4ZDD, is the new Y.R.S. Supervisor in Queensland and reports a registration so far of nine clubs with the possibility of new clubs at Townsville, Clayfield and New Ireland. There have been several Elementary and Junior Certificates gained. There is also a Y.R.S. net on 40 mx on the first Saturday of each month, so look for VKs 4UD, 4UC and 4NN about 9.0 a.m. It would be very interesting to have some interstate Y.R.S. contacts and someone might think up a special certificate for this purpose for the certificate hunters.

VK5: Mr. Bert Hollebon, VK5EQ, advises that new clubs are being formed at Kadina and Port Augusta. Also, there have been five recent successes in the Elementary.

VK7: This is the first information I have had from Tasmania and it is very heartening to see the spread of Y.R.S. Mr. Reg Emmett, VK7ZAO, has written to say that things are under way with two active clubs so far, at Burnie and Hobart, with a total membership of 41. Out of these, six have already passed their Elementary exams.

That's about it for this month. Many thanks for sending me the news and I look forward to the time when I can list every State in Australia with something to report on each one. Please send all information to me by the last Wednesday of each month. Address: Mrs. M. Swinton, VK2AXS, P.O. Box 1, Kulnura, N.S.W., 2251, 73, Mona.

SCANDINAVIAN ACTIVITY CONTEST 1967

RULES FOR NON-SCANDINAVIANS

1. Contest Periods: C.w.—1500 GMT, Saturday, Sept. 16, to 1800 GMT, Sunday, Sept. 17. Phone—1500 GMT, Saturday, Sept. 23, to 1800 GMT, Sunday, Sept. 24.

2. Contest Call: Non-Scandinavian stations call CQ SAC on c.w. and CQ Scandinavia on Phone. The Scandinavians use CQ-test and CQ-Contest.

3. Bands: 3.5, 7, 14, 21 and 28 Mc.

4. Objects: Non-Scandinavians will try to work with as many Scandinavian stations as possible. The same station may be worked once on each band during the Contest. Only c.w.-c.w. and phone-phone QSOs are valid for the Contest. The prefixes used in Scandinavia are: LA (Norway), JW (Svalbard), JK (Jan Mayen), OH (Finland), OH0 (Aland Islands), OX (Greenland), OY (Faeroes Islands), OZ (Denmark), and SM/SL (Sweden). All of these prefixes are geographically not in Scandinavia, but they are considered so for the Contest.

5. Operating Classes: Single-operator and multi-operator classes. The club stations, even if operated by one operator during the Contest, are in the multi-operator class. Multi-operator stations may use one or more bands simultaneously, but the exchange number must flow in chronological order.

6. Serial Numbers: The serial exchange consists of six-digit (c.w.) or five-digit (phone) number: RS(7) plus No., e.g. 599001 or 59001, etc. Every contestant must start from 001.

7. Points: One point for every complete contest QSO.

8. Multipliers: Maximum of nine per band, consisting of prefixes listed in paragraph 4.

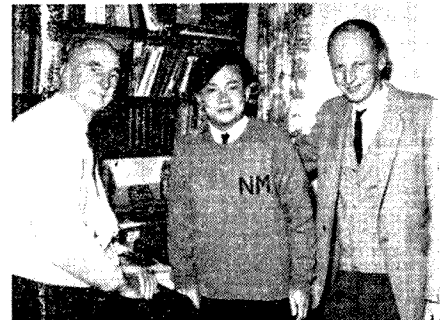
9. Final Scoring: The sum of complete QSOs multiplied by the sum of multipliers. There is only multi-band class in this Contest.

10. Certificates: Two highest scoring stations in both operating classes separately on c.w. and phone will receive the Contest Award in each participating country as well as in each participating U.S.A. call area. Depending on the number of the contestants in each country the Contest Committee will consider more certifications.

11. Contest Logs: The logs are to be filled in the following order: Date, GMT, station worked, sent no., received no., band, note of new multiplier. Separate logs for different bands are not necessary, but a summary sheet showing totals of each band and the final score is required. On this summary sheet the contestant will write plainly his/her call sign, name and full address. Also the operating class to be stated. Separate logs are required for c.w. and phone. The rest of the space on the summary sheet is recommended to be used for personal comments. Finally, the signature of the contestant certifies that he/she fully agrees to the rules, has been working according to them and agrees to the final decision of the Contest Committee. The logs must be mailed before October 15, 1967, to the organising League, S.R.A.L., P.O. Box 10366, Helsinki 10, Finland.

12. The decisions of the Contest Committee are final and definite. Right to changes in these rules is reserved.

All S.A.C. participants are requested to confirm each contest QSO with QSL card. This voluntary habit is aimed to foster general QSL policy all over the world.



JA VISITOR TO MELBOURNE

Nobuo Matsukura, JA3API/MM (2nd radio officer on the "London Maru") photographed with Bill Yates, VK3AHS (left) and Phil Orchard, VK3APO (right) when recently on the way to a Moorabbin Radio Club meeting.



FEDERAL AND DIVISIONAL MONTHLY NEWS REPORTS

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

FEDERAL

CASH PRIZES FOR CONTESTS

Re Item 2.12.1 of 1967 Federal Convention. Federal Executive wish to advise: "That it is the policy of the Institute to discourage the trend towards the presentation of cash prizes for contests."

This matter was decided last Easter in Hobart during the Federal Convention.

LICENSED AMATEURS

May—	Full	Limited	Total
VK1	70	15	85
VK2	1302	395	1697
VK3	1123	532	1655
VK4	461	173	634
VK5	478	218	694
VK8	272	123	396
VK7	128	71	199
VK8	16	4	20
VK9	62	9	71
VK0	7	0	7
Grand Total	3917	1543	5460

W.I.A. MEMBERSHIP RETURNS (Latest Returns)

	VK2 Jun.	VK3 July	VK4 Mar.	VK5 July	VK6 July	VK7 July
Life	15	15	?	5	8	7
Full	797	779	?	356	239	141
Assoc.	361	224	?	118	73	71
Others	10	—	—	19	—	—
Total	1183	1018	477	498	318	219
Prev'us Total	1278	995	—	544	311	232

Grand total members: Full 2800, all grades 3700. Percentage of members to licensees, approximately 51%.

DX-PEDITIONS AND D.X.C.C.

From A.R.R.L. (the fourth in a series of statements by A.R.R.L. Awards Committee):

"... It now appears to the Awards Committee that there is little or no likelihood that Dr. Miller (W9WNV) shall be able to supply the minimal information required to give the Committee reasonable assurance that D.X.C.C. credit can be given, or continued in effect for contacts in 1966 and early in 1967 with Dr. Miller's DX-peditions to St. Peter and Paul's Rocks (PY0XA), Chagos (VQ9AA/C) and Heard Island (VK2ADY/0). With respect to the first two, reasonable documentation concerning the manner in which the travel was accomplished has not been supplied. With respect to Heard Island, a question concerning authorisation by the Australian Government continues to remain unresolved. Accordingly, the Awards Committee most reluctantly announces that D.X.C.C. credits for these three operations must be withdrawn."

LIFE MEMBER BADGES

As directed at Hobart, F.E. has ordered and received a quantity of lapel badges for distribution to Life Members. They are similar to the usual badge, but with a green map background and white scroll.

FEDERAL QSL BUREAU

QSL arrangements for VK4HG, John Humphries, currently at Willis Island and active on s.s.b. only, have been varied. John now instructs that all QSLs be held at the VK3 Bureau. He will handle them himself on his return to the mainland about the end of 1967.

A full set of "CQs" for 1966 is available at this Bureau for free. First to call may have them. If no locals interested, postage is required from others.

The slump to 6,000 in incoming QSLs for June, as expected, proved shortlived. The July total rose to 10,000.

W.W. DX-pedition to the Treasure Island (Isle of Pines), Cuba. Amateurs are invited to participate in this contest organised by the DX-pedition (CO4) to Avalos key, eastern side of the Treasure Islands (Isle of Pines) where a world wide spearfishing contest will take

place. Contest period: 2400 GMT, Sept. 4 to 2400 Sept. 7, 1967. Object: To contact with the DX-pedition, several CO4 operators on different bands. Use QSO serial numbers. Scoring: Any CO worked on c.w. 10, or a.m.-s.s.b. 15 points; any CO4 worked on c.w. 20, or a.m.-s.s.b. 30 points. Awards: 1st place, Golden Plaque and Diploma; 2nd place, plate medal; 3rd place, copper medal; 4th to 10th place, diploma. All participants will receive color QSLs. QSOs can be worked out six times on the same band with different operators on c.w., a.m. or both. The different CO4 operators will call on a.m. "CQ Spearfishing Contest" and on c.w. "CQ CS de CO4..." Points will be given as soon as the logs are tabulated. Mailing deadline is October 1 1967 to P.O. Box 6996, Radio Club, Habana, Cuba.

The Radio Club Venezuela were late in the forwarding of advice of their Independence of YV Contest 1967, which was held on July 1 and 2. Logs should be sent to R.C.V., Apartado 2265, Caracas, Venezuela. Results of the 1966 Contest just received show the following VK participants: VK2APK 15,600 points, VK4LT 1,943 points, VK4HR 1,073 points, VK4FA 496 points, VK9DJ 12,938 points.

—Ray Jones, VK3RJ, Manager.

NEW SOUTH WALES

COUNCIL NEWS

Members will be pleased to hear that Bill 2YB, the Divisional Vice-President, has left hospital and is resting at Crookwell. It will be some time yet before we see Bill at meetings, but his many friends hope that he has a speedy recovery. Bill was going to take portable gear to Crookwell but no signals have been heard so far.

Following the resignation of Councillor Stan Dogger, Council appointed George Wilson, VK2AGO, to Council.

Council has announced that a full-time Secretary has been appointed for the Division and the position has been taken up by Mrs. M. Long. The Secretary will attend Council meetings and attend at Atcheson St. during the week. The hours of business for telephone and personal enquirers are from 9.30 a.m. to 3.30 p.m. on Tuesdays Wednesdays and Thursdays. Mail enquiries will of course be dealt with as soon as possible and Council hopes that a better service will result to country members. As can be appreciated, a vast amount of work and organisation is required of the new Secretary so the assistance of members will be necessary to allow the operation to be successful.

In order to assist members further, Council has delegated various departments to Councillors for supervision and these are as follows: C. Wilkins, property and plant; C. Henderson, zone liaison and radio clubs; F. Campbell, W.I.C.E.N. and technical; D. Jeans, Y.R.S. and education; G. Wilson, Treasurer and Executive Secretary; W. Lewis is on sick leave.

Council's membership drive is starting to show results, one member having recruited 15 new members. There were a further 15 applications for membership and 25 re-instatements. Don't forget the slogan, EVERY member get a MEMBER. If you care to beat the record of 15 new members, then have a go! Membership in N.S.W. is still way down so how about it chaps?

RADIO CLUB REGISTER

Councillor Cyril Henderson reports that the register of Radio Clubs is nearing completion and hopes for an early publication of the

SILENT KEYS

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

- VK3NS—Ross Bennett.
- VK4JF—Jack Files.
- VK6MU—Mal. Urquhart.

information. Cyril told "A.R." that he was having some difficulty in obtaining full information on some clubs and asks that clubs send ALL the details of their club. Those few clubs which have ceased could also help by advising the fact to Cyril. Members and club committees are again reminded that the information is required to assist them as well as the Institute and Amateurs in the pursuit of the art.

RADIO EQUIPMENT STORE

The Radio Equipment Store is undergoing a facelift and it is planned to have goods in bins with prices clearly shown. The store is to be modelled along supermarket lines with more realistic prices.

N.S.W. CONVENTION 1968

Council has announced preliminary details of next year's Convention. It will be held over the Australia Day week-end in January 1968. On the Saturday the Convention will start with an equipment display followed by the Dinner in the evening. Refreshments will be available all the time and the location will be the Windsor Gardens Convention Centre at Chatswood. Tickets will in the \$5 class and 150 will be made available, of which some 60 have been tentatively booked already.

Councillor Dave Jeans advises that the Y.R.S. are going to put out a kit set for a converter to allow reception of 40 and 80 metre bands on h.c. receivers. The kit will most likely contain two coils and a printed board and will use a low cost transistor tunable oscillator design; with the object of keeping the project simple, easy to construct, and easy on the pocket. Dave would welcome any assistance or advice on the project.

JULY MONTHLY MEETING

The Divisional meeting was held as usual on the fourth Friday and was opened at 8 p.m. by Chairman-President Keith Finney. After the reading of the minutes, Keith reported that the Secretary had been appointed and was working literally day and night to catch up on the backlog of work.

Federal Councillor Pierce Healy then introduced David Rankin, VK3QV, to the members and several visitors were then introduced and welcomed by the members.

Chairman Finney then closed the meeting to allow the annual auction to commence and handed the chair and knuller over to Noel 2AQH. Bill 2AGF took the cash—what little there was of it—and Warwick Johnson made book. Noel was just as sharp as ever, but what must be the greatest buyer-resisted auction in history took place. I think it only fair to say that Noel was completely exhausted at the end of the evening. Your correspondent can only put the lack of spirit on this occasion down to either the mob are so wealthy they are only prepared to buy commercial gear or that they are too lazy or busy to build their own gear—or that the art of Amateur ingenuity is dying out.

W.I.C.E.N. NEWS

A total of 132 Carphones have now been distributed to members, of these 61 went to country members and the remainder to the city and Gosford area. Conversion of the units to W.I.C.E.N. channels is by now well advanced as quite a large number of crystals have been supplied to put the units on channel B (146 Mc.). Quite a number of stations are also firing up on channel A as the release of this batch of units will most likely provide almost 190 stations in N.S.W. on channel B.

The meeting of the W.I.C.E.N. Group, which is held the second Friday of the month, will take the form of an adjustment clinic for the recent batch of Carphones.

Work is well advanced on the carpentering side of the room at Atcheson St. for the new communications room. It is expected that the project will proceed steadily until the room is ready for installation of equipment which is being overhauled prior to being installed in the building.

A joint effort is in hand by the group in conjunction with the V.h.f. Group to erect the 40 ft. tower and antennae for the v.h.f. equipment at Dural. Completion of this project, together with maintenance of the equipment, should improve the coverage of VK2WI on all the v.h.f. bands. 73, Stan 2ZRD.

OBITUARY

JOHN DUNCAN, VK3VZ

Amateur Radio has lost a very good friend by the passing of John Duncan, VK3VZ, on 18th July, 1967, aged 53 years.

Belonging to a family who built things, his particular flair was the building of radio receivers and transmitters. This led him in the war years to join those Amateurs who had the necessary knowledge and drive to provide many of the early sets needed by the Armed Forces.

He used to tell lively tales of changing coils on transmitters during Darwin thunder storms while lightning played around on the rhombs.

Returning to civil life, he joined his father and brother as master builders, but retained his love for radio.

In the great boom of Amateur Radio in the post war years, his was a well known call sign—one that always turned up when something needed to be done.

The Wireless Institute of Australia owes much to his enthusiasm, as a Divisional Councillor, as Technical Editor of the Magazine, and as un-official troubleshooter in many jobs, such as underpinning the rooms of VK3 headquarters. The Institute showed its appreciation of him by electing him an Honorary Life Member in 1954.

He was a famous transmitter hunter and also had the satisfaction of being the first transmitter-hider to completely baffle the hunters. Before television was known to Victorians, he was one of those who toiled all night before a models exhibition where the W.I.A. had pride of place featuring Amateur Television in operation.

He married rather late in life, but managed to find time, without ever neglecting his family ties, to continually build better transmitters and receivers. His signals were always good, and it was a pleasure to contact him. He was always vitally keen on what he was doing himself, but was equally willing to give understanding advice and help with the other man's problem. He was a generous, cheerful Scot who did not spare himself.

It was a privilege to know him, and to work with him.

JACK CRAWFORD FILES, VK4JF

The VK4 Division was saddened to learn of the passing of Jack Files, VK4JF, on 20th July after several months' illness. He was born in Brisbane 80 years ago

and worked for Victoria Cross Manufacturing Co. almost all his life.

Jack took an interest in Amateur Radio many years ago and in 1931 was a member of the South Brisbane Radio Club, obtaining his licence on 1st December, 1932.

For the past 18 years Jack has been in charge of the inward QSL Bureau and served on Council of the VK4 Division. All Amateurs in that State are well aware of the excellent job he has been able to do—a fine example of service to fellow Amateurs, and many of the cards handled this year were sorted at his bedside, both at home and in hospital.

Jack took an active interest in Church work, and his kind, gentlemanly and friendly manner was a practical example of the high ideals he practised towards his fellow men.

When Jack did find time to operate his station he preferred c.w. and mostly home made equipment. The call sign VK4JF is known all over the world and has appeared on all cards passing through the QSL Bureau for the last 18 years. Perhaps Jack has not been as active as some, but no doubt is better known than most.

The W.I.A. was represented at the funeral service which was held at Ann St. Church of Christ and members formed a guard of honour following this service.

To his sorrowing wife and son Jack, a sincere thank-you for assistance with the QSL Bureau, and we extend our deepest sympathy in their sad loss and can only hope that the hand of time will help to ease the strain of his passing.

MAL. UBQUHART, VK6MU

It is with much regret that we record the passing of Mal. Urquhart, VK6MU, on 27th July, 1967, at the age of 82.

VK6MU was a household call all over the world. Since he retired a couple of years ago, he had been on a world trip. His sudden passing will leave a gap, very hard to fill.

He always had an active interest in Amateur Radio. About twelve months ago he organised "an old timers" get-together and was already working on this year's event. It is now over forty years since he interested himself in Amateur Radio and has always kept it in the forefront of his activities.

Our condolences go to his wife and two daughters left to mourn his loss.

title of "Do It Yourself". This will be a contest to decide who has the most praiseworthy piece of equipment, the vote being made by those present. In case you've never been to a Hunter Branch meeting, the room is No. 6 in the Clegg Building, Newcastle Technical College, Tighes Hill, with the time of commencement—8 p.m. The September meeting is on Friday 1st and the October gathering on Friday 6th. Visitors are always welcome, so why not come along. 73, 2AKX.

CENTRAL COAST RADIO CLUB

A programme of wide interest was the feature for the July meeting of the Central Coast Radio Club. Ern 2EH recently made a tour of the Snowy Mountains project and took a number of colour slides. At the meeting, Ern gave an interesting run down, by his slides, of the latest developments in the area.

Another interesting item was a taped message from Laurie 4ZBL on life and communications in the Thursday Islands. Following playing of this tape, a reply from the meeting was recorded to be returned to Laurie.

The final feature of the evening was the discussion of a question on antennae from a recent Amateur Operator's Certificate of Proficiency examination. 73, Bill 2TS.

VICTORIA

The Victorian Division is holding another membership drive, membership has increased over the past few months: April 977, May 989, June 1023. From these figures for membership over the past few months it appears to be successful. If you are not a member, why not join now. Remember the Institute's aim is to help Amateurs, and you can help the Institute by joining.

VICTORIAN DIVISION ANNUAL DINNER

The Divisional Annual Dinner this year will be held on 3rd November at the Oriana Room, McClure's Restaurant, St. Klida Road. Charge is \$5.50 a head which includes pre dinner savouries and sherry. A band will be engaged for 8-11 for those wishing to dance the light fantastic. Listen to the Divisional broadcasts for further details and booking arrangements.

The Divisional rooms are looking rather brighter and more welcoming now that the long overdue painting and redecorating has been completed.

The August general meeting was a surprise with over 30 members and visitors present to hear Fred 3YS give his talk and demonstration on the tuning and adjustment of s.s.b. transmitters using a two-tone oscillator and c.r.o. The talk and demonstration was very informative and was thoroughly enjoyed by everyone present. The evening was concluded by every one having a cup of hot tea or coffee.

The guest speakers for general meetings for the remainder of the year are:

Sept.: Les 3ZBJ with a repeat of the excellent lecture he gave to the V.h.f. Group entitled "A New Look at V.h.f. Technique—doing it with Semiconductor".

Oct.: Ian Sash, of the Defence Standard Laboratories will talk all about "Field Effect Transistors".

Nov.: Roy Humphries also of the Defence Standard Laboratories will talk on the "Design of Power Supplies using Semiconductor Rectifiers."

FURTHER I.T.U. DONATIONS

T. R. Naughton, 3ATN, \$10; D. Harkin, 3ADJ, \$5; J. Mitchell, 3ZMI, and F. E. Hobson, 3ZEU, \$2 each.

73, Cyril 3ZCK.

EASTERN ZONE

Have not too much news for the zone this month. The Overseas Zone DX Certificate, which was brought into being at the Convention is being well advertised by zone members on the h.f. bands. Peter 3AUV is welcomed to the zone and will be on s.s.b. shortly. Norm 3ANC and Cliff 3AIT have also joined in zone activity. Keith 3SS is holidaying in W land. We hope to hear from him on return. Graham is going s.s.b. and worked his first VE for some years.

Ten stations were on the Friday night (28th July) zone hook-up on 80 mx, including ZLs and VK's. Jamboree of the Air activity will include 3AWV, 3AED, 3ZCG, 3QZ, 3ZAB and yours truly. We hope others will join in. 73, Albert Cash.

MOORABBIN AND DISTRICT RADIO CLUB

After many years of "exile" the club is returning to its birthplace—the City of Moorabbin. For some years now, the club has enjoyed facilities provided privately and we are indeed grateful to Laura Hall for putting

HUNTER BRANCH

The Command receiver which surely must be known to Amateurs in all parts of the world is a very versatile piece of apparatus, but its true versatility was revealed very convincingly at the July meeting of the Branch. Gordon 2ZSG came out of hiding at last and gave his long promised talk on the most popular conversions for this receiver and he displayed sets of all the frequency ranges including the broadcast band type which is quite rare in Australia. With the help of S.w.I. Arie Oosterveen, who did the draughtsmanship, Gordon supplied each member of the large audience with a booklet outlining all the conversions supplied. These ranged from the simple b.f.o. and volume control addition to double conversion for super selectivity.

No doubt the surplus Commands lying about in the shacks of Branch members will now be put to use in a much more efficient manner than they had thought they could be. In fact it would be true to say that the designer of these sets would be amazed at some of the modifications outlined by the lecturer. Some copies of the circuits are still available and Gordon will dispense these to postal enquirers if they are needed. In addition to the lecture, we were fortunate to obtain from the Japan National Railways a film of the features of the super express "Hikari" which makes the rapid journey from Tokyo to Osaka at two miles a minute. So it appeared that the audience was well pleased with the night's activities.

Plans are now well advanced for the Branch Field Day which will be held this year at Bolton Point Park on Lake Macquarie on October 15. There will be a full programme of transmitter hunts on both 2 and 40 metres and competitions and amusements for the other

members of the family. The registration fee of \$1 per adult or \$2 per family will, this year include a lunch to be served in the hall at the ground and there will be some suitable liquid refreshments as well. More detailed information will appear in the Divisional Bulletin.

The Westlakes Radio Club conducted a most successful Field Day on 9th July and a small but enthusiastic group of Amateurs and Y.R.S. members made short work of finding all the hidden transmitters including the small transistor v.h.f. rig hidden by Tony 2ZCT in some very unlikely places. Wet boots seemed to be the order of the day in this regard! And while speaking of the club, a great deal of activity has been evident of late with work on the new aerial mast proceeding at a fast rate. The base block weighs something like two tons so it should be a difficult task to push it over. The mast will carry some v.h.f. aeriels including a colinear for 146 f.m. It is hoped that this will result in good signals being received over much of the Newcastle, Lake Macquarie and Port Stephens areas on f.m.

The latest form of contest activity is a v.h.f. scramble to follow the Monday night broadcast on selected days. The winner and placegetters will be awarded points for their scores and these will total to give some lucky operator the prize to be given at the Annual General Meeting. Short wave listeners may also take part in the scramble and all logs should be sent to the Secretary, 15 Marine View, Newcastle, not later than the Friday following each contest. The first of these events was held on 24th July and further contests will be announced during the broadcasts.

The October meeting of the Branch will be held as usual and once again this will take the form of a series of lecturettes with the



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up with us for so long. Suitable alternative accommodation has been obtained in the form of an arrangement to share the club room facilities of the Moorabbin Baseball Club. At the time of writing, the date of changeover had not been set, but members will be advised in the club's newsletter "A.P.C."

The usual "natter" night is programmed for Friday, 1st Sept., and the monthly general meeting on Friday, 15th Sept., will be followed by a talk on Field Effect Transistors by Nell 3ZRT.

It has become quite common now for VK3 stations to be asked by DX stations if they are members of the club. This is because many overseas stations are seeking to become honorary members and win the club's handsome certificate.

Enquiries are still being received from local and overseas points for kits for the club's receiver project. Some excellent reports have been received on the performance of the companion 2 mx converter; and from "reading the mail" on 80 mx, it seems likely that converter kits for other bands will also be in great demand. Enquiries regarding any of the receiver project kits should be directed to the Hon. Secretary, Harold Hepburn, at 4 Elizabeth Street, East Brighton, Vic., 3187.

A transmitter hunt on Friday, October 8, will replace the "natter" night for that month and it is planned to hide a 2 mx rig alongside the 80 mx rig. Both rigs will be keyed continuously with the club call sign VK3APC with a long key-down interval. The mode on 80 mx will be the usual c.w., but m.c.w. will be used on 2 mx so that the v.h.f. clan who may not be equipped with b.f.o.'s will be able to track it down.

It is hoped that the use of two bands will attract a larger group of hunters. The hunt will leave from the club rooms at 8 p.m. and any suitably equipped Ham or S.W.I. may compete. Those without equipment will be welcome to ride as passengers.

Other activities planned are: Friday, Oct. 20, tape lecture; Saturday, Oct. 23, social evening; Friday, Nov. 3, practical night; Friday, Nov. 17, annual general meeting; Sunday, Nov. 26, car trial/barbecue/party; Friday, Dec. 1, "natter" night; Friday, Dec. 15, Xmas party.
73, Alan 3ASL.

QUEENSLAND

TOWNSVILLE AND DISTRICT

Since last time we in our fair city have had the chance of seeing some VEs, Bill VE1AHK operating under the call sign of HP9FC/MM being in port while the R/V VEMA was taking on some supplies. Bill is the op. and the ship is doing geological survey of our Barrier Reef. Merv. 4DV did manage to take him around the various shacks, while yours truly took him sightseeing all the places around about including the local zoo to take snaps of the kangaroos which he had never seen in the flesh. They really turned it on for his camera. Peg VE4PE is roaming the north on a working holiday and going to be entertained by Evie 4EQ.

Happy to report that at least three will face the August exam., so here's hoping the paper is to their liking. I know that all wish them every success.

The local club is busy toying with the many ideas to try and raise finance to build their club house and try and beat Ipswich who already have theirs. So anyone wishing to have the club house bearing their name, here is the opportunity to send along the necessary "grand".

Allan 4FS still busy watching the satellites passing over with the Moon Watch Society, also journeying to the west to record the moon passing Mars, apparently North Queensland is the only spot where this can be actually witnessed, so here is hoping for cloudless sky at 7.15 p.m. on the night.

The Expo for Canada has many of the boys chasing the 100 contacts to get the award. Merv. has it in the bag, while Bert frantically watches for V0 to get his total. 73, Rob 4RW.

IPSWICH AND DISTRICT RADIO CLUB

The main event on our July Calendar was the Annual Meeting and Fifth Birthday Party which was held at the club house on July 11. The annual election of officers was conducted and we have a few new faces at the official table for the next twelve months. The new officers are Ron 4RG, President; Norm 4KO, Senior Vice-President; Phillip 4ZPE, Secretary; Mrs. J. Lloyd, Treasurer; Bill W1A-L4001, Public Relations Officer; Wayne 4ZN, Station Manager.

Our outgoing President, Norm, presented his report on the club's activities and achievements

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over the last 12 months and thanked all club members for their support. We were glad to welcome visitors in the person of Mrs. V. Jordan, M.L.A., our Vice-President; Mr. and Mrs. A. Simpson, Secretary of local W.I.A.; Mr. P. Brown, 4PJ; Mr. P. Radikoff; Max Vincent, 4ZMU; Trevor Connelly; and Mr. and Mrs. Eddie Bange.

A birthday cake made by Mrs. Kirke, mother of S.w.I. Malcolm, was the highlight of the supper table. The club's shack in miniature, right down to the colour scheme, was a feature of the cake, which was enjoyed by one and all.

The club's tri-band transceiver has now been installed in the shack and drew its first blood as VK4IO in a nine-station net on Monday, 10th July. Participants were from practically all over Queensland as well as two in VK9, not to mention club members.

We would like to welcome several new members to the club, including Mr. Clem Scott, 4DW; Mr. Rod Tow, 4TF; and Mr. L. Fall, and we hope they will join in the club's many and varied activities.

Wayne 4ZN has a big conversion job on his hands now changing his 6v. 40 mx mobile over to 12v. operation. A new car has been responsible for the extra work. Couple of local lads, namely Ron and Warren, were very popular recently while chatting away on 80 about transistorised power supplies, when they were overwhelmed by numerous ZLs calling for numbers in one or their national contests. It appears the first VK4 worked was worth 14 points, so it was open season on two sitting ducks. 73, Warren 4GT.

SOUTH AUSTRALIA

The monthly general meeting of the VK5 Division was held at the club rooms to a little below average attendance of members and visitors, 85 to be exact, and in view of the coldness of the night, this was quite a good roll-up. The meeting was opened on time by our President, Murray 5ZQ, and with no Divisional business, very little Federal business, and no controversial subjects to discuss, the business side of the meeting collapsed with an audible sigh, and QSL cards and smoke-oh took over the meeting.

Rick 5ZPQ was the lecturer for the night and he chose as his subject "Six Semiconductor Oscillator Circuits" and as he is considered to be something of an expert in this field, the meeting settled back for an interesting and instructive hour and a half or so.

To say that they were not disappointed would be the understatement of the month, as Rick handled his six circuits along the lines of a juggler, tossing them on and off the blackboard with remarkable dexterity and knowledge, and together with answering a barrage of questions from the interested members, he also managed to keep up the interest even of those who might have been a little out of their depth at times. Fortunately for me, most of the lecture was on the blackboard and aside from posting the said blackboard over to the Magazine Committee, there is very little more for me to say—Cheers from VK6 and VK4. However, to keep the record straight, the six oscillators were the Unijunction—Chow—Phase Shift—Franklin—Ultra Audion—and a lamp flasher, with quite a time spent on the Unijunction. The applause that greeted the closing of the lecture was so spontaneous, that Murray did not find it necessary to ask anyone to propose a vote of thanks to the lecturer, a tribute to Rick's fine job, and members left for home at the witching hour of 10.30 p.m., well pleased with the night's entertainment, and definitely a little more "clued-up" on the subject of semiconductor oscillators.

Uncle Tom 5TL was a busy little bee at various times during the meeting. Firstly as Publications Officer, then as QSL Officer—due to the unexplained absence of the regular QSL Officer, George 5RX—then back to Publications Officer, and finally as "Chucker Out" when apparently a couple of night owls forgot that they had a home to go to. A real battler is our Uncle Tom.

Ernie Luff, WIA-L5080, from Elizabeth, was his usual sprightly self at the meeting, complete with brief case containing certificates and QSL cards he has acquired since 1925. I was particularly interested in the Klondike Award that he acquired recently, also in the first QSL card he received in 1925 from G5OY. Ernie was then in England, his homeland, and from what I read, a power in the s.w.I. game then. He claims to be 73 years young, but personally I would call the stewards in to make him produce his birth certificate, because he certainly does not look anywhere near it.

Wyk 5WM was an unexpected visitor to the meeting, and although he has been a member for many years his visits these latter years

have been few and far between. As a matter of fact he was listening on his mobile and heard a couple of the boys say that they were going to the meeting, and having a free evening for once he decided to join in. The 53.1 Mc. net is proving useful in more ways than one!

Wayne Kitchener, the Associates' representative on the VK5 Council, is now beginning to realise just how hard it is to organise the Associate members into getting together at the pre-general meeting to talk matters over among themselves for their own benefit. He is also now realising just why so many enthusiastic past Associate members' representatives have fallen by the wayside in their efforts to get organised, finally giving it away as a bad job. Wayne is still enthusiastic about the job and can only repeat—The Institute wants to help you, if you want to help yourself.

Rick 5ZPQ is now a member of the Disposals Committee to help from the transistor sales angle and as most know, his work and experience on these small items will make his advice more than welcome.

Once again a reminder about the Electrical Workers' Licence. The application forms are available from the Electricity Trust of S.A. and the deadline will be upon you before you know it. He who hesitates is lost, and he who is lost will pay out sundulics for all matters electrical. None of us should have any difficulty in obtaining a "B" class licence, in fact nobody should have any trouble in getting some type of licence.

Our large and genial Minute Secretary, Treva 5ZIS, caused quite a commotion at his place of employment recently when he put his foot, and other portions of his anatomy, through the ceiling. One of my spies, who spends most of his spare time lurking in ceilings, tells me that Treva almost fell through completely and left quite an impression on the said ceiling. It is also said that he nearly fell on top of his boss, although just how the man "underneath" would have finished up is best left to the imagination—yours.

With the coming of winter months it is now "back to 80" and the first call of the migrators heard was that of Len 5ZF, and possibly by now Moss 5TU has arrived on the band, to say nothing of the rest of the gang who spend the winter months on "good old 80 mx".

Uncle Tom 5TL, our busy Publication Officer, has been out of stock of the VK call sign books and has already lodged an application for the next issue (well in excess of the last order) and hopes to be able to supply all and sundry. Naturally the time of delivery is not guaranteed at the moment, but October is the shot in the dark.

Also, if anybody is seeking to acquire any crystals through the Division, or would like some information on same, the man to seek out these days is the ex-President, Ross 5KF, who has taken over the job from Gilbert 5GX who is busy doing his usual best in other directions.

Although we have at least two boat owners in our midst (probably more for all I know), nothing has been heard lately about the price of fish, nor that a fish meal is available at any time. The only information I have is that Pete 5FM once said that the first few fish were pretty pricey, but the cost was decreasing as the catches increased.

An official invitation has gone out from Council to any members who might wish to "sit in" on Council meetings. This is a good idea and will certainly dispel any suggestions that Council has anything to hide, and show it is at all times willing to allow the membership to acquire inside information as to the running of the Division. Let's hope that they don't all roll up at once, although it might be a means of recruiting future Council members.

Strange what bits and pieces can be picked up just by listening around the bands. John 5ZZ is seeking bamboos "about 10 feet long" and has been advised by all and sundry of possible sources from Rundle St. to Fort Adelaide. I would plump for Port Adelaide myself, but then I could be wrong, anyway what does he want the bamboos for?—could he be a prospective quad builder?

Can't help but notice the number of two-letter call signs now on 53.1 Mc. (the W.I.C.E.N. net) these days, mostly to and from work. Just to mention a few, 5RD, 5KF, 5KX, 5LT, 5TY, 5WK and probably many more scattered along the roads in various directions.

Brian 5ZNK is reported as having been on a trip to ZL land in connection with his association with the R.A.A.F., and if all is to be believed, he saw other things in addition to the R.A.A.F. activities.

Quite an uproar recently at a meeting when George 5RX, our worthy QSL Officer, announced in a very loud voice, for all and sundry to hear, that he had a card for me from Kenya

—524JH to be exact—and when the cheering and uproar had subsided, he delivered the punch line that the contact was on 14 Mc.—and—on s.s.b. I have managed to live down the shame and degradation of the whole thing, but just think of it happening to me, and to make it worse, it looks dinkum. A joke about "The Thing" I can take, but anything dinkum is beyond a joke!!

I notice by the VK5 Journal that the Youth Radio Club activities are definitely on the increase in our fair State and that Bert 5EQ is still guiding the destinies of the Port Pirie Club. I notice with some surprise, the fact that recently the first interstate conference was held in Sydney, and also the comment from the VK5 Co-ordinator, Bob 5OD, to the effect that why was not VK5 informed or represented at this first Y.R.S. conference, and also why should we accept decisions, which may affect all States, made by a conference arranged by and attended only by VK2 and VK3. Quite a point I feel, and one which the "Wise Men from the East" could well consider next time a conference is mooted. (Nothing to do with the W.I.A.—Ed.)

Geoff 5TY, the grumpy Co-ordinator of W.I.C.E.N., reports that the Red Cross Society have asked for W.I.C.E.N. to take part in the coming State Disaster Plan. This plan is being organised by the Red Cross with the approval of the relevant government authorities.

I notice, with extreme gratification, that Phil 5NN, the doyen of the followers of "The Thing", opens his column in the July magazine with the comment that the notes on s.s.b. are being written whilst on vacation in VK3 and adds in brackets "of all places". Apparently whilst we may differ on our modes of modulation, we at least agree on the dangerous subject of VK3!!

Reading the VK6 notes recently—oh yes, I read other Divisional notes—I see that Boss 6DA was welcoming another YL to the Division, none other than VK6OV—no christian name mentioned, either by design or accident—and a c.w. expert at that. Well that rubs me out of a contact, she would have to be an expert on c.w. to copy my code, so I am told by several coarse types in VK5. Oh me, oh m, such is fate, always the bridesmaid, never the bride—or something!

Had a visit from Wyk 5WM the other day, and was initiated into the mysteries of his 6 mx mobile set-up in his car. Was quite impressive, and he tells that it is a wonderful way to keep in touch with the boys, especially when one is too busy to get on the air from the home QTH. He is very happy at Channel 2, and reckons that he should have gone there long before he did. I reckon he has shaken off some weight, although he strongly denied this and refused to even give me a hint of any diet he may be practicing.

Any chance of my achieving fame as a lecturer at Uncle Tom's (5TL) Black Forrest Methodist Church Men's Fellowship meetings has now gone down the drain. The date he picked for my debut was the only day in the year that I would be away from the State—in VK3 at that, Ballarat to be exact—so you can cancel your orders for eggs and tomatoes, etc., they won't be needed. Such is fate.

Had a ring this month from a chap who put himself right in my good books by announcing that he was a VK3, "one of Pincott's mob" to be exact, they all seem to say that when they ring. I suppose they think they will frighten me that way—and they always do! Anyway, it was none other than Jed Kelly 3AFD—too close to 3AFJ for comfort—and I must confess that I forgot his christian name, but when I looked at the call sign book and saw it was J.—it immediately rang a bell. I am sure that somewhere along the line there has been a Jed Kelly in VK3 history, and me having a memory like an elephant, I never forget. He seemed to be quite a good sort of a chap, and I was sorry that I could not find an opportunity for an eyeball QSO, but I was in bed when he rang and my XYL was just recovering from a bout of pneumonia, so I had to make my excuses and leave it at that. Actually he was ringing to find out when there was a meeting, but he was a week too early, as he was leaving for home within a day or so. Better luck next time—Jed—You Beautiful!

Talking of Pincott 3AFJ, and to be exact I never want to, but he always seems to intrude into my thoughts, I note with dismay that my old Division has again put their faith in him by electing him as their President. I think it time that I paid them another visit and had a go at getting rid of their Pincott complex. What has he got that I have not? Oh Yeah!

Throughout the many years that I have been listening on 7 Mc., I have heard some mighty signals when the conditions were good, but the other night I heard a three-way between ZL3MF, VK6BT and VK1FB, and believe me,

I have never heard such a signal as that of John 1FB. Bob 6BT was above the normal strength usually associated with VK6 signals on that band, and Dave ZL3MF was also at good strength, but 1FB seemed as if he was next door. It did not last for long, but whilst it did, the copy was unbelievable.

I suppose that one must be prepared for shocks and surprises in Amateur Radio, but the other night on 7 Mc. I passed over the usual S9 signal of Athol 5LQ and lo and behold he was not in contact with Jack 6LN but was talking to Frank 5FJ. Athol was having a technical discussion as to the fact that his XYL always read the evening paper and if and when he got around to reading any paper it was the morning paper—or viva-voce—and Frank countered by giving a highly technical description of how to half put up a ceiling, and then when it rains, how to cover it up pronto!

Most of the readers of the VK5 notes, always assuming that there are such readers, could be pardoned for thinking that I have a persecution complex with regard to such things as VK3, Pincott 3AFJ, the Magazine Committee as a whole, the VK5 Council, and sundry other pet hates. Naturally, not having been the victim of their machinations, it probably is hard to fully realise just how they plot and plan to secure my downfall, without, ever providing me with sufficient proof to support my claims of victimisation. However, at last I am in a position to produce proof enough to convince even the most sceptic of readers as to the truth of my complaints. Now I ask you, who is responsible for the magazine?—VK3! Who is the Editor?—Pincott 3AFJ! Who prepares the magazine?—the Magazine Committee! Who pays the Divisional dues for the magazine?—the VK5 Council! Bearing all this in mind, why did I not receive my copy of the magazine for July—and why, when I happened to mention it to Council member Uncle Tom 5TL over the telephone, did the telephone start ringing frantically within the next half hour or so, and when I answered it, the honeyed voice of the VK5 Treasurer, Harry 5MY say, "Having some trouble with the magazine, old boy?" Also, as a clincher, why did the magazine arrive next day, and as an added insult, have written in big letters on the back of the wrapper—"S.W.A.L.K.," which for the benefit of the uninformed means "Sealed with a Loving Kiss".

Gentlemen, I rest my case, and if they are not a lot of stinkers, what are they? Don't answer that. You beaut! What a gift from the skies, almost as good as striking Tatts, or even the local lottery—well almost!

73, de 5PS, PanSy to you.

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WESTERN AUSTRALIA

Greetings from the wet side of the black stump—brrrrrr I hate this winter, give me the summer any time! Perhaps I shouldn't say that, because it's winter conditions which usher in some interesting contacts on 80 mx of an evening.

40 metres seems to be giving a good account of itself too. Only a couple of Sundays ago I can distinctly remember taking part in a "round table" in which some eight or nine stations took part. It was a real "talkathon", as one station dropped out, another popped up to take his place. Among those responsible were VKs 3AAO, 5SS, 5ZZ, 2BAI, 2KD, 6BT, 6KJ (portable aboard M.V. Kangaroo) with 6NJ and 6MF mobile on the outskirts. 2KD, by the way, was running 18 watts to a base loaded whip!

There is currently here in VK6 a renewal of interest in 160 metres. This is mainly due to Cliff 6NK who has had considerable experience and success on this band in the U.K. Cliff was on hand at a recent Council meeting to give of his knowledge on "Top Band" and several other aspects of Ham Radio. Many chaps seem to shy clear of this band mainly because of the old bogey of the length of antenna required, but after a few words with Cliff, and indisputable evidence in the form of QSL cards, this excuse no longer holds good. Looks like a bit more construction work ahead for some. John 6ZW is getting in early by including 160 mx in his new sideband rig.

Talking of new sideband rigs, was lucky enough to be able to visit Narrogin recently and visit Pat 6PH at his QTH. Pat's home brew transceiver looks pretty good—sounds okay on the air too!

Len 6LG is putting in a bit of time at the work bench too, watch for this one.

Popular (?) rumour has it that a couple of blokes out Leederville way are putting in some crafty work on the side too.

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It was nice to hear a couple of new call signs on the 6 mx a.m. net, welcome to Michael 6ZCW and Frank 6ZFN; hope to hear more of you.

May I extend, on behalf of all members, best wishes to VK6WS "Skipper" Schofield, who added yet another year to his already formidable tally. "Skipper", now 93 years young, is still active on 6 mx where he maintains several skeds each day. By the thoughtful action of Bill 6WV, "Skipper" was able to talk to many of his friends after the regular call back, shortly after his birthday. He must surely be the oldest active Ham.

Vic 6VK is back on the breeze from his new QTH, must be like old times to be back in them there hills. Judging by comments and questions I have heard being directed at you Vic, it seems as if your recent lecture and demonstration have created quite a lot of interest in r.t.t.y.

Among the visitors at the July meeting were John Moran and Tom 6TH and Cyril 6CN (now a city dweller I believe). Keep an ear out for Tom on the 6 mx f.m. net you Hunbury boys and anyone else too for that matter because Tom is toying with the plan to put the unit in his aircraft.

It looks almost certain that as a result of Clem's suggestion, we will soon be having an outdoor social gathering for the whole family. This is due in no small measure to the ground work being done by Graham 6ZEZ and Ken 6ZBT. Please give them YOUR support.

"Oh he floats through the air with the greatest of ease," this could well be true of Peter 6VR. I understand that he tried conclusions with a couple of visiting experts in the sport of Judo while they were visiting us from JA land. It's all in the way you land I'm told. How true!

Cheers to you all and hope to see you on the bands soon. 73, Ross 6DA.

SELL: Swan 350 Transceiver, 100 Kc. calibrator, Swan A.C. Power Supply, perfect condition. Heathkit 610 Monitor Scope, little use. Bill Yates, VK3AHS, 26 Henry Street, Highett, Vic., 3190. Phone 95-1967.

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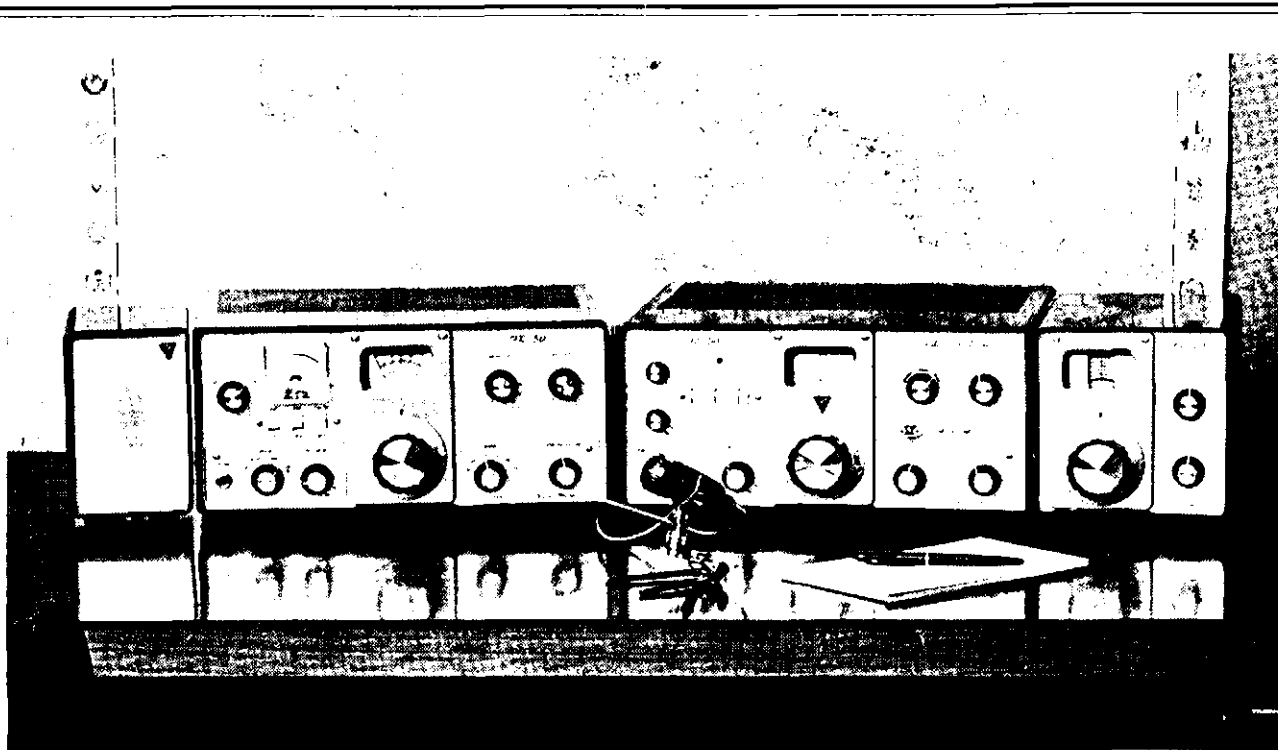
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amateur radio

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8A7	8 in.	50-16,000	8 watts	\$7.50
12A9	12 in.	30-13,000	20 watts	\$18.75
Coaxial Type with "Free Edge" bass cone and horn tweeter				
8CX50	8 in.	30-22,000	15 watts	\$23.75
10CX50	10 in.	25-22,000	20 watts	\$36.00
12TX50	12 in.	18-22,000	25 watts	\$62.50
Single Cone "Free Edge" type:				
5A50	5 in.	50-15,000	8 watts	\$15.00
Professional Series:				
H50 Horn Tweeter	2,000-20,000	15 watts	\$11.10	
6M50 6 1/2" Sp'ker	200-6,000	25 watts	\$21.00	
8L50 8 in. Woofer	37-4,000	15 watts	\$28.25	
10L50 10 in. Woofer	25-3,000	20 watts	\$41.00	
12L50 12 in. Woofer	17-2,500	30 watts	\$64.00	

Please Note.—A7 and A9 types are available in either 8 or 16 ohm Voice Coil. A50, CX50, TX50 and Professional types, 16 ohms only.

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THE NEW "HANDBOOK"

FEDERAL Executive takes great pleasure in announcing that the new "Handbook" for the guidance of operators in the Amateur Service is now ready for printing.

Behind this deceptively simple statement lies nearly two years of negotiation and discussion between the Institute and the Postmaster General's Department and it is the purpose of this, and subsequent, notes to inform Institute members of the background and results of these negotiations—negotiations which affect all Amateurs in Australia, no matter whether or not they are members of the Institute.

At the Federal Convention held in Melbourne at Easter 1965 several subjects were raised which involved representation to the Department. They included such things as allowable sideband power, t.v.i. and portable operation. It became the job of Federal Executive to pursue these points with the Department and present the Institute point of view.

Accordingly a working party was formed consisting of Messrs. Hull, Williams, Connelley, Owen and Hepburn and for over three months this group met at least weekly and often more frequently. Every aspect of the Handbook was examined in the light of Institute policy and finally a submission was prepared which gave the Institute point of view on such diverse subjects as the status of the Amateur Service, t.v.i., age limits, acceptable sideband power limits, portable and mobile operation, modes of transmission, authority for the erection of masts and many other matters.

As a result of this submission, a series of meetings was arranged with officers of the Department.

At the first of these meetings—chaired by Mr. Eric Neilson (Asst. Director General—Telecommunications) those present were Mr. C. Carrol (Controller—Radio Branch), Mr. K. Buckley (P.M.G.) and Messrs. Williams, Owen and Hepburn of the Institute.

The points raised in the Institute's submission (and many others) were examined in detail and it soon became clear to both parties that a complete revision of the Handbook was necessary. As a result of a series of minor alterations over quite a long period the Handbook had become rather unwieldy and was often either obscure in its meaning or, worse, inconsistent within itself. Furthermore, in some places it did not accurately reflect the Regulations on which it was based and which it purported to explain and expand.

It was therefore agreed that both the Institute and the Department would,

separately, prepare drafts of a new Handbook and compare these drafts at a later date.

This exacting task, which was to occupy nearly all the spare time of the Executive working party for the next four months, was assisted by an analysis of the appropriate legislation (not only of Australia, but also of Britain and the United States) prepared by the Department.

At the second meeting held in November 1965, to review progress, it was immediately apparent that both the Institute and the Department were in complete accord on the philosophy behind the Handbook.

Some minor matters of wording remained to be resolved but both parties were obviously trying to express the same thoughts. With this heartening background, work continued through the Christmas break and a third meeting was held in January 1966, when the now completed drafts were again compared and moulded into a complete whole. A few "toughies"—notably that relating to t.v.i.—remained to be settled but in the main the new Handbook had taken shape. The Department undertook to steer the necessary regulatory changes through the appropriate legal channels and also to produce the final draft of the Handbook.

Due to the low priority accorded these regulatory changes, it was over a year before the Department was in a position to inform the Institute that the Handbook was cleared for printing.

FEDERAL COMMENT

As an interim measure, the situation with regard to the sideband power limit and the preferred method of measurement was clarified by a letter from Mr. Carrol which was printed in the December 1966 issue of "A.R." This letter stated that Australian Amateurs would be allowed a peak output of 400 watts on s.s.b. and also detailed the method of measurement to be used.

At the last meeting—held on 24th August, 1967—the final draft of the Handbook was checked and was equally satisfactory to both the Institute and the Department. Since the printing of the new Handbook will take some time,

the Institute has permission to print in "A.R." those parts of the new Handbook of immediate interest to Amateurs. The list is a long one and over the next few months it is the intention of Federal Executive to cover them in some detail giving both the changes themselves and the reasons for them.

Briefly, however, some of the changes (other than the s.s.b. power limit) are:

Reduction in age limit to 15 years for would-be Amateurs.

Five days /P operation for all classes of licence without prior departmental approval.

Recognition of the Amateur Service as such.

Reduction in log keeping requirements.

Clarification of c.w. examination marking standards.

Reduction of theory examinations to twice yearly.

Wider use of different modes of transmission allowed.

Freedom of choice for frequency measuring equipment.

Prior D.C.A. authorisation of antenna masts no longer a condition of issuing a licence.

The above list is not exhaustive, but serves only to indicate the way in which a wide variety of subjects have been examined and made to reflect present day conditions. Neither does such a list indicate the depth in which each subject was examined.

Between now and the time the new Handbook is actually available on the bookstalls, the Institute has the undertaking of the Central Administration of the Department that the provisions of the Handbook, as they express the policies of the Department, will be conveyed to the Radio Superintendent in each State.

Over and above the changes that have occurred in the rules governing the Amateur Service, there has been another gain which must be to the benefit of the Australian Amateur. That change is one for the better in the matter of relationship between the Department and the Institute. At the present time this relationship is extremely good and based on a mutual respect and understanding that has not hitherto existed.

Provided always that the Institute acts in a responsible and logical manner in seeking advantages for its members, then it will not seek in vain.

--HAROLD L. HEPBURN, VKSAFQ,
Federal Vice-President, W.I.A.

TRANSISTORISED REGULATED POWER SUPPLY

K. A. KIMBERLEY,* VK2PY

THE power supply described in my article "The Thing"—Transistorised" ("A.R." August 1967) has been in regular use at VK2PY. During this time certain modifications have been incorporated into it and hence its usefulness has become even greater.

My power transformer, type ST3894, is rated at 0.5 amp. instead of 2.0 amp., as in the original Mullard circuit, hence the overload series resistor required alteration. R4 was increased to 20 ohms 40 watt. A 12 volt 100 mA. lamp (B.P.O. type No. 2) connected across R4 serves to indicate when an excessive load is being drawn from the supply. This modification does not seem to alter the regulation characteristics at load currents below about 250 mA., however the regulation becomes progressively worse at higher loads.

Notwithstanding this slight degrading of its performance, the supply is still quite usable up to a load current of 500 mA. I know of five supplies having been built and all are giving satisfactory results. However, in some cases, the maximum output voltage has been somewhat lower than the design

• Readers are referred to the August 1967 issue of "A.R." page 9 for information on the original transistorised regulated power supply described in the author's article "The Thing"—Transistorised". In this issue he submits details of modifications to the power supply which will be of interest to readers. Also a brief note re transistor testing, using the supply, is included.

METERING

The fixed range voltmeter has been changed to a multirange function:—

Position 1	.....	0-10 volts
" 2	.....	0-20 volts
" 3	.....	0-500 mA.
" 4	.....	0-50 mA.
" 5	.....	0-10 mA.

The best voltage regulation is obtained when the meter range switch is in one of the voltage positions. This removes the meter shunts from circuit,

until the meter under test (M.U.T.) shows full scale and note the actual reading on the "standard".

Return voltage to zero and replace the 100 ohm resistor with one of about 10 ohms and repeat the above for both the 50 mA. and 500 mA. ranges. If the readings obtained indicate that no great errors have been made a start can now be made on the actual adjustments.

Set both the M.U.T. and the "standard" to the 10 mA. position and carefully turn up the voltage control until one of the meters reads 10.0 mA. If the "standard" reads full scale before the M.U.T., the resistance of the shunt is too low and conversely if the M.U.T. shows full scale first the shunt is high.

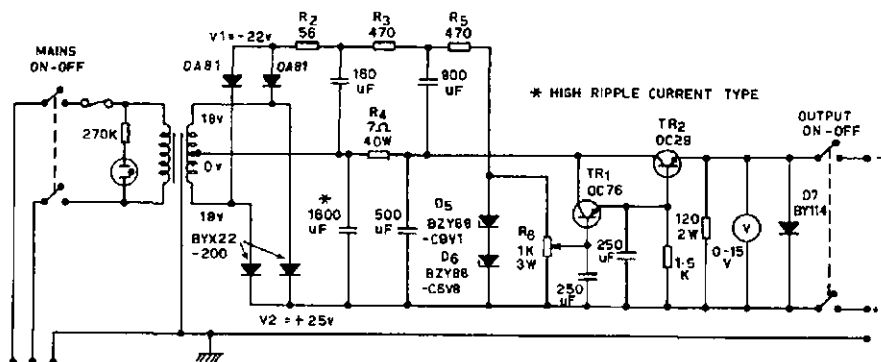
A shunt which is no lower than about 10% may be increased to the correct value by unwinding same and very carefully stretching it. A rewind job will be needed when the above procedure fails or if the shunt is more than 10% out of tolerance. A high shunt may be unwound to give the correct value or another resistor connected across it until the M.U.T. gives the same readings as the standard. The next two ranges are adjusted in the same manner.

Warning: Always switch the supply off whilst making adjustments, otherwise you are likely to wrap the meter pointer around the stop. The shunts should be cooled down with a "metho" soaked rag to prevent erroneous results caused by the "thermo couple" effect.

VOLTAGE RANGE ADJUSTMENTS

The purchase of two only 10K ohms 1% "high stab." resistors is the easiest way of obtaining satisfactory voltmeter results. The internal resistance of the meter adds to multiplier resistance. In my case, the meter resistance was 100 ohms and represents an additional 1% (on the 10 volt range). Hence the actual resistance tolerance becomes minus zero plus 2%. A further possible error of $\pm 1\%$, due to the calibration of the meter itself, should also be taken into account. At the worst, the overall error will be minus 1% plus 3% of f.s.d., and should not worry the average Amateur. The 20 volt range will be slightly better as the meter resistance now represents an error of only 0.5%.

(Continued on Page 18)



Original Circuit of the Bench Power Supply for Transistor Circuits.

figure. This is caused by the reference zener diode (S) being lower than 15 volts.

Zener diodes are usually supplied with a nominal tolerance of either 5% or 10%. Naturally the 5% ones are somewhat more expensive. Also due to the sorting methods used, at the factory, the odds are that the resulting diode supplied will be on the low side. However, an increase in the reference voltage is obtainable simply by adding ordinary silicon diodes in series with the zener. Provided that the correct polarity is observed, each silicon diode will give about 0.75 volts extra.

D7 is used as a protective device and is not really necessary, hence this diode could be used as described in the preceding paragraph.

thus keeping the internal impedance of the supply to a minimum. The values shown in the diagram were calculated on the basis of a 1 mA. 100 ohm (i.e. 100 mV.) meter. Different meters may be used providing the shunts and multipliers are altered accordingly. My shunts were wound with the appropriate gauge solderable resistance wire (Eureka, etc.), and adjusted to the correct value.

CURRENT RANGE ADJUSTMENT

Connect the station multimeter and a 100 ohm resistor in series across the power supply. Keep the voltage output down to minimum and switch the meter range switch to the 10 mA. range.

At this stage it is wise to keep the standard multimeter, etc., on a higher range. Now carefully wind up the voltage

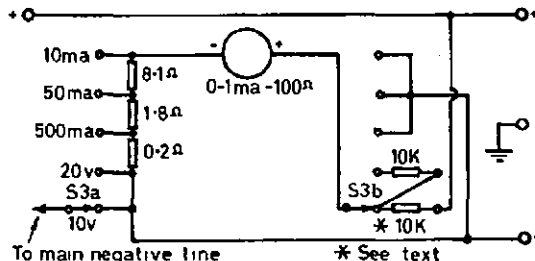


FIG. 1. MODIFIED METER CIRCUIT.

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SPECIFICATION DETAILS:

Data	PC1	PC2	PC3	PC4	PC5	PC7	PC9
Power Output mW.	150	400	400	400	3W.	800	Pre-Amp.
Input Imped. ohms	1.5K	1K	2.5K	220K	1.5K	1.5K	1M
Outp. Imped. ohms	40	15	15	15	3	8	600
Supply Volt. —volts ..	9	9	9	9	12	9	9
Typical Distortion % ..	2	3	3	3	3	3	1
Frequency response	300-15K	200-12K	200-12K	200-12K	50-12K	50-12K	20-20K
Overall Dimensions All $\frac{3}{4}$ " high.	2x1	2 $\frac{1}{2}$ x1 $\frac{1}{2}$	2 $\frac{1}{2}$ x1 $\frac{1}{2}$	2 $\frac{1}{2}$ x1 $\frac{1}{2}$	5 $\frac{1}{2}$ x1 $\frac{1}{2}$	3x1 $\frac{1}{2}$	2x1
PRICE	\$5.00	\$6.27	\$6.27	\$6.27	\$12.47	\$7.53	\$4.50

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- PC4—G.P. Amp. and Driver's Office Dictating Machines, Listening Booth Amps.
- PC5—Portable Audio Amps, Car Radio Audio Amps, Servo Amplifier, Tape Relay Amp, Automation Drive Amp, Burglar Alarm Amp.
- PC7—Tape Language Lab, Telephone Dictating Machine Amps, Control Amp. for Textile Machinery.

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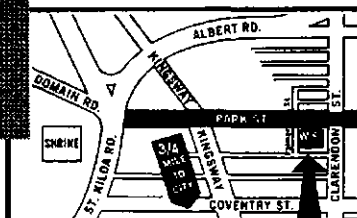
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MODIFICATIONS TO B28/CR100 RECEIVERS

A. M. KEIGHTLEY,* VK6XY

HAVING received my call sign a couple of years ago, I settled down with a B28 and Geloso and 813, to enjoy Amateur Radio to the full. Some six or eight weeks after the first contact I plunged into my first R.D. Contest, which rapidly showed up the short comings of using the B28 in crowded band conditions today.

After some reflection I decided to embark upon a programme of improvement of the monster, with the stipulation that the full coverage features would not be impaired; firstly to retain the ability to check for spurious responses, which were starting to show up in the form of t.v.i. (that is another story) and, secondly, to continue to be used as a general coverage receiver for short wave listening.

I hope the ideas used prove to be of some use to other B28/CR100 users as well as to other receivers.

STABILISING OSCILLATOR

First move was to stabilise the h.f. oscillator, so an OA2 VR tube was fitted in an available corner and function switching arranged so that the h.f.o. ran at all times the receiver was on, even when the function switch was "off". The practice had been to turn this off for transmission as muting had not been arranged at this stage. By now drift with voltage changes had improved greatly, but an annoying feature became evident on s.s.b. signals.

When the line voltage jumped up or down by some 5 volts or more, the receiver drifted up or down, as the case may be, quite slowly over a period of a second or so. Considerable reading and discussion suggested that the culprit was the resistance of the cathode coating changing with the changes in temperature. As the cathode was grounded, I decided to try some external R so fitted up a carbon pot. and discovered that about 220 ohms could be introduced without upsetting oscillation on any band. So a 220 ohms 1 watt was wired in. The previous problem had been reduced to negligible proportions.

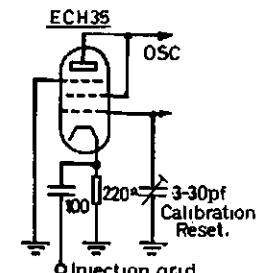


FIG. 1. ADDED PARTS.

A further oscillator problem became noticeable for attention in the form of a considerable pulling on 15 and 10 metres. The receiver has a separate oscillator feeding the grid of the triode

section of an ECH35 which now adorned the place of the previous mixer (a 6K8G I think). Reckoning any try was worth while, and not having space for a cathode follower, I tried taking injection voltage from the 220 ohms resistor in the oscillator cathode instead of the previous method. This worked "fine" but calibrations had all jumped up a bit, but nothing a Philips' trimmer did not fix. The internal resistance was only minor compared to external so was "swamped" effectively.

Now sideband signals could be copied on 10 metres with a.g.c. pulling no problem. So on to the next item.

SELECTIVITY

A Collins 455 kc. filter came to hand the hard way, so I looked into the possibility of retaining the present arrangement of bandpass switching with the addition of the mechanical filter, but due to lack of space could not achieve this, so ended up removing the crystal filter and associated coils from the first i.f. and introduced the filter as the only connection between the mixer and 1st i.f., but was not happy with 2.1 kc. on a.m., so some fiddling around produced a very workable arrangement, shown in Fig. 2.

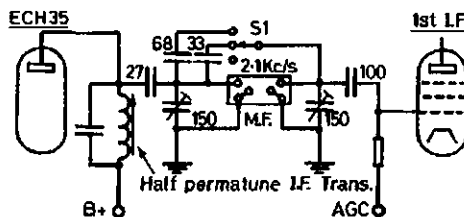


FIG. 2. I.F. SELECTIVITY CONTROL.

The grid resistor of 1st i.f. is 0.1 megohm.

The mixer plate feed was via an old i.f. transformer cut in half and adjusted to the frequency of the filter, then the 150 pf. air trimmer peaked up. The two capacitors of 33 and 68 pf. were then switched across the filter for wider bandpass. 33 pf. gave 3.6 kc. without upsetting the shape factor too much, while 68 pf. is good for broadcast band usage. The switch is the section of the passband switch which brought in the crystal filter.

Now the receiver passband is 8 kc., 3.6 kc., 2.1 kc., 2.1 kc., and 100 c/s. with original audio filter. The second 2.1 kc. position was later used to switch in a bridge T filter, which is introduced between the ECH35 and the filter, and takes care of heterodynes very nicely. Details came from R.S.G.B. Circuits Handbook, ex W.I.A., and uses a 12AX7 in conjunction with the other half of the wrecked i.f. transformer.

By now the receiver was performing quite well, but with an eye to future work on it I decided to make a lot more space available by replacing the large quantity of metal encased, under chassis

mounted, 0.1 uF. capacitors which seemed to occupy far too much territory. So out they came, to be replaced by disc ceramics across the valve sockets. This seemed to lift the overall performance, so the old ones must have been overdue for replacement. It is amazing how much extra space became available!

FITTING A VERNIER DIAL

The tuning with the 2.1 kc. filter seemed quite critical so a Jabel 6:1 ball bearing vernier was fitted on the front tuning shaft and a small bracket made up to secure it to the front panel below the knobs. This was $\frac{1}{4}$ " wide metal fitted so that it was very close to the tuning knob, to be out of the way of fingers in a hurry.

This made a fantastic difference and really speaks well of the B28 drive mechanism, as no back-lash is evident. These low priced little verniers should not be overlooked for any such application, they do a mighty job.

INCREASED GAIN

By now I was feeling fairly happy with things, but felt that gain could be increased with benefit. After playing around with various configurations, I ended up with an 6EH7 in the 1st r.f. position with a.g.c. on its grid and its own gain control in the cathode. This gain control was placed on the front panel above the present r.f. gain control which controls r.f. and i.f. gain.

EF39 valves were fitted to the 2nd r.f. stage and three i.f. stages without any instability troubles, and gain was well up.

REDUCED MIXER NOISE

There is always a "but" in my "delvings" and this was now internal noise, which was eventually traced to the ECH35. Shorting out the h.f. oscillator and grid one did not change things much, so it left the cathode and grids 2 and 4. After clearing the cathode, I started on grids 2 and 4, put a pot. from this pin to ground and as I wound it around, so the noise went down. Quite a bit of checking ended up with 37 volts on that pin. The mixer noise disappeared and no other problems took its place; signals weak or strong were not upset, so I sneaked quietly onto the next section after taking out the pot. and replacing it with suitable resistors. Probably the high voltage on these electrodes was accelerating electrons to such an extent they bounced off the cathode, creating noise. That's my story and I'm sticking to it!

MUTING RECEIVER

Muting the receiver on transmission came in for discussion and the B28 handbook circuit used without complaint. All i.f. valves and the 2nd r.f. cathode resistors return to a common line and then to the moving arm of a 2K pot. which was modified as in Fig. 3.

* P.O. Box 1, Wickepin, W.A., 6370.

The upper 2K pot. originally had its lower end on ground. By adjusting the extra 2K pot. on transmit, the receiver is very good to monitor my own transmission. A small socket fitted on the rear of the chassis enables the leads to be taken to the transmitter and relay.

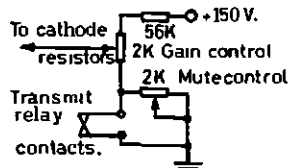


FIG. 3. MUTING CONTROL.

With the present push to talk arrangement in use, the receiver is instantly in the sensitive receiving condition with no delay that some muting systems suffer from.

DETECTOR

The detection department came in for the next attack. This had not been changed previously as I could see no easy way of switching from product to a.m. detector within the existing switching facilities.

diode triode can be replaced by it without any problems of trying to find space for an extra valve, and the extra switching required to change from the usual diode detector to product detector. I find it is very desirable to have an a.m. detector available, as there are still quite a few unstable a.m. v.f.o.'s!

To carry on the idea of reducing loading on the last i.f. transformer, the a.g.c. system was changed. This comprises one section of a triode used as a cathode follower. It gets its energy from last i.f. plate to give even further isolation from the b.f.o., and supplies a germanium diode and a series silicon diode as a gate. This also acts as a voltage doubler to give increased a.g.c. voltage and the circuit arrangement (Fig. 5) gives fast attack and slow decay. The extra time constant capacitor is switched into circuit by the b.f.o. switch.

The OA202 has a very high back resistance so decay time is controlled by the value of 2 meg. resistor. The B28 now has both r.f. and the three i.f. valves on a.g.c. and is able to take care of the strongest signals into this shack. In fact r.f. and i.f. gain controls are run flat out at all times, except on

triode in socket and with gain turned down and no signal, set cathode pot. for zero reading and you are in business. This arrangement gives a cut-off at about 4 volts a.g.c. fed to the half 12AT7.

The space for this valve came to hand by throwing the 5Y3G out and putting a pair of silicon diodes, BY100s, under the chassis on a tag strip.

At this stage of development, the receiver is performing very well and seems able to hold its own with most others and better than many, and still retains full coverage. The next project is to complete a stage started quite some two years ago, but shelved, to construct an s.s.b. exciter due to the t.v.i. mentioned earlier. That is to scrap the band 1 which used to tune from 60 to 160 kc. and rewind the coils and bandspread them to cover 500 kc. of some suitable area, either 3.5-4.0 Mc. or 4.5-5.0 Mc., and then some converters to go with it.

This has been a very interesting project so far. It has developed from much rag chewing on 80 metres and quite a bit of experimenting, during which I have learned quite a bit more about receivers and what makes them

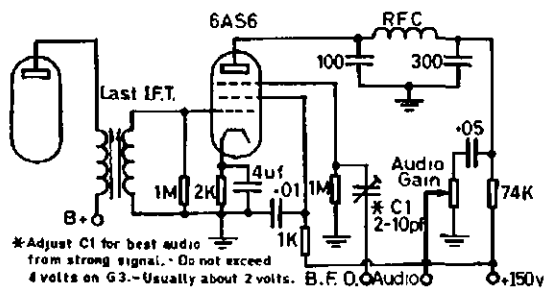


FIG. 4. AM-SSB DEMODULATOR.

A circuit published in the VK6 Bulletin was tried and proved to be ideal. This was developed by the Philco people and after some component changes (Fig. 4) worked better than expected. The original circuit showed how to obtain a.g.c. and S meter from it. Do not persist with these as other circuits work much better for these.

The 6AS6 has an odd grid 3, which has control over the electron stream similar to a grid 1, and its operation as a suppressor is not impaired by being 1 meg. above ground. Feeding the last i.f. into the high impedance of grid 1 instead of the usual diode detector, reduces the loading on its winding and it improves the selectivity in receivers where this is a problem and naturally is able to develop a greater voltage.

Detection of a.m. signals takes place in the grid-cathode area and is amplified in the grid-anode circuit.

To receive c.w. or s.s.b. signals only entails energising the b.f.o. Very efficient mixing takes place in the suppressor-anode area, and a further benefit appears. Grid 2 so effectively prevents b.f.o. signal getting back to grid 1 that a.g.c. action is not affected by b.f.o. voltage at any time.

The 6AS6 is quite able to drive a 6V6G to much greater sound level than I can stand! So this means the usual

80 metres. The overall arrangement maintains between 1 and 1½ volts of r.f. on grid 1 of the 6AS6 on all signals above about S2 signals. The a.g.c. worked so smoothly I decided to put in an S meter, shown in Fig. 6.

S METER

This circuit has an advantage over many others in that it is impossible to pin the meter once the pots. have been set.

For any other receivers, select a valve which will have a cut-off voltage equal to the a.g.c. voltage of that developed by that rock-crushing signal in the next block. With the valve out of the socket, set the 3K pot. for full scale deflection, then replace the pot. with a fixed resistor of equal value. Replace

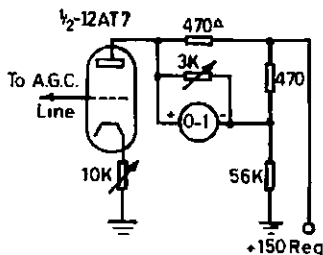


FIG. 6. "S" METER CIRCUIT.

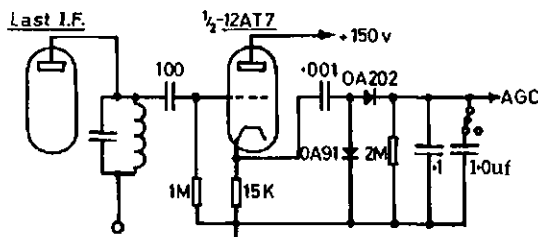


FIG. 5. A.G.C. CIRCUIT.

Note: The OA202 is shown incorrectly. It should have been drawn in the reverse direction.

tick. In writing this I have tried to keep it as simple as possible, and each section separate, so that if any of the ideas appeal, they may encourage someone else to grab a soldering iron and get into it. I am sure you will have quite a lot of fun and the end result will be very pleasing.



PROVISIONAL SUNSPOT NUMBERS FOR APRIL 1967

Dependent on observations at Zurich Observatory and its stations in Locarno and Arosa.

Day	R	Day	R
1	105	16	32
2	79	17	42
3	54	18	58
4	52	19	56
5	62	20	44
6	65	21	60
7	78	22	76
8	104	23	74
9	67	24	76
10	62	25	66
11	62	26	55
12	51	27	76
13	63	28	79
14	48	29	68
15	51	30	68

Mean equals 65.3.

Smoothed Mean for October 1966: 66.8.

Predictions of the smoothed monthly sunspot numbers for the coming six months:—

May 84, June 87, July 91, August 94, September 98, October 101.

—M. Waldmeier, Eidg. Sternwarte Zurich, Switzerland.

SIDEBAND

Sub-Editor: PHIL WILLIAMS, VK5NN, 37 Winna Rd., Coromandel Valley, 5051

SIDEBAND FOR CONTEST

This year the R.D. Contest has come and gone, and it can be said quite safely that the sidebanders dominated the Contest. In previous years the really high scorers used high power on a.m. and "plonked" their carriers on whatever they wished to work, or alternatively just sat with a monumental signal and waited for all and sundry to call in and be worked.

1967 appears to have been the year of the transceivers, and there is no doubt they were effective in getting high scores in a short time. Those of us who are not young still need our sleep and enjoy meals in the dining room, even during Contests. I will not cross swords with the c.w. Contest men, as c.w. is quite obviously the most effective DX Contest medium, especially if you are DX.

"HOW CAN I GET ON SIDEBAND?"

Since the R.D. Contest I have been approached by all and sundry with the question "How can I get on sideband?" There are several questions which must be asked of the enquirer, such as "Do you wish to build or buy? What have you built in the past? How much can you spend?"

Those who wish to buy are usually told to visit the shack of some acquaintance, ask questions, operate the gear and then read all the equipment reviews to see which gear will provide all the necessary features they need. An example of this is "I won't have vox at any price, but I must be able to get a 500 cycle bandpass filter for c.w. contest work—so whom do you know with such equipment that I can see, and will assure me that 500 cycles is not too narrow as I'm not really sure." Customers such as this are usually easy to satisfy (with advice, at any rate).

WHICH EXCITER TO BUILD?

And now for the builders—they want to get on sideband using the junk box wherever possible, for which I don't blame them. I usually advise them to try the 9 megacycle phasing generator plus 5.0 to 5.5 megacycle v.f.o., with the possibility of adding crystal oscillators for bands other than 20 and 80 metres. This is a well tried recipe, and if you wish, later you can spend 30 to 40 dollars on a crystal filter—brand of your choice. There are numerous designs published but a well tried one is described in the A.R.R.L.'s Single Sideband Handbooks. The fourth edition has one on p. 71 by John Isaacs, W6PZV. It uses the American McCoy filter with upper and lower sideband carrier crystals. There are others, of course, but these 3 kc. wide filters give very good quality sideband signals.

In the same Handbook is the well known "Sideband Package" design by W6TEU, first described as long ago as 1958 in June "QST". This uses a crystal filter on 455 Kc. or thereabouts, using the surplus FT241 crystals. These are not as plentiful as they were 10 years ago, and remaining stocks have been well sifted through for goodies and many doubtfuls are now being sold. The price of mechanical filters has recently been reduced, so I recommend one be substituted for the crystal filter in the "Package". This could save hours of fiddling with surplus crystals. I have a personal dislike of mechanical filters and the sort of voice quality they produce, but this does not mean that they will not produce an effective signal with the other sideband well suppressed. One mistake people usually make is to place the carrier too high up the skirt of the filter. For the normal voice (male) and a 2.1 kc. wide mechanical filter, the carrier crystal should be set so that the "audio" for the flat-topped passband is from about 500 cycles to 2600 cycles per second.

Again, it is possible to adapt the "Package" design to use a phasing type generator at 2250 kc. This may be done as shown on page 80 of the Sideband Handbook by K4EEU, and page 87 by K9YHT.

If you have ever built an Amateur band receiver, with its mixers, r.f. stages, i.f.'s and oscillators (h.f. and b.f.), then you should have no difficulty with any of the above designs. As with the receiver, where the high i.f. will give less problems with images, the exciter generating the sideband at a high frequency of say 5.5 or 9.0 megacycles. will be simple to construct and align. When you use 455 kc. you need to go to double or even triple conversion to get to the desired band and so a few double-tuned circuits will be needed along the way to get rid of unwanted images of the generated signal.

The same rules generally apply to the selection of oscillator frequencies. The levels of the oscillators for mixing s.s.b. signals are usually about 10 times as high as the sideband, so that more care is needed to ensure that their levels are not any greater than essential, and their harmonics do not fall too close to the required output band. Remember the old Irish rule that no harmonic less than the fifth should fall within 20% of the final output frequency. If they do, then you need to "trap" them out, or go to bandpass circuits—and this is enough to scare anybody off.

It will be noted that all of the exciters described use the trusty old 6146s, either one or two in the final stage. These tubes are generally easier to get

going than the t.v. line output tubes such as the 6DQ5. The 6146 is better screened internally and gives less distortion products. With fixed screen voltage of about 210 and 700-800 volts on the plate, about 45 volts of bias is needed to hold the quiescent plate current to about 25 mA. per tube. I have found the 6146 almost indestructible in this service. Should your experience with 6146s in class C with grid leak bias have been as disastrous as mine (globules of molten grids inside the tube), then take fresh heart, because once neutralised they are tame to tune, but very hot performers.

If you build a phasing version, don't forget to study that classical article in the same Handbook, originally written for November 1956 "QST" by Bob Ehrlich, W2NJR (then W0JSM), "How to adjust phasing-type s.s.b. exciters". It is still as applicable now as when it was written.

When tackling s.s.b. construction for the first time, allow yourself plenty of room on a large chassis and build in the shielding early in the project. I suggest you re-read page 15 of September 1965 "Amateur Radio" for tips on laying out the exciter chassis.

SEVERAL COMMON QUESTIONS

The first evergreen question is: "Well, I have operated c.w. for over 40 years but I'm 'danged' if I can get the hang of those pi-network things. Can I stick to link coupling in the s.s.b. final?"

The answer is that it is possible to use link coupling, especially if you are prepared to stick to plug-in coils and variable links so that the loading on the final can be adjusted for optimum. But in these days of shielded finals (to reduce t.v.i. and r.i.) and rapid band switching, the pi-network gives a better means of band changing with one tapped coil and a large broadcast three-gang condenser for a loading control.

But don't expect too much impedance matching range with a simple switched coil. They are usually designed for a nominal 50 or 70 ohms output impedance—all boxed up, and an aerial matching and tuning box is used to bring the aerial back to an impedance of this value.

The second harmonic of an 80 metre s.s.b. signal on 40 metres (or just outside of 40 metres) sounds awful, so if you use the pi-network for convenience, then, use an aerial tuner to present the correct load to your final—and reduce your harmonic output at the same time.

And the second question concerns peak ratings of final amplifier tubes and went like this:—

"I had a Heathkit DX100 with a pair of 6146s which took about 140 watts input unmodulated in class C, and on modulation this was 560 watts peak input power. Why can't I run the same peak input on sideband?"

Now, you wouldn't operate these tubes at such ratings in a modulator, would you? Just imagine a class C modulator—no I can't, because it would sound terrible, but class B should be better. Looking at the class AB1 and AB2 ratings in the Handbook shows that AB1 gives 120 watts output and AB2 132 watts (peak) output, the latter

(Continued on Page 17)

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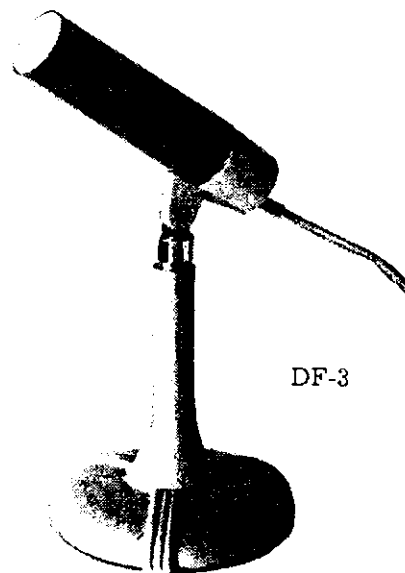
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OF JAMBOREES AND CUBS AND US . . .

A. J. C. THOMPSON,* VK4AT

WHAT a headache to co-ordinate and launch such a scheme! Yet we see more co-operative effort being put into it each year. In VK4 land, at this particular QTH, the two Amateur Radio stations to be used arrive complete with aerials, gear and rostered operators. They set up in opposite ends of this huge solid timbered Scout-hut and test their gear simultaneously on different bands.

Along comes the Great Day, the Scouts, the Radio Gang and QRM. One transmitter tries to outrush the QRM on 40 metres while the other finds the long distance 20 metre band to its liking. New Zealand responds and after a few reciprocating exchanges and sundry adjustments the meters suddenly come good and we are off to a good start.

The s.w.r. meter in the aerial circuit registers a tale of woe, so Barrie looks at his 72 ohm coax, with a critical eye and decides on 300 ohms. He mentally pictures the probable activities of his household, then estimates the chances of successfully swiping a hunk off their t.v. 300-ohm lead-in.

No. 2 operator, placidly waiting for detailed instruction on how to handle this (to him) strange rig, is suddenly bundled into the operator's chair, shown the off-on switch, told to turn that knob for gain and chase him with that dial if he moves off frequency. The ZL is loud and clear so the greetings of the Scouts in their queer jargon is banded back and forth. A brisk bargaining on the exchange of badges ensues and then we are off with him and on to Adelaide. Barrie returns in a cloud of dust but with no visible sign of pursuit. He heaves the purloined 300-ohm lead-in through the window and takes over.

The transmitter "loads-up" and all is well. Tension is off for the relieving operators and a quick cup of tea indicated, but they have with them that nagging thought: Now why should a purloined lead-in have jagged ends when the swiper thereof had a perfectly good pair of side cutters in his pocket? It could quite reasonably be assumed that Barrie's "good deed of the day" was to be postponed until tomorrow. His grateful family would then appreciate the quick fixing of the t.v. that had so suddenly gone on the blink. But back to work with a background of rattling cups, voices and the harsh blare of the other transmitter valiantly striving on 40 metres.

Yallourn in VK3 land is soon busy, bragging about their big hole in the ground and how you can stand on the top and see ant-like movements way down at the bottom. We know the answer to that one. They are ants! Not to be outdone and put to shame when the tall ones are being put over, we have a word with our Scouts and

out goes the tale of the shoppers at the one-mile in the old days who, on very wet days, could go down one mine and come out of another mine almost on the main street. Adelaide seems to be popular. Some sort of a corroboree due to be held there soon, we gather, when the Scouts speak some English.

So here is Adelaide and a heterodyne. Comes a request to shift up 5 Kc. Now how far is 5 Kc. on a strange rig? We give that one up and tell him to go up and call us from there. We have a stab at 5 Kc., gently rocking the dial in wider and wider sweeps then shoot right up the band. We locate his familiar voice just putting it over to us about three times as far up as we expected. Either this rig has a super bandspread or else he just kept going until he found a clear spot to his liking.

We compare his six Scouts with our 20, then discover our 20 are now 40. Now, shall we put them through like sheep at shearing time or trust to his being generous and having a long session? We tell him we have droves of Cubs and Brownies, then call in the eager ones to speak their piece while we cast an appraising eye over their leader. Will she give them confidence by speaking or do they give her confidence? She looks efficient and confident so in she comes and all is well.

Those expectant little faces are not all to be satisfied, even though we coax and cajole the more timid. There are going to be some tears shed over this by the less fortunate and those that we miss. Things are quiet for awhile as a VK2 comes in, but he has only Girl Guides. Our Scouts are not shy and ask for an exchange of badges. A pause and then "they haven't any". We are shocked! How have they acquired the "brush-off" technique at such an early age? A little thought, then we visualise anxious mothers in the background shepherding their chicks. We warn our Scouts not to use slang and make a note on the pad to "bung on" the charm during the next over.

The speaker drones on and we have time to ponder over the symmetrical attractiveness of these Brownies and Girl Guides in their uniforms, without any eye-catching colors. Like the Scouts themselves, their neat appearance must have been evolved by trial and error over many years. Here we have healthy tradition in the making with a whole cross-section of our youth-

ful community taking no part in either wanton destruction or the cult of ugliness. It makes us wonder if the so called leaders of youth have very willing followers.

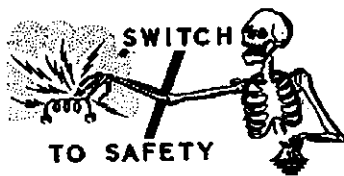
But back to work as the speaker suddenly cuts out. A flick of the dial and a glance at the meter puts the trouble at the other end. Probably nervous little fingers have pushed the mike switch over. Back he comes with a rush to murmur 73 to us all and he is off.

It is CQ for us now in the hope of DX, but the answer comes from Nar-rander. We puzzle over a town in Victoria having a 2 call sign, but when he says he is about half-way between Melbourne and Sydney we decide it must be on the border. Some of our small fry at the back insist on it being in the Riverina but we ignore them. We make a note on the pad to bring an atlas next time. It would help on this job if the operator was a school teacher and a trained detective with a couple of years spent on psychology and a few months in a charm school.

And thinking of detectives reminds us of Barrie and that severed lead-in. He must have had some doubts about his family waiting for him to fix that t.v. In that case the local t.v. trouble-shooter might even now be trying to join two jagged ends that dangle 20 feet apart. After sundry tuggings he would have to give visual proof to a very sceptical family that such a state existed. His troubles wouldn't end there either. He would be expected to explain how it went and where it is now.

But we have our own troubles, too. We just took a little peek up the band a bit, confident that the transmitter was sitting on the frequency. When too late we remembered that in these silly transceivers the transmitter follows the receiver around like a faithful pup. Now we have lost our station and can't find it. All of our observant off-siders know just where we were sitting so we soon are back on the frequency with the loss of much dignity.

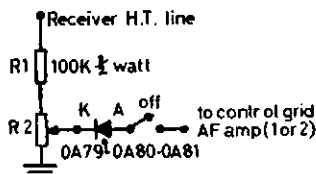
More trouble now, this time from a Victorian. We never even heard of his town but on enquiring we learn that he comes from the Glenrowan district. Wow we do know our history even if we are a bit weak on geography. We ask if he is the son of Ned Kelly. He is indignant! He says he is not the son, he is the father. A heated argument flares up at this end. Did he mean that he was the father of Ned Kelly's son or just the father of Ned Kelly? Now we Queenslanders can hold our own when the talk is of big holes in the ground, but when the bragging is about their famous relatives, then we must admit to being properly licked. We hand over to our successors after warning them to beware of these Victorians. They can put it all over us when it comes to telling tall yarns.



* Skyrings Creek, Pomona, Qld.

A SIMPLE AND EFFECTIVE NOISE LIMITER

The following circuit was found to be a simple and effective noise limiter. The circuit itself is simple and only requires a few components and is easily incorporated into most existing receivers.



The circuit is actually only a gated clipper, by varying the positive voltage on the cathode of a diode we control the voltage at which the diode will conduct (minimum voltage at which the diode is gated on), thereby limiting the maximum positive voltage swing on the anode.

The values used in the circuit were selected from the junk box and can be varied to suit the builder, but R1 should be kept a high value to (a) limit the current through the pot, thereby limiting the power dissipated in it, and (b) as the voltage on the grid is only small, we only require a maximum voltage of about 10-20 across the pot.

With the values shown in the circuit and a h.t. of 200 volts, the current flowing through the circuit is only 1.8 mA. (approx.). This means the voltage across the pot. is about 19 volts, this

value gave ample control over the diode, also this meant the power dissipated in the pot. was well within its tolerance (much less than 1/2 watt). The pot. has a switch (s.p.s.t.) so that the limiter can be switched in and out.

The semiconductor diode used was a normal small signal diode of the germanium type.

The circuit was tested in several receivers and worked effectively in all of them and made unreadable signals readable without attenuating the required signal greatly.

—Jim Jones, VK2ZEZ (ex VK3ZEW)

MODIFIED "Q" MULTIPLIER IN HE80 RECEIVER

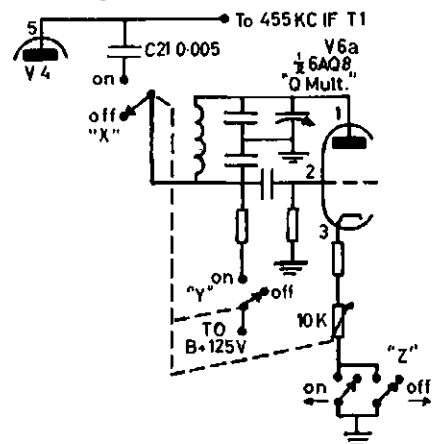
As originally wired, switches X and Y (see diagram) are as indicated and switch assembly Z does not exist, i.e. the 10K potentiometer is connected direct to earth at its bottom end. When the X and Y ganged switches are closed to connect the "Q" multiplier, the whole of the "Q" multiplier is placed in parallel across the primary of 455 Kc. i.f. transformer T1. This detunes this i.f. to the extent that the gain which the "Q" multiplier will supply is all "used up" in making up for the loss caused by the detuning of T1.

So, simply disconnect X and Y from their present positions and bridge these connections permanently. Rewire X and Y into the circuit shown between the 10K pot. and earth as at Z. Realign the i.f. transformer T1. There

should be sufficient slug adjustment available.

(Note that in the HE30 receiver this modification is not successful because the i.f. cannot be peaked after the modification.)

If difficulty is experienced in aligning the i.f. of the HE80 a reduction in the value of C21 by a small amount may help.



This modification gives up to 5 S points gain in signal strength when the "Q" multiplier is "on" as compared to its "on" position previously. The increase in "Q" is still quite effective. Try it and see. There are no new components required, just a little soldering and wire.

Paul Rodukoff, W1A-L4017

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- ★ HEATH HW32-A 20 mx Transceiver Kits. \$180.
- ★ GONSET Sidewinder 2 metre SSB/AM Transceivers. \$400.
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- ★ HEATH HA14 all-band 10-80 metre Linear Amplifier and AC Supply Kits. \$225.
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ROSS HULL MEMORIAL VHF/UHF CONTEST, 1967-8

The Federal Contest Committee of the Wireless Institute of Australia invites all Australian and Overseas Amateurs and Short Wave Listeners to participate in this annual Contest which is held to perpetuate the memory of Ross Hull whose interest in v.h.f./u.h.f. did much to advance the art.

A Perpetual Trophy is awarded annually for competition between members of the W.I.A. in Australia and its Territories, inscribed with the name and life work of the man whom it honours. The name of the winning member of the W.I.A. each year is also inscribed on the Trophy. In addition, this member will receive a suitably inscribed certificate.

OBJECTS

Australian Amateurs will endeavour to contact as many other Amateurs in Australia and Overseas under the following conditions.

DATE OF CONTEST

From 0001 hours, E.A.T., 9th December, 1967, to 2359 hours E.A.T., 14th January, 1968.

DURATION

Any seven calendar days within the dates mentioned above, not necessarily consecutive. These periods are to be at the operator's convenience. A calendar day is from 0001 hours E.A.T. to 2359 hours E.A.T.

RULES

1. There are two divisions, one of 48 hours duration, and one for seven days. In the seven-day division, there are three sections:—

- (a) Transmitting, Open.
- (b) Transmitting, Phone.
- (c) Receiving, Open.

2. All Australian and Overseas Amateurs may enter for the Contest whether their stations are fixed, portable or mobile.

3. All Amateur v.h.f./u.h.f. bands may be used, but no cross-band operating is permitted. Operators are cautioned against operating transmitting equipment on more than one frequency at a time, particularly when passing cyphers. Cross-band operation to assist contest working is prohibited.

Such operation will be grounds for disqualification. Cross mode contacts will be permitted.

4. Amateurs may enter for any of the transmitting sections. The seven-day winner is not eligible for the 48-hour award.

5. Only one contact per band per station is allowed each calendar day.

6. Only one licensed Amateur is permitted to operate any one station under the owner's call sign. Should two or more operate any particular station, each will be considered a contestant and must submit a separate log under his own call sign.

7. Entrants must operate within the terms of their licences.

8. **Cyphers:** Before points may be claimed for a contact, serial numbers must be exchanged. The serial numbers of five or six figures will be made up of the RS (telephony) or RST (c.w.) report plus three figures, commencing in the range 001 to 999, for the first contact, and will then increase in value by one for each successive contact. When a contestant reaches 999 he will then commence again with 001.

9. **Entries must** be set out as shown in the example, using only one side of the paper. Entries must be post-marked not later than 12th February, 1968, and clearly marked "Ross Hull Contest" and addressed to Federal Contest Manager, Box N1002, G.P.O., Perth, W.A., 6001.

10. **Scoring** for all sections will be based on the attached table. Distances must be shown in the log entry as shown in the example. Failure to make this entry will invalidate the particular claim. Some typical distances are given in the attached table.

11. **Logs:** All logs shall be set out as in the example and in addition will carry a summary sheet showing the following information:

Name.....Call Sign.....
Address.....Division.....
.....Claimed Score.....

SCORING TABLE

Distance in Miles	52 Mc.	144 Mc.	432 Mc.	576 Mc.	Higher
Up to 25 Miles	1	1	2	2	20
26 to 50 "	1	1	10	10	50
51 to 100 "	2	5	25	30	100
101 to 200 "	5	10	50	60	200
201 to 300 "	15	15	75	85	250
301 to 500 "	10	20	100	125	300
501 to 1050 "	5	25	200	200	350
1051 to 1500 "	10	50	250	250	400
1501 to 2500 "	20	100	300	300	450
2501 to 3500 "	35	200	400	400	500
3501 to 5000 "	50	300	450	450	550
5001 and over	100	400	500	500	600

Operating Dates.....(7 cal. days)
Highest Score over a 48-hour period
was.....points.

Operating period:
from.....hrs. E.A.T. /...../8....
to.....hrs. E.A.T. /...../8....

Declaration: I hereby certify that I have operated in accordance with the conditions of my licence and abided by the Rules of the Contest.

Signed.....
Date.....

12. Entrants not abiding by the Rules of this Contest will be disqualified.

13. The ruling of the Federal Contest Committee of the W.I.A. will be final. No dispute will be entered into.

14. **Awards:** Certificates will be awarded to the winners of each section in each VK and Overseas Call Area. The VK contestant who returns the highest score in the transmitting section and who is a financial member of the W.I.A., will have his name inscribed on the Trophy which will be held by his Division for the prescribed period. A Certificate will be awarded to the contestant who shall not be the Trophy winner, and who returns the highest scoring log covering a period of any 48 consecutive hours.

Also, Certificates will be awarded for operating in the Ross Hull Contest and breaking any Australian v.h.f./u.h.f. distance record.

RECEIVING SECTION

1. Short Wave Listeners in Australia and Overseas may enter for the Contest, but no transmitting station may enter.

2. Contest times and logging of stations on each band are as for the transmitting sections, however there is no 48 hour sub-section.

3. To count for points, logs will take the same form as for transmitting sections, but will omit the serial number received. Logs must show the call sign of the station heard (not the station worked), the serial number sent by it, and the call sign of the station being worked.

Scoring will be on the same basis as for transmitting stations, i.e. on the distance between the Listener's station and the station heard. See the examples given. It is not sufficient to log a station calling CQ.

4. A station heard may be logged only once per calendar day on each band for scoring purposes.

5. **Awards:** Certificates will be awarded to the highest scorer in VK and Overseas countries.

EXAMPLE OF TRANSMITTING LOG (Brisbane Station)

Date/Time E.A.S.T.	Band Mc.	Emission Power	Call Sign	RST/No. Sent	RST/No. Rcvd.	Dist. Miles	Points Claimd.
24th Dec. 0100 E.A.S.T.	52	A3(a)	VK7ZAI	59001	59004	1110	10
0110 E.A.S.T.	52	A3(a)	VK4NG	58002	57051	330	10
0230 E.A.S.T.	144	A3	VK5ZK	56003	55043	690	25
0235 E.A.S.T.	144	A3	VK3ZJO	45004	46021	650	25

EXAMPLE OF RECEIVING LOG (Perth S.w.I.)

Date/Time E.A.S.T.	Band Mc.	Call Heard	RST/No. Sent	Station Called	Dist. Miles	Points Claimed
2nd Jan. 1000 E.A.S.T.	52	VK5ZDX	59221	VK6KK	1330	10
1025 E.A.S.T.	52	VK2ZCF	58195	VK6ZAA	2040	20
1110 E.A.S.T.	432	VK6ZDS/6	57061	VK6LK/6	60	25
3rd Jan. 0500 E.A.S.T.	144	VK5ZJH	44102	VK6ZCN	1330	50

1967 R.D. Broadcast by Hon. Allen Fairhall, M.P., Minister for Defence



IN countless radio shacks in Australia today, there is a ring around the calendar. For today is Remembrance Day.

May I begin by recalling one little remembered fact. It is that, in the years before World War II, there operated in Australia a Royal Australian Air Force Amateur Radio Reserve. On the declaration of war in September 1939, the first additions to the manpower strength of the Australian fighting forces came from this group of Radio Amateurs. They were to be the first of a long line of Amateurs who gave their services to their country at war.

Some of them even gave their lives. And in Australia we recall their sacrifice in this Annual Remembrance Day Amateur Contest.

Since Amateur Radio contacts make friendships, and develop international understanding, and because in this field lies the greatest possibility for the future of avoiding war, it seems to me that today's Remembrance Day activity and the promotion of contacts between fellow Australians is a fitting way of serving the memory of those Australian Amateurs whose names appear on the Roll of Honour.

And yet their service in the field was not the only service that Amateur Radio operators rendered to Australia at war.

The fact is that World War II gave birth to much of the electronic technology which now runs our world. In a country which had not previously been deeply involved in the electronic industry, it found itself in wartime need, but was the home-grown skill and experience of Radio Amateurs that largely filled the key roles in laboratories and factories, developing and building the equipment which their fellow Amateurs operated in the field.

Perhaps nothing gives me more pleasure than this opportunity officially to acknowledge, even if belatedly, the magnificent contribution to this country's defence which came from Amateur Radio operators.

It has been my pleasure to be associated with you, officially through Defence and defence production, but even more happily as an active member of the fraternity and if, today, I hold a position of some authority in the Government, it is because my interest in Amateur Radio set me on the high road to that office. But it does permit me to say that the health and growth of Amateur Radio as an advanced technical activity, is of the very greatest value, not only to defence, but to national development, when electronics means so much.

● This is the full text of a special message broadcast throughout Australia on 12th August, 1967, on the Amateur Bands by the Minister for Defence (Mr. Allen Fairhall) on the occasion of the 1967 Remembrance Day Contest conducted annually by the Wireless Institute of Australia.

Mr. Fairhall is a Life Member of the Wireless Institute of Australia and a pioneer of the commercial and amateur broadcasting networks in Australia. Mr. Fairhall operates from Newcastle, N.S.W., on the Amateur call sign of VK2KB.

In France, the government of today operates what might be termed a "national radio school," recruiting to it thousands of technically-minded young men, giving them instruction, supplying them with components for practical instruction, then judging their work. All of this, the promoters say, is to make sure that the electronics industry of that country is not starved of the technical talent it needs.

This is how one modern technologically advanced country values electronic technicians. It could be an example to everyone.

But if we do not have that kind of school, the Amateur Radio could well be a powerful alternative, richly deserving of government encouragement in all of those avenues where government alone can help. Not least of these is in the preservation of Amateur frequency assignments.

It is trite to say that this is the electronic age. But if anybody should be so foolish to regard that as merely another cliché, they need only cast their thoughts over today's activities in travel and transport, in research, design and production, in management, communications and in entertainment. The great common denominator for all of these daily activities is the practical application of electronics.

And to all of this, through his own efforts, the Radio Amateur has an open door. For Amateur Radio is a unique preoccupation. I can't call it a hobby, because it is vastly more than that.

To the technician, amateur or professional, Amateur Radio offers an avenue of scientific study where he can learn by doing. To the more advanced scientist, it offers opportunity to experiment within his resources and to discuss the results of his work with others of like mind.

To others concerned with the philosophical values of human communications, the Radio Amateur has, in most cases, found the answer, not merely through the exchange of signals but in that peculiar and valuable ability to exchange thoughts and ideas with contemporaries in a hundred nations who make up the great democracy of Amateur Radio.

If there were nothing more than that in Amateur Radio it would be enough.

A recent study by the Stanford Research Institute discloses that of the 275,000 Amateur Radio operators in the United States of America, no less than 110,000 of them are associated professionally in some phase of the nation's communications and electronics industry. Of these, at least 94,000 attribute their choice of a career to their experience as Radio Amateurs.

Who can say how much of the technological leadership of the United States today is attributable to the Radio Amateur. And again, who can say, here in our own country, industrial growth through electronics has not been vastly enriched by the knowledge and experience of those who have chosen Amateur Radio as a recreational extension of their professional work.

There is something tremendously unique about a recreational activity that acknowledges the active participation of half a dozen heads of state throughout the world, that numbers amongst its adherents the originators and leaders of some of the world's greatest industries, that brings together in a great confraternity of enthusiasts the research scientists of defence and industry, and yet enlists into that same fraternity on equal terms the thousands who see in Amateur Radio a challenge to learning and an opportunity for friendship.

Here is an arena where an operator's telegraphic key or microphone is a passport to instant friendship, where a call will bring—hopefully—an instant reply from a fellow in some distant corner of the world who is immediately your friend "Joe" or "Roberto", Francisco, Pierre or Toshihide, whose name and conversation you will recall when next you meet.

In the whole radio frequency spectrum, there are preserved only narrow Amateur bands, safe we hope from commercialism, but free for the peoples of the world to talk to each other in mutual interest and friendship. Kilocycles for kilocycles, there is no piece of the spectrum that contributes so much to the warmth of international understanding or to the exchange of information as do the Amateur bands.

It may be that the days when Amateur operators contributed to the development of new techniques and invention have been overtaken by the enormous growth of technology to which their early efforts made such magnificent contribution. Today, real discovery has moved into the well and expensively equipped laboratories. But the Radio Amateur has a unique opportunity to apply technology, to test theory, and enjoy the doing of it, for surely Amateur Radio is the most rewarding and satisfying of technical activities.

So that, in the Contest which is about to begin, we will remember not only our fellow Amateurs who served their country in war, but those who enrich their experience and devote their talents to a young Australia on the way to industrial greatness.

It is my pleasure to declare this 1967 Remembrance Day Contest now open.

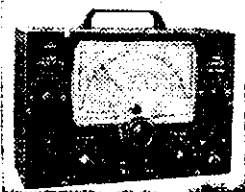
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240v. a.c. operation. Printed circuit board wiring, 5 c.p.s. to 1 Mc., time base oscillator to sweep 10 c.p.s. to 100K c.p.s. in steps with continuous in-between variation. Ideal s.s.b. measurement with coupled r.f. sampling signal. Weight 11 lb.

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Pocket size instrument finds defective circuits—**IMMEDIATELY!**

For every technician or engineer who must find defective circuits quickly and exactly, the new Mosquito with detachable probe—pocket size, cordless, pen-type instrument which generates and injects a rich signal covering the audio, i.f. and r.f. spectrum!

The Mosquito contains a transistor oscillator, powered by a single 1.5 volt pen light cell, which completely eliminates the need for a large expensive signal generator. It can be coupled into magnetic pick-ups and circuits without leads. And the Mosquito oscillates at approximately 1,000 cycles per second, with a wave form which is rich in harmonics. This is truly the simplest, fastest, most effective, most economical way to find defective circuits—it belongs in your pocket now!

Price \$15.00

CITIZEN BAND TRANSCEIVERS

TOKAI Type TC-911 9-Transistor Citizen Band Transceivers. P.M.G. approved. Use like a telephone with separate microphone and receiver. Push-to-talk operation. 100 mW. input. Single rod antenna system. Range better than 2 miles over average terrain. Best we have ever tested. Best value on the market.

Price \$75.95

JAPANESE INSTRUMENT DIAL

Type Y.N-6

Ratio 7.5:1. Calibrated 0 to 200 (red scale) over 180 degrees. Six blank scales for band/frequency calibration. Size 6½ x 3¼ in. Complete with hairline cursor and black moulded escutcheon and perspex clear front.

Price \$8.75

SLOW MOTION DRIVES

Ideal for use where 1:1 control is impractical. Eddystone Type 892 (as used with Type 598 dial). Epicyclic ball bearing drive mechanism. Ratio 10:1. Smooth, back-lashfree operation. Price \$3.45.

Jabel Type 3 6:1 planetary drive. Good quality construction at a reasonable price, \$3.75.

EDDYSTONE INSTRUMENT DIALS

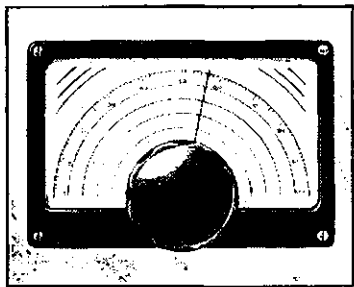


Cat. No. 898

GEARED SLOW-MOTION DRIVE ASSEMBLY

A high grade assembly designed for instrument application. The movement is gear-driven and fly-wheel loaded, giving a smooth, positive drive, with a reduction ratio of 110 to 1. The pointer has a horizontal travel of 7 inches. A circular vernier scale, marked over 100 divisions, rotates five times for one traverse of the pointer, and, read with the "100" scale on the dial, provides a total of 500 divisions.

Price \$21.75



Cat. No. 598

FULL VISION DIAL

The epicyclic, ball-bearing drive mechanism is of improved design and has a reduction ratio of approximately 40 to 1. The movement is smooth and free from backlash. The dial escutcheon measures 6 in. long by 4¼ in. wide plus a 3/64 in. lip. The scale is marked 0-100 over 180 degrees and is 5 in. across. A large fluted instrument knob is fitted. Ripple black finish. Ideal for s.s.b. equipment.

Price \$8.19.

WILLIAM WILLIS & CO. PTY. LTD.

430 ELIZABETH STREET, MELBOURNE, VIC., 3000

Phone: 34-6539

**AMERICAN DOW-KEY
ANTENNA RELAYS**

Coil Ratings: 6, 12, 24 volts d.c. at 2 watts, 6, 12, 24 volts a.c. at 6va., 50/60 cycles. Special coil voltages available on request. R.f. Ratings: 1kw. power rating to 500 Mc.; 20 watts power rating to 500 Mc. in types DK60-G and DK60-G2C in de-energised condition. The DK60-G and DK60-G2C have a special isolation connector in the de-energised position to reduce cross-talk to a minimum.

V.S.W.R.: Less than 1.15:1 from 0 to 500 Mc. (50 ohm load).

Isolation: Greater than 60 db. at 10 Mc. in DK60 and DK60-2C; greater than 100 db. from 0 to 500 Mc. in DK60-G and DK60-G2C when in energised position.

Operating Time: Less than 30 milliseconds from application of coil voltage; less than 15 milliseconds between contacts.

Connections: Standard SO239 type v.h.f./u.h.f. Co-ax. Connectors. Available with Type N, BNC, TNC, C Connectors to order.

Type DK60 standard single-pole change-over D.C. A.C. \$18.12 \$19.25

Type DK60-G standard single-pole change-over with special isolation contact in de-energised position to reduce cross-talk \$20.15 \$21.15

Type DK60-2C, same as DK60, but includes external set of double-pole change-over contacts \$20.25 \$21.38

Type DK60-G2C, same as DK60-G, but with external double-pole change-over contacts \$21.78 \$23.30

**CO-AXIAL FITTINGS
AND CABLE**

PL259 Co-axial Plugs, suit 5/8 in. Cable .. 98c
SO239 Co-axial Sockets .. 98c
UG175/U and UG176/U Cable Adaptors for use with PL259 .. 34c

C32-16 right-angle Co-axial Connector, Jack to Plug, suit PL259 .. \$1.88

C32-17 T. Connector—Plug and two Jack Ends—suit PL259 .. \$2.33

C32-14 Coupling for two PL259 Plugs .. \$1.72

Belling & Lee L734P Co-ax. Cable Plug 32c

" " L604S Co-ax. Chassis-Socket .. 28c

" " L603/B Co-ax. Chassis-Socket ground Insulated .. 25c

" " L734/S Recessed Co-ax. Chassis Socket .. 25c

" " L734/J Co-ax. Cable Socket .. 43c

" " L1421 Bulk-head Cable Socket .. 56c

" " L616 Coupling — couple two L734/P Plugs .. 36c

PT81M (UR67) 52 ohm Co-axial Cable, per yard .. 58c

RG58AU 50 ohm Co-axial Cable, per yd. 35c

PT9M 55 ohm Co-axial Cable .. per yd. 25c

PT77M 70 ohm (UR70) Co-ax. Cable, yd. 32c

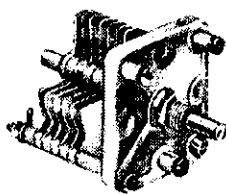
PT11M 70 ohm Co-axial Cable .. per yd. 40c

FORMULA 11 Open Wire 300 Ohm Transmission Line, 100 ft. coils .. \$5.06

K20 72 ohm Twin Flat Line yd. 15c

KA47 300 ohm Twin Flat Line (solid or slotted) yd. 8c

KA45 300 ohm Heavy Duty Flat Line (solid or slotted) yd. 12c



EDDYSTONE CONDENSERS

476 Split Stator 15 x 15 pF.	\$2.90
580 Single Section 13.5 pF.	\$1.95
583 Split Stator 23 x 23 pF.	\$2.90
584 Butterfly 32 x 32 pF.	\$3.25
585 Single Section 91 pF.	\$2.90
586 Single Section 140 pF.	\$3.90
587 Butterfly 16 x 16 pF.	\$3.90
588 Single Section 27.5 pF.	\$2.90
589 Single Section 66 pF.	\$2.90
739 Butterfly 10 x 10 pF.	\$3.25
738 Double Bearing 100 pF.	\$5.27
817 Transmitting Type S. Section 270 pF.	\$5.15



VALVE SOCKETS

TELETRON
BAKELITE
MOULDED
AND
MICA
MOULDED
VALVE
SOCKETS
SKIRTED
AND
UNSKIRTED

ST27G 7-pin unskirted bakelite ..	10c
ST27L 7-pin unskirted mica ..	13c
ST29G 9-pin unskirted bakelite ..	11c
ST29L 9-pin unskirted mica ..	15c
ST47G 7-pin skirted bakelite ..	23c
ST47L 7-pin skirted mica ..	31c
ST49G 9-pin skirted bakelite ..	31c
ST49L 9-pin skirted mica ..	36c
ST48G octal moulded bakelite ..	10c
ST48L octal mica filled ..	16c

CANS FOR SKIRTED SOCKETS

1-9/16 inch Can Length—CS7/1 for 7-pin ..	15c
CS9/1 for 9-pin ..	22c
1-15/16 inch Can Length—CS7/2 for 7-pin ..	15c
CS9/2 for 9-pin ..	22c
2 inch Can Length—CS7/3 for 7-pin ..	19c
CS9/3 for 9-pin ..	22c
3-3/8 inch Can Length—CS7/3 for 7-pin ..	19c
CS9/3 for 9-pin ..	22c
Ceramic 7-pin Skirted Sockets ..	30c
Ceramic 9-pin Skirted Sockets ..	35c
Ceramic Octal, 4-pin, 5-pin, 6-pin standard Valve Sockets ..	ea. \$1.10

**DOW-KEY MANUAL
CO-AXIAL SWITCHES**

R.f. Ratings: 1 kw. to 500 Mc. Fine silver finish, Fitted with u.h.f. type SO239 co-axial sockets.	
DK78-2 Single Pole two throw ..	\$18.22
DK78-3 Single Pole three throw ..	\$18.68
DK78-6 Single Pole six throw ..	\$20.25
DK78-T Transfer Switch ..	\$19.30

TRANSISTORS AND DIODES

AC107 ..	\$1.30	2N269 ..	\$1.40
AC125 ..	85c	2N279 ..	\$1.24
AC126 ..	85c	2N279 ..	\$1.16
AC127 ..	96c	2N280 ..	\$1.54
AC127-128 ..	\$1.86	2N281 ..	\$1.25
AC127-132 ..	\$1.31	2N301 ..	\$1.93
AC128 ..	90c	*2N301 ..	\$2.25
2-AC128 ..	\$1.81	2N301A ..	\$3.30
AC132 ..	85c	2N370 ..	\$1.84
2-AC132 ..	\$1.72	2N371 ..	\$1.84
AC172 ..	\$1.00	2N372 ..	\$1.84
AD139 ..	\$2.10	2N373 ..	\$1.43
2-AD139 ..	\$4.21	2N374 ..	\$1.73
AD149 ..	\$2.22	2N406 ..	34c
*AD149 ..	\$2.25	2N408 ..	84c
2-AD149 ..	\$4.41	2N410 ..	35c
*2-AD149 ..	\$4.50	2N412 ..	85c
AF102 ..	\$2.00	2N591 ..	50c
AF114N ..	90c	2N647 ..	96c
AF115N ..	90c	2N649 ..	90c
AF116N ..	85c	2N1010 ..	\$1.40
AF116NS ..	85c	2N1637 ..	85c
AF117N ..	85c	2N1638 ..	35c
AF118 ..	\$2.10	2N1639 ..	35c
AF178 ..	\$2.00	2N2613 ..	98c
AS128 ..	90c	2N2614 ..	\$1.00
BC107 ..	\$1.00	AA119 ..	70c
BC108 ..	90c	2-AA119 ..	60c
BC109 ..	\$1.30	AS25 ..	60c
BF115 ..	90c	BA100 ..	44c
OC26 ..	\$2.55	BA102 ..	\$1.22
2-OC26 ..	\$5.10	BA114 ..	39c
OC30 ..	\$4.60	BA122 ..	50c
2-OC30 ..	\$8.00	BY100 ..	\$1.50
OC44N ..	89c	OA90 ..	28c
AC45N ..	89c	OA91 ..	29c
OC57 ..	\$2.22	OA95 ..	33c
OC58 ..	\$2.22	OA210 ..	85c
OC59 ..	\$2.24	OA605 ..	55c
OC60 ..	\$2.40	OA610 ..	60c
OC65 ..	\$2.43	OA620 ..	65c
OC66 ..	\$1.43	OA630 ..	80c
OC70 ..	\$1.15	OA650 ..	\$1.05
OC71N ..	\$1.24	OA660 ..	\$1.22
OC72 ..	\$1.25	OA670 ..	\$1.40
2-OC72 ..	\$2.50	OA674 ..	50c
OC74N ..	85c	OA675 ..	50c
2-OC74N ..	\$1.71	1N37A ..	28c
OC75N ..	\$1.24	1N617 ..	25c
OC79 ..	\$1.40	1N618 ..	33c
OC169 ..	\$1.83	1N4193 ..	65c
OC170 ..	\$1.83	1N3194 ..	85c
OC171 ..	\$1.90	1N3195 ..	\$1.22
OC975N ..	\$1.71	1N3196 ..	\$1.50
2N217 ..	38c	1N3253 ..	72c
2N217S ..	82c	1N3254 ..	90c
2N218 ..	90c	1N3255 ..	\$1.25
2N219 ..	90c	1N3256 ..	\$1.25
2N220 ..	90c	1N3563 ..	\$1.71
2N247 ..	\$2.50		

* Supplied with mounting material.

COIL FORMERS

3/4 inch Poly. Formers with mounting base and iron slug ..	30c
7/16 inch Paxolin Formers with mounting base and iron slug ..	23c
3/8 inch Poly. double slugged I.F. Formers with can ..	81c
Two-pin Polymax G.D.O. Formers with winding protective shroud for inductances ..	72c

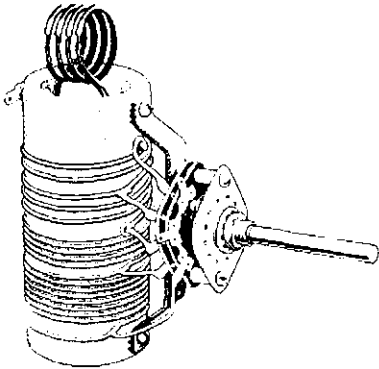
NEON LAMPS

GE Type NE51 M.B.C. 110v. Neon Lamps, 1/4 watt ..	39c
GE Type NE2 Pig-tail 110v. Neon Lamps, 1/2 watt ..	25c

PLEASE INCLUDE FREIGHT WITH ORDERS

William Willis & Co. Pty. Ltd., 430 Elizabeth Street, Melbourne, Vic., 3000

PI-COUPLERS



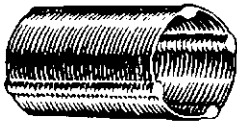
WILLIS MEDIUM POWER TYPE

For use up to 600 watts p.e.p. Match plate loads of 2,000 to 3,500 ohms (Z) and higher into co-axial cable. Operating O increases on higher frequencies to increase harmonic suppression, enabling practical values of tuning capacity to be used on 10 and 15 metres and allowing for wiring inductance (L). Incorporates extra switch section for shunting additional capacity (C) if required, or switching other circuits. Switch rated or 10 amps. at 2,000 volts with contact resistant (R) of 0.8 milli-ohms. Price \$8.85.

Geoso Pi-Coupler Type 4/111 for use with parallel 807s, 6146s, etc. 75 watts. \$3.94

Geoso Pi-Coupler Type 4/112 for use with single-ended 807, 6146, etc. 75 watts. \$3.94.

Geoso Pi-Coupler Type 4/113 for use with parallel 807s, 6146s, etc. 100 watts. \$4.37.



"WILLIS"

AIR-WOUND INDUCTANCES

Take the hard work out of Coil Winding—use "WILLIS" AIR-WOUND INDUCTANCES

No.	Diam. inch	Turns per inch	Length inch	B. & W. Equiv.	Price
1-08	1/2	8	3	No. 3002	59c
1-16	1/2	16	3	No. 3003	59c
2-08	3/8	8	3	No. 3006	70c
2-16	3/8	16	3	No. 3007	70c
3-08	3/4	8	3	No. 3010	82c
3-16	3/4	16	3	No. 3011	82c
4-08	1	8	3	No. 3014	95c
4-16	1	16	3	No. 3015	95c
5-08	1 1/4	8	4	No. 3018	\$1.22
5-16	1 1/4	16	4	No. 3019	\$1.28
8-10	2	10	4	No. 3907	\$1.55

Special Antenna All-Band Tuner Inductance (equivalent to B. & W. No. 3907 7 in.)

7 in. length, 2 in. diameter, 10 turns per inch, \$2.76

References: A.R.R.L. Handbook, 1961; "OST," March 1959; "Amateur Radio," Dec. 1959.

A & R TOROID BALUNS

General Specifications: Power Rating—Types A, B, C, 200 watts or 400 watts p.e.p., provided the s.w.r. is less than 2:1. Construction—Toroidal ferrite cores, fully encapsulated with epoxy resin and silica under vacuum. Suitable for use in cold to sub-tropical areas. All except 355C and 356C are provided with antenna insulator support brackets. Balun dimensions approx. 2 in. diam. x 1 in. plus socket and lugs. Weight approx. 3/4 to 4 oz.

Installation: When used at the antenna centre, use at least one insulator each side of the brackets and connect antenna leads to Balun terminals with 23/0076 in. or similar flexible wire. (These leads form part of the antenna length.) Types A only: When the Balun and Co-axial Cable are not supported at the centre of the antenna, it will be necessary to tie the co-axial plug to the Balun brackets with nylon cord or wire to prevent the co-axial cable from pulling the plug from the socket.

Type 350A—Impedance ratio 1:1. 75 ohms unbalanced to 75 ohms balanced. 3 to 30 Mc. For use at centre of a dipole antenna with co-axial cable feed line or at base end with 75 ohm twin line. Co-axial connector is Belling & Lee L604/S and lug terminals. Price \$4.25.

Type 351A—Impedance ratio 1:4. 75 ohms unbalanced to 300 ohms balanced. 3 to 30 Mc. For use at centre of a folded dipole antenna with co-axial feed line or at base end with 300 ohm twin line connector and terminals as 350A. Price \$4.25.

Type 352A/BC—Details as 350A except freq. range 500 Kc. to 5 Mc., or to 30 Mc. for receiving purposes only with increased attenuation. Price \$4.25.

Type 353B—This is a type 350 with a co-axial socket SO239 (Amphenol screw type). Price \$4.92.

Type 354B—Type 351 with SO239 co-axial socket. Price \$4.92.

Type 355C—Impedance ratio 2.1:1. 52 ohms unbalanced to 25 ohms unbalanced. 3 to 30 Mc. For use at the base of a mobile whip antenna, coupled to fixed or adjustable transmitter output impedance. Lug terminals. Price \$4.92.

Type 356C—Impedance ratio 3.1:1. 78 ohms unbalanced to 25 ohms unbalanced. 3 to 30 Mc. Lug terminals. Use as 355C. Price \$3.87.

MODULATION TRANSFORMERS

BRITISH "WODEN"

Type No.	Audio Watts	R.F. Watts	In. Watts	Max. Sec. Current	Price
UM0	10	20	60	60 mA.	\$15.60
UM1	30	60	120	120 mA.	\$23.31
UM2	60	120	200	200 mA.	\$30.30
UM3	120	240	250	250 mA.	\$32.60

MAINS TOGGLE SWITCHES

German knife-blade type, self-wiping contact Toggle Switches:

Type APR—	Price
1016C single pole changeover	47c
1019C as above with centre "off"	50c
1011C single pole "on-off"	40c
507 two pole "on-off"	69c
509 two pole changeover end contacts	75c
519 two pole changeover rear contacts	75c
559 four pole changeover	\$2.56
649/2 two pole changeover centre "off"	\$1.06

PUSH BUTTON PANEL SWITCHES

Type APR—	Price
1212C push to break return "on"	60c
1213C push to make return "off"	60c
1316 single pole changeover	\$1.80

GELOSO V.F.O.

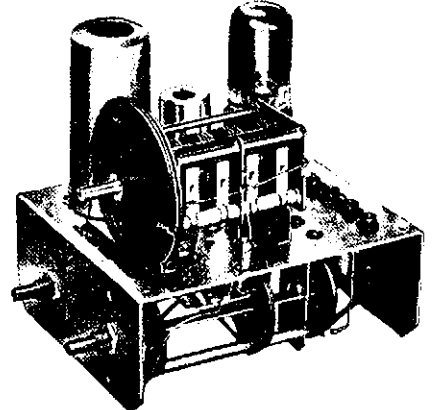


Illustration: Model 4/102

Model 4/104 V.f.o. Unit: Tunes 80, 40, 20, 15, 11 and 10 metres. Complete with calibrated dial and escutcheon. Uses 6CL6 and 5763 valves. Price (valves extra) \$24.55.

Model 4/102 V.f.o. Unit: Tunes 80, 40, 20, 15 and 10 metres. Complete with calibrated dial and escutcheon. Uses 6J5G, 6AU6 and 6L6 valves. Price (valves extra) \$24.55.

Model 4/105 V.f.o. Unit: High stability unit using output from relatively low variable frequency generator mixed with the output from a quartz-crystal generator. Low frequency generator covers range of 500 Kc. on the 80, 40, 20 and 15 metre bands and 1 Mc. on two sections of the 10 metre band. Uses 6U8, 6AH6 and 6CL5 valves. Suitable for use in s.s.b. transmitter. Price (valves and crystals extra) \$38.43.

Each model comes complete with calibrated dial, pointer and perspex escutcheon. Full circuit diagram with each kit. Valves and crystals extra.

GELOSO KIT FOR D.S.B. TRANSMITTER

The following components comprise the GELOSO Kit for construction of D.s.b. Transmitter. For circuit details refer Nov. 1965 issue of "Electronics Australia".

4/105 Crystal controlled Beat Frequency Oscillator	\$28.12
N1657 Calibrated Dial, Pointer and Escutcheon	\$6.30
N4/113 Pi-Coupler	\$4.85
N771 Condenser	\$4.50
N774 Condenser	\$4.50
N17634 All Wave R.f. Choke	96c

Valves not supplied with V.f.o.
Valves for V.f.o.: 6U8, 6AH6, 6CL5.

LOW PASS FILTERS

A "Cabena" Low Pass Filter will fix t.v.i. Cut-off frequency, 30 Mc., attenuation at 60 Mc. better than 30 db.; insertion loss, negligible. Impedance 50-72 ohms.

Price \$11.50

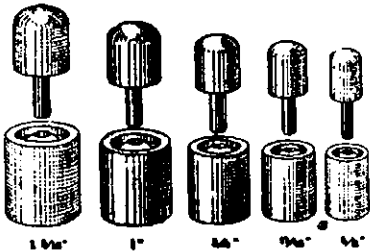
RESISTORS

Cracked Carbon Resistors, 5%, 1/2w.	10c
Cracked Carbon Resistors, 5%, 1w.	12c

PLEASE INCLUDE FREIGHT WITH ORDERS

William Willis & Co. Pty. Ltd., 430 Elizabeth Street, Melbourne, Vic., 3000

PUNCHES



WILLIS HAMMER DIE PUNCHES

WILLIS hammer type die punches are made to precise sizes for use in industry wherever a clean, round hole is wanted. Designed to punch down to 14 gauge steel. Centre remnant removed with a flick of the hand. Can be used in die press. Special sizes made to order at slight additional cost.

3/8 in.	\$2.40	1-1/2 in.	\$6.00
7/16 in.	\$2.40	1-5/8 in.	\$6.40
1/2 in.	\$2.60	1-3/4 in.	\$7.20
5/8 in.	\$2.60	1-7/8 in.	\$8.00
11/16 in.	\$2.80	2 in.	\$8.40
3/4 in.	\$3.00	2-1/16 in.	\$8.60
13/16 in.	\$3.20	2-1/8 in.	\$9.20
7/8 in.	\$3.80	2-3/16 in.	\$9.40
1 in.	\$3.80	2-1/4 in.	\$9.60
1-1/16 in.	\$4.00	2-5/16 in.	\$9.60
1-1/8 in.	\$4.00	2-3/8 in.	\$10.40
1-3/16 in.	\$5.00	2-1/2 in.	\$11.00
1-1/4 in.	\$5.20	2-3/4 in.	\$12.40
1-5/16 in.	\$5.20	3 in.	\$13.40
1-3/8 in.	\$5.60	3-1/4 in.	\$15.80
1-7/16 in.	\$5.90	3-1/2 in.	\$18.20

Q-MAX CHASSIS PUNCH

SCREW TYPE

3/8 in.	\$1.88	1-7/32 in.	\$3.80
7/16 in.	\$2.00	1-1/4 in.	\$3.80
1/2 in.	\$2.00	1-5/16 in.	\$4.08
9/16 in.	\$2.00	1-3/8 in.	\$4.08
5/8 in.	\$2.00	1-1/2 in.	\$4.08
11/16 in.	\$2.56	1-5/8 in.	\$4.44
3/4 in.	\$2.56	1-3/4 in.	\$4.44
13/16 in.	\$3.08	2 in.	\$5.60
7/8 in.	\$3.08	2-3/32 in.	\$6.64
15/16 in.	\$3.68	2-1/2 in.	\$7.92
1 in.	\$3.68	1 in. sq. hole ..	\$5.56
1-1/16 in.	\$3.68	11/16 in. sq. hole	\$5.32
1-1/8 in.	\$3.68	21/32 x 15/16	
1-3/16 in.	\$3.68	rectang. hole ..	\$7.62

"JABEL" TR14 REAMERS

Ideal for clean finish on small panel holes and cleaning out for neat fit.

Price \$1.05 each

"ADEL" NIBBLERS

Makes area cut-outs for transformers, etc., as simple as ABC. Price \$7.50.

PENETROX "A"

Famous American aluminium and copper corrosion inhibitor. Avoid bad electrical connections and corroded joints on beam antennae, T.V. antennae, etc. Use PENETROX "A".

Price \$1 per tube

C.R.C. FORMULA 2.26 FLUID

For use on electronic and electrical equipment of all kinds. Displaces water and moisture. Improves electrical properties. Protects metal surfaces and lubricates.

16 oz. Pressure Packs, Price \$3.00

POWER TRANSFORMERS—Voltage Doubler Types

ELECTRICAL DATA

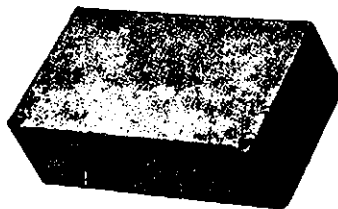
TYPICAL PERFORMANCE—fully loaded

Type No.	H.T. Secondary Volts	Max. D.C. mA.	Heater Windings V. A.	Effective Series Resistance Ohms	Rect. Min. P.I.V.	Input Cap. Each uF.	Addit. Series R	D.C. O/P Volts	Price
PT 2062	115 tap 105	80	6.3 CT 2.25	25	400	100	0	290 265	\$7.60
PT 2063	135 tap 125	80	6.3 CT 2.25	29	400	100	0	340 315	\$7.89
PT 2067	120 taps 110 100	100	6.3 CT 4	22	400	100	0	310 285 260	\$9.00
PT 2064	135 tap 125	125	6.3 CT 2.25	16	400	100	0	340 315	\$10.13
PT 2065	115 tap 105	150	6.3 CT 6	10	400	100	0	290 265	\$10.40
PT 5324	124 taps 114 104	150	6.3 CT 3 6.3 CT 3	17	400	100	0	310 285 260	\$9.75
PT 2066	125 tap 105	190	6.3 CT 6	7	400	100	0	320 265	\$11.25
PT 2068	195 taps 185 175	200	6.3 CT 4 6.3 CT 3	14	600	100	0	500 475 450	\$15.93
PT 1965	115	300	12.6 CT 5	4	400	100	5	270	\$15.85

Conventional Power Transformers also available. Prices on application.

FILTER CHOKES

Type No.	Inductance Henrys	Max. D.C. mA.	Resistance Ohms	Max. D.C. Working Volts	Type Filter	Price
3040	12	100	290	600	Cond. Input	\$3.65
3041	12	125	275	600	" "	\$5.71
3090	2.5	150	125	600	" "	\$2.35
3042	12	150	205	600	" "	\$6.85
3043	12	175	185	600	" "	\$7.60
3044	12	200	165	600	" "	\$9.28
3045	10	250	130	1000	" "	\$10.50
3046	10	300	90	1000	" "	\$13.21
3047	5-15	250-50	70	1000	Choke Input	\$10.50
3190	3 mH.	150	15		R.F. H.T. Choke for use in D.C.-D.C. Converters	85c
3191	0.15 mH.	4 Amp.	0.05		L.T. Choke for use in D.C.-D.C. Converters	56c



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Type 903	7 3/8 x 4-11/16 x 3 in.	\$4.86

TELEPHONE TYPE PLUGS AND JACKS

Plug—shielded cover nickel plated C20-1	72c
Plug—insulated phenolic cover C20-3	60c
Plug—shielded cover chrome plated C20-5	50c
Plug—insulated phenolic cover C20-6	52c
Plug—brass P.M.G. type bakelite cover No. 150	71c
Jack sockets for above 1/2 inch mounting bush C20-2	32c
Jack sockets for above 3/8 inch mounting bush C20-4	32c
Plug—miniature telephone type C30-1	38c
Plug—miniature telephone Bulgin P519	50c
Plug—miniature telephone Bulgin P529	70c
Jack socket suit C30-1, P519, P529, J30	54c
Plug—compact insulated cover Bulgin P38	54c
Plug—shielded side entry Bulgin P536	86c
Plug—shielded P.M.G. type Bulgin P538	77c

PLEASE INCLUDE FREIGHT WITH ORDERS

OUR HOBBY OPENS THE DOOR TO HAPPINESS

Many times we have to listen to stories which our friends tell us and often people say that they find it difficult to make new contacts. They feel inadequate because they have no hobbies, or any avenues to expand friendship. Usually this situation arises when children are brought up in a home where the parents have no hobbies whatsoever.

Amateur Radio in any home lends an atmosphere of warmth and friendship. Hams are of the opinion that their hobby is the greatest of them all, and there is ample justification in saying so. What other hobby opens up friendship between all the peoples of the world?

Within minutes, people are stretching out a hand of friendship right across the globe—what other hobby will make people call each other by their first name in minutes? Cheerful voices float through the air from one house to another, and one contact leads to another. In an hour, a Ham can speak to 10 or more people, or less if he or she wishes. You can travel from Hong Kong to Malaya, Australia, Guam, Taiwan, Korea, Burma, Siam, Seychelles, or to Marion Island in an hour. Some Hams are going to bed, others preparing for dinner, and if the U.S.A. is included, then a hearty "good morning" is extended to that country, if it is afternoon in South Africa.

If Hams travel around the country in the course of their daily routine, or go anywhere on pleasure, they can take their hobby with them. A mobile rig can be put into a car and a station operated while driving. Hams at sea take their equipment with them. Often Hams speak to operators in the different oceans, from oil tankers to passenger liners. These intrepid travellers can never say they find it hard to make friends. No sooner are they in a port than they head straight for some Ham shack.

If Hams prefer to operate a Morse key, then the fingers do all the work. It takes longer perhaps to say something, but a keen sense of perception is developed. The ear becomes attuned, and during times when conditions are poor, the telegraphy will succeed where the microphone will fail. Some Hams have never owned a microphone.

Romance has resulted from friendships made over the air. One YL and an OM used to talk frequently in the U.S.A. They were at least 3,000 miles apart and the weekly talks led to daily chats. Eventually they decided to meet at a point half-way so each one travelled 1,500 miles. Marriage resulted, and the pair settled down happily to a life of "dit-dah". In due course, little Harmonics arrived, who no doubt will become Hams in time to come.

This hobby is a boon to people who are confined to bed, or to a wheelchair. Even blind people weave their lives around Amateur Radio. At any time of the day, someone is waiting to share some minutes or hours with another human being. Life assumes a more rosy hue because of this hobby, which opens so many doors. Visitors are usually found to have the mutual interest.

Lasting friendships have been made over the air—sometimes one does not necessarily meet the Ham on the other side of the globe, but a daily talk is part of the routine. Some people have made more than 1,000 contacts with the same person and enjoyed every moment of each chat. On occasion when a contact is made, a Ham has been known to say, "I last spoke to you 15 or 20 years ago". It is not a case of memory always, because many Hams keep an up-to-date index card system. It certainly would add an aura of warmth to a chat after such a long time.

Every day, somewhere in the globe, Ham meets Ham, and in this instance, the meeting is between people of two different countries. Someone knocks on a door in Los Angeles, California, U.S.A., and when it is opened says, "I'm Mr. XYZ from South Africa." Even before the salutations are completed, the visitor is ushered into the house and treated like Royalty. This is referred to as an "eyeball QSO". Such friendships lead to close kinship and often the visitor is taken all over the particular State or country, feted at a banquet, etc., before he leaves. As one door closes, so another opens.

Those who are attracted to the hobby of Amateur Radio are indeed fortunate. They say, "one man's meat is another man's poison", and there are many people who shake their heads and say that they would find all that talking would give them a headache. Probably Bird Watching would appeal to them more, or even fishing. That may be self-satisfying in a way, but you can't make so many friends through these hobbies. Admittedly, groups may indulge in these outdoor pursuits, but what do you do when it rains? Not so many doors

can be opened to you anywhere and everywhere.

In times of emergencies, Radio Hams can give tremendous help to the authorities. When communications are destroyed through water or fire, the path to speech is open—the air waves are waiting for the voices to send out distress calls, to bring helpers to the scene, food or medicines if required, etc. No other hobby can do so much for mankind in such a short space of time.

(The above was forwarded by Eric Trebilcock, and was extracted from the South African Women's Radio Club's magazine, "YL Beam.")

— . . . —

POSITION OF PLANETS LINKED TO SOLAR FLARE PREDICTION

BY REX PAY

Los Angeles.—Watch for major solar proton storms on May 22, 24 and 27, probably June 8, and very probably June 25, 27 and 30. Expect solar flare activity to peak at the end of 1968, with a Wolf relative sunspot number of 175 at least, possibly reaching an intensity equal to the last maximum, which was the highest recorded.

These predictions come from calculations of the time rate of change of the gravitational field at the Sun's surface, taking into account local areas of persistent solar activity and their alignment with respect to the Earth.

Principal influences on the rate of change of the gravitational field at the solar surface are the planets. Although their gravitational effects are many orders of magnitude less than that of the Sun itself, the time rate of change of the resultant planetary field vector appears to have some triggering effect on the release of solar flares. It appears, therefore, that solar flares can be predicted from the positions of the planets.

UNDERSTANDING LACKING

Describing the gravitational vector technique for predicting solar flares, Dr. Richard Head, of N.A.S.A.'s Electronics Research Centre, told "Technology Week" that although the predictions had so far worked out very well—with an accuracy of about half a day—there was as yet no understanding of why this should be so.

The technique provided predictions to the Lunar Orbiter I. operations staff of the intense proton storm occurring at the end of August 1968, just after the completion of the photographic mission. Because the technique relies on planetary motions, it can provide very long-term predictions.

With the success it is achieving, the gravitational vector technique is drawing increasing interest from N.A.S.A. and the academic community. Furthermore, this interest is likely to increase many fold if another speculative theory is confirmed. Contained in a 1965 report by National Engineering Science Co., this theory states that variations in the Earth's ionosphere have a much larger effect on the troposphere, and so on surface weather, than has previously been assumed.

If this theory is correct, then solar flare activity will be relayed through the ionosphere to the troposphere and will directly influence surface weather there.

Striking evidence that planetary effects play a part in sunspot activity has been provided by J. H. Nelson, of R.C.A. The effect of increased sunspot activity that Nelson is particularly concerned with is the interruption of ionospheric radio propagation. In studies that have been under way since 1940, he has found that disturbed conditions for radio propagation exist when two or more planets line up with the Sun or form an angle of 90 degrees with the Sun. Refinement of these observations has enabled Nelson to predict disturbed conditions a considerable time in advance. He was able to predict the radio blackout of November 12, 1960, 14 months ahead of its occurrence.

PLANETARY HARMONICS

Calculations of the tidal forces on the Sun due to the seven inner planets, carried out by C. J. Bollinger, showed a cyclic pattern that may be relatable to solar activity cycles. K. Takahashi has calculated tidal forces on the Sun and correlated the periodicities that appear with periodicities in solar activity and in meteorological phenomena (500 mb height anomalies).

W. H. Portig presents a harmonic analysis of sunspot activity in the N.E.S.C.O. report and suggests that the cyclic variations have components that are harmonics of a basic cycle of 178 years. Jupiter's orbit time of 11.86 years corresponds closely to the 15th harmonic. The repetition time after which Jupiter and Saturn are in conjunction or opposition, 9.93 years,

corresponds closely to the 18th harmonic. When these two components are extracted from the sunspot cycle, a 16th harmonic with a period of 11.25 years remains. This is yet to be identified. Portig regards these results as proof that Jupiter and Saturn have positions that favour sunspots.

Head's predictions for the latter half of 1967 start with a possible event on July 3, followed by events on July 23, August 5 and 26, and September 15. Events are also predicted on a somewhat low probability for October 11 and November 5. The various levels of probability arise because these predictions are made at the beginning of the sunspot cycle and there are very few data available on the detailed behaviour of sunspots at the beginning of a cycle. Head expects that as data on sunspot behaviour are gathered this year and next, the accuracy of the prediction will improve.

[Acknowledgment to "Amateur Radio Facts," produced by Bill Orr, W6SAI.]

SIDEBAND

(Continued from Page 7)

being barely worth the trouble of driving into grid current. The class AB1 s.s.b. output stage uses a variable drive signal, the same as a modulator, the only difference being that it uses tuned circuits instead of transformers. Because tuned circuits exhibit the "fly wheel" effect and audio transformers do not, it is possible in r.f. service to use the tubes in "parallel" instead of "push-pull". Otherwise, the element voltages, currents and power figures published for modulator service are a very good guide for r.f. linear amplifier service—remembering that the load impedance for two tubes in parallel is one quarter of the published plate-to-plate load for the push-pull modulator.

The notes this month were not written for those who know all about sideband, or can afford to buy "The Thing" already made. I trust they may be of some help to those others who have to battle through the hard way.

73, for now, Phil VK5NN.

TECHNICAL ARTICLES

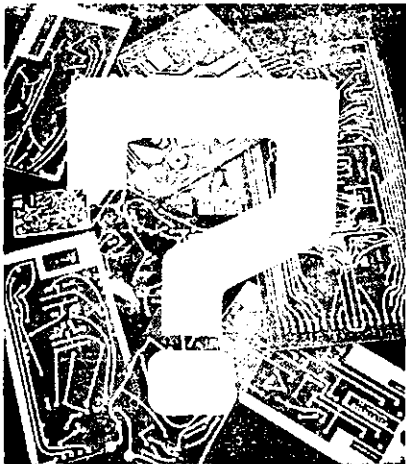
Readers are requested to submit articles for publication in "A.R.," in particular constructional articles, photographs of stations and gear, together with articles suitable for beginners, are required.

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

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

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Transistorised Power Supply

(Continued from Page 3)

If you are lucky, the two resistors will have tolerances in the opposite direction and hence the error on the 20 volt range will be even less. However, the lower resistor should of course be used on the 10 volt range and is selected as follows:

For the time being, do not wire in either resistor. Hold resistor A in position and wind the supply output up until the voltmeter indicates exactly full scale. Remove resistor A and substitute B whilst observing the meter indication. The lower resistor gives the higher meter reading.

These extra meter ranges make the unit far more useful and easier to use.

One particularly interesting use is the testing of transistors.

TRANSISTOR TESTING

Small Transistors

(a) Set the power supply at 2.2 volts output.

(b) Connect the collector and emitter leads of the transistor under test (T.U.T.) to the appropriate output terminals.

(c) If at this stage the overload lamp glows, the test is finished as is the T.U.T., i.e. the wretched thing is S.C.

(d) Provided all is okay, switch the meter down through the ranges until an easily readable indication of current is obtained. This reading is generally in the microampere region and is known as the I_{cso} .

D.c. forward current transfer ratio (h_{FE} d.c.).

(e) Leave the T.U.T. as in step (b), return meter range switch to the highest position. Bridge a 22K ohm resistor (hand held) between the collector and base connections to obtain a base current of 100 microamperes approx.

(f) Switch the meter down through the current ranges until an easily readable current indication is obtained. This figure (in mA.) multiplied by 10 is the h_{FE} d.c. Note, higher voltages may be used for the above tests provided that the power ratings of the T.U.T. are rigidly adhered to. Failure to do so will result in the untimely demise of yet another transistor.

Power Transistors

The test procedure for these types is essentially the same as outlined above, except that higher voltages and currents are involved.

Take for instance an OC29. I would normally test a transistor of this type with 12 volts between the collector and emitter using a base resistor of 5.6K ohms. This gives a base current of 2 mA. (approx.). The d.c. forward current transfer ratio is obtained simply by dividing the resulting collector current (in mA.) by two. Although power transistors are more robust than the "little fellas", it is still a wise practice to keep the measuring time down to a minimum.

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DX

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

Predicted sunspot number for October is 101. This for a DXer is akin to class cuisine for a gourmet. 21 and 28 Mc. are already open during the daylight hours and a big improvement is expected on these bands. 20 mx seems to be the best band at the moment with good paths to Europe around 0700 and 2030z. Africans are also workable. The night circuit to the North West, which is usually very reliable is not operable yet on 14 Mc., but this should appear soon. Some South Americans have been worked on 7 Mc. at 1000 and a little later. Js and UAs are audible on 80 mx.

NOTES AND NEWS

Shetland Is.: GM3SVK on 14193 at 0245z.
Gambia: ZD3G at 0520z, transmitting freq. 14197. Otto K6ENX, QSL Manager for ZD3G, informs us that Ray will be departing Gambia in September or early Oct. This will make ZD3 a tough one, once more. Ray's operation from there is an excellent example of how some serious operating will clean up a rare one in short order.

Aldabra: A letter reports that G3UDU is due to arrive in Aldabra mid-August. He will be there for six months and will sign VQ9JW. John will use a c.w./s.s.b. transceiver on all bands, 10-160 mx. There will be no mail service to the island but Maurice G3NWQ hopes to be able to QSP requests for skeds.
Wake Is.: WA4QXB/KW6 on 14050 at 1800z.
Cocos Keeling: VK9ZCF reports that ZC2T is a phony. Barry is the only legitimately active station on the island now, but is confined to 6 metres.

Rarotonga: ZK1CI will be QRV for three years from here, operating 80-15 phone and c.w. QSL P.O.B. 103. He is ex-ZL1AWT.

Sakhalin Is.: UA0ER, UA0FF and UA0FM all busy from Zone 19 on 14 c.w.

Franz Josef: UA1KED on 14007 at 0200z.
Greenland: Curt XPIAA on 14220 at 2210z. QSL to 1983 Comm. Sqd. A.P.O., New York, 09023.

Afghanistan: Fred Yalfv on 21300 at 1820z. QSL via ISWL.

Laos: XW8AX, XW8BZ and XW8BJ on between 1845z and 1715z around 21300.

Malta: Ted 9H1AG on 21030 at 1345z.

Faeroe: John OY9IM on 14153 at 0300z. QSL to Box 184, Torshava, Faeroe.

VQ1GDW: Willie of VQ1GDW fame is now in the relative tranquility of CX. Call there is CX9AAN. Logs and QSLs for the VQ1 operation are with W2CTN.

Chad: 5U7AL has plans to operate from here in October or November.

Muscate: MP4MAY on 14115 at 2000z.

Lesoto: Ulli, long known as Z58L, now signs 7P8AR, the new call for this country. Heard on 14197 listening on 14202 at 0600z.

Antigua: Harold, formerly ZD8HL, etc., will begin operating from here shortly.

Ethiopia: ET3USA on 14217 at 0030z.

Pitcairn Is.: Ron W3DWG will be active for approx. six months from here. Most operation will be 21 Mc. s.s.b. with 21350 as the most preferred freq.

Cameroun: Martial TJ1AC on 21334 at 2140z. QSL Box 20, Bafoussam, Cameroun.

South Orkney: VP8JD reported on 14 and 21 Mc. c.w. at 2100 and 1800z.

Andorra: PX1EQ, 1629z on 21374. QSL to DJ8EQ.

Svalbard: Erl JW3NI on 14038 at 0311z. QSL to LA3NI.

Yemen: 4W1C on 14102 at 1930z. QSL to W2CTN.

Tristan de Cunha: ZD9BI on 14225 at 1930z. Mt. Hermon: 4X7MR on 14215 at 1930z.

Corsica: Pierre F2WS on 14215 and 14105 at 1900. QSL to home call or via Bureau.

Monaco: Jean 3A2MJC on 14225 at 0540z. Also holds call 3A2EE. QSL to Jean, Kennedy St., Monte Carlo, Monaco.

(Most of the above by courtesy of Dr. Howard Klein, DX Editor of LIDXA.)

Tuamotu Arch.: FO8BU QRV 14103 0615 daily.

Mariana Is.: KG6SA 14205 1425. QSL c/o U.S.C.G., 935, Box 338, F.P.O., S.F., Cal., 96950.

Bismark Arch.: VK9VM 21340 1030.

Isle of Wight: G3RXC 3.6 s.s.b. 0900.

Easter Is.: CE0AE 14200 0800. QSL WA5PUQ.

Sw Andreas: HK0AI 14165 0600. QSL via W9WHM.

W. Caroline Is.: KC6BY 14205 1603.
W. Pakistan: AP2MR 14110 1700. AP5HQ 14025 0800.

Guernsey: GC8HT 14133 1400 and various other times. Also GC3FMK 21040 1200z.

Kure Is.: KH6EDY 14271 0730.

Andreanof Is.: KH6FOJ/KL7 14212 0745. Also Fox Is.: KL7CGA 14270 0700.

Sth. Georgia: VP8IE 14117 1845. QSL W2GHK.

Gough Is.: ZD9BH 14 c.w. with very QRP rig. Marion Is.: ZS2MI 14178 1400. QSL ZSAOI.

(The bulk of the above supplied by Geoff Watts, Editor DX Newsheet in U.K.)

Niue: ZK2AE active on 80 mx a.m. Try around 3.8 at 0800.

St. Helena: ZD7KH 14200 and 21335 around 0700. QSL K2HVN.

Tristan da Cunha: ZD9BE is about to QRT but ZD9BH will carry on. 14 s.s.b. QSL W2GHK.

Botswana: ZS9L is on 14178 transceive.

Comoro Is.: FH8CE 14135 1730, 21340 1800, 28575 1000. Also active is FH8CD.

C.A. Rep.: TI8DL 14102, 14215 after 0600. QSL Box 924, Bangui.

Falklands: VP8FL 14125 2000.

Port. Timor: CR8AH 21250 1000 on a.m. mode. QSL J. Santos Leite, Box 225, Dilli.

Mongolia: JT1KAA is reported as consistently strong on 14105. Listens 14200. QSL Box 639, Ulan Bator.

Fletcher's Ice Island: WA1ARF/KL7 14315 0800.

Trinity Is.: KL7DND 14306 0900.

(The above received from DX Ed. Goe Studd of N.Z.A.R.T. "Break-In".)

Bay Island: HR8EB is reported very active from here on 14 s.s.b. after 0600.

Taiwan: BV2A is QRV 14 c.w. 1000. QSL P.O.B. 101, Taipei, Taiwan.

Deception Is.: LU2ZI 14010 also on 7 Mc. 1000.

Pakistan: AP2NMK is reported active now.

Lord Howe Is.: Once again Arch Hewitt will spend his vacation at this tranquil spot. He will be active from Oct. 3 to 20. Mode AI and mainly 14038, but other bands if conditions are suitable. Call VK5XK/2.

ACTIVITIES

Dave VK3QV says 28 Mc. has picked up again. He lists the following as worked: KA2KK, KR6LS, KGX6D, VK8AU, VS8FS, VS9AB, ZE1JJ, 9J2DT, VK9XI, VK9DJ, VK9BS, VK9BK (Lae), plus most of the W areas. Dave is off on a world business tour. No DXing included. (Bon voyage.—Al.)

Chas VK4UC writes to say he is QRL with many things, but did manage these on 14 Mc. c.w.: HA8UF 0800, HA8DA 0440, DJ7DS 0530, DL6ZZ 0500, G3UBE 0700, HB9AE 0600, YU-5JYZ 0600, Y08AW 0500, UF8FS 0300, UY5FF 0400, F5MG 0800, G8RL 0600, SPIBHX 0440, KP4CLB 0630, I1BRM 1000, VK0CR 0600, FZ-1BW 1030, GC2FMV 0640, DJ5JK/LX 0420, VP8WR 1030. Best QSLs received were KJ-6BZ, VO1AW, WA8SVU/VP9, VR3L, CT2YA,

KG6IF, HS1JM, GB2SM, TG8IA, YS1VST, ZL1AI and 5W1AS.

Peter VK4PJ reports various openings on bands 40 through 10 mx. On 14 s.s.b. he lists the following: DL80A, PY3BXW, ON4IZ, G8FC, UA4KED, I1RTF, 4X4AM, SM5AZU, IS1LO, G3NAS, F3DD, SM5HK, UQ2KBH, EA8BQ, KL7WAH, PA0EC, OH5DH, OA3KBO, LX1WR, 9L1KG, PA0DEC, HB9YQ, F2BWP, LA6EL, PX1IE, CE3ZN, PY3APH, CT1BT, OH2BH, ON4QJ, E14AZ, G8NY, W3DWG/VR6, ZP3AL, VS6FV, G6TA and many more.

Peter reports South Americans workable on 7 Mc. at 1030z. (Thanks OM.)

Dud VK4MY logged these. Conditions are on the improve he notes. 14 s.s.b.: VK4HG 14160 0716, PJ3CR 14155 0700, WOICJ/KM6 14300 0045, TG9OP 14120 0700, VE1WH 14180 0730, VE8MK 14125 0725, IT1TAI 14120 0500, T15CMR 14150 0600, VR2CC 14110 0550, VQ5G 14100 1212, PJ-3CC 14150, 0700, CT1BT 14190 0630. On 14 c.w. Z56BL 14032 0700, 9L1KG 14050 0813, 6W8DD 14050 0730, and more.

Ken VK3TL has a lament. He is running out of countries to work. 14 Mc.: SL2ZI, IS1RUA, DJ2IB/LX, VQ9HJB, 9L1GQ, 9L1KG. QSLs revd. were VQ9AR, ON8XA, CR4BC, MP4MAW, CX9CO, OK5KMB, 5W1AA, CT3AS, VQ8CA, U5ARTEK, CX9AAU, CX9AAN, GB2SET and EL2S.

Keith VK4DU from his Utopian QTH worked the following on 14 c.w. in one hour using 2.5 watts and doubling in the final: DL2KM, K6TYQ, OZ7KV, I1AMO, F8VN, WA8FHF, G3CQS. Also many QSOs have been made on 21 Mc. with less than 1 watt.

SOME QTHs

9L1KG—Yasme.
DJ2IB/LX—DJ2IW.
PJ3CC—W3AYD.
VQ9G—Box 191, Mahe, Seychelles.
VK4HG (Willis Is.)—Via VK3 Bureau.
5W1AS—Box 498, Apia.
VP5RS—KTUXN.
TA2AC—K4AMC.

OH AWARD (issued by S.R.A.L.)

Contacts must be made after June 10, 1947. DX applicants have to produce evidence of QSOs with at least 15 OH stations in at least five OH call areas. Certified by two A.S. officials is sufficient. C.w. or phone, or mixed is okay. Contacts with marine stations will not count. Details required are station worked, date and QTR plus report. Send list with five I.R.C.'s to OH Award Manager, P.O. Box 806, Helsinki.

(Supplied by courtesy of Award Hunters' Club.)

SUMMARY

My thanks again to the column's supporters. DX news, reports on conditions, QTHs etc. are always needed, so please fellows, help swell the mail bag. 73, Al VK4SS.

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FIFTY AND OVER

BY ROY HARTKOFF*

VK3ZFC, VK3ZFC, VK3ZFC. This is VK3ZOM Mobile calling you, Bert. VK3ZOM Mobile calling you. Over. VK3ZFC, VK3ZFC, . . . Received you that time quite okay, Bert. The converter seems to be working better now. Yes you heard right. I'm mobile. I've been meaning to get round to it for months. That's why I haven't been on the air for the last week or so. I've been too busy getting the gear ready. Hope you can still copy me, VK3ZFC, this is VK3ZOM Mobile listening for you; over. . . .

VK3ZFC, VK3ZFC. This is VK3ZOM Mobile returning. Yes. Bert, all copied

* 34 Toolangi Road, Alphington, Vic.

a hundred per cent. Thanks for the report. Glad to know that it's such a good signal. You say you're surprised at the lack of mobile flutter? Well, Bert, I'm not actually driving along. I'm stationary mobile in the drive at the side of the house. I've got one or two little things to finish off before I can just jump in and drive off. Part of the rig's sitting in the glove box and the rest is on the seats and the floor. But never mind, I've made a start and that's the main thing. VK3ZFC, this is VK3ZOM stationary mobile listening for you; over. . . .

VK3ZFC, VK3ZFC. This is VK3ZOM mobile returning. Glad to hear you like the modulation, Bert. I suppose it is better than most of the mobiles. It's funny that you should say it's almost as good as the home modulator because actually it is the home modu-

lator. I'm going to get another one, of course, but I wanted to get on the air as quickly as I could so I used what I had. As a matter of fact the rest of the rig is the home gear too. It's a bit hard to tune the AR7 when it's sitting on the floor in the back and, of course, there's no room for anyone else in the car except the driver. But never mind, the main thing is to get mobile. One can always fix up the little details later. VK3ZFC, this is VK3ZOM mobile listening for you; over. . . .

VK3ZFC, VK3ZFC. This is VK3ZOM mobile returning. Well, Bert, I must say you have got a good memory. It's months since I told you about the home rig. Fancy you remembering I am running 80 watts! You're quite right. The power supply is a bit of a problem. But I'm not actually worried about running the car battery flat. You see I'm using the home power supply with a mains lead out through the window. That's one of the details I'll have to organise before I can actually operate while I'm driving along. VK3ZFC, VK3ZFC. This is VK3ZOM mobile listening for you; over. . . .

VK3ZFC, VK3ZFC. This is VK3ZOM mobile returning. It's strange you should mention aials, Bert. No, I'm not using a whip; that's another little detail I'll have to fix. But meantime I figured that since I had to have a mains lead out through the window I might as well have the home aerial lead as well. It saves such a lot of time and trouble. I'm afraid I'll have to stop now, Bert. I've got to clean the car and the leads aren't long enough for me to be able to work mobile at the other end of the drive. Mind you, as I said, there's a couple of little details to fix up, but I've got started and it's fine to know you're operating away from the shack and independent and out in the fresh air with the birds singing and everything. Why don't you go mobile yourself, Bert. It's not as hard as you might think and if you get stuck maybe I could give you some tips. Anyway, you ought to try it some time. VK3ZFC, this is VK3ZOM mobile off and clear and closing down. Cheers, Bert. I'll work you mobile later when I've shifted the car back to this end of the drive. VK3ZOM mobile closing down. Cheers. — . . . —

"CQ" W.W. DX CONTEST

PRECIS OF RULES, 1967

Dates: Phone: October 21 0000 hrs. GMT to October 22 2400 hrs. GMT. C.W.: November 25 0000 hrs. GMT to November 26 2400 hrs. GMT.

Bands: All authorised frequencies between 1.8 and 29.7 Mc.

Cyphers: RS/RST plus zone. (30 Eastern Australia, 29 Western Australia).

Scoring: QSO point value: (a) 3 points between stations in different continents; (b) 1 point between stations on same continent but in different countries; (c) contacts between stations in the same country are permitted for zone and/or country multiplier but have NO QSO point value. Multiplier is determined by the number of zones and countries worked on each band.

Final score: (a) single band, zones plus countries multiplied by QSO points; (b) all band, sum of zones and countries from each band multiplied by total QSO points of all bands.

Divisions: (a) Single operator, all bands OR single band; (b) multi-operator, single transmitter, all band only; (c) multi-operator, multi transmitter, all band only.

Logs to go to "CQ" World Wide DX Contest, 14 Vanderventer Ave., Port Washington, L.I., N.Y. 11050, U.S.A.

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OTL/76

VHF

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

N.S.W. V.E.F. AND T.V. GROUP

The current v.h.f. topic is the work in progress at Dural. The new 2 mx array comprising four 10-element beams in quadrature is laying down a mighty signal. Reports of satisfactory reception have been received from Canberra, Newcastle and several points west of Sydney. Plans are in hand to increase the transmitter efficiency and this should help raise the signal level in some of the more remote regions. Further 2 mx improvements are in progress including the construction of a converter less prone to cross-modulation.

On 6 mx Dural now sports a new antenna for 53.86 Mc. This antenna, made and donated by George 2ZDR, is a coaxial dipole. The tip of the new 6 mx antenna is approximately 67 feet above ground, just below the two metre array. At a later date ground-plane radials will be added to this antenna. A worthwhile improvement has been noted in the 6 mx coverage from VK2WI, one contact being with VK2ZVL mobile in the main street of Newcastle. Keith at the time was radiating four watts of r.f.

While the direct coverage from Dural is being gradually extended, we must thank those stalwarts who front-up every Sunday to relay these broadcasts on u.h.f. and to the more sheltered areas. Owing to the sheltered nature of the Wollongong Amateurs, the coverage to date has been rather scratchy. However, things may improve as VK2AND has volunteered to set up on 144 Mc. and relay back to Wollongong on the Illawarra net frequency of 53.982 Mc.

Any districts not directly, or indirectly, covered by the v.h.f. broadcasts, and who would like to hear them regularly, should contact the V.h.f. Group Secretary, Norm 2ZXC. It is possible that we may be able to organise a relay or if tape recorders are available a weekly exchange tape of the broadcast.

The 6 mx event of August was the visit to Sydney of John FK8AB maritime mobile. John was operating on 52.1 Mc. and tuning 52 to 54 Mc., especially listening to the 6 mx net frequency. For those who would like to work John, he has only two transmitting frequencies, 52.050 and 52.1 Mc. Whenever his ship, Nickel One, is in Australian waters he will be active on 6 mx. John will also be active whenever he is in his home port of Noumea.

How many New South Welshmen worked the 6 mx DX during the Scouting Jamboree on Saturday, 5th August? During the pouring rain in the afternoon, VK4s and VK5s were heard at SS levels, but only working each other not VK2s. Six metre DX sure pops up at the most unexpected times.

Talking of DX. It would seem that one Sydney station is getting set up for the 2 mx DX season this summer. Ross 2ZRU was recently heard testing his new 2 mx s.s.b. exciter and talking about the linear coming up. As Ross has a 60 element array, the locals will hardly miss his signal.

Finally, if these notes appear in time, don't forget the combined car trial and fox hunt on Sunday, 8th October. The fox will be 2ZAU, operating frequency for the hunt being the 53.866 Mc. a.m. net. 73, Keith 2ZAU.

VICTORIA

Activity in Victoria is still at rather high level. In Melbourne some 20 new stations have appeared on 2 mx. 6 mx is still very popular with most activity during commuting times and at week-ends. Although no DX reports have been received, there have been frequent contacts between Melbourne and the Northern Country areas.

The VK3 V.h.f. Group converter project is well under way and by the time you receive this "A.R." there should be quite a few units in service. Converters for 2 mx and 432 Mc. also fully transistorised are in an advanced state of development.

Copies of the VK3 Field Day rules and scoring can be obtained from the V.h.f. Group.

Any readers requiring further information of the VK3 V.h.f. Group's activities should write to the undersigned or the Secretary V.h.f. Group, P.O. Box 36, East Melbourne, Vic., 3002. Until next month, 73, Cyril 3ZCK.

4th Annual V.h.f. Convention: The VK3 V.h.f. Group will hold its 4th Annual Convention over the week-end of 7th and 8th October, 1967, at Geelong. The V.h.f. Group and the Geelong Amateur Radio Television Club have combined to organise and arrange the programme for this year's Convention. Don't forget the dates: Saturday and Sunday, 7th and 8th October, for the V.h.f. Convention.

Coming v.h.f. events in VK3, Oct. to March:
Sat./Sun., 7th and 8th Oct., V.h.f. Convention.
Sun., 15th Oct.: 1st V.h.f. Field Day.
Sun., 15th Oct.: 2 Metre Scramble.
Wed., 18th Oct.: V.h.f. Group Meeting.
Wed., 25th Oct.: 2 Metre Fox Hunt.
Sun., 12th Nov.: 2 Metre Scramble.
Wed., 15th Nov.: V.h.f. Group Meeting.
Sun., 19th Nov.: V.h.f. Field Day.
Wed., 22nd Nov.: 2 Metre Fox Hunt.
Sun., 10th Dec.: 2 Metre Scramble.
Sun., 17th Dec., V.h.f. Field Day.
Wed., 20th Dec.: V.h.f. Group Xmas Party.
Wed., 27th Dec.: 2 Metre Fox Hunt.
Sun./Mon., 31st Dec./1st Jan.: VK2/VK3 Field Day.
Sun., 14th Jan.: 2 Metre Scramble.
Wed., 17th Jan.: V.h.f. Group Meeting.
Sun., 20th Jan.: V.h.f. Field Day.
Wed., 24th Jan.: 2 Metre Fox Hunt.
Sun., 11th Feb.: 2 Metre Scramble and National Field Day.
Wed., 21st Feb.: V.h.f. Group Meeting.
Wed., 28th Feb.: 2 Metre Fox Hunt.
Sun., 10th Mar.: 2 Metre Scramble.
Sun., 17th Mar.: Final V.h.f. Field Day.
Wed., 20th Mar.: V.h.f. Group Meeting.
Wed., 27th Mar.: 2 Metre Fox Hunt.

Eastern Zone: Nothing special to report from the Gippsland area. No Es openings observed, and each 28-day cycle is better than the one before and gives a monthly peak average of 26-32 Mc., and often goes as high as 39 Mc. to the Pacific. The boys in the Zone are getting ready for the coming DX season and are looking for 2 mx a.m. and s.s.b. contacts after 2100 hours each Sunday evening. 73, George 3ZCC.

SOUTH AUSTRALIA

It is apparent that the majority of operational v.h.f. enthusiasts in VK5 are ardent contest seekers. The support given to the most recent R.D. Contest was extremely gratifying. Many fine scores were noted on the v.h.f. bands especially those of 5ZTS, 5ZXR and 5ZUL, who spent a considerable amount of time on the bands.

Considering that Limited licensees are now added into that complex arithmetical state scoring formula and providing that all the respective logs are submitted to the F.C.C. by the VK5 v.h.f. operators the State Trophy may again become the property of the VK5 Division for the ensuring year.

Of late Rod 5ZSD ex 6ZDS has been airing his gear as he progressively unpacks his equipment. Barry 5ZMW is also currently refurbishing his gear with an elaborate system of linear amplifiers for both 6 and 2 mx, utilising QB3s, for use with his s.s.b. exciter. Numerous other Ham shacks are undergoing changes for increased radiated power.

Local activity has been reduced due to the spate of building, nonetheless all for a good cause. Continuing, however, is the daily schedule between Herb 3NN and Mick 5ZDR to evaluate the propagation characteristics between 144 and 432 Mc. 73, Colin 5ZHJ.

WESTERN AUSTRALIA

One of the best ever junk sales, with Roy 6RY with the hammer doing a sterling job, should stimulate further activity. Several V.h.f. Group members completed their fox hunt gear or added to it. Valves sold suggested power increases were contemplated in some stations.

Laurie 6ZEA is going to Dirk Hartog Island (near Shark Bay on the W.A. coast) with an expedition party of 30 boys from Wesley College. The party will split into four groups, linked by radio with Laurie as chief operator. He hopes to set up gear on 6 mx and is optimistic of making contacts from this radio dead spot.

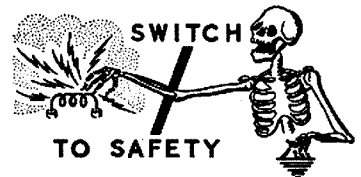
Activity on 6 and 2 mx continues mainly on the 6 mx a.m. net, 52.586 Mc. (crystal frequency 8764.444 Mc.). Two metres is a good band and not difficult to build gear for—we should make more use of it in VK6. 73, Laurie 6ZEA.

TASMANIA

Not a great deal of news this month as activity is at a low ebb at the moment. It would be greatly appreciated if all correspondence for "A.R." is received at my address, Flat 6, 7 St. George's Square, Launceston, 7250, by the 24th of every month as these notes have to be in Melbourne by 28th of each month.

6 Metres: Activity on this band is mainly confined to the 53.035 Mc. a.m. net frequency. At the time of compiling these notes, no DX has been reported to me.

2 Metres: Activity on this band has been very low this month. This could be due to the cold weather we have had lately, but should pick up as the warmer weather arrives. Bevan 7ZBW has recently acquired some 2 mx f.m. equipment and is operating on Channel A and B. So you Melbourne f.m. enthusiasts keep an ear open for Bevan when he points his beam in Melbourne's direction.



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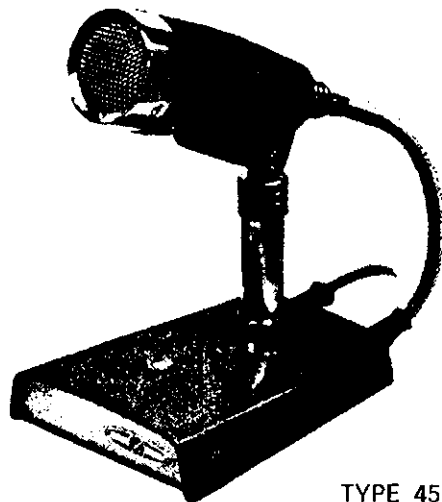
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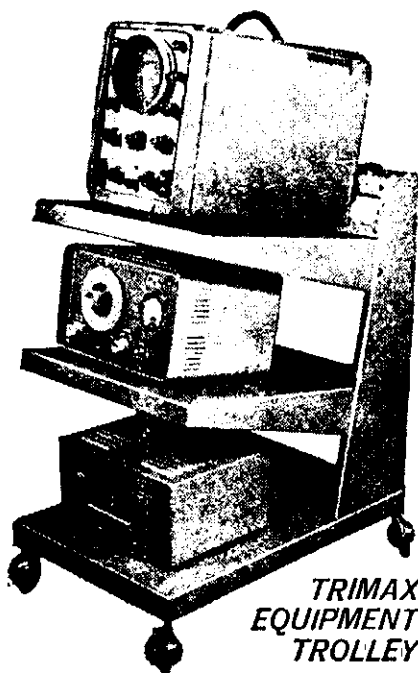
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L37/A

SWL

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

The R.D. Contest was the major activity for many listeners during the month of August, and excellent conditions once again prevailed. There were many VK6s and VK9s to help the scoring along and some good logs will be submitted.

We look forward to our next contest which will be the VK/ZL World Wide DX event to be held over two week-ends in October. Details have been published in "A.R." and you are advised to pay particular attention to the rules covering the Receiving Section. It is a very interesting contest, with a very high scoring rate and there is always plenty of good DX to be found.

VK3 Divisional News: The VK3 S.w.l.'s found the R.D. Contest slightly different from other years. The Melbourne boys appear to favour the club station approach rather than entering the single operator section. The boys on a.m. receivers had a lean time, as most of the stations heard in Melbourne were on s.b. and if you could not resolve it you missed the majority of stations.

The elections for office-bearers for the next twelve months will take place at the September meeting. If you have missed out on attending meetings during the year you will not have seen demonstrations of teletype equipment, v.h.f. f.m. reception, tunable i.f. receivers, lasers, Project Australis and the use of Aegis coils, so remember fellows, the lectures for the rest of the year are as interesting as those which have been given previously.

VK2 Divisional News: Once again I have no official news from this group, and the only report I have is that attendances at the meetings have been very poor, and that any suggestions for the advancement of the group will be appreciated. I did hear in the broadcast that visits to such places as the O.T.C. Doonside are proposed in future. I can report, too, that all cards received at the bureau have been despatched.

DX NOTES

The best news we have had is the appearance of Don Miller from Rodriguez Is. as VQ8CBB. After a long hunt I managed to log one of his QSOs. It must have been very helpful to this DX-pedition to have a VK2 signal come up on their frequency calling CQ.

W3DWG/VRS is on the bands, QSL via G3DO for those outside the States. G2CFMV has been on the 20 mx band s.s.b. quite regularly around 5 p.m. E.A.S.T. He is on Jersey.

CR6GO is on leave and operating from /CT1. ZD7DI was working into Sydney recently. His QSLs go via the R.S.G.B.

Want some good Morse practice? Then look for KH6AFS who has one of the best transmissions I have heard.

AROUND THE SHACKS

Peter Drew is down at Balcombe Sigs School. Using an Eddystone EC10, Peter has made a slather of the R.D. Contest and recorded some very fine DX as well. On 7 Mc. c.w. Ws, JAs, VE3DZV, UW0FP, KH6EPW and on s.s.b. KH6FLY/MM, KC4USN, HK6AWX, HK30J, HC1BY, OA4NXS, OA4GQ and G3A0O. On 14 Mc. c.w. KH6CLJ, Y08DD, UA9KCA, and s.s.b. SM5YV, LX1RB, G13JM, TG9OP, HR1KAS, CT1BT, F08BW, EA8CB, UC2BF, GB3BSI, VE0MZ, VP9FC, 5W1AS, DU1FH and many others. Only other loggings by Peter were on 21 Mc. where he logged FB8XX on c.w., ZS2OM, ZE2JA and KR6BF on a.m., with ZS6FF, KX6BU, FK8BK, VKOCR, VK9VM, CR7FM, KA9MF, ZS6KC and ZS4K on s.s.b. Ws have been noted on 20 at 1130 to 1300 hours GMT.

Eric Trebilcock has logged his usual issue of good 'uns. VP1MW (Box 554, Belize) and W2NAU/MM were amongst the doings on 7 Mc., YV5ACP, HK3BAE, KP4BBN, HK7XI and ZD8J were the best on 14, whilst it is pleasing to note that Eric logged 30 Europeans on 3.5, a band which frequently reveals much hidden c.w. DX in the very early hours. 387 cards in 81 countries and 31 zones are his tally so far this year, the latest being from F08BJ, F08BT, KR6KJ, W7DEL/KS6, OE2HVL, TI2PZ, VP2MK, VU2GW, VU2JA, VU2DIA, ZB2AX, ZS6JK, 9V1NV and 9M4LP.

Some of the more interesting calls I heard on 20 mx c.w. were LA4NR, YN1MO/W4, EA8CG, VQ8CBB, KX6FM, FB8YY, UQ2CQ/

UA0, CR6GO/CT1, XE1AAN, ON5ZO, FM7MO, VS9MB, G13RUV, CT3AS, CO2FM, VR4CR, LU4DGP, 4X4CJ, TG9EP, TJIQQ and HB0ADH. Whilst on s.s.b. EA3NI, CR6IK, TG9EP, ZD7DI, YS1SRD, VK0GP, ON8XA, OH2OI, 5N2AAX, CT1SO, YS1AG, GC2FMV, OX3WX, 5Z4KL and VQ8CBB. A lone a.m. station was CT1NW. The 20 mx band has been outstanding at this QTH, the Europeans being heard nightly at around 7 p.m. our time, and still coming in 12 hours later.

Ernie Luff has logged the following on 20 mx s.s.b.: UA6XG/P, LA8NK, LU9DM, ZS3HX, ZS6YE, ZS5FY, UW0AH, UA1CK/JT1, ZLSAC, CR7CO, ZS6AIP, EA3NI, KL7FAY, CT1EE, SM7TE/M, VE0MZ, EL2AC, 9L1KG, 4UIITU, KP4AST, EI2BG plus the usual Gs, etc. Inward QSLs are K9JJR, ZS4F, CX9CO, CN8BF, CX8AAN, VR3L, KV4EY, VK2AXS, OY7ML, 3C3ELA, UP2NV, UA3CT, DL8KG, JA2GZ and JA1OEA, the latter two being for 15 mx.

Finally, from Mac Hilliard comes news that the 10 mx band is on the improve, with strong signals coming in from West Coast U.S.A., DU and JA, plus a good signal from PY2AJE.

Well chaps, that winds it up for this month. In the meantime all the best in the VK/ZL, de Don L2022.

★

Correspondence

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

FOREIGN OPERATION

Editor "A.R.," Dear Sir,
I have been advised per medium of "Dialog," official magazine of the International Amateur Radio Journalistic Society, that following efforts by Cliff Evans, K6BX, creator of C.H.C., Chairman I.A.R.J.S., etc., liberalisation in operating procedures has been effected in the aforementioned European countries.

Amateurs visiting Hungary can now obtain permission to operate using their own call /HAS. It is not necessary that one's own country has a reciprocal licensing agreement with Hungary. This country's action is unilateral with no strings attached. It is simply a person to person goodwill action.

Also nationals of all countries visiting Yugoslavia may obtain YU7 calls and operate freely without any requirement, or any bi-nation treaty.

Poland, too, has announced similar actions and relinquished need for any reciprocal treaty. Gs who have mobile permits may now operate /M while touring Hungary and Yugoslavia.

It is also permissible now that visiting Hams or any Hungarian may send third party messages to Hams elsewhere in the world and vice versa. Same applies to Yugoslavia.

Ham Radio moves one step further ahead.
—Alan Shawsmitth, VK4SS,
Third Vice-President, I.A.R.J.S.

★

YOUTH RADIO SCHEME

Another month has gone by in the Y.R.S. and things are really getting into gear with more and more boys becoming interested in radio. The club leaders are doing a magnificent job in keeping the movement going. The Correspondence Section fills a very big gap in the Y.R.S. and special thanks should go to past and present leaders of Correspondence Groups. Without these men, some being former Y.R.S. students, a large number of boys would be without a fascinating hobby.

The new issue of the N.S.W. Newsletter has been received and is full of news and information. This is a very good effort by the committee and represents much time and co-operative effort. Bog VK1RD has resigned from producing the Newsletter due to the many pressures of the work involved in being Supervisor of the Correspondence Section.

A note of interest is that the Intermediate Syllabus has been revised and now follows the Junior Syllabus a little more closely.

CLUB NEWS

VK1: Canberra Y.R.C. has had 14 out of 17 students pass the Elementary recently. These will go on to the Junior Certificate while a new class is being formed for the Elementary.

VK2: There are six new club registrations. Welcome to Newton College, Scone High, Marist Brothers High, Sydney Teachers' Col-

lege, Lyneham High, and Dee Why. There are now 31 active clubs.

Westlakes R.C.: David Fraser has received the call sign of VK2ZYK and is one of the few high school students to reach this coveted ambition.

VK3: A general meeting of all member clubs and correspondence members was held recently with over 30 members present representing 60 per cent. of the clubs.

VK4: Bundaberg.—The boys are still working on their 3w. amps.

Maryborough.—Office-bearers are President, Paul Russel; Secretary, Ken Ashford; and Treasurer, Ken Widdeyes. The club has some solderless assembly crystal sets working very well. There is also a 50w. station operating regularly from here as VK4NN and can be heard on the net the first Saturday of the month at 9 a.m.

Gympie.—There has been some local newspaper publicity for Y.R.S. resulting in three new members.

Clontarf Beach.—Some successful experiments are being done with modulated light beams and some good distances have been achieved. 73, Mona.

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FEDERAL

INTRUDER WATCH SERVICE

You have already heard about a W.I.A. proposal to inaugurate an Intruder Watch Service in Australia in line with similar activity being carried on in Regions I. and II. these past few years.

Why do we need an Intruder Watch? In theory we don't! In practice we shouldn't! But in fact we need one because countries DO radiate transmissions in the exclusive Amateur band frequency assignments—sometimes in defiance of International Telecommunications Union (I.T.U.) conference agreements, and sometimes because the countries concerned are non signatory to I.T.U. agreements.

In respect of the latter, Administrations can only do their best to negotiate with the country concerned for the removal of the offending station to an out-of-band frequency; but in regard to the former it should be possible—and indeed a reasonable expectation—that an Administration will negotiate for the removal of unauthorised transmissions from Amateur band assignments in the same way as they would act to have interference to commercial services corrected.

There are, of course, problems in the case of the Amateur Service. Firstly, we have multi-frequency assignments in a number of bands throughout the frequency spectrum as compared with fixed frequency allocations in the case of the commercials. A report of interference to a commercial transmission can bring prompt action because only one frequency is to be monitored and dealt with. On the other hand, interference to the Amateur Service concerns a frequency assignment complex which is difficult to imagine will be monitored 24 hours a day.

This is where the Amateur and Short Wave Listener can play an important part in effectively monitoring Amateur frequencies, and with a standardised and co-ordinated reporting system, assist the Administration in the problem of removing unauthorised transmissions. In Regions I. and II. this system is known as the Intruder Watch Service and it works to the advantage of the Amateur Service and the various Administrations concerned.

The W.I.A. believes the Australian Administration will co-operate in such a system if accurate information can be directed to its monitoring stations.

The British Post Office (U.K.) and the Federal Communications Commission (U.S.A.) co-operate expertly with the Amateur Service representative society on this problem in these two regions. We confidently expect the same co-operation will exist in Australia.

Basically the A.R.R.L. and the R.S.G.B. have the same system of monitoring, recording and reporting. The A.R.R.L. uses a triplicate carbon copy system wherein the original copy goes direct to the F.C.C., the second copy to the A.R.R.L. headquarters, and the third copy is filed by the Intruder Watcher making the report. The R.S.G.B. uses separate forms to achieve the same recorded details of interference.

The American system places the responsibility for accurate reporting on the appointed watcher who forwards the appropriate completed form directly to the F.C.C. at the same time telephoning the information to the nearest monitoring station. The R.S.G.B. system, on the other hand, correlates the reports from its watchers and forwards a comprehensive report on a special form to which is attached a copy of "traffic" handled by the interfering station. Both Societies circulate regular information bulletins and lists of known intruder transmissions to the members of their Intruder Watch Service.

The W.I.A. Federal Executive has collected all the information on the systems used overseas. From this information will be formulated a satisfactory system suitable to Australian conditions. Before the details are worked out, however, we need to have an organisation to back the system. We will no doubt have little trouble in obtaining the services of officers within the Divisions for the correlation of the detailed information. But the system won't "get off the ground" without a considerable number of Amateurs located at many points around the Commonwealth prepared to devote a reasonable amount of time

each day to monitoring interfering transmissions and accurately filling in the appropriate forms which will be supplied by the W.I.A.

This is where YOU—the Amateur and S.w.l.—can play your part in protecting your own bands. David Wardlaw, VK3ADW, has been appointed Federal Operations Officer of the proposed Intruder Watch Service. Can you assist to get this project under way? If so, please drop a note in the mail addressed to:—

D. Wardlaw, VK3ADW,
Intruder Watch Service, W.I.A.,
Box 2811W, G.P.O., Melbourne, Vic., 3001.

Remember, you don't have to be a licensed Amateur! We would like to encourage S.w.l.'s to also participate in this useful service. If you are interested, ACT now!

—G. Maxwell Hull, VK3ZS,
Federal President, W.I.A.

FEDERAL QSL BUREAU

The Milan Radio Club sends details of its Milan Award available for contacts with members of the Club or with stations in the Province of Milan. Club members count 2 points and Province stations 1 point. DX stations must earn 10 points for the award. Applications together with 8 I.R.C. to the Awards Manager, IIRCD, Cleato Realini, Via Rimini 13, Milan, Italy.

The L.F.R.A. Panama advise a change of address for all correspondence including the QSL Bureau. The new address is P.O. Box 9A-175, Panama 9A, Republic of Panama.

The new Inward QSL Manager for the Queensland Division is Tibby Scholz, VK4HR, 95 Stephens St., Morningside, Brisbane, Qld., 4170. Tibby was appointed on the recent demise of our old friend and colleague, Jack Files, VK4JF. Jack held the job down for a score of years, giving the job his undivided attention and knowledge and extending the maximum of co-operation to all his fellow QSL Managers.

Results of the 1966 All Asian DX Contest are just to hand from the J.A.R.L. Australian award winners listed are VKs 3AXK, 7SM, 3APJ, 3ABA, 2APK, 9CJ and 9GN.

Traffic through the Federal Bureau for August again increased to over 11,000 cards. Obviously the slump in June was caused by the diversion of shipping from the Suez route to the Cape, as a consequence of the Middle East conflict. While the R.S.G.B., N.Z.A.R.T., S.S.A., D.A.R.C. and some other Bureaux are observing the new VK QSL arrangements, other Bureaux from which big consignments are received, are so far ignoring the instructions. Forceful reminders have been sent to the J.A.R.L., the A.R.I. and Box 88, Moscow.

VK3ZMI was the first applicant for the 1966 "CQs" mentioned in these notes in August.

—Ray Jones, VK3RJ, Manager.

NEW SOUTH WALES

COUNCIL NEWS

The President and Councillors have been meeting more frequently than usual, and in the last few weeks working parties of Councillors have been systematically, with the aid of the newly appointed Secretary (Mrs. Long) and Councillor George Wilson, virtually re-writing all the records and completely reorganising the Division's office services. A systematic filing system is being completed and the banking procedures have been completely overhauled. Ken Finney says that following the appointment of a Secretary, "a new look" Division will emerge.

SILENT KEY

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

Ex-VK4CW—Jack Worth.

The formation of the Federal Company will mean that the Division will need to be very efficiently run, and N.S.W. will be ready to accept and handle the requests of this organisation with promptness and accuracy. The re-organisation will result in the issuing of back Membership Certificates and members should receive these soon. The issue of Certificates will in future become automatic as the system catches up with the backlog. Council has said that the membership drive is encouraging, but that there are still many more non members and as a challenge Council has suggested a target of 2,000 members this year.

The taped lecture service has now been handed over to the Secretary and all enquiries for the tapes should be sent to the Secretary for attention. The service has 43 lectures on tapes, some of which are illustrated with accompanying slides and country and interstate clubs and divisions are invited to use this service. The Morse tape service is a separate set-up and is handled by Ern Bodgkins, VK2EH, Mangrove Rd., Narara. Ern has 180 tapes in circulation. Don't forget to give details of the speed of YOUR recorder, number of tracks and enclose 25 cents for postage. You can, if you prefer, send your own tape, but allow time for Ern to copy for you.

The President reports that the Bulletin and the General Meetings will in future contain a report of Council activities in order to keep all informed of the Division's happenings and provide details of future events. A minimum of business will be handled at meetings with the emphasis more on lectures and rag-chewing.

BULLETIN EDITORS

Council has received the notice of resignation of the Bulletin Co-Editors from this position after the publication of the October issue. Gerry Sabin and Warwick Johnstone have both done this most important task for the last five years and have decided to pass on this job to two new Editors. Both Gerry and Warwick are involved in other Institute work which occupies a fair amount of their time. Council very much appreciates the past efforts of these Co-Editors and is seeking to find two Amateurs to take over the job. If you feel you would like to take a more active part in Institute affairs then here is a position to fill your need.

EDUCATION OFFICER

Harold Burtoft, the Education Officer, has asked to be relieved of his position after Christmas. Increasing private commitments are causing Harold to find it difficult to carry on in this position which he has run for the last seven years. Council is seeking someone to take over this position from Harold.

AUGUST GENERAL MEETING

The August general meeting was held at Wireless Institute Centre on Friday, 25th, being opened by President Ken Finney at 8 p.m. Ken gave a fairly comprehensive report to the meeting of the activities of Council and the Secretary. The President then gave the results of a questionnaire which was given out at the meeting last month in order to find out the members' choice of lecture topics. The results were as follows:

Antennae 39 points (14 per cent. of total), transistors 33, solid state r.f. 27, test equipment 25, v.h.f. 24, mobile gear 20, s.s.b. building 20, television 18, receivers 17, transceivers 17, s.s.b. theory 16, crystals 13, r.t.t.y. 10, DX and predictions 4 points. Total 283 points.

A further batch of forms was handed out to this meeting, but the results will not be known until later. The lecture being on r.t.t.y. will no doubt influence the result.

The President then introduced the lecturer, Mr. Pat Bennett, who spoke on r.t.t.y. Mr. Bennett had teleprinter machines set up coupled to a tape transmitter and showed how the machines go. Mr. Bennett had some very good slides and with his very easy to understand lecture the audience were quite engrossed in this r.t.t.y. and its possibilities. At the conclusion of his lecture Mr. Bennett was asked many and varied questions, and these showed that those present were very keen, and that r.t.t.y. is quite an attractive adjunct to Amateur Radio and could prove to be very popular in the future, depending on the release of

suitable machines to the Amateur ranks. The vote of thanks, duly carried, was moved by Bill 2AGF who apologised for the absence of the President and Council (they were meeting on urgent business) and the meeting then was formally closed by Bill on behalf of the President.

1968 CONVENTION

As announced earlier, the Convention will be held over the Australia Day holiday weekend at the end of January. Further details are to hand regarding the Annual Dinner, the cost of which has been firmly set at \$4.50. Dress for the occasion is lounge suits. Full details will be published in the Bulletin and in later issues of "A.R." when all details are finalised. A field day will be held but no details have been decided on yet except that Ken Finney says it will be different.

W.I.C.E.N.

Sunday the 20th saw some 30 odd cars and 70 Amateurs and XYLs spend the day at Dural Transmitter, erecting the much talked about tower for the antennae. Unfortunately, the tower was not originally dismantled by anyone present so the task of re-assembly was difficult. Considerable ancillary work was carried out as well and the work was not completed until 7 p.m. or so. Specially designed antennae for the W.I.C.E.N. net transmitters are to be fitted to the tower shortly.

The room for the Communications Centre at Acheson St. is almost complete and along with the renovation of the lower floor this area is now beginning to look sensible and tidy. 73, Stan Z2RD.

CENTRAL COAST RADIO CLUB

August appears to be a month of activity for the Central Coast Branch. The usual monthly meeting was held on Friday, 18th August, but with a most interesting lecture from a Newcastle Amateur. Mr. Ian Fyfe, VK2ZIF, described his single sideband transistor transceiver. In keeping with the components, the size of the unit was a mere 7 x 6 x 3 inches. A very thorough description of the unit was given, with the assistance of an oscilloscope to illustrate wave forms.

The lecture ended with an active question and answer session, and the issue of printed sheets on the transceiver.

HUNTER BRANCH

The September meeting of the Branch, held in the Technical College, was well attended to hear Lionel Z2LD speak on the design and manufacture of printed circuits in the shack. Apologising for his recent efforts with bright dip, that wonder chemical which cleans any metal and clears any classroom, Lionel gave a most informative discourse on all Amateurs need to know about making their own circuits, both simple and complex. Lionel achieved something which many lecturers hope for but seldom reach, that of audience participation in the display. Let you think that some of our young lads were dispatched to the etch bath, let me reassure you that the participation was in the form of assistance with the design of a simple circuit to be made on a 2½ by 3 inch board. Quite a deal of discussion ensued and the final design was the joint effort of everyone in the room.

Surrounded by the tools of his trade, including an electric radiator, several large plastic containers, cans of spray, chemicals and butane gas, not to mention stencil knives and the rest, Lionel made short work of painting the design and etching the circuit while the lecture was in progress. Even the old men of printed circuits, Ian Z2IF and Tony Z2CT, reported that they had learned something new and everyone went away delighted after carrying with acclamation the vote of thanks moved by Bill Z2WM.

During the business section of the meeting, President Frank Z2FX outlined the programme for the Field Day to be held this year at Bolton Park on Lake Macquarie on Sunday, 15th October. A full programme of hunts and a scramble for Amateurs and S.w.'s as well as events for the ladies and entertainment for the children have been arranged and this day looks like being another winner for the Branch. Henry Z2GK, that well known cooker of hamburgers, has decided to extend his field of endeavour this year and provide a midday meal for all attending the ground. The cost of this will be included in the registration fee for the day of \$1 per adult male or \$2 per family ticket, including children under 14. Children over 14 and any unaccompanied children will be charged 50c for registration.

Activities will commence with a 2 mx fox hunt following registration from 0930 to 1015. The hunt will end at 1055 in time for the

broadcast from 2W1, and the next event, a 40 mx hunt will commence at 1135 and end at 1230. A lunch break will be made from 1230 to 1330 and the first afternoon event will be an all-band mobile scramble from 1335 to 1415. At 1430 and lasting till 1545 a marathon three-transmitter 2 mx hunt will be held and prize giving will be made at 1615. During the day, pedestrian fox hunts and novelty events will be run, in addition to the usual quizzes. Some liquid refreshments for the thirsty hunters will also be available. Registration for the event may be undertaken at any time prior to or on the Field Day and all details may be had from Gordon Z2SG, 15 Marine View, Newcastle, N.S.W., 2300.

Since the installation of the new mast and co-linear aerial for 2 mx f.m. at the Westlakes Radio Club, Teralba, signal reports from many parts of Newcastle have been most encouraging. It appears that, except for some shadowed areas, a good overall coverage is now possible. This will mean ideal conditions for relay of the Hunter Branch broadcasts from and to the club.

Activity on the bands during the R.D. Contest was quite good and some seldom heard call signs were evident. Jan 2BJO operated the 2AWX rig and made 111 points, while several other calls including 2AHA/MCW (standing for mobile c.w.l.) were busy at it.

And amid all this activity, there must be some who have made something new and delightful during the year. Well, here's your chance to air the design and building at the October meeting of the Branch to be held in room 6 of the Clegg Building, Newcastle Technical College, Tighes Hill, on Friday, 6th October. This is the annual home-built equipment competition and Branch members are invited to take part for a prize to be given at the Field Day. So come along and join in the merrymaking with such as I who will be describing my one transistor amplifier built in a matchbox. Oh! and you won't forget the Field Day will you. See you, 73, 2AKX.

— . . . —

VICTORIA

The August meeting of the Victorian Divisional Council was held on Monday 28th. Apologies were received from John Beckett, VK3FE, and Mike Owen, VK3ZEO. Members arriving early were greeted to a steaming hot cup of coffee from a hot drink dispenser which is of a similar type to one which the Division has decided to buy to ease the problem of

refreshments at functions at the Divisional rooms. Another improvement at general and v.h.f. meetings will be the addition of additional chairs which will increase the seating accommodation.

The W.I.C.E.N. representative reported that the first of the vehicles is almost completed and the second has been started. At the present rate of installation both vehicles should be available well before the coming summer season.

The Division's Annual Dinner will be held on Friday, 3rd November, at the Oriana Room, McClure's Restaurant, St. Kilda Road, Melbourne. The charge of \$5.50 per head includes pre-dinner appetizers, the dinner and the services of a band for those wishing to dance. Don't forget, Friday, 3rd November, the Victorian Division's social event of the year. Until next month, 73, Cyril VK3ZCK.

EASTERN ZONE

Here we are again with the zone notes. I regret having to start on a sombre note. We are sorry to note the passing of our ex-zone member, Ross Bennett, VK3NS, of Doncaster (ex VK3ZAQ of Warragul). Zone members were active in the Jamboree on the Air, they were 3BB, 3AED, 3ZCG (from Morwell); 3QZ, 3ZAB (Traralgon); 3AWU (Yallourn). Quite a few members took part in the R.D. Contest.

Harvey 3ZWH is leaving the zone for VK4. One zone W.I.C.E.N. co-ordinator, Graham 3QZ, and Bert 3BB were invited to the local State Disaster Plan meeting on 23rd August. Our President 3ZCG attended the communications meeting associated with the Disaster Plan meeting on 31st August. Any news boys? Please let's have it. 73, Albert Cash, L3289.

WESTERN ZONE

Bill 3ZAX is still writhing under the indignity of a bent antenna guide pole—commiserations OM. V.h.f. bands are very active as usual. This has led to considerations of forming a v.h.f. club in the area for Hams and interested S.w.'s. Also worthy of note was the use of v.h.f. bands for the recent Jamboree of the Air. Taking part were Tony 5ZAI, Bill 3ZAX and Gavin 3AEJ. Judging by the number of boys who turned up at 3ZAX's QTH, it was quite a popular concern. I have no contact on h.f. bands at present but can assure readers we are slowly converting them to v.h.f. Good to hear Bob 3ARM on 6 mx! However, we do long for the day when we are proficient on c.w. Must QRT—new QSL cards won't send themselves. 73, Jim 3ZMS.

— . . . —

QUEENSLAND

IPSWICH AND DISTRICT RADIO CLUB

News for this month seems to be a bit scarce, possibly because I have spent most of this month in other call areas of VK and have not been in touch with local club members. However a little news has come to hand since I returned.

We were all sorry to hear of our Public Relations Officer's bout of the flu and hope he is well on the way to recovery by now. He was still able to send news to VK4WI so that proves he was still on the job—wog or no wog.

On my return to the club meetings, a lot of new faces were seen and looks as if the club will be gaining more new members—the more the merrier.

It was decided that with the coming of summer, the club's 80 mx Monday hook-up at 8 p.m. will have to be abandoned soon. The QRN will soon make 80 mx impossible to work, and a new band for the hook-up has been discussed. The eventual outcome seems to be settled on 144 Mc. and club members are now building and renovating the 2 mx gear which has been hanging around gathering dust.

A possible get together between Ipswich and Bundaberg Radio Clubs has been mentioned to take place in the near future as a camp out week-end at a spot some half way between Ipswich and Bundaberg. This has been met with a lot of enthusiasm from our end and final arrangements and announcements will be made when all is finalised. This could be the forerunner of a closer bond between the two Radio Clubs and we hope the first of many more such get togethers.

The t.v. station at Bunya Mountains was invaded by several of our club members not long ago, strictly an informal visit. No t.v.i. problems, but it appears they were made very welcome by the tech. on duty who lives alone at this remote location and greeted the company to relieve the monotony. 73, Warren 4GT.

VICTORIAN DIVISION, W.I.A.

ANNUAL DINNER

will be held on

FRIDAY, 3rd NOVEMBER

in the

ORIANA ROOM

McCLURE'S RESTAURANT

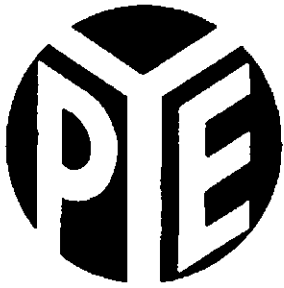
454 St. Kilda Road

Price: \$5.50 per head

Reservations: Contact the Admin.
Secretary. Phone 41-3535.

CONTEST CALENDAR

- 7th/8th October: VK-ZL-Oceania DX Contest (Phone Section).
- 7th/8th October: W.A.D.M. C.W. Contest.
- 14th/15th October: VK-ZL-Oceania DX Contest (C.W. Section).
- 14th/15th October: R.S.G.B. 21/28 Mc. Telephony Contest.
- 21st/22nd October: "CQ" W.W. DX Contest (Phone Section).
- 28th/29th October: R.S.G.B. 7 Mc. DX Contest (Phone Section).
- 11th/12th November: R.S.G.B. 7 Mc. DX Contest (C.W. Section).
- 11th/12th November: OK C.W. DX Contest.
- 25th/26th November: "CQ" W.W. DX Contest (C.W. Section).
- 9th Dec. 1967 to 14th Jan., 1968: Ross Hull Memorial V.h.f./U.h.f. Contest.



CRYSTAL PRODUCTS

QUARTZ CRYSTAL OSCILLATORS

Pye Pty. Ltd. engineers are designing a Series of Stable Crystal Oscillators within the range 1.5 Kc. to 100 Mc.

Range: 1.5 Kc. to 100 Mc.

Types now available are:—

- XL687 1.5 Kc. to 6.0 Kc.
- XL683 +6 Kc. to 50 Kc.
- XL681 +50 Kc. to 150 Kc.
- XL682 +150 Kc. to 525 Kc.
- XL688 1 Mc. to 20 Mc.
- XL690 +20 Mc. to 60 Mc.
- XL691 +60 Mc. to 100 Mc.

These oscillators are of robust construction (using printed circuit board technique), reliable and of low cost.

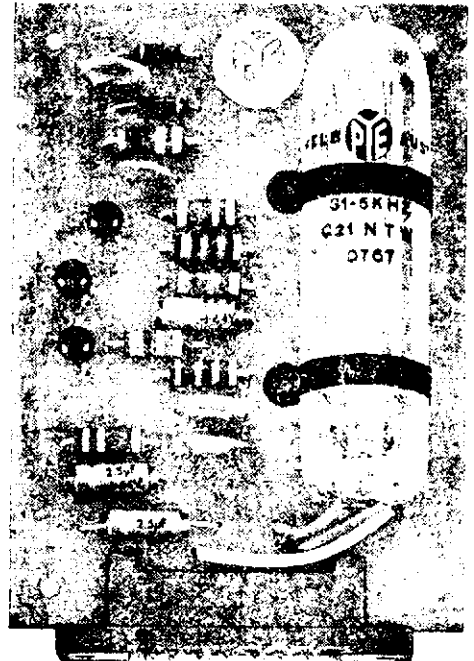
The photograph shows the PYE XL683 as an example. Mounting is by the four holes in corners of the board. Alternately, if a "plug-in type" is required, an in-line socket can be supplied as an optional extra.

SPECIFICATIONS

A typical example of the series is the XL688. These figures are general, closer tolerances can be obtained.

- Frequency Range 1 Mc. to 20 Mc.
- Supply Voltage .. 12 Volts D.C.
- Current Drain 15 mA. maximum.
- Output 1 Volt p. to p. min. into 1K ohms.
- Frequency Accuracy $\pm 0.001\%$ (set at factory).
- Freq. Temp. Stability $\pm 0.005\%$ from 1 Mc. to 2 Mc.
 $\pm 0.003\%$ from +2 Mc. to 20 Mc.
- Dimensions 2" x 2.5" (5.08 x 6.35 cms.).

These oscillators are supplied complete with crystal and accurately adjusted to a specified frequency. Write for full details, without obligation, stating frequency and mounting.



PYE XL683 Oscillator shown actual size

Send for our new—
"QUARTZ CRYSTAL UNITS"
illustrated catalogue
post free



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O.C.B. APPROVED ORGANISATION

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- ADELAIDE 1 Hould Street, Adelaide, S.A., 5000 23-3979
- PERTH 151-155 Brisbane Street, Perth, W.A., 6000 28-4338
- HOBART 141 Murray Street, Hobart, Tas., 7000 3-3707
- CANBERRA P.O. Box 766, Canberra, A.C.T., 2600 49-6677

TOWNSVILLE AND DISTRICT

Once again the R.D. Contest has come and gone. It seemed quite exciting, this time I thought as I heard quite a few newcomers trying for the highest point rating. One chap from the Antarctic regions seemed to be about the highest I heard as his X factor was quite high for his QSOs. If the boys in New Guinea run true to form, they should give the other States quite a run for their money. Quite a few sounded hoarse as I heard them on the Sunday morning exchanging numbers. The various bands seemed to come in for a bit of QRM as each tried to work on the same frequency. Another few did not seem to keep a good check of the chaps called and seemed surprised when the station called and informed them that they had exchanged numbers previously for that band.

Even though the bands seemed favourable at that period I now notice that the conditions have changed somewhat as the skip has altered. Very few stations being heard after tea. Maybe quite a few are resting on their laurels of the Contest.

Merv 4DV has been transferred out to where the crows fly backward, etc. His signal now being heard from Richmond, approx. 300 miles west of our city of Townsville. Eric 4HN will soon be transferred to Proserpine from Darra, so hope we can hook up once again Eric if rot on the twisted pair. No news to hand as yet of the various schools who seemed in the Youth Scheme. 73, Bob 4RW.

BUNDBERG AMATEUR RADIO CLUB

Another month gone and it seems that we have achieved quite a lot this last few weeks—most of it behind the scenes. Our time has mainly been taken up with the conversion of all the Pye Mk. 3s, about 10 of them. Some are going and some are not, but probably by next month the 6 mx QRM will be at an all high level.

On the subject of 6 mx, quite a gang of our younger members spent Sunday, 27th Aug., on a mountain climbing expedition up Mt. Colosseum, about 80 miles north of Bundy. They originally planned to climb to the top—1600 ft.—and set up a 6 mx station and be on the air by 10.30 a.m. However, at 1.30 p.m. they set up the station at 800 ft. The lads carried a 60 ft. collapsible tower, batteries and a transceiver through miles of lantana covered mountain side and assure me they did well to get half way up by lunch time. Their efforts were rewarded by the exchange of 5-7 signals with Elliott Heads, 10 miles S.E. of Bundaberg. Just a warm-up for the big Queensland V.h.f. Field Day that was to be held on 17th September.

Jeff Bonny, our newest call sign, is well away on h.f. and v.h.f. Congratulations Jeff from all your mates. Jeff, who is running several h.f. bands with a home-brew transistorised transceiver putting out a very nice clean signal, had the rather unfortunate experience a few days ago of being given the royal order, or dirty big wipe off, when he called into a well known early morning VK4 hook-up. He was told in no uncertain terms that s.s.b. signals were not wanted in the hook-up. Some of the remarks heard were: "I wouldn't even bother to switch the b.f.o. on" — "Oh it's that new call sign from Bundy, only been on the air a few days, don't worry about him" — "The cheek of this chap to break into an a.m. hook-up with duck talk."

Now, fair go chaps! Perhaps he should have known better, but youthful enthusiasm is really a marvellous thing to behold and you, with your years of experience behind you, could at least have been polite.

During the month Arch 4IL got going on the h.f. bands at long last. Nice to hear you active Arch. See you on 6 mx soon. 73, Rusty 4JM.

OBITUARY

JACK WORTH, Ex-VK4CW

Jack held the call sign VK4CW from 1948 and was very active for a number of years. He took a keen interest at this time in the Bundaberg Amateur Radio Club. However, after some years other interests occupied his time and he relinquished his call.

For some time now he has been living in retirement and has not enjoyed the best of health.

To his wife and daughter we extend our deepest sympathy.

SOUTH AUSTRALIA

The monthly general meeting of the VK5 Division for August was held to a capacity gathering of members and visitors, so much so that extra chairs had to be brought in to enable everybody to be seated in comfort. The meeting opened a little on the late side, but with very little business, Divisional or Federal, the time was soon picked up and the meeting soon settled back for the display of members' gear, and to add variety to this annual event, a display of some commercial equipment as well. The pieces of equipment displayed by members were many and varied, some fifteen pieces in all, and the one thing most noticeable was that at times it was difficult to sort out the commercial gear from the amateur gear, which is sufficient praise in itself.

In order of presentation, Gilbert 5GX had a fully transistorised s.s.b. transceiver; Murray 5ZQ a transistor power supply; Graham 5ZJL a 53.6 Mc. transistorised transmitter; Les 5NJ a s.s.b. transceiver kitset which he had brought back from the U.S.A.; Bob 5ZDX a mobile 6 and 2 mX transmitter and converters; Bob 5PU a gimmick, which after a lot of technical ballyhoo and drawings on the blackboard, turned out to be a transistorised oscillator for code practice, a real leg puller this one; Peter 5ZKA a 6 mX receiver using FETs in conjunction with a Command receiver, a 2 mX converter also using FETs, and an amateur band receiver using FETs, not quite completed; Shep 5DC a Collins KW2M transceiver; Jim 5ZSJ, the Moorabbin Radio Club transistor receiver; Eric 5ZEJ with a noise blander using FETs, and two very old time receivers of about 1924 vintage which he had reconditioned like vintage cars; Leith 5LG, his first transmitter which he had recently discovered in the roof of his QTH during a clean-up; Goldy 5HF a Swan transceiver; John 5NX a capacitance meter; Joe Vardon, who was treasurer of the VK5 Division around the 1920s, brought along a Jap. 11 wave band transistor receiver; Ian 5ZIP had a power amplifier and a GR modulation monitor; Trevor 5ZTM had a 4-track stereo tape recorder that he had put a lot of work into; and to wind up the proceedings, Ron 5KS brought along several examples of his book-binding of the magazine into 12 monthly copies. Altogether an imposing array of equipment, and when one considers that each exhibitor also gave a run down on the merits of the equipment displayed, it was no wonder that the meeting did not close until 11 p.m. and I think I can safely say that not one member of the audience left the room until the meeting closed, which is sufficient indication of the entertainment provided and the success of the evening.

The three awards for the display of members' home constructed gear went to Gilbert 5GX, Graham 5ZJL and John 5NX, and to all the exhibitors goes the thanks of members present for such an enjoyable evening.

Could not but help notice when the pieces of equipment were being described by their owners, just how often they said that the various bits and pieces were given to them, or they scrounged them, etc., etc. I must have been a little unlucky in my time because nobody ever gave me anything, probably this giving business is another variation of the well known often heard statement, "well filled junk box", another thing I never seem to have bumped into.

Heard on the W.I.A. broadcast that Frank 5MZ and Les 5NJ were seen at the ballet—or something—did not find out whether they were performers or only spectators, but looking in my crystal ball, I will hazard that Frank was there because his daughter is an instructress, and Les was there because his daughter was a performer. I hope that I am right, because what a pair they would make as performers!

On the same morning I heard a slip of the tongue from Uncle Joe 5UJ, of Whyalla, who blandly said that "these tubes usually take about 200 amps," and then very hurriedly corrected the statement, no doubt to avoid any unpleasant enquiries from any direction. Apparently his two 807s in parallel were suffering from one bung lung—a well known Chinese complaint—but I hate to think just what they would have been suffering from at that current.

Another quad has appeared in the evening sky—although I don't know if three wise men reported it—but it belongs to our genial Federal Councillor—what a joke!—none other than Geoff 5TY. A band of willing (?) helpers made the job much easier, with Geoff cracking his Simon Legree type whip at appropriate moments. What a bully!!

Talking of quads, I believe that one will shortly appear at the QTH of Rex 5DO. I will have to put a stronger fuse in my receiv-

ing aerial if this rumour is true, because his signal at the moment almost melts the piece of 044 at present acting as a fuse. Have you warned them in VK3 yet, Rex?

I recently put an ad. in the VK5 Journal in an effort to dispose of the gear belonging to the late Jim 5JK and was more than impressed with the number of replies that I received, and also the distances they came from. Since then I have been told that Geoff 5TY advertised an article in the Journal, and received a telephone call some 2,000 miles away, just a week after he sold it. Plus the fact that Uncle Tom 5TL notified all readers of the Journal of the Institute's stock of technical literature, and soon put up the sold right out sign. As much as I dislike Ye Ed's, I cannot but pat Brian 5CA on the back for the hard work that he puts into his "baby", to say nothing of the efforts of the XYL Marlene. Such hard work deserves success.

Heard an unexpected caller-back on the W.I.A. broadcast the other Sunday, none other than Roy 5AC, the young looking old-timer. Have not heard him much on this frequency lately, but believe that he can be heard loud and long on 53.1 Mc., and often at that. He called in to see me the other afternoon and looks younger than ever.

The R.D. Contest seemed to bring out all and sundry on various bands, and some of the figures I heard being exchanged certainly showed how keen everybody could be for their State. Cec 5BZ, of whom I have heard nothing for quite a long time, appeared to be in the thick of it, although from what I heard, he apparently was in a seditious mood, making no secret of the fact that he preferred c.w. to any other mode!

Gilbert 5GX apparently found time from his many disposal duties to make over 200 contacts and spent the night in bed at that. He is definitely a wise man in not believing in all night sittings, particularly when he can make a good score without it.

Someone commented on the fact that I still only get two points for contacting a VK6 on "The Thing" in the specimen log sheet in "A.R." This is of course only spite on the part of "Ye Ed", as my working any State on such a mode would be worth at least 20 points, to say nothing of the comment which would follow!

I am still a success, even though I could not fit in a talk on commercial radio to the Black Forest Methodist Men's Fellowship on the date set out, Uncle Tom 5TL still wants me to oblige, so I will be on deck in November. Tomatoes should be out of season by then, so all I will have to contend with will be possibly eggs, cigarette boxes and possibly a couple of dirty looks. I intend to take up the position of danger mouse with Nunky, but not with much hope, I fear.

Reg 3MZ is definitely one of my mob. I heard him giving out an imposing list of contacts that he had participated in that day and concluded with "don't knock a.m. after that". A stout fellow is our Reg, even if he owes allegiance to VK3 these days, always remember that he is an ex VK5, which probably accounts for him being such a stout fellow!

George 5CV, he of Thunderbird fame, heard calling a G on 14 Mc. the other late afternoon, and when contacted seemed to be having quite a deal of trouble in holding him. I could not even hear the G so it would appear that the beam, plus George's equipment, was right on the ball.

Keith 5ZY is someone that I have not heard for quite a while. Tuning across 7 Mc. the other Sunday afternoon I heard him in QSO with Tom 2ZZ of Newcastle. Judging by the strength of Keith's signal, it is probably just as well I do not hear him often, as I certainly would not hear anything else around that frequency. Why don't you accept Tom's invitation to visit Newcastle Keith? Sounds like he would give you a good time. Nobody ever invites me to Newcastle, or anywhere else for that matter, all they do is to tell me where I can go to!

Heard Mac 5NG, indeed a stranger to me, have not heard him for years, in contact with Ron 5UW the other early evening on 7 Mc. Both stations were mobile, Mac at North Adelaide and Ron at Marion. As I was about in the middle of both I had a good chance to judge the strength of the signals and as far as I am concerned they broke about even. Nice to hear you Mac after all this time.

Listening up in the c.w. end of 7 Mc. the other early evening I bumped into a whacking signal belonging to 5LY, so much so, that I thought he was a newcomer to the district, probably just over the back fence. Checking up in the Call Book, I was amazed to find that he was at Bridgewater, which after all is a little bit further than over the back fence to me. He is a stranger to me, I don't even know his christian name, but the book says

that his initials are C. W., so it was fitting that he was on c.w. Anyway, with a signal like that he won't ever be a stranger to me again!

Listened into the usual sked between Athol 5LQ and Jack 5LN the other evening on 7 Mc., but did not stay very long with them, they were too active and energetic for me. Athol was up to his neck with weedkiller, getting ready for the tomatoes, and Jack was torn between painting and rushing out to frighten away several millions of "spoggies"—his calculation, not mine—who were booking their seats in his orange tree for the night. I was quite exhausted after a few minutes listening to such activity, and left them to it. Anyway, what is Athol doing growing tomatoes? Has he heard about my venture into the lecturing field? This will take some watching! Warrant Officer Len Baker—Len 5OB, 5OC, to you—retired this month from the R.A.A.F. after 27 years' service, but his tradition of service will be carried on by his son John, who was recently commissioned as a technical officer. Len was honored with a parade of 24 City of Adelaide Squadron at Edinburgh Airfield on the Sunday of his retirement, and in recognition of his contribution to the R.A.A.F., Air Commodore N. P. Ford presented him with a certificate of merit for outstanding service. Len has served in Malaya, the United Kingdom and throughout Australia. We dips our lid, Len—never knew you were so famous—photo in the paper and all!

The "Chief Duck" in VK5—Phil 5NN to you—decided that he would construct a little gadget to make operation in the R.D. Contest a little easier, to wit, a combination headpiece and microphone which would leave his hands free for the clerical work involved. It turned out to be an outstanding success from all points of view, and as he rallied his army of duck talkers to the cause, he was indeed a proud man. However, pride cometh before a fall, when his young daughter brought him a cup of coffee at some point through the contest, he clean forgot his little gadget and swiftly put the cup to his lips, to which the microphone objected, and several parts of "Chief Duck's" abdomen received large chunks of hot coffee. Being on "The Thing," it was not possible to resolve just what exactly he said, although I am given to understand that no such words have as yet ever appeared in his s.d. column! You beauty!

Incidentally, I note with some suspicions, that he received, for the second year in succession, the same report of 88 from a certain female station in VK2. Thank the fates again that I am pure?!!

73, de 5PS—FanSy to you.

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WESTERN AUSTRALIA

Hi there customers! Well that was a contest that was, of course I refer to the R.D. It seemed to me that scores generally were somewhat higher than in other years, but perhaps we had better wait for the publication of results before sticking the old neck too far out. Was rather surprised to hear Kerry 6CA, operating mobile on 8 mx, swapping numbers. Then there was a well known member of the Division who was lucky enough to borrow some fairly high power sideband gear, complete with vox, etc., and prepared to do battle. Being a smart cookie he put in a bit of practice before the big day but ran into trouble with odd "birdies" in the receiver. Called for help from the owner who marched in armed with quite an assortment of test gear. One quick look and he burst out laughing (good sport that he was) because the problem was overcome with a simple twist of the wrist. It appears that the bewildered borrower was reading the v.f.o. dial incorrectly—clot! Boy, was my face red!

Heard that Bob 6KN was operative on 80 mx again recently. This was welcome news because a previous whisper indicated that he had been reclining in a hospital bed somewhere in Victoria.

Our Broadcast Officer, Bob 6RE, reports that the new 6WI transceiver is performing reasonably well, but tends to feedback with certain antenna conditions.

At the time of writing, school holidays are in full swing and many members are taking the opportunity to fit around the countryside. One such happy philanderer is Doug 6EP, who has shrugged off the cares of the workaday world to visit the "big smoke" and points of interest in the south west. With a bit of luck he might hook up with Noel 6MF who is also allegedly visiting much the same territory.

By a masterpiece of timing, Bob 6RE was able to squeeze in a bout of chicken pox, just prior to the holidays. I understand that he plans to do a bit more to his transistorised rig in the next couple of weeks.

Bob 6BT has been sprucing up the shack in preparation for a visit from the, you know who, and is also hopeful of working a bit of DX on 15 and 20 mc. Oh to be a "Chalkie" when holiday time is here.

John 8ZBY managed to escape from Kalgoorlie for a brief week-end visit, but found time to "pencil" for Bill 8WY for a couple of hours during R.D.

During a recent QSO with John W4DPI, he enquired as to the whereabouts of some of the "old-timers" like Skipper 8WS, Ron 6KW, Frank 6FL and Alan 8MO. By the way, what did happen to Ron?

Came across a strange voice the other night while casting my shrill note on 20 mx. It turned out to be Keith 6KE, putting in a re-appearance after an absence of some years. Operating a "black bird" too—hope you were able to iron out the "bugs" on 40 mx Keith and welcome back.

A report just to hand from one of my more reliable carrier pigeons suggests that Griff 6VG has entered the city limits from far off Geraldton—might even have an "eyeball" with him, with a bit of luck.

After beating a hasty retreat from the shack, I can hardly wait to get my hot little fingers to these keys. The reason for this undue haste is Bob 6BT, who has just appeared on 80 mx using "The Thing". What with a new receiver and all, he is really hitting the high spots.

Well, that wraps it up for the time being, 73, Ross 6DA.

TASMANIA

Foley 7CK will soon be moving QTH to a spot just north of Launceston. Although this seems like a gain of one for the Northern Zone, its numbers will stay the same, as Harry 7BR will be moving to the south to Gorchroy.

Congratulations to David, ex-7ZMD, on dropping the Z and now being active on h.f. as 7MD.

On 10th September a group of Launceston operators were going aeronautical mobile with equipment on both the 2 and 6 mx net frequencies. They were to be piloted by Norm 7ZRG and were to head towards Flinders Island, in the hope of working into VK3.

While talking about net frequencies, Jim 7JO has at last broadened his outlook and come onto 6 mx. We hope his outlook stays broad and we see him on 2 mx before long.

Just to finish up, this month's funny story: A VK7 worked a G3 recently on 20 mc. Both were using vox and both had their dogs in the shack. The VK7's dog decided to bark and started several volleys of barks flying to G-land and back again. No doubt they will be careful of using vox in future. Once bitten . . . 73, 7ZLP.

HAMADS

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

Advertisements under this heading will be accepted only from Amateurs and S.w.i.s. The Publishers reserve the right to reject any advertising which, in their opinion, is of a commercial nature. Copy must be received at P.O. Box 38, East Melbourne, Vic., 3002, by 5th of the month and remittance must accompany the advertisement.

FOB SALE: Creed 7B Page Teleprinter, good condition with service manuals, \$60. Wanted: Tape Repeater and Distributor, also Antenna Tower suitable for Beams. Williams, VK31Z, Phone 437-1811 (Melb.).

FOR SALE: Galaxy V. Amateur Station, VOX and 100 Kc. Callibrator installed, 12 volt Galaxy supply and home-built 240VAC supply, Heath SB810 monitor, Gencoc 500 watt 50 ohm dummy load, Galaxy remote VFO unit, mic, key, rotator, Quad antenna, etc., as a complete station. Sutherland, P.O. Box 405, Port Moresby, Papua.

FOR SALE: SSB Phasing Exciter, output 9 Mc., Aswell P/S Network, 4.5 Mc. Xtal, 17 x 8 inch chassis with punched holes for mixer, etc., \$30. Gelson VFO 4/104 with valves, one a.r. missing, otherwise reasonable condition, \$14. R. N. Ferguson, 23 Floral Ave. East, Mildura, Vic.

SELL: Amateur band Receiver with Gelson Front End, 80-10 m., professional appearance, matching 6 and 2 m. Converters, \$100. Yeasu SSB Generator, Type F, never used, \$40. ART13 AM/CW Transmitter, 2-18 Mc., 813 mod. by 811s, \$60. New 4/250A, \$5. VK3MT. Phone 277-8295 (Melb.).

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SELL: Extra heavy duty P.S. 240 VAC 2500 VDC 350 mA. output. Choke input. Relay switched and metered. \$20 or exchange, such as small Com. or Ham Receiver, etc. VK4SS, 35 Whynot St., West End, Brisbane, Old.

SELL: Hallicrafter HT37, 80-10 m. DSB, CW, SSB, complete with Dow Relay and Transformer, Good condition. VK4KC, 72 Canning St., Warwick, Old., 4370.

SELL: Johnson Match Box, \$70; two Command Tx. 7-9.1, \$12 ea.; Command Tx. 4-5.3, \$10; Command Rx. 150-550 kc., Q5er, \$20 (all Command gear in first-class condition); Palec VTVM with RF probe, \$30; Heath O Multiplier, \$10; Hallicrafter R338, 28-144 Mc., \$70; 14AVO Hy-Gain Vertical, \$30. Russell Bradshaw, VK3SX, Phone 82-2152 (Melb.).

SELL: Pye Reporter, converted 6 m. net, AC/DC operation, less xtals, \$33. Low band FM Base Station, unconverted, complete P.S., Phones, Mike, etc., \$33. HT PS 550 volt 250 mA., \$19. IF Unit, 85 Kc., ideal Q5er, \$18. VK3ZKA, 28 Flinder Ave., Syndal, Vic. Phone 232-7480.

SELL: Receiver, Hammerland HQ170; Transmitter, Heathkit Apache, 240v. to 110v. transformer tossed in. \$300 the lot. Let me know between Oct. 1 and Oct. 15. VK4HI, 30 Jellicoe St., Toowoomba, Old. Phone 25990, ask or Frank the Yank.

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WANTED: Type 3 Mk. II. Receiver in perfect order and unmodified. VK4DU, James St., Currumbin Beach, Old., 4223.

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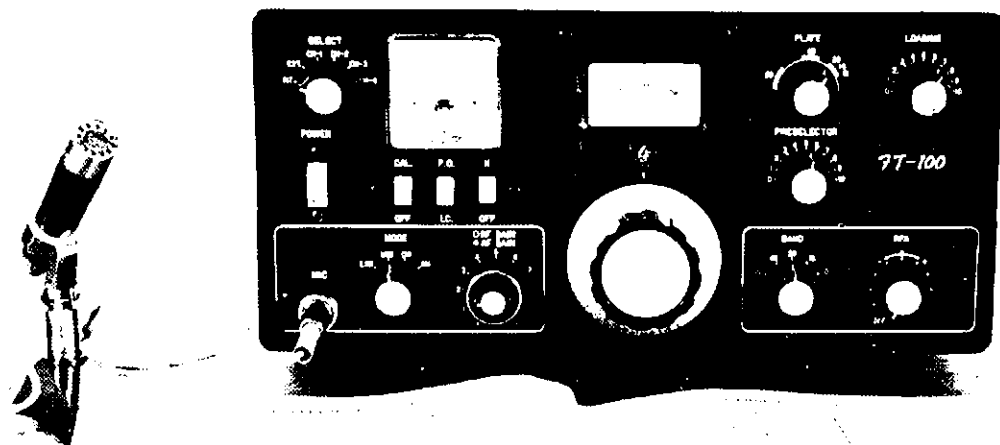
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8CX50	8 in.	30-22,000	15 watts	\$23.75
10CX50	10 in.	25-22,000	20 watts	\$36.00
12TX50	12 in.	18-22,000	25 watts	\$62.50
Single Cone "Free Edge" type:				
5A50	5 in.	50-15,000	8 watts	\$15.00
Professional Series:				
H50 Horn Tweet.	2,000-20,000	15 watts	\$11.10	
6M50 6 1/2" Sp'ker	200-6,000	25 watts	\$21.00	
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"AMATEUR RADIO"

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W.I.A. OFFICIAL BROADCASTS

NEW SOUTH WALES		QUEENSLAND	
VK2W1, Sundays, at 1100 hrs. E.A.S.T.		VK4W1, Sundays, at 0900 hrs. E.A.S.T.	
3595 Kc. a.m.	145.130 Mc. a.m.	3580 Kc.	53.995 Mc.
7146 Kc. a.m.	148.000 Mc. f.m.	7146 Kc.	144.36 Mc.
53.866 Mc. a.m.	(53.950 Mc. f.m. proposed shortly)	14,342 Mc.	
VICTORIA		SOUTH AUSTRALIA	
VK3W1, Sundays, at 1030 hrs E.A.S.T.		VK5W1, Sundays, at 0900 hrs. C.A.S.T.	
1825 Kc. a.m.	144.500 Mc. a.m.	3.5, 14, 52 and 144 Mc. bands.	
3600 Kc. s.s.b.	145.854 Mc. f.m.	WESTERN AUSTRALIA	
7146 Kc. a.m.	432.500 Mc. a.m.	VK6W1, Sundays,	
53.032 Mc. a.m.		TASMANIA	
		VK7W1, Sundays, at 1000 hrs. E.A.S.T.	
		3672 Kc., and re-transmitted by representative stations on—	
		7146 Kc.	144.1 Mc.
		53.032 Mc.	432.6 Mc.

FEDERAL COMMENT:

FEDERAL COMMUNICATIONS

In response to several requests from Divisions for Federal items for their broadcasts, and also in line with the present Executive's policy of increasing the Federal content of "A.R." we present a new news format this month.

Briefly, in each month's "A.R." three or four short news items on different topics will appear. Each of these will be pre-released by F.E. simultaneously, one a week, to Divisional Federal Councillors who will forward a copy to their Broadcast Committee. Therefore, this material will be firstly on Divisional Broadcasts, and secondly in "A.R." Some of the items will be from that mass of correspondence passing through F.E.'s hands, which appears as routine to Executive but contains many matters of general interest to members. In particular, we would like to mention at this moment the liaison continually undertaken with hdq. of I.A.R.U., the International Amateur Radio Union.

The Federal Secretary of the W.I.A. has been corresponding actively with I.A.R.U. in a desire to clarify points pertinent to the Institute's policy towards Region III. Liaison. Suggestions on the policy to be adopted with regard to South-East Asia and I.A.R.U. will be passed along to Divisions in the near future. Liaison with R.S.G.B. and A.R.R.L. as representing Regions I. and II. has been undertaken, and covers such matters as reciprocal licensing, methods used by Intruder Watch systems in those Regions, right down the line to comments and methods used overseas to control car ignition suppression.

Recently in the Australian press, comment has been passed relating to a possible change in the structure of the P.M.G.'s Department, notably to suggest a Statutory Corporation to undertake the business activities of the Post Office. In order that we may be prepared, the Institute has sought comment from A.R.R.L. re the American F.C.C. system, and from R.S.G.B. on contemporary events in the U.K. These comments from overseas are intended to give Executive some background just in case changes are suggested in regard to the regulatory functions at present undertaken by the P.M.G.'s Department.

From time to time W.I.A. has to vote as an I.A.R.U. member on International matters. Recently an affirmative vote was cast on three proposals to admit new Amateur Societies to I.A.R.U. Notably the Radio Club of Honduras (R.C.H.), the Central Radio Club of Bulgaria (C.R.C.B.) and the Association des Radio Amateurs Ivoiriens (A.R.A.I.)—the National Society of the Ivory Coast. Details of their organisation and licensing requirements are received and studied to give us some guide as to overseas trends in Amateur licensing. It is of interest to note that all three of these countries report a good attitude of their government to Amateur Radio.

Details of the I.A.R.U. Region II. conference at Caracas, Venezuela, earlier this year are to hand, and it may be noted that at the conference it was felt more development should be given to v.h.f. and u.h.f. in Region II., and plans developed for expanded emergency communications networks in that region.

In addition to domestic matters of International Amateur Radio, Executive is kept informed on I.T.U. matters. A World Administration Radio Conference to deal with matters relating to the Maritime Mobile Service is being held in Geneva at the moment (Sept. 18 to Nov. 4). The agenda, like that of other recent specialised conferences is strictly limited to matters concerning the specific service. The meeting will not deal with questions affecting Amateur Radio, and as yet there has been no indication of any plans for a conference to deal with frequency allocations.

So, from time to time these Federal news items will be presented to you indicating the state of liaison both at home and overseas, and the efforts being made to keep in touch. This is also a new effort to keep W.I.A. in touch with its members.

INTRUDER WATCH

Institute policy on Intruder Watch was determined at Hobart last Easter by means of Motion 2.3: "That in conformity with I.A.R.U. policy, the Wireless Institute of Australia inaugurate an Intruder Watch Service on an organised basis to be administered by Federal Executive." This was moved by Federal Executive, seconded by the Queensland Division, and carried unanimously.

In October "Amateur Radio" on page 24, Max Hull, VK3ZS, the W.I.A. Federal President, outlined in a very comprehensive report the need for an Intruder Watch, and asked for your assistance. Please read it, and if you can offer your assistance as indicated, do so immediately. It is of interest to note that this move was initiated in answer to a request from International Amateur Radio Union headquarters and we quote from I.A.R.U. Calendar of this year on page 5:

"The headquarters again urges Member Societies of the Union to establish some form of Intruder Watch". Section 3, Article 3, of the Radio Regulations, Geneva 1959, states as follows:

"Administrations of the members and associate members of the International Telecommunications Union (I.T.U.) shall not assign to a station any frequency in derogation of either the table of frequency allocations given in this chapter or the other provisions of the Regulations, except on the express condition that harmful interference shall not be caused to services carried on by stations operating in accordance with the provisions of the Convention and of these Regulations."

What this section of I.T.U. Regulations means to us Amateurs is that if a station in the fixed or broadcasting service operates in the Amateur bands, this operation is permitted under the terms of the I.T.U. Regulations, provided no interference is caused to the Amateur Service; thus it is essential that we Amateurs file complaints of interference whenever it occurs.

In short, it is not just the nuisance caused by an intruder, but the I.T.U. Regulations will permit him to remain there if he does not cause us interference, and unless we inform on this interference, he has every right to be there. Accordingly, as an I.A.R.U. Member Society, the W.I.A. is undertaking action to establish liaison with our Government Departments in connection with the filing of complaints; however, these complaints must be filed in proper and effective and standard manner.

As indicated in Max's article, on page 24 of October "Amateur Radio," the A.R.R.L. and the R.S.G.B. have a specific system of monitoring, recording and reporting. These systems have been communicated to the W.I.A. recently, and they have been examined by the Intruder Watch Committee, which at the moment consists of Federal President, Max Hull, VK3ZS; Assistant Federal Secretary, Peter Williams, VK3IZ; Federal Liaison Officer, George Pither, VK3VX; and Federal Executive member, Dr. David Wardlaw, VK3ADW, who has agreed to become the Federal Operations Officer of the W.I.A. Intruder Watch. David has been an Executive member for some years, and also while living in Canada was a member of A.R.R.L. and while living in Britain was a member of R.S.G.B.; therefore he has first hand knowledge of the systems used overseas and his experience will, no doubt, be valuable in setting up Intruder Watch in Australia.

So keeping in mind the comments made earlier that intruders are not just nuisances, but may become permanently established in the Amateur bands, the W.I.A. is instituting an Intruder Watch Service which, at the present moment, is

(Continued on Page 4)



John Battrick, VK3OR

THE NEW HANDBOOK



Harold Hepburn, VK3AFO

IN the October 1967 issue of "A.R." the background to the revision of the Handbook was given, as was a brief list of changes made. This and subsequent articles will describe some of the more important of these changes in greater detail.

Before doing so, it may well be appropriate to reiterate how the Amateur Service is regulated. In Australia all licences to transmit by radio are currently issued and administered by the Postmaster-General's Department.

The basic legislation making this the responsibility of the Department is the Wireless Telegraphy Act. Because this Act is very broad in its scope, more explicit "rules" are set out in the Wireless Telegraphy Regulations which are the Regulations made under the Act. Not all of these Regulations apply to the Amateur Service, but the effect of those that do is explained in detail in the Handbook which is issued by the Department.

One of the most obvious changes is the re-organisation of the contents. So far as possible, all related provisions are grouped together to keep the need for cross reference to an absolute minimum. As well, the provisions are now set out in a more logical order. It is to be hoped that the intent to make the new Handbook a simpler document to understand has been achieved to a large degree.

Some of the specific changes which have been made are:—

1. SIDEBAND POWER

As indicated in a letter from the Department which was printed in December 1966 issue of "A.R.," the power limit for single sideband suppressed or reduced carrier is now 400 watts peak output.

Until the Department's letter was published, the a.m./c.w. limit of 150 watts d.c. input to the final had applied but just what this meant in terms of sideband was far from clear. How to measure it was even more obscure.

It was agreed that the problem could be solved, and parity achieved if a peak sideband output equal to the usual class C fully modulated a.m. peak output was used as a basis for the power limit. The type, number and class of operation of the output tubes used in the sideband rig would thus not need to be specified and the Amateur would enjoy greater freedom in designing his gear.

Thus the new Handbook states:—

"Paragraph 72—Where an Amateur Station is utilising A3A or A3J emission, the peak envelope power of the radio frequency output, measured at the input to the antenna transmission line, shall not exceed 400 watts . . ."

Note.—A3A is single sideband reduced carrier and A3J is single sideband suppressed carrier.

The method of power measurement to be used with sideband transmitters is substantially that currently prescribed by the British Post Office.

The new Handbook states:—

"Paragraph 72—The determination of power shall be made by the following method:

"Apply two non-harmonically related sinusoidal tones of equal amplitude to the single sideband transmitter which is operating into a resistive dummy load and an appropriate r.f. current meter. With an oscilloscope connected across this load, the transmitter with the carrier fully suppressed is adjusted for maximum power output coinciding with linear operation as indicated visually on the oscilloscope.

"The power output is then calculated by the formula:

$$P_m = I^2 R$$

where P_m = Mean power in watts.

I = R.f. current ampere flowing in the dummy load.

R = Resistance of dummy load in ohms.

"The resultant figure, being mean power, is doubled to give peak envelope power. This value must not exceed 400 watts."

2. COMPONENTS

The old Handbook contained a provision that the combination of components used in the power supply and final should not be capable of allowing operation at higher power levels than those permitted. The string of components had to contain a "weak link" as it were to ensure that the power limit could not be exceeded.

This may have been a reasonable provision during the immediate post war period when very high power transmitters could be obtained cheaply from surplus sources, but it was felt that, under the present day conditions, such a provision was no longer necessary; further, in many cases its application was the result of an individual's opinion.

As an analogy it was argued that motor cars are not designed to ensure compliance with speed limits. The onus is on the driver to ensure that he does not misuse his car in such a way as to break the law.

Therefore, the restriction has been deleted from the new Handbook and an Amateur can now use what combination of components he wishes in constructing a transmitter.

One thing must be emphasised. The Amateur remains liable at all times to ensure that his transmitting equipment is operated within the permitted power limits. The deletion of the restriction on certain combinations of components will provide no excuse for exceeding the power limit at any time.

3. FREQUENCY MEASURING EQUIPMENT

The old Handbook required that an Amateur should possess frequency measuring equipment of a specified type. For all practical purposes the type originally required was a BC221 or equivalent frequency meter. Since it was by no means clear what constituted an "equivalent" it was felt that the requirement should be withdrawn and replaced by something more comprehensive. The new Handbook now states that:—

"Paragraph 54—The licensee of an Amateur Station shall take all steps necessary to ensure that the emissions from his station are within the limits of the Amateur frequency band on which he is operating. For this purpose he shall have available at his station frequency measuring equipment capable of verifying that emissions are within authorised Amateur bands."

For example, simple band edge crystal calibrators could come within the scope of the above requirement. The individual Amateur is still fully responsible for keeping in the band he is working on and he will have to show that the frequency measuring equipment he elects to use will do this satisfactorily.

So long as the Amateur can ensure that his transmission is within the band, he is no longer required to be able to determine his precise frequency within the band.

4. TYPES OF EMISSION

With the much wider use of modes of transmission, such as f.m., r.t.t.y., etc., it was felt that a greater choice of mode should be available on the different frequency bands. The new table is shown in Table 1.

If Table 1 is compared with the old table and with the individual Amateur's station licence it will be seen that a much wider choice of mode is now allowed.

5. PORTABLE AND MOBILE OPERATION

Under the provisions of the old Handbook licensees were required to apply to the Department when they wished to operate portable for periods in excess of 24 hours on frequencies below 52

(Continued on Page 4)

FEDERAL COMMENT (Continued from Page 2)

just getting under way. However, co-operation is needed from Amateurs and Short Wave Listeners, not only in being increasingly vigilant in reporting interference from intruders, but also offering help as requested in the report, page 24, October "Amateur Radio".

Please read it again. Incidentally, those of you who have r.t.t.y. equipment, your services are also extremely valuable as many intruder stations are establishing teletype circuits in the Amateur bands. Once again, the Federal Operations Officer for Intruder Watch is David Wardlaw, VK3ADW, C/o. Box 2611W, G.P.O., Melbourne, 3001, and again, an intruder station may become permanently and legitimately established if the interference he causes is not reported.

THE AUSTRALIS-OSCAR "A" SATELLITE

Last month the organisers of "Project Australis", namely the Melbourne University Astronautical Society, delivered copies of a very well-produced *User's Guide* to co-ordinators in each State. Federal Executive also obtained some of these and a copy has been forwarded to each Division of the W.I.A. through the Federal Councillor.

Recent publicity in the press and on t.v. has raised doubts in the minds of some Amateurs as to the exact status of this satellite. In August "Amateur Radio" of this year, page 3, it is stated in an article that: "The entire operation will be supervised by Project Australis, and not available to any Amateur". The organiser of the project, Mr. Richard Tonkin, has indicated to Federal Secretary that this comment only refers to the supervision of the command systems, and in fact the success of the entire project depends upon the support of a large number of tracking stations. Therefore Project Australis is anxious to enlist the co-operation of suitably equipped radio operators, short wave listeners and v.h.f. enthusiasts everywhere.

Therefore you, as a member of W.I.A., do have an important part to play after its launch, but you did also play quite an important part in the development of this first Australian Satellite. This part was played through your national amateur society, W.I.A., and the following extracts from official minutes may serve to emphasise this.

Institute policy on this satellite stems from motions of the 1966 Brisbane Federal Convention, notably, Motion 2.5, moved New South Wales Division, and seconded West Australian Division, "That the possibility of launching an 'Oscar' Satellite or similar experimental device sponsored by the Wireless Institute of Australia be investigated". Discussion on this motion included comment from VK2 delegate that it had been put with no prior knowledge of the activities of M.U.A.S., and comment from Mr. Tonkin representing M.U.A.S.—who had gone to Brisbane at his own expense. In his explanation, Mr. Tonkin indicated that the co-operation of the "Oscar" Project in U.S.A. had been contacted and that they had promised to provide launch facilities. He also stated that work to date had exhausted their meagre funds and that they were approaching the Institute for sufficient funds to purchase the components for the final flight package. At that stage he estimated that some \$400 would be required.

From that discussion there was the following motion arising, motion 2.5.1: "That the Institute shall support the Melbourne University Astronautical Society 'Australis Project' in the manner following . . .", then followed eight points relating to joint control and to the contribution and expenditure of funds. At the conclusion of the debate on these motions, Mr. Tonkin thanked the Chairman and delegates for the support, which would enable certain completion of the project.

It would seem then that the W.I.A. and the M.U.A.S. had independently made moves for an Australian Amateur Satellite, and that at Brisbane last year reached mutual agreement for this satellite to be a joint effort. All Divisions contributed funds to the project and Executive, in addition, has paid the air freight of the completed package to U.S.A. So, you all in a small way perhaps, but in a NOT insignificant way, contributed to the amount of finance initially requested by the organisers to complete the project as it was then envisaged. At some time in the near future we hope Oscar Inc. will be able to arrange a ride into orbit, and then your help will be again required to assist the M.U.A.S. in tracking this first Australian Amateur Satellite.

John B. Batrick, Federal Secretary, W.I.A.

THE NEW HANDBOOK

(Continued from Page 3)

Mc. In addition, there was an apparent restriction on the number of times during any year that such permission would be granted.

No limitations were imposed on licensees who wished to operate portable on v.h.f. frequencies.

The exact position of mobile operations in the old Handbook was ambiguous and needed clarification, though in respect of periods of continuous absences from the licensed location the

same position applied as in the case of portable operation on the h.f. bands. The effect of these provisions was to exclude limited licensees from ever having to seek the Department's permission to operate portable/mobile.

In the new Handbook it will be found that as far as both portable and mobile operation are concerned licensees may operate on all frequencies for continuous periods of up to five days before permission from the Department is required.

If portable or mobile operation away from home for periods in excess of five days is required, licensees (both full and limited) must apply for permission.

Note that daily mobile operation (for example going to and from work) is a special case. Provided always that the licensee and his transmitter returns each evening to the address on the licence then daily mobile operation without prior Departmental approval is permitted on an indefinite basis, as permission is only required in respect of continuous absence exceeding five days.

The new Handbook paragraph states:

"Paragraph 90—An Amateur station licence, as a general rule, authorises the operation of the station at a fixed location. Subject to the written approval of the

Superintendent, Radio Branch, however, such stations may be operated in a portable or mobile capacity for specified periods.

"Applications in writing must reach the Superintendent at least three days before such an operation and should indicate—

- (a) The period for which the portable/mobile permit is required, and
- (b) The area or locations in which it is intended to operate.

"A request by telephone for such a permit will not be accepted other than as an intimation that a written application has been forwarded."

"Paragraph 91—Notwithstanding anything contained in the two preceding paragraphs, the licensee of an Amateur Station may operate his station in a portable or mobile capacity without obtaining the approval of the Department for a maximum period of five consecutive days."

Note.—The two preceding paragraphs referred to above are numbers 89 and 90. Number 89 refers to transfer of address and inaccessibility of equipment.

—Harold L. Hepburn,
Federal Vice-President, W.I.A.

Frequency Bands	Type of Emission
All Bands	A1, A3, A3A, A3B, A3H, A3J, F1, F3 (± 3 Kc.), and for RTTY—F1, F2 or A2.
All Bands above 52 Mc.	A0, A2, F2, F3, P0.
Ultra High and Super High Band	A5, P1, P2D, P2E, P2F, P3D, P3E, P3F.

Table 1.

THE VK3 V.H.F. GROUP 6-METRE CONVERTER

BY THE CONVERTER COMMITTEE, VK3 V.H.F. GROUP

EARLY this year (1967) the VK3 V.h.f. Group formed a committee to investigate and prepare designs for a series of converters for the 52, 144 and 432 Mc. bands and where possible to arrange for the bulk purchase of selected components where this would benefit the members of the Group. At an early meeting of the committee the basic design objectives for the converters were formulated and it was decided to proceed initially with the design and production of the 52 Mc. converter. The basic design objectives were:

- The design should be adaptable to a wide range of i.f. output frequencies.
- The converters should be readily reproducible and simple to align.
- The design should have good cross-modulation and inter-modulation characteristics (mainly on account of Channel 0 which can cause considerable trouble in some parts of Melbourne).
- It should have a good performance together with a reasonably low total cost.

DESCRIPTION

It was felt that the use of Field Effect Transistors (FETs) was warranted to give the required cross-modulation characteristics and the 2N3819 junction N-channel FET (Texas Instruments) was selected on account of its low cost and adequate performance. For those of you who have not had much to do with FETs a few brief details may be in order at this stage.

A field effect transistor is very similar in its characteristics to a triode vacuum tube as it is a three-terminal device having a high input impedance and a moderate output impedance. When correctly biased the FET is superior to both vacuum tubes and conventional transistors in their resistance to cross-modulation and as well as this their noise figure is quite comparable.

There are some disadvantages in the use of FETs and one of these is their relatively large spread of their characteristics. For example, the 2N3819 can have a zero bias drain current of between 2 and 20 mA., a cut-off bias

I.F. Output	Xtal Freq.	L4 turns	C14 pF.
14 to 16 Mc.	38 Mc.	35	22
7 " 9 "	45 Mc.	60	15
4 " 6 "	48 Mc.	90	15

Table 1.

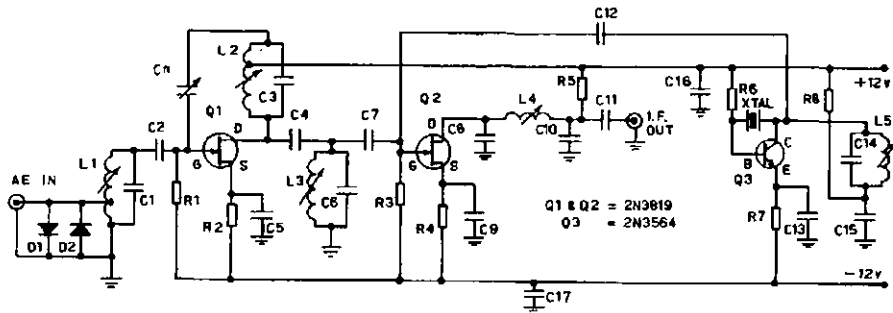
for 200 μ A. drain current from -0.5 to -7.5 volts, and a transconductance between 2,000 and 6,500 μ Mho. This means that to obtain optimum performance the operating bias must be individually adjusted for each device. A second problem is the fact that the feedback capacitance is relatively high (similar to a triode vacuum tube) and hence neutralising is often required, especially in the v.h.f. region.

The final design uses one FET as a common source r.f. amplifier with a second FET as a mixer employing gate injection from a crystal controlled oscillator. Between the r.f. and mixer

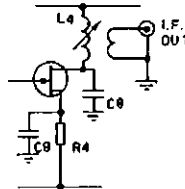
stages is a coupled bandpass pair of tuned circuits to give a reasonable bandwidth. The output is a pi-coupler arrangement to provide a match between the mixer and the co-ax. feed to the main receiver, however provision has been made on the printed circuit board for a parallel tuned, link coupled output arrangement for those who prefer this method.

The crystal oscillator employs a conventional silicon transistor and a third overtone crystal, the frequency of which depends on the i.f. output frequency required. For example, an i.f. of 4 to 6 Mc. would require a crystal of 48 Mc., although a crystal on 58 Mc. would give the same output but with reverse tuning.

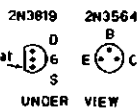
The converter is constructed on an epoxy fibre-glass printed circuit board 4" x 2 1/2", which allows adequate space for the components. A smaller size board could have been used but this would have made assembly more difficult and probably have required the use of special components. The coil



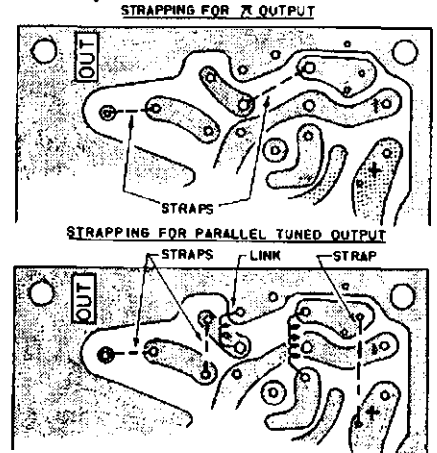
OPTIONAL PARALLEL TUNED OUTPUT



- NOTE
- R5 C11 Replaced by links
 - C10 Not required.
 - C8 L4 Varied as required



- COMPONENT LIST**
- R1, R3—100K, 1/2w.
 R2—See text.
 R4—10K, 1/2w.
 R5, R8—1K, 1/2w.
 R6—220K, 1/2w.
 R7—1.5K, 1/2w.
 Capacitors (all disc ceramic):
 C1—6.8 pF.
 C2—100 pF.
 C3, C6, C7, C8—15 pF.
 C4—4.7 pF.
 C5, C11, C13, C15—1000 pF.
 C9—0.01 μ F. "Redcap"



COMPONENT LIST

- C10—56 pF.
 C12—1.5 pF.
 C14—See Table.
 C16, C17—0.1 μ F. 25v. "Redcap".
 D1, D2—0A95 or similar germanium diodes.
 Crystal—Third overtone of required frequency, Style D holder.
 Co-ax. Sockets—Belling Lee L604.
 Cn (neutralising trimmer)—Phillips solder-in screw trimmer, 6 pF. ceramic.
 Coil Formers—Neosid Style A (single), and Style B (double) assemblies.

CONVERTER MODIFICATION

It has been found that the bandpass pair of tuned circuits, L2 and L3, in the original circuit were considerably over-coupled, resulting in an excessively wide bandpass. To correct this situation, capacitor C4 is deleted and a ferrite cup-core (Neosid Type T31/500) placed over L3. The bandwidth should now be about 1 Mc. which can be broadened if necessary by stagger tuning.



CRYSTAL PRODUCTS

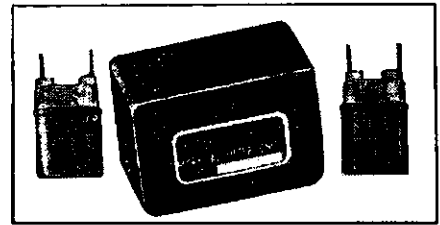


9 Mc. SSB FILTER TYPE 9-0A

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As from September 1, 1967, the price of the complete PYE 9-0A Filter Package Unit will be \$25.50 each plus sales tax. This price will now allow you and many more Hams to build that special transmitter and join the exciting SSB ranks.

The PYE 9 Mc. SSB Package Unit consists of one type 9-0A Filter, two crystals (style D) and their holders, and a typical schematic circuit diagram and application notes. The frequencies of the crystals are 9002.0 Kc. and 8998.0 Kc., which are the frequencies for the upper and lower sidebands.



9-0A Package Unit

SPECIFICATION 9-0A:

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Pass Band Ripple	2 db. max.
Insertion Loss	4.5 db. max.
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Output Termination	150Ω plus 120 pF.

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formers used are the Neosid type A (single assembly) and the type B (double assembly) with aluminium screening cans. The coil formers have a nominal diameter of 0.2" and the coil data given in Table 2 is given for these formers with F16 screw cores in L4 and F29 screw cores for all other coils.

PERFORMANCE

A noise figure of 2.5 db. has been measured on one of the prototypes using a high-quality commercial noise generator and comparative checks with other prototype converters using another uncalibrated noise generator have shown similar results. The i.f. frequency used when the noise figure of 2.5 db. was obtained was 14 Mc. and the receiver used had a noise figure at this frequency of greater than 15 db. Gain measurements have not been made but sufficient gain is available to over-ride the noise in any tuneable i.f. that is likely to be used. A number of converters have been constructed and all have given excellent results with no difficulties in construction or alignment.

- | |
|---|
| L1—12 turns 24 B. & S. close wound, tapped 3 turns from earth end; Neosid A assembly, single, F29 screw core. |
| L2—10 turns 24 B. & S. close wound, tapped 3½ turns from Cn end. |
| L3—8 turns 24 B. & S. close wound. Both L1 and L2 using Neosid B assembly, double, F29 screw cores. |
| L4—See Table 1, scramble wound 30 B. & S., winding length 0.3 inch; Neosid A assembly, F16 screw core. |
| L5—12 turns 24 B. & S. close wound; Neosid A assembly, F29 screw core. |

Table 2.—Coil Details.

No attempt has been made to quote minimum signal levels that can be copied because as well as being influenced by the noise figure of the converter r.f. stage, the i.f. bandpass characteristics of the following receiver play a major part. On 6 metres the major factor is usually band noise (motor car ignition, power line noise and other associated "rubbish").

In the Melbourne area considerable difficulty is often experienced with 6 metre converters using valves and con-

ventional transistors by cross-modulation or inter-modulation caused by the sound carrier from Channel 0 (51.75 Mc.). Even while listening to a signal near band edge with the beam pointed towards the t.v. station no sign of spurious responses has been detected in the prototype converters. No doubt if you were close enough to the t.v. transmitter then some trouble could be expected (although the tuneable i.f. would probably "pack up" before the converter gave trouble), but most normal converters would be useless long before this anyway.

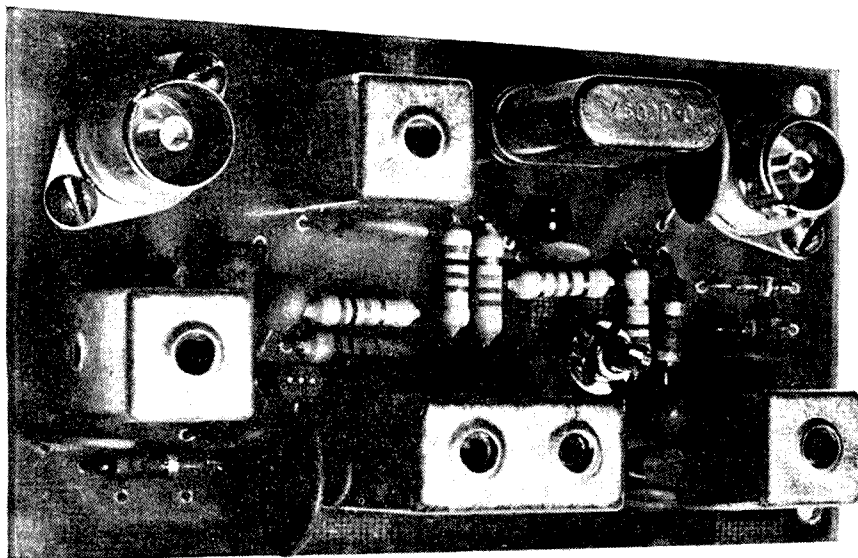
ALIGNMENT

The alignment of the completed converter is quite simple and the first step is to ensure that the crystal oscillator is functioning correctly. A voltmeter is connected across R8 and the screw

each other and it will take some care to get top performance from the converter.

With Cn set mid-way between the positions where the r.f. amplifier becomes unstable, the value of R2 can be progressively reduced, re-adjusting Cn as needed to keep the r.f. stage stable. The reduction in the value of R2 will cause the gain to increase and at the same time the setting of Cn will become more critical. When the stability tends to become marginal due to the increased gain, a fixed value of resistance can be substituted for R2 and in practice, depending on the characteristics of the particular FET used, the value can vary between 100 ohms and 5K ohms.

It will be found that if all the tuned circuits are peaked at one point in the band that the effective bandwidth will

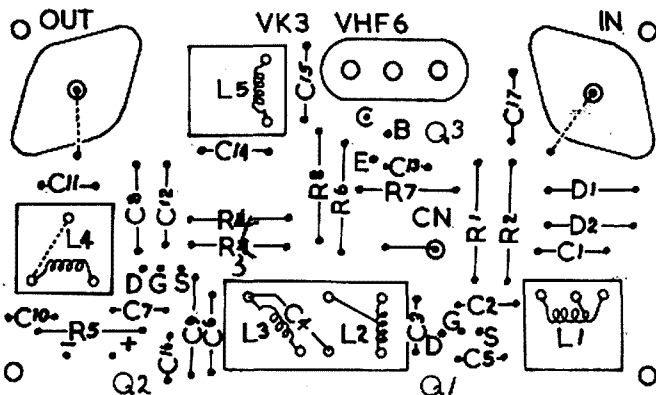


core in L5 is adjusted for a maximum voltage reading (maximum current through Q3). A resistor of about 10K (a 10K potentiometer is quite suitable) is temporarily connected in place of R2 and the screw cores in L1, L2, L3 and L4 adjusted for maximum response to a signal in the band. It will probably be found that the r.f. amplifier becomes unstable as the gain increases and Cn must be adjusted to restore stability. The adjustment of L1, L2, L3 and Cn all interact slightly with

be about 1 Mc. (500 Kc. each side of the centre), however the bandwidth can be increased by stagger tuning the various stages but this will result in a drop in gain.

The other adjustment that may be found necessary is to the level of oscillator injection to the mixer; too much will cause excessive mixer noise and too little will result in inadequate conversion gain. The object is to increase the local oscillator injection

(Continued on Page 18)



RTTY THE EASY WAY OR DRIFTITIS CONTROLLED

JACK KENNER,* VK3PB

ABOUT 18 months ago the writer became interested in that rather fascinating branch of Amateur Radio activity—RTTY. A printer was borrowed and a suitable terminal unit made to drive the printer from the station Galaxy transceiver. When making the T.U. a mark frequency of 1,000 c.p.s. was chosen and provision made for shifts of either 850 c.p.s. or 170 c.p.s. The choice of the 1,000 c.p.s. mark frequency was determined by having some excellent 50-cycle bandwidth filters available on this frequency.

After a few minor problems the gear operated as required and a lot of really enjoyable DX and local QSOs made. For a while this sort of operation was carried on but soon it became apparent that, with the sharp filters employed in the T.U., drift was a major problem and the original minor inconvenience of returning every fifteen seconds or so had become a major chore. So major in fact that either something had to be done or else the RTTY gear was going up for sale!

The Galaxy was tackled first and after a lot of experimenting the drift in this piece of equipment was cured by stabilising the voltage to the filaments of the crystal oscillators and v.f.o. Let me hasten to add that the mains variations at my QTH are very wide and sudden changes in line voltage from 240 down to under 190 are caused by the intermittent use of heavy machinery in a next door timber working factory. This variation had some drastic effects on the filament voltages and was the major source of the drift encountered in the unmodified Galaxy.

With the local problem overcome, it was thought that no further trouble would be experienced when operating, but, regrettably, this was not so. There was little that could be done when the transmitter on the other end of the QSO drifted and it was still necessary to keep re-tuning the (now stable) receiver if good copy was required.

Consideration was given to generating an a.f.c. voltage and applying it to the v.f.o. in the Galaxy, but since this meant some major modifications to the transceiver itself the idea was abandoned. However, the thought remained that if the variation in the 1,000 cycle mark signals from the Galaxy could be made to operate a reversible motor, then this motor could be used as an automatic tuning device.

Various possibilities were explored but in every case the need for some very sharp audio filters was paramount. Finally, the possibility of using tuning forks came to mind. They are easily obtainable, cheap and have very high Q and very narrow bandwidth. They

are in fact high class audio mechanical filters. Their temperature co-efficients are good and even normal diurnal changes only alters their frequency by a cycle or so. A couple of tuning forks (middle C 256 c.p.s.) were obtained and one was ground down until it "sang" at about 1,000 c.p.s. as determined by beating aurally against an accurate audio oscillator. The test set up of Fig. 1 was then breadboarded. Output from the audio oscillator was fed into an old earphone coil of about 500 ohms d.c. resistance.

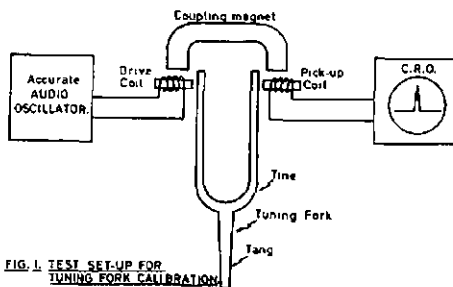


FIG. 1. TEST SET-UP FOR TUNING FORK CALIBRATION

This coil was placed about 0.020" away from one tine of the fork and a second coil placed the same distance from the other tine. A small horseshoe magnet was used to couple the two coils. As the audio oscillator was tuned to the frequency of the fork, the latter was excited into oscillation and a voltage induced in the "pick up" coil. Coupling the pick-up coil to a c.r.o. and manually adjusting the audio oscillator gave the bandpass and the exact frequency of the fork. As anticipated, it was very good. Resonance was sharp and bandwidth was 3-4 cycles at low drive levels (about 1 volt r.m.s.), increasing as the drive was increased. Here was the answer to the filter problem.

As a result of this experiment the final "AFC" unit of Fig. 2 was evolved. The trials and tribulations of its evolution will not be described, but only the operation of the final unit.

Basically it consists of four main sub-sections:

- (1) An audio amplifier to process the signal from the terminal unit.
- (2) The three "detector" forks and their associated transistor switches and relays.
- (3) The drive motor assembly.
- (4) The power supply.

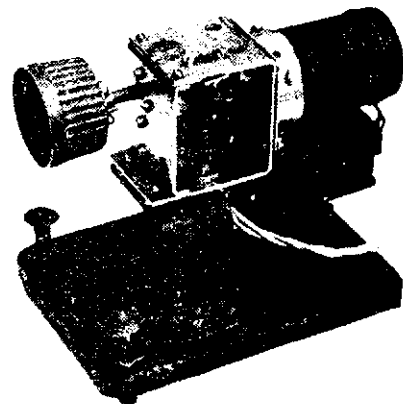
The 1,000 cycle mark note used as reference is taken from the mark filter of the T.U. This filter is only 50 cycles wide and thus no signal outside its passband can operate the a.f.c. unit. The level is adjusted by means of the 47K resistor in the primary of the input transformer.

The input transformer is a standard transistor driver unit such as the A & R TD1 with the secondary centre tap not used. The signal is boosted in the audio amplifier, this amplifier being quite standard except for the output transformer which "sees" a load of about 1,500 ohms. An A & R driver transformer type IT631 50 ohms c.t. to 1,500 ohms would suit but something with a higher primary impedance would be preferable. The 0.05 uF. on the secondary is to improve wave form around the desired frequency.

The output signal from the amplifier is split two ways. One leg goes to Q4 which is acting as a switch in the drive motor supply line. In the absence of a signal Q4 is cut off and no current flows through the coil of Relay 3. The contacts R3 in the line to the drive motor open and the motor stops. The second output leg from the audio amplifier is applied in series to the drive coils of the three tuning forks (L1, L2 and L3). For the particular coils used in this unit, 4.5 volts r.m.s. was found to be the optimum drive level.

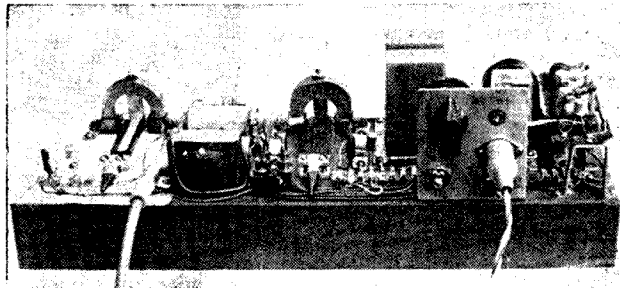
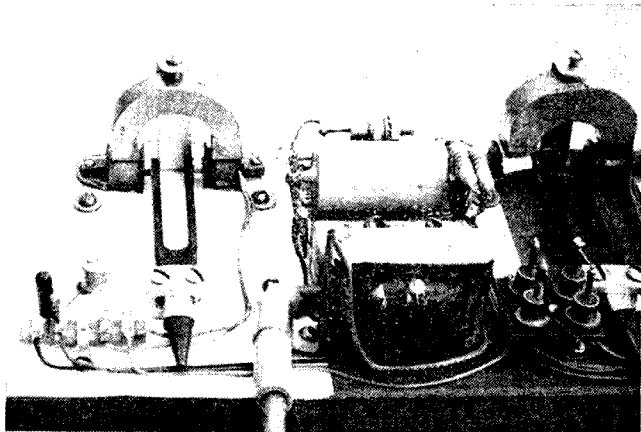
If the signal is at the 1,000 c.p.s. resonant frequency of the centre tuning fork, a voltage is induced in its pick-up coil (L5) and this signal will cause Q6—which is normally cut off—to conduct. CR1 rectifies the signal and the resultant d.c. is applied to L7 and L9 in the two Carpenter polarised relays which are wired in series. Energising L7 and L9 cause the relay contacts R1 and R2 to connect both motor supply lines to the negative d.c. feed rail and the motor is thus inoperative.

Note that the positive voltage for the emitter of Q6 is derived from the motor supply line and not from the 9 volt regulated supply. This is done to prevent L5/Q6/CR1 from activating the relays when the incoming signal has been centred on 1,000 c.p.s. CR4/CR5, the two 100 uF. 12v. electrolytics, and



View of Tuning Motor Assembly. Note the plastic bottle top "clutch".

* 22 Clarence St., Elsternwick, Vic., 3185.



Above: General View of Unit.

Left: View of two of the Tuning Fork "Filters" showing method of mounting and magnetic coupling.

the two associated resistors are used to provide the correct positive voltage to the emitter of Q6 independent of the polarity of the motor supply.

Just so long then as the feed signal is $1,000 \pm 5$ c.p.s. the motor is not activated. Since the motor is connected to the main tuning dial of the receiver the v.f.o. tuning remains unaltered.

Suppose now the signal drifts low. As soon as it reaches 995 cycles L1 energises tuning fork F1, L4 picks up a signal which allows Q5 to conduct, this signal is rectified by CR2 and L8 is activated. This causes R1 to take up its "positive" position while R2 stays "negative". The motor then drives the receiver tuning knob in the direction to counteract the drift, i.e. the mark signal is returned to 1,000 cycles and the motor stops.

If the signal drifts high, as soon as it reaches 1,005 c.p.s. then F3, L6, Q7 and CR3 come into play, L10 is activated and the supply voltages to the motor are reversed, i.e. R1 stays "negative" while R2 goes "positive". The motor drives, this time in the opposite direction, and once again the receiver is tuned to counteract the drift, cutting off when it reaches 1,000 c.p.s.

SW1 is included as a reversing switch for use on "opposite" sideband. The driver motor is a 24-volt polarised unit fitted with a high reduction gear train obtained from surplus radar. The direction of rotation is a function of the polarity of the drive voltage. With the supply connected round one way the motor goes clockwise. When the supply is reversed the motor goes counter

clockwise. In the unit described the motor is mounted on a heavy baseplate and is adjusted by means of three screwed legs in the baseplate so that the centre line of the drive shaft is concentric with the centre of the Galaxy tuning knob. No modifications are necessary to the receiver tuning arrangements since the "couple" on the motor is a plastic bottle top which fits loosely over the tuning knob. A simple rubber band doubled round the tuning knob acts as the actual coupling element and the motor can be connected to the receiver by pushing the baseboard into position. Very simple! Very effective! Very cheap! The photograph gives an idea of the mechanics of the drive unit. The power supply is straight forward and must be able to give 15 volts at about 200 mA. The supply for all the transistors (except Q6) is regulated at 9 volts by the zener diode CR6.

GENERAL

Whilst moderately complex, the unit has outstanding performance. Once tuned to the required signal it stays tuned. The receiver can be "locked" on to the distant station and left unattended for long periods—all day if necessary—and imperfect copy due to drift is eliminated.

As far as the writer is aware this is the first time such an a.f.c. control for Amateur RTTY has been described. A.f.c. units must obviously be used by Post Offices and other official communications bodies all over the world but they are very complex devices using a

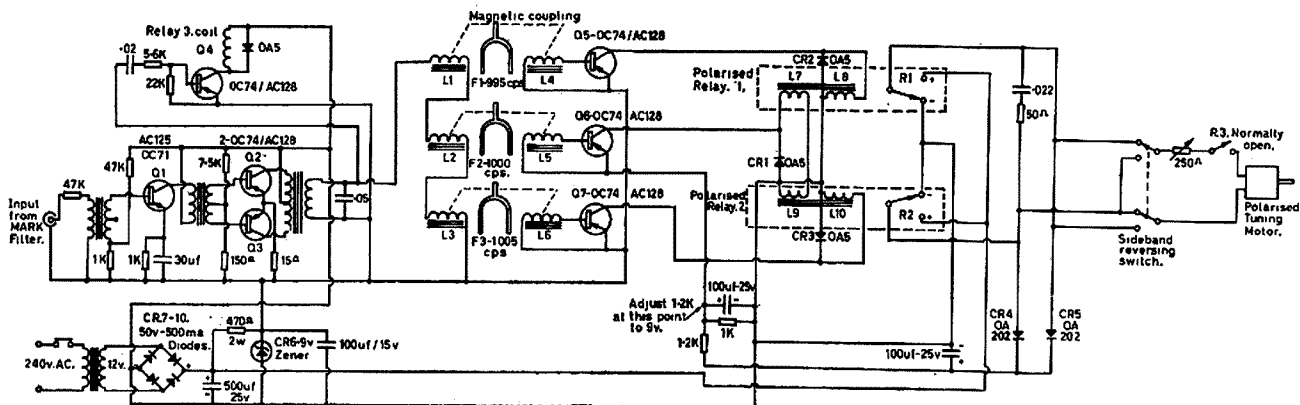
lot of very accurate and very specialised low frequency crystals. As such, they would be outside the reach of the average Amateur. This unit is not.

As a result of four months of "on air" trial many flattering remarks—and many queries—have been forthcoming from others interested in RTTY. Eric VK3KF—the doyen of Australian RTTY'ers—has had many discussions with the author and is currently developing a similar unit using the toroidal filter/discriminator approach.

One constructional point that needs some explanation is the way in which the tuning forks are brought on frequency. These forks are normally obtained resonant on Middle C or 256 c.p.s. It is necessary to remove metal from the tines until the fork is resonant at the required frequency (1005/1000/955 in the case described). Since Middle C forks come in a variety of shapes, some long and thin, others short and fat, it is not possible to specify in this article how much metal must be removed. However, the tuning procedure will be the same irrespective of the actual dimensions of the fork used.

The first step is to rough grind the fork ends, removing equal amounts of metal from each tine. After each grinding the note is compared aurally with an audio oscillator/speaker combination set to the desired frequency. As the note gets closer to that required a smooth file is used and only small changes made. Finally the test set-up of Fig. 1 is used to get the fork exactly on frequency. Since the coil coupling

(Continued on Page 13)



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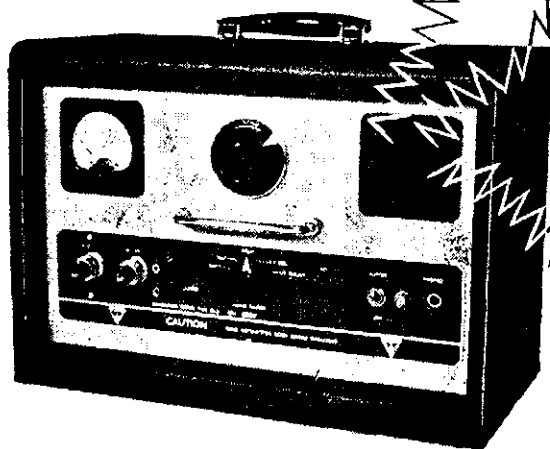
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SIDEBAND

Sub-Editor: PHIL WILLIAMS, VK5NN, 37 Winda Rd., Coromandel Valley, 5051

V.H.F. S.S.B. DX

Already DX is to be had on 50 Mc., and many of the VK boys are preparing to avail themselves of the better DX ability of sideband. The new regulations which are due to be published in "Amateur Radio," and which should be available in the new Handbook for the Guidance of Amateur Operators, should make it possible for some very useful s.s.b. to be beamed north and northeast for the DX season in January and later. They estimate that the Handbook will be printed and distributed within a few months of publishing these notes.

Apparently some of the stations on 50 Mc. to the north of us have some difficulty in receiving sideband. This is a shame and if somebody could publicise the fact that we are going to use reasonably high powered sideband transmission, the DX stations may be able to prepare their receivers. It may be worth a letter to Sam Harris who writes the V.h.f. Notes in "QST".

SIDEBAND GATHERING—1968

The honorary secretary for the next Hamilton, Vic., Sidebanders Gathering for 1968, Dud VK2DQ, advises that this will be held during the Australia Day week-end at the end of January. Most of those who have attended previously (1964 and 1966) have been sent notices and any others who have frequented the top of 80 mx with the "Sewing Circle" and would like to come should write to Dud for details and application form.

SIDEBAND ON AN OLD RECEIVER

I have been asked again to outline the most desirable modifications to be made to an old receiver of the 1940-50 vintage to make it work "properly" on sideband. On following up the meaning of the word "properly" in the questioner's mind, it is apparent that he usually wants the old box transformed into a 75A4 or the equivalent, but even so there is quite a lot which can be done to make the receiver a useful item of gear.

A brief run through the major points may help anybody who has an old SX24, "Super-Pro" or even an AR7.

Stability.—Much has been written about this but the oscillator stability can always be improved by fitting a VR105 or similar tube for the h.f. oscillator and b.f.o. supply. This tube and its dropping resistor should be located away from the oscillator section, in the well ventilated section of the receiver. It is a good plan to replace the old 5Y3 or 80 with a set of silicon power diodes, and use the rectifier socket (re-wired or replaced) for the VR tube.

More heat may be removed by running the audio output tube (say 6V6 or 6F6) with about 150 volts on the

screen and about 20 mA. of plate current instead of 40 mA. or so. It usually needs 600 to 800 ohms of cathode resistance to achieve this, and a watt or so of audio is still available.

Another oscillator tube such as a 6C4, which has a low consumption heater, will often reduce heating and improve stability. The original octal socket hole may take a metal plate with the 7-pin miniature socket (ceramic or P.T.F.E.) sitting in the centre.

Additional cabinet ventilation in the top, sides and back can be had by letting in some pieces of perforated metal, or cutting long horizontal parallel slots with a nibbler. The latter can give quite a pleasing result.

Bandspread and Tuning Rate.—Those old receivers made for c.w. usually have reasonable tuning rates on the bandspread knob. If such is not the case, it is usually on 10 and 15 metres that the rate is too rapid, and I can only suggest the addition of a small 6:1 planetary drive on the front of the panel, with a big knob to hide it, or add converters for these bands (crystal) and tune at a lower frequency. The converter usually solves a stability problem and a sensitivity problem, too.

I consider that a tuning rate of about an eighth of an inch per kilocycle is about the place for tuning sideband—i.e. measured on the circumference of the tuning knob. Use a skirted knob and mark these around the edge. It is helpful for estimating signal bandwidths, separation and for moving your own transmitter by "X" kilocycles to dodge some interference.

Intermediate Frequency Bandpass.—Most old crystal filters are not ideal for sideband, but the least selective "crystal" position is generally used. The "narrow" position is too restrictive and intelligibility suffers as a result.

If your receiver has no crystal filter, then I recommend you try two pairs of back-to-back i.f.s. One is not enough at 455 Kc. Couple between transformers with a 10K to 20K resistor, and add about 12 pF. of capacitance to each winding which does not have a valve plate or grid connected to it.

You may be able to add a two-crystal, half-lattice filter, using surplus channel 44 and 45 crystals of the FT241 type, but this is not recommended as these crystals are now old and those remaining have been well picked over. The addition of a mechanical filter (2.1 Kc. bandwidth) is recommended and the money outlaid is worth "saving up" to get the very big improvement in rejection in unwanted signals. For their size, their performance is amazing. Just tune the input and output windings with capacitors as recommended by the maker and couple in and out with small

condensers—usually less than 10 pF. No terminating resistors are needed.

B.f.o. and Product Detector.—Although many will tell you a diode is okay for receiving sideband, and I do not deny it—the use of the existing diode usually prevents the use of a.g.c. for sideband reception. If the product detector does nothing else, it separates the b.f.o. signal from the detector, and allows the rectified received signal to be used for deriving a.g.c.

The simplest product detector I know is that using a mixer/oscillator tube such as a 6AN7 tube. An ordinary broadcast type oscillator coil suitable for the tube in question may be made to work at 455 Kc. by placing 1,200 pF. of fixed mica condenser across it and adding about a 50 pF. variable for the b.f.o. tuning condenser. The tuning slug will put the b.f.o. on 455 Kc. and the variable will then tune about plus and minus 3 Kc.

The signal input to the product detector should be reduced in strength by putting 100 pF. from signal grid to earth, and coupling from the last i.f. transformer secondary via a 10 pF. or small variable. With about 22K of plate load resistor in the heptode (plus the r.f. filter resistor or r.f. choke, of course) it should be possible to switch from diode to product detector on an a.m. signal, without too much change in level.

To align the i.f. transformers, the method I have found most useful is to put the b.f.o. condenser in mid position, adjust the b.f.o. slug to put the b.f.o. on 455 Kc. exactly (signal generator zero-beat)—then go along and adjust each slug in the i.f.'s for lowest pitch of the noise peak coming from the product detector with signal generator off. If a mechanical filter is added, it may be necessary to shift the b.f.o. slug to the centre frequency of the filter by leaving the condenser in mid position and tuning the b.f.o. coil slug for lowest pitch noise.

A.g.c. for Sideband.—This will probably be the modification demanding more sweat and tears than the preceding because it will require changes to the a.g.c. time constant resistors and capacitors to give fast attack and slow decay. The a.g.c. decoupling condensers on the grids (or tuned circuits) of the controlled stages should be small (say 0.01 uF.), and the a.g.c. voltage derived from a low impedance source and fed to the control line via a silicon diode.

If you can find room on the chassis for a 12AU7 and a 3:1 audio transformer, then I recommend strongly that you use the audio-derived "hang" a.g.c. circuit now given in all issues of the A.R.R.L. Handbook. It was described in "A.R." last year.

If you use this audio derived a.g.c. you will need an S meter to tell you how strong signals are, because you will not be able to tell by listening. A strength 3 signal sounds like a 10 over 9 one on a quiet band.

The standard S meter connected from the cathode of a controlled i.f. stage to the cathode of the a.f. stage, with zero and sensitivity control resistors, is usually satisfactory.

(Continued on Page 13)

SIX AND TWO CROSS-BAND DUPLEX MOBILE

ROY HARTKOPF,* VK3ZOM

HAVE you ever sat in the middle of an intersection waiting for the other station to finish the over so that you can ask which way to turn? Or gone three miles past a turn off because the fixed station started describing his rig and forgot to give you directions? Or have you started an over at 5 and 9 and found, when you put it back, that you had been talking to empty space? If you have experienced any of these frustrations, then you are a potential customer for cross-band duplex mobile working.

The writer had six metre mobile in his car for some years but was missing out on all the two metre contacts. So he decided to build some mobile two metre gear as well. To be any use for mobile, it was necessary to be able to change from six to two at the flick of a switch. At the same time, space and cost dictated that as much of the gear as possible should be common to both. With two aerials, a common power supply, common microphone and modulator, it was only a short step more to adding facilities for simultaneously transmitting on one band and listening on the other and so the cross-band duplex mobile rig came into being.

The two separate aerials are not really a problem. The six metre rig uses the normal car radio aerial mounted on the bonnet and the two metre aerial is a 19" length of wire held in a terminal which is mounted on the rear centre part of the roof. When the rig is switched off the six metre aerial is connected directly through to the car radio for normal broadcast reception.

From the block diagram (Fig. 1) it will be seen that there are three basic units; first the transmitters, converters and switching, then the modulator and power supply (both transistorised), and finally the normal car radio. The first and second units are connected by screened six-way cable, while the car radio is kept as an entirely separate unit and if you are prepared to do without a noise limiter it need not be touched at all.

To allow for continuous operation while mobile and for several hours when parked, a power of ten watts was used. The transmitters are almost identical physically, each being on a 7" x 2" x 1 1/2" chassis and using a 12AT7, 12BY7 and 6X4 as the final. It is hoped to describe these together with the converters at a later date and also the power supply and modulator. However, the idea behind this article is to help anyone who is interested to make something up from existing six and two metre gear.

Many Amateurs seem terrified of anything with complicated switching, but the switch layout diagram (Fig. 2), together with the block diagram in Fig. 1 should help to convince them that the switching needed is not so difficult after all.

In the rig the switch wafer comprising SW1 A and B was nearest the panel so as to be close to the relays and aerial lead. All the r.f. leads were screened and earthed at one point. It was found that apart from one or two "spots" there was surprisingly little interference or feedback when working cross-band either way.

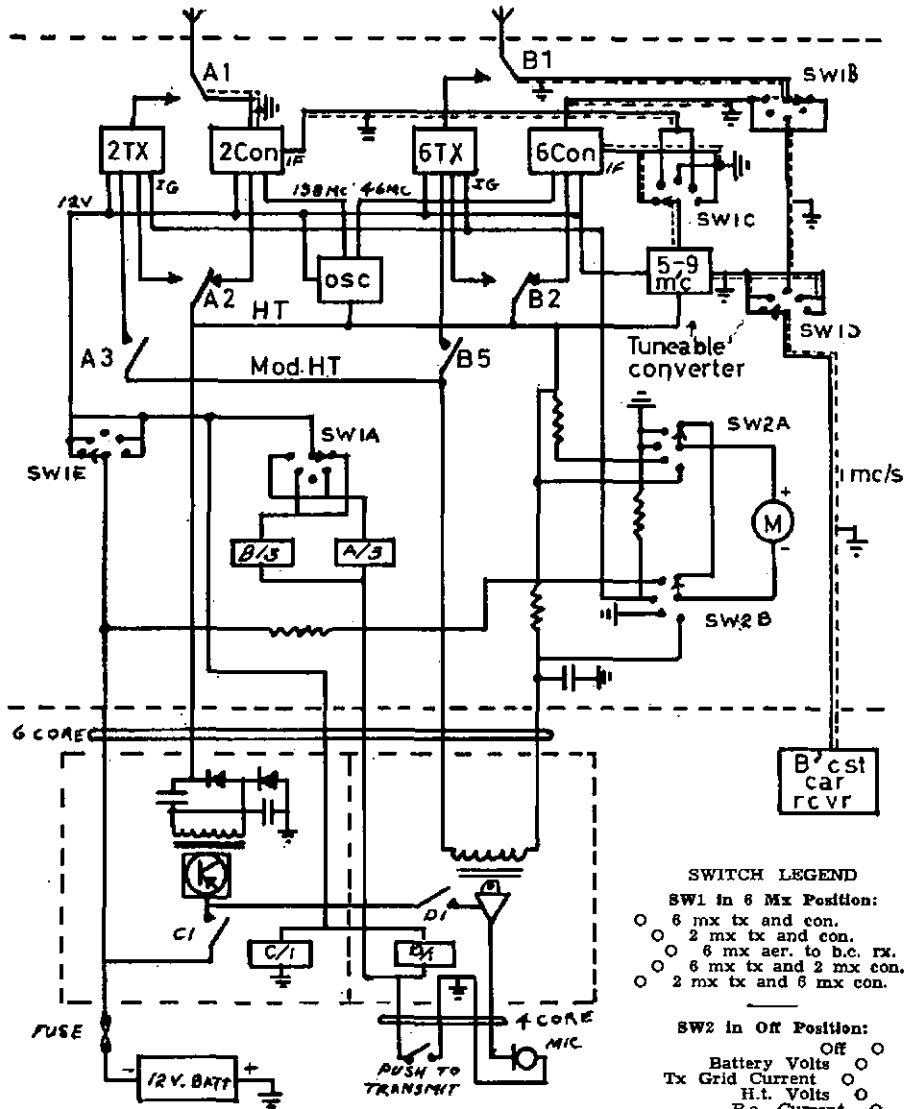
Both transmitters use crystals oscillating at frequencies well above the 6 to 10 Mc. tunable converter. The common 12AT7 oscillator for the v.h.f. converters uses a 46 Mc. crystal, giving a 6 Mc. i.f. for 52 Mc. and the crystal frequency is tripled in the other half of the 12AT7, giving 138 Mc. This again gives an i.f. of 6 Mc. at the bottom of the two metre band. Normally the car receiver is set at a spot-free position round about 1 Mc. and the tuning is done by the tunable converter. If you are prepared to settle for 1 Mc.

coverage you can have a fixed second converter and use the car radio for tuning.

For those who find the switching circuitry of Fig. 1 confusing, here is a brief description of the operation of the function switch SW1.

The off position, which has already been mentioned, routes the six metre car radio aerial through SW1B and SW1D direct to the car receiver and everything else is switched off.

In the six metre position, the one in which the switch arcs are drawn, SW1E puts the live battery on to all the heaters, to 6/1 which operates starting up the h.t. supply, to D/1 and through SW1A to relay B/3 the six metre transmit-receive relay. Meantime, the SW1B connects the six metre relay contacts B1 to the six metre converter input and SW1C connects the output



* 34 Toolangi Road, Alphington, N.20, Vic.

to the tunable converter. Finally, SW1D connects the tunable converter output to the car radio receiver.

When the "push to transmit" switch on the microphone is operated the modulator relay D/1 and the transmit-receive relay B/3 are operated. Contact D1 switches on the modulator. Contact B3 supplies modulation to the six metre transmitter; contact B2 supplies h.t. and contact B1 connects it to the six metre aerial.

The next position of function switch SW1 does exactly the same for the two metre transmitter and converter. In this case the "push to transmit" switch operates relay A/3 instead of relay B/3. Since the two metre converter is permanently connected to change over contacts A1 there is no two metre equivalent required for SW1B.

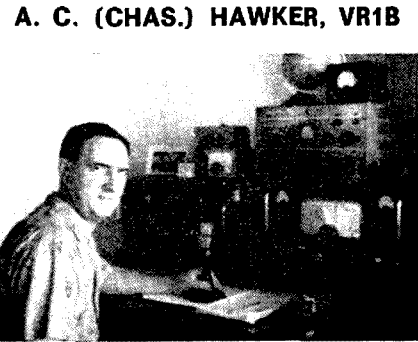
The two most clockwise positions of function switch SW1 are used for cross-band working. The extreme clockwise position—listen on six and transmit on two is almost the same as the extreme anti-clockwise, normal six metre position. The only difference is that SW1A

connects A/3, the two metre relay, instead of B/3, the six metre one. This means that when the "push to transmit" switch is operated the two metre transmitter is put on the air; and since relay B/3 is not operated, the six metre converter remains in action and so we have cross-band duplex transmitting on two and listening on six simultaneously.

In the last but one clockwise position the two metre receiver remains in action all the time while the "push to transmit" switch operates the six metre transmitter.

The meter switch SW2 (must be non bridging or break before make type) is entirely independent of the function switch and will meter whichever transmitter is in operation at the time. The circuitry here is quite standard and the series and shunt meter resistors are of course chosen as required.

After several months of duplex cross-band working, the writer is completely sold on it and never uses the "mobile monologue" section if he can possibly avoid it.



Pictured is the rig in use by Chas. Hawker who operated station VR1B from Tarawa in the Gilbert Islands during the period 1959-1965. It was thought that due to the large number of enjoyable contacts had with VK a description of the equipment used might be of interest.

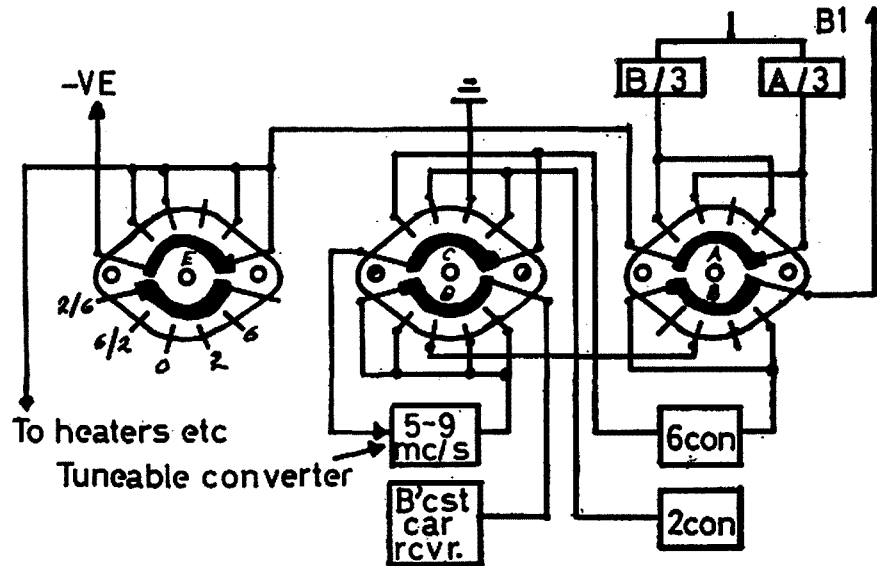
The receiver should be immediately recognised as a vintage SX28, although considerably modified for improved c.w. and s.s.b. operation (article "A.R." March 1966). The same receiver was used at VK1AC (Macquarie Island 1954) and VK0AB (Davis 1957), so is widely travelled!

The transmitter is a home-brewed effort built around the inevitable Gelson v.f.o. featuring alternative crystal control, break-in keying, all-band tank circuit, in-built solid state power supply, a.m. modulator and 150 watts input to a pair of 6146s. The latter are also switchable to serve as AB1 linear amps. for s.s.b. service and when in this mode are driven from the much-modified 10B exciter seen atop the transmitter.

The home-brew s.w.r. meter is perched on top of the 10B and the remote v.f.o. for the s.s.b. rig sits in a handy position right top of the receiver. The microphone is a dynamic. Antennae in use were W8JK and a 170 ft. long-wire 35 feet in the air. The latter was erected out over the sea, which accounted for its excellent performance and favoured use!

Over six thousand contacts were logged and a total of 173 countries worked. W.A.S. was achieved in a few short months early in the peace. Conditions generally were excellent during 1959-60 but 1961-65 saw many occasions when it was difficult to work VK and even the West Coast Ws faded completely from the scene. Indeed there were many occasions when a CQ from VR1 didn't bring a solitary reply! From VR1 it is extremely difficult to hear any European stations and in six years successful openings of any worth probably numbered less than a dozen.

An Australian-made Crammond transceiver was used during occasional maritime mobile excursions, including the Phoenix and Line Islands trip in mid 1964. S.s.b. gear was loaned by KB6EPN during the s.s.b. phase of the Phoenix Islands expedition. Chas, ex VR1B, now operates a Collins S Line from VK31B at the home QTH at Dimboola, Vic., where he now handles a newsagency business.



sw1.detailed wiring switch shown in 2M-TX 6M-RX posn.

SIDEBAND

(Continued from Page 11)

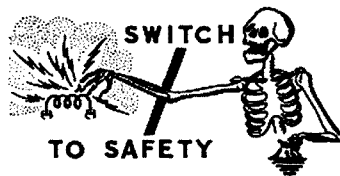
Receiver Re-Sale Value.—Old receivers of the type mentioned brought higher prices unmodified some 5 or 10 years ago, but their value is now less than a 1936 Pontiac—so don't be afraid to modify your old faithful "hearing-aid". There may be some years of life in it, yet.

Finally, Muting.—Don't forget that you have to silence your receiver while you are transmitting, but let it come back to life quickly when you return to "receive". It is possible to do this in so many ways that I shall simply state the requirements and let it go at that. You could feed about 40 volts of your transmitter bias to the receiver a.g.c. line through a diode, i.e. just enough to mute it.

For netting, however, you must restore the receiver gain while the transmitter is on, but with the transmitter audio to the modulator shorted out, so that only "carrier" at low level leaks through to the receiver. The audio a.g.c. will hold its level.

Yes, the sideband part is easy, it's all this switching stuff that gets so complicated.

73 for now, Phil VK5NN.



RTTY THE EASY WAY

(Continued from Page 9)

magnet affects the resonant frequency of the fork, it is essential that final trimming is done with the fork mounted and driven as it will be when in operation.

This article has not attempted to give exact mechanical details. Rather it has been its purpose to present a practicable solution to a very real Amateur RTTY problem. The diagrams and photographs will assist those who would like to make something similar. In VK3 at any rate the polarised relays are in reasonable supply from disposals sources and the writer has a few suitable fork coils available for those really interested.

As a closing thought, there seems no reason why the c.w. fanatic could not adapt the system to his favourite mode.



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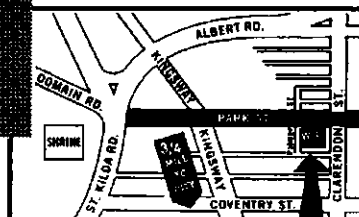
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IMPROVEMENTS TO SWAN 240 TRANSCEIVER

JOHN D. WARD,* VK5WD (EX G3HDW)

SOON after acquiring one of these transceivers the writer realised that, although basically of good design, some improvements could be made which would improve the performance of the equipment.

The modifications described in this article concern changes to overcome the following deficiencies:—

1. Noise produced by the 12BE6 mixer valve, resulting in a somewhat poor overall signal-to-noise ratio.
2. The relatively short life of the 6DQ5 p.a. valve experienced by some users of this equipment.
3. The lack of correct tracking of the exciter tuned circuits over the full range of any band. This results in a variable amount of drive to the grid of the p.a. valve, depending on the frequency set by the v.f.o.
4. Hum emitted from the speaker when a combined speaker/power supply is used (depending on the power supply cable loom used to connect the power supply to the transceiver, this may not occur with all installations).

Other modifications, such as low band coverage on 80 metres down to 3.5 Mc., grid block keying and the provision of an S meter will not be mentioned in this article since they have been referred to in Swan service bulletins and other publications.

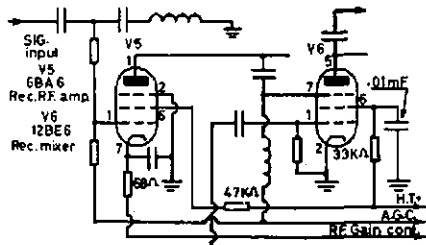
IMPROVING SIGNAL-TO-NOISE RATIO

To improve the signal-to-noise ratio either the mixer, which generates most of the noise, must be modified or else the r.f. amplifier must have sufficient gain to amplify an incoming signal to a level whereby it can override the mixer noise. An investigation into the circuit indicated that since a multi-grid valve was used for the mixer, it would be easier to modify the r.f. stage.

In the original circuit the screen grid of the 6BA6 r.f. amplifier is fed by a dropping resistor which is common to a similar electrode in the mixer. This results in a short grid base for the r.f. amplifier with the result that this stage is biased back considerably when a signal is tuned in and the a.g.c. line voltage increases in negative potential. To improve the effective grid base of the 6BA6, and thus obtain a more gradual and progressive reduction of gain on moderate and weak signals, the screen grid of the r.f. amplifier should be fed via a high value of series resistance.

To make this modification proceed as follows: Disconnect the lead connecting pin 6 of the 12BE6 mixer to pin 6 of the 6BA6 r.f. amp. Remove the existing 22K ohm 1w. resistor connected to pin 6 of the mixer and substitute with a 33K ohm 10% tolerance 1w. type. Decouple pin 6 of the mixer to ground

with a 0.01 uF. 500v. disc ceramic capacitor. Connect a 47K ohm 10% tol. 1w. resistor between pin 6 of the r.f. amp. and the h.t. feed end of the new 33K ohm resistor which has previously been installed (the h.t. feed point is at a tag strip). Remove the existing 47 ohm resistor connected to the cathode, pin 7, of the r.f. amp. and substitute with a 68 ohm 10% tol. 1/2w. type. This completes the modification and your circuit should now look like Fig. 1.



CHANGING THE P.A. VALVE

The original 6DQ5 valve is not very tolerant of being subjected to high operating temperatures, extended periods of tuning-up or the rough treatment that often occurs with mobile operation.

A very much better valve, although it is more expensive, is a type 8236 which is a plug-in replacement for the 6DQ5. To fit this valve, a slight mechanical modification must be made to the base inside the p.a. compartment and the anode tap cap must be opened out slightly to accommodate a slightly bigger top cap. There is no need to change the base or to make any electrical modifications.

Some Amateurs may experience difficulty in obtaining 8236 valves, but it is understood that Mullard-Australia has stocks available via their distributors.

EXCITER TUNED CIRCUITS

To improve the tracking of the exciter tuned circuits, the values of the fixed capacitors wired across coils L3-75, L3-40 and L3-20 should be reduced in value. These components are situated on the top of the chassis in front of the screened p.a. compartment. The following changes should be made:

- | | |
|--|----------|
| Remove— | |
| 75 pF. capacitor across | L3-75. |
| 180 " " " | " L3-40. |
| 50 " " " | " L3-20. |
| Substitute— | |
| 47 pF. 10%, 500v., N.P.O. disc ceramic across | L3-75. |
| 150 pF. 10%, 500v., N.P.O. disc ceramic across | L3-40. |
| 27 pF. 10%, 500v., N.P.O. disc ceramic across | L3-20. |

If disc ceramic capacitors are not available, 500v. good quality mica types will do just as well.

When this work has been completed re-align the exciter tuned circuits according to the instruction manual. This operation entails the connection of a dummy load to the antenna socket, inserting a little carrier and adjusting the slugs in the coils for maximum output. The adjustment should be made at approximately the centre frequency of each range.

HUM

Some models of this transceiver suffer from an objectionable level of hum in the speaker. It took the writer some considerable time to locate the cause of this, especially since the hum level did not alter in intensity when the h.t. supply was switched on or off. The reason for this is that in the original Swan P.U. circuit there are two ground return paths from the chassis of the P.U. to the main transceiver chassis.

The first ground return path is via the direct connection between the P.U. and transceiver (pin 6 on the connectors to the linking cable loom). The second return is not so obvious. It is formed by the path through the speaker voice coil (one side is grounded) being connected via the cable loom, pin 12, to the low resistance secondary winding of the output transformer back to the chassis of the transceiver. Since several amps. of heater current flow through the wiring linking the ground return between the two units, some a.c. current is allowed to flow through the speaker coil.

The solution to this problem is to remove the ground connection from the speaker coil in the P.U. and return it to ground at the transceiver chassis, using the spare pin (11) on the Jones' connectors at each end of the connecting cable loom. This will mean the use of an additional lead between the existing connectors. Alternatively, bring the speaker connections out directly at the transceiver chassis and avoid grounding one side of the speaker coil to the P.U. chassis.

PERFORMANCE

With the improvements described, the overall performance of the transceiver is considerably improved. Not all users may wish to carry out all of the modifications described, but the simple changes to the r.f. amplifier circuit are earnestly recommended to anyone who desires an improvement in the signal-to-noise ratio for very little effort spent in altering a few components.

Many Amateurs who are using modern commercially made equipment appear to be reluctant to even take the cover off a transceiver let alone contemplate modifying the circuitry. However, these people should realise that most commercial equipment is built to a price level and a compromise design is the usual result. The old adage "nothing ventured, nothing gained" is certainly true in this case!

* 19 Caspar St., Fairview Park, S.A., 5126.

6-METRE CONVERTER

(Continued from Page 7)

until the instantaneous sum of the oscillator and signal voltages, with a strong signal, is almost to the point of driving the mixer gate to zero bias. This, however is difficult to measure as the average Amateur has not got access to the necessary test equipment so the easiest way is to increase injection (by peaking the screw core in L5 or by varying C12) until just prior to the point where the mixer noise rises sharply. The injection may have to be reduced still further if cross-modulation is experienced on strong signals. (Another possible source which should be checked if cross-modulation is a problem is instability in the r.f. stage.)

The converter can be easily adapted to cover a wide range of input frequencies covering the h.f. and the lower portion of the v.h.f. bands by simply altering the coils and using a crystal of the appropriate frequency. The h.f. converter in "A.R." September 1967 is an adaption from this circuit. The upper limit of this design is probably in the 70 to 80 Mc. region, due mainly to the availability of crystals at reasonable cost and also by the drop in gain of the single r.f. stage. Above this frequency a second i.f. stage or possibly a cascode arrangement would be desirable to obtain adequate gain. The range of i.f. output frequencies given in the table were selected as it was felt that the majority of Amateurs use output frequencies in this range (the adjustment of the screw core covers a reason-

ably wide frequency range to cater for i.f.s around the values given). If other i.f.s are required, then it is a simple matter to alter the number of turns on L4 as required.

A number of kit sets consisting of the printed circuit board (silk screen printed on the reverse side), transistors, coil former assemblies, neutralising capacitor and construction information have been distributed to VK3 V.h.f. Group members and to some Interstate Amateurs at a price of \$5.50 each plus 50c postage.

It is anticipated that a further limited number of these kit sets and/or component parts will be made available and further information can be obtained from the Converter Committee, VK3 V.h.f. Group, P.O. Box 36, East Melbourne, 3002.

Work is in hand to develop designs for both the 144 and 432 Mc. bands and it is anticipated that this work will be completed shortly.

PROVISIONAL SUNSPOT NUMBERS AUGUST 1967

Dependent on observations at Zurich Observatory and its stations in Locarno and Arosa.

Day	R	Day	R	Day	R	Day	R
1	139	9	94	17	85	25	98
2	119	10	87	18	114	26	105
3	91	11	79	19	116	27	107
4	83	12	62	20	108	28	119
5	90	13	70	21	115	29	111
6	95	14	56	22	104	30	121
7	98	15	61	23	110	31	124
8	119	16	77	24	104		

Mean equals 98.1.

Smoothed Mean for February 1967: 78.4.

Predictions of the smoothed monthly sunspot-numbers for the coming six months: September 95, October 97, November 99, December 101, January 103, February 104.

SSB EQUIPMENT

TYPE "F" SSB EXCITER, circuit board with crystal filter, mic. amp., B.M., I.F. amp., etc., completely assembled **\$49**

FM-50 VFO, for use with "F" Exciter, FL-50 and FT-50 **\$49**

FF-30DX, 3-section L.P. filter, **\$18.50**

K-109 SWR METER **\$20**

FR-50 RECEIVER, dual conversion, 80-10 mx **\$225**

FL-50 TRANSMITTER, lowest cost 5-band SSB rig **\$225**

FT-50 TRANSCEIVER, new, 60 w. p.e.p., five bands **\$380**

FT-100B TRANSCEIVER, revolutionary ultra-modern design, transistorised, low current drain, 120w. p.e.p. **\$620**

Also the well known "F" Series mechanical filter equipment (see back page advert, this issue), matching speakers, accessories, coax. connectors, tri-band beams.

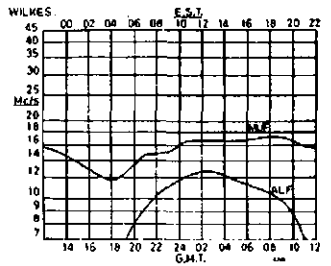
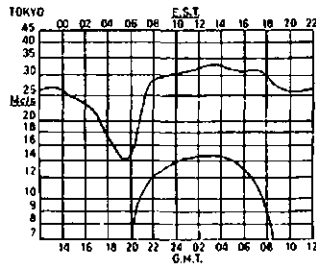
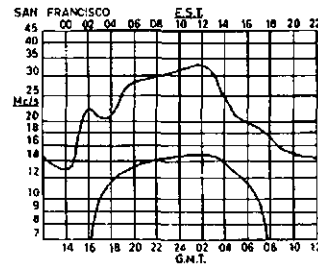
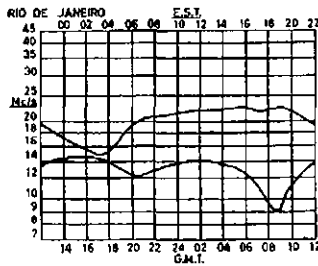
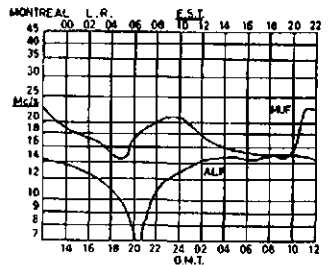
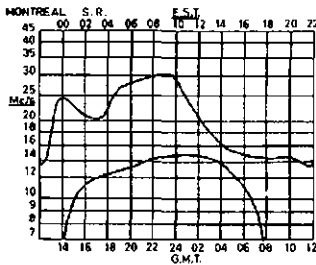
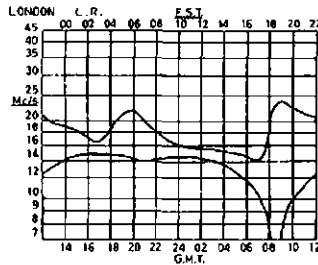
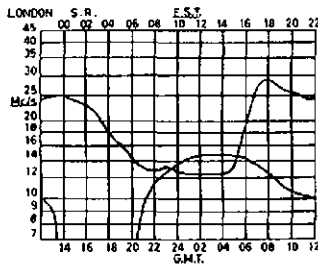
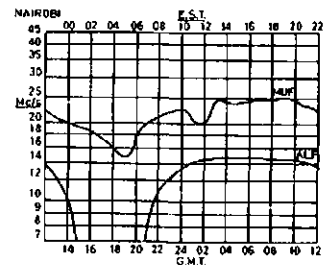
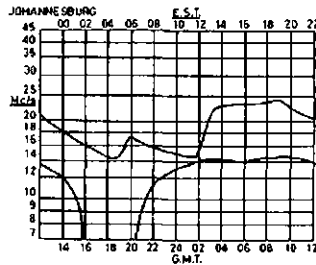
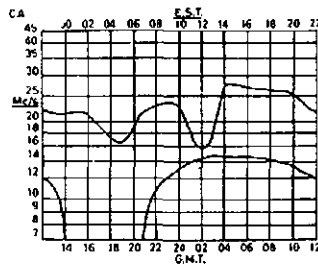
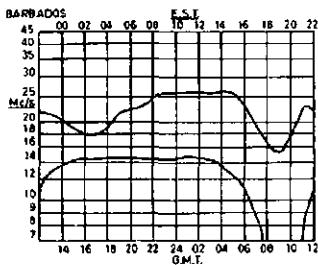
All prices Amateur Nett, incl. S.T., freight extra.

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PREDICTION CHARTS FOR NOVEMBER 1967

(Prediction Charts by courtesy of Ionospheric Prediction Service)



FIELD EFFECT TRANSISTORS*

FETs May Be Lowest Noise, Lowest Cross-Modulation, Lowest Priced Devices So Far!

FIELD Effect Transistors (FETs) are a family of devices that have been in the laboratory for some time in inferior forms. Now, by using recently evolved techniques used in ordinary bi-polar transistor manufacture, they have emerged as an extremely commercially attractive device. They appear to have all the virtues of valves and transistors and yet none of their vices and have filled a gap in the electronics field that previously hindered developments in many areas.

The FET is quite a separate device from the bi-polar or ordinary transistor. It is reasonable, therefore, to expect a distinct new set of characteristics.

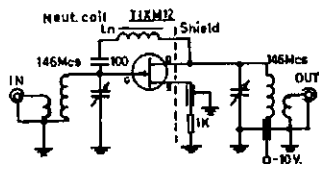


FIG. 1. GROUNDED SOURCE NEUTRALIZED R.F. STAGE, - 15-20 DB GAIN.

I think it is important not to confuse FETs with ordinary transistors, and it is unfortunate that "Transistor" is used as part of their title. Broadly, they have the following characteristics:—

High to almost infinite input impedance, which in most cases is very much higher than valves.

Capable of very low noise figures from d.c. to v.h.f. frequencies, and often this range is covered by the one device.

Low susceptibility to cross-modulation and inter-modulation due to strong unwanted signals in the passband of r.f. and mixer stages. Here again, some later types are superior to valves and far superior to transistors.

Apparently no limit to their power handling or maximum frequency, apart from inferior fabrication techniques at present in use.

No "off-set" voltage requirement.

Available in forward or reverse bias types and in P or N channel types with insulated or junction gates. This provides more versatility than any other device.

Can be positive, negative or zero temperature co-efficient, according to bias conditions and therefore very useful in d.c. amplifiers.

Require only one diffusion during fabrication as against transistors which may require as many as four.

Operate at medium voltages and are compatible with transistors in many new circuit designs.

Have the prospect of being very cheap due to the simpler manufacturing methods.

Have increased the component density capability of integrated circuits.

Very much more resistant to radiation than transistors.

However, to off-set this fine list of characteristics are a few disadvantages:

FETs still exhibit a fairly high resistance when turned on "hard". This resistance may be several hundred ohms, which is many times larger than a transistor of similar dimensions.

Another disadvantage is gate breakdown. This is where stated charges on the gate of the insulated gate type FETs cause catastrophic failure. It should be noted that this is only a danger in the insulated gate FET, MOS-FET or IGFET. The cheaper and more common junction FETs can be handled with the same respect as other semiconductors.

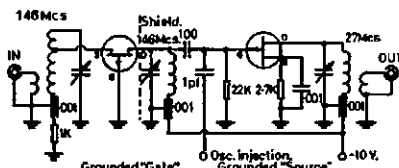


FIG. 2a. R.F. Stage, FIG. 2b. Mixer. TYPICAL 146 to 27 Mcs CONVERTER.

Some earlier FETs have had other disabilities which have been overcome in later ones by the large multitude of researchers who have taken such a keen and sudden interest in them. It is hoped that their remaining disadvantages may be likewise overcome.

In my limited and short experience with FETs, I have found they do all they claim in the tests I have given them. However, here are a few additional features that I have observed:

I have found that the audio FET 2N4360, apart from its expected low noise, seems fairly immune to induced key-clicks and electrical household appliance interference which usually plagues record-players, tape recorders and the like where bootstrapped transistor front-ends are used. A similar immunity to r.f. interference from the Adelaide Airport radar has been noted. This is unprecedented in any high-gain audio equipment ever used at my location in the foothills.

I am currently using the germanium P channel junction FET (TIXM12) both as r.f. stage (see Fig. 1) and mixer (see Fig. 2B) on 146 Mc. As a mixer, the TIXM12 has a lower conversion gain than the 2N3563 transistor used previously although the gain is probably comparable with a triode valve mixer. The TIXM12 r.f.

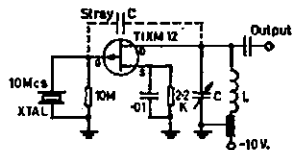


FIG. 3. TYPICAL CRYSTAL OSCILLATOR. (Claimed to have high stability.)

stage (see Fig. 1) is in grounded source and, as expected with 3 pF. feedback capacity, had to be neutralised for stability and maximum gain. This r.f. stage should provide a gain of about 15 to 20 db. and seems to do this. I also tried a grounded-gate configuration (see Fig. 2A) which did not give the same gain but did not require neutralisation either.

However, the real advantage of low susceptibility to i.v. interference was fully realised even at Mt. Lofty where the FETs proved better than my valve front-end in a check at the Mt. Lofty summit (R.F. Hill).

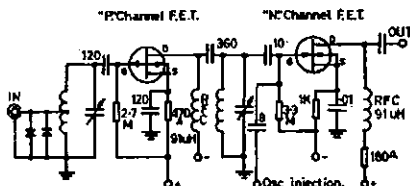


FIG. 4. RECEIVER FRONT END DESIGN USED BY THE "OMMO CO." (R.F.C.'s in Drain circuits used for ease of switching.)

I have also had the TIXM12 performing as an oscillator (see Fig. 3). It seems this FET was only as good as other transistor oscillators I have had working, which is still quite excellent. The only bonus here may be in a g.d.o. ("gate" dip oscillator) which I have had going in prototype form.

This short discussion will, I hope, introduce a few, at least, to the FET. I have avoided the theory of operation of these devices since there is quite a deal being printed in most of the periodicals these days. Instead, I hope this may serve as a bit of an appetiser and encourage further reading.

—Rick VK5ZFQ.



"... and who might you be calling 5 by 9?"

* Reprinted from "The South Australian Wireless Institute Journal," May 1967.

1967 R.D. CONTEST RESULTS

VICTORIA'S FIRST WIN

Congratulations Victoria for your high marginal win in the R.D. Contest. This success has now enabled every Division to hold the Trophy.

The log entry remained around the usual figure, which now is less than 10% of the total number of licensees for the whole of Australia. This has not followed the national increase of licence growth. 13% of the total entry were Z licensees.

With peak propagation expected in 1968, can it be anticipated that participation percentage will improve?

—Neil Pentfold, VK6ZDK, for F.C.C.

DETAILS OF STATE SCORES

Log Entry	Licensees	% Participation	Total State Points	State Score	
VK2	90	1697	5.3%	20,989	81.34
VK3	64	1655	3.9%	20,397	85.32
VK4	49	634	7.7%	14,639	82.18
VK5	118	694	17.0%	24,048	79.52
VK6	62	398	15.2%	13,902	79.51
VK7	52	199	26.1%	8,624	75.64

AUST. CAPITAL TERRITORY

(Award Winners in Bold Type)

Phone—

VK1AN	169	VK1QL	840
1BA	132	1VF	906
1DR	41	1WT	77
1JL	640	2BLF/VK1	242
1KM	271	1ZCG	14
1ML	21	1ZMR	12
1NC	8	1ZRX	12

C.w.—

Open—

VK1LN	288	VK1DA	377
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NEW SOUTH WALES

(Award Winners in Bold Type)

Phone—

VK2AL	93	VK2AGF	760
2CH	111	2A1A	337
2CM	250	2A1C	56
2DM	330	2A1J	94
2EK	292	2A1L	34
2FM	710	2AMA	49
2GJ	220	2APQ	538
2HQ	508	2AQR	11
2HZ	9	2ASJ	93
2IJ	113	2ATT	684
2MR	253	2ATZ	28
2MW	320	2AUQ	279
2OH	592	2AVT	51
2PF	616	2AWN	924
2PZ	150	2AWX	111
2RC	496	2AYP	42
2RJ	424	2BCW	42
2RP	88	2BGF	874
2RU	160	2BJF	44
2SG	109	2BMK	583
2SJ	595	2BRL	17
2TS	499	2ZCT	31
2VS	5	2ZCF	78
2WT	222	2ZGK	13
2XT	663	2ZJT	35
2YJ	22	2ZNK	8
2YN	626	2ZPC	10
2AAT	49	2ZSG	17
2ACD	263	2ZSI	15
2ACZ	305	2ZTM	6
2ADL	40	2ZWV	54
2AEC	352		
2AFD	331		

15873 pts.

C.w.—		C.w.—	
VK2GT	158	VK2AGI	462
2HW	30	2AGS	39
2JM	11	2AHM	50
2JY	84	2AJQ	121
2QY	31	2ANZ	44
2QL	545	2AXK	41
2VN	567	2BSJ	45
2YB	129		
2ZC	82		
2ZO	54		

2532 pts.

Open—

VK2B0	1987	VK2AUC	31
2CK	250	2BCC	885
2PU	227	2BCP	495
2RA	47	2BST	252
2AHA/M	12		
2ASJ	96		

2782 pts.

VICTORIA

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VK3BA	26	VK3AFW/P	884
3DY	310	3AGM	260
3EG	989	3AIH	204
3EF	192	3AGQ	123
3MO	1341	3AIS	10
3NN	135	3AJP	17
3OM	261	3AKJ	300
3OR	605	3AMK	861
3PP	78	3AOS	251
3RV	687	3ARM	70
3VK	915	3ATN/M	41
3VT	72	3AUC	82
3WM	77	3AUV	128
3WW	591	3AZJ	21
3WY	152	3ZCQ	11
3XU	268	3ZQN	40
3YQ	452	3ZUE	22
3ABP	161	3ZVV	65
3ABW	923		
3AEJ	733		

12290 pts.

C.w.—

VK3EZ	55	VK3ADB	451
3EB	332	3APJ	471
3PR	23	3ARV	93
3QK	278	3AXK	476
3VF	65		
3XY	348		
3ABR	148		

2780 pts.

Open—

VK3JG	630	VK3YO	202
3KC	142	3YS	196
3OP	638	3ABA	107
3KS	31	3AKS	710
3PG	32	3APN	543
3QV	756	3ASL	380
38M	690		
3XB	179		

3226 pts.

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VK4AT	30	VK4OF	112
4AV	28	4PJ	423
4BG	17	4PQ	866
4EM	67	4PK	537
4BQ	687	4PZ	25
4CP	768	4QW	139
4CZ	144	4RL	108
4DO	505	4RW	37
4EH	57	4SF	93
4EQ	82	4UW	31
4FA	236	4VX	1609
4FX	65	4WV	1115
4HB	395	4XJ	13
4HC	219	4XJ	167
4HR	106	4XY	593
4HZ	6	4XZ	315
4JJ	46	4ZZ	14
4JM	995	4ZDC	6
4JW	27	4ZMD	Check Log
4LE	397		
4LZ	288		

10858 pts.

C.w.—		C.w.—	
VK4KK	37	VK4XW	312
4UU	8		
4WO	118		

475 pts.

Open—

VK4FH	238	VK4UC	183
4J1	129	4UK	418
4LT	1012		
4RH	1329		

3306 pts.

SOUTH AUSTRALIA

(Award Winners in Bold Type)

Phone—

VK5AX	313	VK5OF	21
5BF	50	4OG/S	18
5BL	821	5ON	97
5BQ	605	5PM	17
5BY	32	5QK	805
5CA	25	5RI	116
5CH	63	5RL	20
5CI	40	5SS	135
5DC	92	5TJ	428
5DE	326	5TN	7
5DF	31	5TY	426
5DI	20	5UF	43
5DO	56	5UJ	337
5EP	300	5WC	134
5EJ	268	5WG	310
5EU	32	5WI	17
5EV	17	5WN	132
5FD	20	5WO	379
5FJ	470	5XO	104
5FL	302	5ZE	1042
5FM	549	5ZK	360
5FQ	245	5ZL	411
5GF	322	5ZZ/T	613
5GM	89	5ZBC	21
5GW	965	5ZCQ	18
5GX	683	5ZDX	96
5HP	107	5ZEH	4
5HW	19	5ZEJ	27
5JC	358	5ZGF	40
5KB	36	5ZJW	36
5KF	89	5ZKB	20
5KM	1025	5ZKK	26
5KN	153	5ZLT	27
5KS	35	5ZMT	8
5KX	23	5ZMW	42
5LQ	268	5ZNH	53
5LQ	45	5ZPB	22
5MM	10	5ZRP	41
5MQ	30	5ZSJ	19
5MS	28	5ZSW	52
5NJ	134	5ZTS	68
5NN	309	5ZUL	40
5NN	843	5ZXR	30
5NT	33		
5NY	1112		
5OB	51		

18187 pts.

C.w.—

VK5AU	182	VK5LD	146
5BS	107	5MY	340
5BZ	24	5MZ	42
5FO	874	5OR	146
5FH	271	5ST	25
5GP	83	5TL	100
5HO	53	5VW	53
5JG	26		
5JT	101		
5KU	18		

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Open—

VK5CL	80	VK5RG	895
5CV	687	5RX	30
5HM	237	5TC	330
5LN	637	5TM	173
5LZ	63	5WV	360
5NK	73		
5QR	225		

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6CF .. 678 "	6RG .. 205 "
6CJ .. 32 "	6RT .. 82 "
6CR .. 13 "	6RY .. 1138 "
6CW .. 444 "	6SE .. 16 "
6DA .. 615 "	6SM .. 539 "
6DC .. 22 "	6TU .. 18 "
6DI .. 42 "	6TX .. 142 "
6DR .. 161 "	6WI .. 46 "
6DT .. 197 "	6WL .. 131 "
6EP .. 386 "	6WY .. 674 "
6EZ .. 49 "	6XW .. 812 "
6FG .. 267 "	6XY .. 796 "
6FX .. 105 "	6ZBG .. 39 "
6GB .. 58 "	6ZCW .. 19 "
6GH .. 97 "	6ZDF .. 25 "
6GL .. 15 "	6ZFB .. 32 "
6ID .. 117 "	
6KH .. 138 "	
6LG .. 70 "	

10487 pts.

C.w.—

VK6AJ .. 61 pts.	VK6WT .. 486 pts.
6AS .. 111 "	6WW .. 127 "
6NK .. 117 "	6ZO .. 39 "
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6QJ .. 93 "	
6RP .. 78 "	
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1391 pts.

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VK6BE .. 864 pts.	VK6WU .. 91 pts.
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7BQ .. 14 "	7WF .. 88 "
7BT .. 13 "	7WI .. 427 "
7CK .. 67 "	7XL .. 311 "
7CT .. 59 "	7ZAH .. 10 "
7DJ .. 252 "	7ZAK .. 6 "
7DW .. 17 "	7ZAO .. 26 "
7EB .. 190 "	7ZAS .. 23 "
7FB .. 231 "	7ZED .. 20 "
7JD .. 13 "	7ZJG .. 26 "
7JO .. 32 "	7ZKJ .. 30 "
7LS .. 175 "	7ZRO .. 82 "
7MX .. 162 "	7ZTM .. 13 "
7PA .. 287 "	
7RL .. 209 "	
7SF .. 279 "	

5840 pts.

C.w.—

VK7BJ .. 42 pts.	VK7MZ .. 129 pts.
7CH .. 15 "	7RY .. 89 "
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7KS .. 18 "	
7LJ .. 40 "	
7MY .. 340 "	

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7EJ .. 201 "	7YL .. 40 "
7KA .. 12 "	7ZZ .. 549 "
7KC .. 50 "	
7MR .. 119 "	

2106 pts.

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C.w.—

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8KK .. 1341 "	

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9DJ .. 1711 "	

C.w.—

Nil Entry

Open—

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9DR .. 257 "	9XI .. 511 "

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WIA-L5078 .. 1049 "
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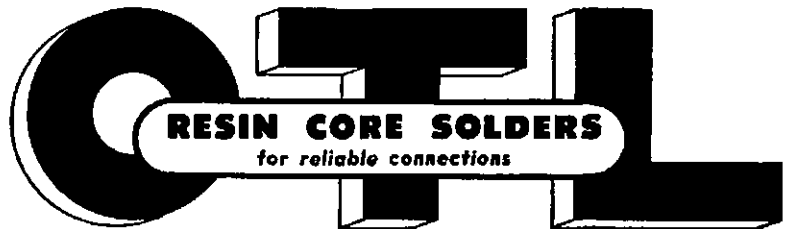
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DX

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

Ionos, the DXers God of Communication, seems to be in benevolent mood. Never for years has 14 and 21 Mc. been so good. Even 28 Mc. is beginning to become expansive. The next twelve months or so might see this peak out, so make time and be in it while it is offering.

NOTES AND NEWS

South Orkney Is.: VP8JD 14050 1900z. Also reported on 14127 a.m.
Falkland Is.: VP8JC 21323 1930z. Also on 3715 2130z.

South Georgia: VP8IE 14120 1830z. QSL to W2GHK.

W. Pakistan: Several AP prefixes now seem to be appearing. Some are: AP5HQ 14005 1800z. AP2MR 14145 1500z. AP2AD 14105 1600z. QSLs for the latter go via P.O.B. 94, Lyallpur.

Crozet Is.: PB8WW 14040 1900z. Also 14248 s.s.b. 1200z. QSL K5AWR.

Glorieuses Is.: FR7ZC/G 14135 1500z and later. Guernsey: GC8HT 14133 1400z. Uses other bands and frequencies.

Outer Hebrides: GM3LHZ/P 21355 1215z. Also 3730 2100z.

Bonair: Commencing Dec., K0GZN hopes to be active for three months.
Trinidad: PY0TX 14110 1900z. PY0AMP 14112 2040z. PY0CZR 14145 2000z.

Turkey: TA1SK 14011 1700z. TA2GK 14040 2300z. TA2FM 14060 2300z. TA4EK 14105 1800z.

Ceylon: 4S7PB 14170 1800z. QSL K6CAZ.

St. Peter and Paul Rocks: PY7AOA, PY7AKW and PY7ACQ plan to operate from here for period Dec. 4-10. Their s.s.b. call will be PY0SP and on c.w. it will be PY0DX. 14105, 21300, 14005.

Scott Base: Remember Ian ZL1ABZ. He will be ZL5AA for a year commencing now. (ZL-ZGX).

Galapagos: HC8JG is said to be active on 14150 around 0400z.

Saudi Arabia: 7Z3AB 14183 listening 14210. QSL W4HEG.

Wrangell Is.: DX-pedition is planned for this one around Xmas '67. Operators will be UB5UN, UW3CS, UA3FT. The call sign will have the prefix 4L0 or 4J0.

Aldabra: VQ9JW/A is reported QRT with p.s. trouble. Should be on 14 s.s.b. again by the time you receive this.

Tromelin: FR7ZL/T will commence from here around Sept. 17 for a prolonged period of operation.

Reunion: FR7ZD 14185 and listens 14205 around 0300z.

Lebanon: OD5BE 14210 0400z.
San Marino: MIB 14200 0500z.

Zambia: 9J2AB 14245 0500z. QSL W6REH.
Goes by name of Bugzy

Amsterdam Is.: FB8ZZ 14045 0500z.
Montserrat: VP2MJ 14230 1600z.

Canary Is.: EA8FO 14005 0300z. Others active on 21 and 28 Mc.

Comoro Is.: FH8CD 14107 1410. On almost daily.

Grenada: VP2GAR 21340 2000z. QSL P.O.B. 201, St. George.

Sao Thome: CR5CA 21093 2300z.

Volta: Rumour has it that all operations have been suspended from here.

Hong Kong: VS6FX 21030 1000z, and VS6CO 14267 1240z. VS6FZ 28600 0900z.

St. Martin: PJ2MI 14192 listens 14202. QSL VE3EEU.

Yasme DX-pedition.—Currently Lloyd and Iris are using the call 5L2KG. However, they are about to move from Monrovia and hope to make their next stop either TU2 or EA0. Keep an ear to these freq.: 7010, 7099, 14051, 14199, 21051, 28599. All QSLs go to P.O.B. 2025, Castro Valley, Calif., U.S.A.

Muscat: MP4MAX 14108 1800. Has a big signal here.

Pitcairn: W3DWG/VR6 is doing a six months' stint from here. Preferred freq. is 21350 s.s.b.

Andorra: FXIHV 14243 14050. QSL WA9HJM. Several PX stations are reported active.

Fletchers Ice Is.: This is a 10 x 6 mile slab of drifting ice in the Arctic Ocean. WA1ARF/KL7 is active 14 s.s.b. and c.w.

Lesotho: 7P8AR, ex ZS8L, around 21350 from 1000z.

Cyprus: ZC4MO active daily 21300, 2000-2200z. QSL WB2MKM.

Honduras: HR4VH active daily 21 s.s.b. QSL to WA5IQP.

Spanish Guinea: EAQQQ. Watch 14005, 103 and 110. QSL via W4DQS.

Luxembourg: DJ2IB/LX, 14015, 210, 21015 between 1900-2200z. DJ5JK/LX 14215 around 2200z. QSLs via DJ2IW.

Finland: To commemorate Finland's 50th year of Independence, prefixes of OF will be used during October to December.

Bulgaria: LZ0CRC 14205 1430. Rarer for W.P.X.

Gibraltar: ZB2BD 21340 s.s.b. 1620. QSL to G3TTG home QTH. ZB2BE QSLs to KIOTA home QTH.

Kuwait: 9K2AM 21346 1250, 9K2BY 14120 1830z.

Thailand: HS1HC 14105 1530. QSL P.O.B. 2008, Bangkok.

Faeroes: OY7ML 28 Mc. Both modes. Several other OY stations active on other bands.

Laos: XW8AX 14110, 1200z. QSL W6KTE.

Willis Is.: John VK4HG having a few minor troubles. On the last air drop his 10 and 15 mx gear went into the drink beyond the reef. So look for John now only on 20 s.s.b. 0900 and 2000z.

LATE NEWS

Aldabra: In a QSO with John VQ9JW on 7005 at 1930z, he passed the following info: Active on all bands 1.8 to 28 Mc. 160 and 80 mx will be used as much as possible commencing middle Oct. He will be on the island till late March or early April 1968. He works s.s.b./c.w. Mostly comes on daily around 1600z and continues through. He will come up on skeds on any band. Look for him on these freq.: 7007, 7040, 14080, 14110, 14140, 21040, 21400, 28040, 28600. QSL G3ONU.

ACTIVITIES

Bert VK5BB seems to have been busy on both 20 and 15 mx. He reports making W.A.S. twice over on the latter band since Feb. '67. QSOs on 20 were UB8NO, OZ6KG, UC2BF, TI2CAP, I1YV, DJ5WU, GC3FKW, 7X0AH, CT1LN, SP8AJK, VK4HG, FK8AU, CR7PV, 4X4CJ, FG7XL, UT5LE, YU1YG. On 15 mx: ZS8LX, VK6XK (Xmas), F7WB, OA4JL, 9J2JZ, 5N2AAW, KJ6EZ, KZ5MF, TG8GF, W3DWG/VR6, CN8FV, VS9MB, IT1TI, YV1TF, KM6CE, 7Q7LZ, etc. (Nice work OM.—A.)

Dud VK4MY now mostly on 14 s.s.b. and reports the band as good. He landed these: VQ8CA 14130, ZD7DI 14115, 9M6MW 14220, W3DWG/VR6 14195, VO1FB 14168, VE1IE, HR1JMF, VO1BD, VE1KG all on 14170, W2NTJ/V8 14158, HL9TM 14110, PJ2MI 14150, SL2ZI 14198, LX1WR 14125, VS6CO 14120, VQ8CB 14198, HS1RZ 14190, 6Y5MJ 14118, VS9MB 14100, DM2CZL 14110, YU1BCD 14170, 5U7AT 14170, AF2MR 14160, UB8KMX, BR1E, VE9MV, ZS6XK all on 14160, FP8DC 14190, FP8BD 14190, VO1FY 14190, 9Y4AR 14140, CO2FA/CO4 14105, 4UI1TU 14180, VP1RC 14168, UQ2KFG 14165, UW1KAT 14122, 9Y4DS 14110, 3B1EI 14170 and many more. Space does not permit. (A big bag, OM. Keep it up.)

Peter VK4PJ also reports a big improvement on 20 mx and 15 and ten mx to a lesser degree. The following are just a few of the nice ones QSOed: 14 s.s.b.: 9M2FO, SM5SB, YQ3LM, ILKCK, HK2YO, UQ2LL, SP8JK, CT1BE, VU2SV, IS1RUA, HB9RE, LA2BK, SM2BHK, UQ2KGF, PX1PA, AP2MR, KP4BL, KP4BS, OH5OS, EA8GF, TL8LD, ET3REL, TF3MA, YU4ALM, VP8JC, YUZHDE, HS1RZ/3, CE8CA, 9H1M, CT1S2 very many Gs and DLs, etc. Mostly 14100-150 2000z. 15 mx: SM5RQ, G3NLV, GM3SVK, G3LBG, G3NEZ, OK1ADM, OZ4FA, OE5PX, DL8PC, G8UR, XW8BQ, DL2CX, SM6CKU, G14RY, LA5KG, DL7AA, OZ2GC, SM3WB, DL0EV, SM7DQK, OA2AM, F3YT, and many more Europeans. QTR 1000-1200z. Ten metres: DJ1QI, SM5RQ, G3FPO, F3H, F3YT, G2TA, G5TP, etc. 0900z.

Dave VK3QV, who writes from Manila, P.I., sends this list worked on 10 mx before he left for overseas on business. G3JOC, KR6HY, KR6QW, KR6TAB, KW6EG, OH2TI, OH3NY, VE7BOB, VS6FS, VS6FZ, YA1AB, ZS6AJK, plus all W areas. Dave reports the band coming to life day by day.

Chas. VK4UC, a 60w. QRP'er, reports he is now W.A.Z., W.P.X. and W.A.S. Says 14 Mc. has been very good and managed 14 new prefixes for the month. Some worked are: G3RJH, K6HQI, KR6UD, DL1IB, VK9XI, 4UI1TU, CT1CB, DM3SBM, DL2KM, DL8KO, DL4PM, DL6VP, F8TG, F8OB, EA8FJ, EA8CG, GW3REQ, GW5BI, GW6YQ, HA0LC, HB4FE, HM2CM, IT1AQ, 18BOH (QSL LIBEC), LA4CI, LUBDLK, OE7AZ, OE3PWW, PA0PFW, SP6KBE, VE8DG, VP6AM, VS9MB, YO3RX, YU0J, UA6JV, UA1KAE (Mirny), KC4USB (between 0530-0630z).

Al VK5EK says: "Just a quick note to let you know that 28 Mc. is in fair shape." All on 28,625 Kc. s.s.b. Gear is 150w. p.e.p., 4 el.

mono-bander: VQ8CG 0735, VS6FZ 0855, UA3TU 0907, SM5WJ 0925, HB9ZC 0935, DL1CB 0940, SM7BKH 0950, GM3SVK 0907, G3LSE 0913, UF6ACR 0923, UV3AAE 1005, UW3GU 1012, PA0FM 1024, XE1CCW 0008, 8J2DT 0628, ZS6HD 0644, ZS9H 0708, OE3SGA 0940, HG2KRD 1006, DJ9VW 1020, Ws and Gs. (Welcome to the column, Al, some more please, deadline is end of each month.)

Barry VK5BS QRP 14 Mc. lists these: VP6YV, VE8DG, UV3BC/M Antarctic, DJ2IB/LX, XE1LL (Box 701, Vera Cruz). All on 14 c.w. Barry reports QRP membership coming along only slowly. Write Oceania Co-ordinator, 18 Cornish St., Glenelg North, if you wish to join.

Ken VK3TL worked on 20 mx: CE8AA 1206z, CE0PC 0858 (Easter Is.), CR7FM 1215, EA8CG c.w. 0840, VP2GAI 0838, VK4HG 1150 (Willis Is.), VQ8CB 1255, VQ8CCR 1300, YJ8BW 1100, 5L2KG c.w. 0745, 7X0WV c.w. 0803. All times GMT. Best QSLs received: ET3AC, CM2WS, IIAUM/MI, 16KDB, PY4BEX, ZD7DI.

SOME QTHs

5N2AAW—Via K5OQO.
TG8GF—Box 762, Guat. City.
7Q7LZ—Via G3LZZ.
9J2IE—Via W2CTN.
OA4JL—Box 538, Lima, Peru.
HL8TM—C/o. American Embassy, Seoul.
HS1RZ—P.O.B. 2008, Bangkok, Thailand.
VS9MB—QSL W2CTN.
8R1S—P.O.B. 739, Georgetown.
FP8DC—QSL to VE3CQD.
5L2KG—Yasme.
CE0PC—Via DL9KRA.
YJ8BW—Via W4NJF.

AWARDS

Latin America PX Award: Working 75 different prefixes (CE1, CE2, etc.) in Latin America countries: CE, CO, CP, HC, HH, HI, HK, HP, HR, LU, OA, PY, TG, TI, XE, YN, YS, YV, ZP from Jan. 1, 1960. Single band or mixed. Send \$1 or 8 I.R.C.'s to Dr. J. Lorens, LU9DM, Lujan 1796, Lanus, F.C. Rocca, Argentina. Also available to S.w.l.'s. (By courtesy of Geoff Watts, DX News-sheet.)

SUMMARY

New sheets and Bulletins are beginning to read like a DXers "Who's Who" with all bands open and working the list of QRV "goodies" is ever increasing. One must be satisfied with a percentage worked. For myself, I find it gratifying to now be working a lot of the OT DXers on 15 and 10. Chaps previously active on 7 and 14 Mc. Thus making four and occasionally five band QSOs.

DX News exchanged with Overseas Bulletins: LIDXA, FLA' DXer, "Air Waves" and with Ed's ZL2AFZ, Rod McNicoll VE3FKR, Geoff Watts. My thanks as always to the column's supporters. 73. Al, VK4SS/I.A.R.J.S.

W.I.A. D.X.C.C.

Listed below are the highest twelve members in each section. Position in the list is determined by the first number shown. The first number represents the participant's total countries less any credits given for deleted countries. The second number shown represents the total D.X.C.C. credits given, including deleted countries. Where totals are the same, listings will be alphabetical by call sign.

Credits for new members and those whose totals have been amended are also shown.

PHONE		
VK5MS	317/338	VK4HR 290/306
VK3AO	314/326	VK4FJ 279/296
VK6RU	304/327	VK3TL 282/286
VK6MK	303/320	VK4TY 251/252
VK5AB	300/314	VK2AAK 246/250
VK2KZ	291/306	VK2APK 234/237

C.W.		
VK2QL	295/315	VK3NC 266/286
VK2ADE	291/313	VK3ARX 263/271
VK3CX	291/312	VK3HR 263/285
VK4FJ	291/313	VK6RU 262/283
VK3AGH	290/302	VK3TL 251/254
VK2AQH	282/295	VK3YL 251/268

OPEN		
VK2AGH	311/329	VK2EO 295/316
VK6RU	308/331	VK4FJ 295/318
VK2ADE	305/329	VK4TY 291/303
VK6MK	305/322	VK3ARX 281/289
VK4HR	302/324	VK3TL 281/285
VK2VN	300/315	VK2ACX 276/300

SWL

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

Very few of us bother to listen on 1.8 Mc. as activity is more or less non-existent, however this is not the case in other parts of the world. This month I have asked our prominent VK6 S.w.l., who hails from England, to tell us something about the band in that country. Over now to George Allen, L6042.

This band is allocated to stations in the Amateur Service on a secondary basis on condition that they shall not cause any interference to other services. The frequency allocation is from 1.8 to 2 Mc., with a maximum d.c. power input of 10 watts. The secondary services are mainly coastal stations operated by the Post Office and give a R/T service to coast-wise shipping. There are some continental services of the same nature, some of which operate almost around the clock, and on the whole the shared operation has worked quite well. Occasionally Hams have been politely told to QSY.

Although top band (as it is known in Europe) has always been popular, particularly for short rag-chewing on phone, it has great DX potentialities over a dark path, a fact of which many regular users were unaware a few years ago. Much Ham history was made in that part of the spectrum as the record books show.

Its present popularity owes much to the genius of the late G6QB, whose journalistic prowess was world-famous, and who thought up the "counties" plan. This competition caught the imagination, and there was soon a great rivalry to top the counties ladder, not only among the tx men, but also in the ranks of the s.w.l. fraternity. Even now, years after its inception, county-chasing is a popular top band activity, and DX-peditions to "rare" counties have been known to cause as big a pile-up on this band, as on the higher frequencies. G3IGW, one of the stalwarts on 160 mx, has made many trips to remote parts of Scotland to give other Amateurs the chance to work difficult counties.

Another big factor in developing the DX side of the band, stemmed from the activities of Stew Perry, W1BB, whose exploits in that band are world famous. His flair for organising the American side of the Pond, and inaugurating regular tests during the winter months, which are now a regular feature each year, has resulted in inter-continental DX working on a scale scarcely thought possible on such a low frequency. Other organised contests, world-wide in scope, have been instrumental in producing results which, on many occasions, have rivalled the DX produced on 14 Mc., and there are several Amateurs who can claim to have W.A.C. on 1560 mx. W1BB is nearing his centenary on the band, a feat which is bordering on fantastic.

Most of the DX is to be found from 1.8 to 1.830 Mc., but in that slice, at least three powerful coastal stations make things rather hectic at times. As far as possible that segment is left for the DX to work in, the Gs and other Europeans keeping above 1.830, though due to over-eagerness, the DX portion sometimes gets cluttered up, with near chaotic results. The high end, when conditions allow, often produces some of the choicer tit-bits, such as W0, W6, W7, also Central and South America.

Whatever is happening on the band, the first flush of dawn warns operators that the end is nigh, and about an hour, sometimes more, after that, following the characteristic pre-fade-out boost, suddenly the DX is gone. It is quite an experience hearing, say, VP8 in broad daylight during this last critical period.

This short summary would not be complete without mention of the two top-band contests which are an annual and eagerly awaited event for which the R.S.G.B. is responsible. These always produce hard fought battles, in which some of the best operators in G participate, and the standard of operating is very high indeed, an object lesson in the art of c.w. operation.

Many Hams have kept late hours on the band, or have crawled out of warm beds at 0500z on a winter morning to see how far their 10 watts would get, maybe from an aerial held up a couple of hundred feet by a gas filled balloon, but very few would consider the effort wasted.

TAPE CORRESPONDENCE

Due to the nature of magnetic tapes and spools, much care must be exercised when mailing them, particularly to overseas addresses.

Since tape recorders have been available at more reasonable prices, many international s.w.l.'s use this means of communication, in fact there are some who prefer it to two-way radio communication. Be that as it may, care must be taken in mailing these articles, to ensure not only their safe arrival, but their safe arrival by correct mailing procedures. Firstly, in this country, tape correspondence is considered to be a letter, and must be mailed at surface rate and full letter rate. In order to ensure that this is done, a sticker marked LETTER can be obtained from any Post Office. In the case of overseas tapes, a green customs sticker must be attached and filled in where it says "Full description of contents," mark it "recorded letter," and where requests the value, mark it NCV (no commercial value).

This will comply with our regulations, however there is one major problem to be overcome, and it is the point of this note. In some countries, particularly the United States, packets are x-rayed to check their contents and I am sure we all know what would happen to a spool of tape thus treated. So on the bottom of the address side, mark it "Magnetic Tape, do not x-ray" and you should ensure the safe arrival of your tape at its overseas QTH.

DX NOTES

VP2LA from St. Lucia on s.s.b. around midnight local time. MP4MAX is Box 35, Muscat, Oman, Arabia. VQ8CC, Box 14, Curepipe, Mauritius. I have the complete list of W2CTN's "clients" and these will appear in the next few issues as there are over 100 of them. TJIAG, Box 20, Bafoussam, Cameroon Rep. Full marks to TG9AD for specially printed cards which he reserves for s.w.l.'s. His address is Roberto W. Engel, Box 514, Guatemala, C.A.

AROUND THE SHACKS

Firstly, George L6042 reports the following on 80 mx in the wee small hours: UA1DV, KBB, KBR, KFA, KFC, UA3s AV, DB, DV, TV, UA4s AW, NB, YV, UA6KOE, UB8KAS/TB and QA, UC2KBC/KSE, UF2AY, UP2KBA, UQ2CC, UR2AA, AY and KAA, with UWIKAD and UW2KAT for good measure. These were all logged in the Russian contest which was held on the R.D. week-end.

Alan Raftery, who has been and remains busy with studies, found time to knock up a presentable log in the R.D. His only new country is 8L1KG, a Yasmé DX-pedition.

I have here the QSL arrangements for s.w.l. reports to future Don Miller DX-peditions, all these must go to VESGCO, showing date, time in GMT, 3 (at least) QSOs in order, frequency, and mode. Please enclose s.a.e. plus I.R.C. for each QSL sent, in other words each envelope mailed must contain one each QSL s.a.e. and I.R.C. W4ECI still handles QSL chores for Mr. Miller's past jaunts, but the current and future ones will be handled as above, with QSLs for all Amateurs being handled by the XYL of his co-operator, WA6BSO. (Tnx to Monitor.)

From Peter Drew, on National Service at Balcombe in Vic., I have a long list of calls heard. 20 mx s.s.b. produces FP8CA, CT2AO, CE0PC, 9G3ID, PJ2AQ, VQ9TC, AF2MR, 7YEC, 6Y8IJ, 26 mx c.w.: ZL5AC, UT7JA, HL8KJ, 9M8L, 9V1OG; 80 mx s.s.b.: KL7DTH; 40 mx s.s.b.: KH6s, FK8AU, EA3JE, DUIFH; 40 mx c.w.: G1AQR, Y0TEL; 15 mx s.s.b.: KH6, JA, W, 5W1AS, KA9MF, JH1BF, FO-8BL, VS6FS; 15 mx c.w.: FB8YV, HM1BW, and finally on 10 mx s.s.b.: K68DC, KR6QW, ZL and W. Thanks, Peter, also for a very welcome list of QTHs for the little black book.

VK2 DIVISIONAL NEWS

The only official news I have is in the form of a letter which I received from the President of the Group telling me that in view of the fact that they are streamlining the Group, my services as QSL Officer are no longer required, and that the Secretary will in future be handling these chores, and it is proposed to ask members to contribute an additional 50c in order that they may have their cards mailed.

I immediately contacted both the Secretary and President, but to date, which is three weeks later, I have had no reply. Ethics would prevent me from making any comment here, however let me assure any chaps that any cards received by me from overseas will be mailed direct to the persons concerned, and this applies in particular to those addressed to non-members of the W.I.A.

I am taking up the question of handling of VK2 S.w.l. cards for members and non-members with the N.S.W. Divisional Council, and I hope that we can have this tangle straightened out.

VK8 DIVISION

The VK3 S.w.l. Group reminds everyone of their meetings and any persons interested in radio, specially members of the Youth Radio

Scheme, are most welcome. You are reminded that there is a constructional night on the second Friday of each month as well as the regular meeting on the last Friday of each month. The s.w.l. newsletter "Zero Beat" is issued six times a year, and is attempting to cater for all tastes in Short Wave Listening. Subscription is 60 cents per annum posted, and can be obtained by contacting the Editor, "Zero Beat," Box 52, Caulfield South, Vic. That's it for now chaps, our next contest is the S.w.l. Section of the Ross Hull, and hope we can have a good roll-up. 73, Don L2022.

Publications Committee Reports

No reports have been published for the last two months due to the fact that meetings have not been held until the middle of the month, by which time "A.R." has been on the press. As all correspondence and articles have been individually acknowledged, they will not be included in this report.

At the October meeting, correspondence was received from VK7ZCP commenting on a recently published article. As the author is at present overseas, we are withholding the letter to give the author time to comment. Technical articles were received from VK2AC and VK2ASI.

Discussion for the night centred round the extra space being given to Federal matters, and what steps should be taken to impose restrictions on other matter in order to leave adequate space for technical material.

Consideration was given to the possible effect of the increase in postal charges on the finances of the committee. It was agreed that while our costs are going to increase, we should wait for a period of three months before making a final decision. It is considered that a regular reduction in the number of pages in "A.R." is the least desirable step, especially after our efforts this year to maintain minimum 28-page issues.

The 1967-68 issue of the Call Book was despatched to all States on 5th October. A new section on Radio Clubs has been incorporated and any club that has been omitted is invited to send details for inclusion in the next issue. The present issue includes all amendments, additions and deletions advised by the P.M.G.'s Department up to the end of May. Preliminary work has already started on the 1968-69 edition as a complete reset will be needed due to the ruling from the Department that Postcode Numbers are to be included.

All correspondents and sub-editors are reminded that copy for the January issue is due on the 1st of December. Under no circumstances will late copy be accepted. They are further reminded that no Divisional Notes will be published in the February issue.

Correspondence

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

ZB2AM QSLs

Editor "A.R.," Dear Sir,

I have been asked by Mike Matthews, G3JFF, to "advertise" the fact that during his recent Gibraltar activity (two years), he made 10,871 contacts and these included a lot of VKs (via long path mostly). He believes that some VKs have not received his ZB2AM QSL card and suggests that a request for it to his QSL manager, Ralph WIHGT, will bring the desired result. Mike hopes to have another "exotic" call sign soon (possibly in Far East area)—in any case he hopes to visit VK/ZL before long and have "eyeball" contacts with his many friends out this way. Mike advises that the future Ham activity from ZB2 isn't very bright, especially for DXers.

—Eric Trebilcock, WIA-L3042.

GHAStLY?

It has been said that to stay on c.w. is ghaStly!. Perhaps it was a joke, but it is the most useful method of communication between people who do not speak one another's language too well. Also, in times of war.

What could be more suitable. Morse Code has a musical rhythm, and when conditions are at their worst, the c.w. stations still have their QSOs.

(Diana Green, ZS6GH, writing in "YL Beam," April, 1967.)

VHF

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

Well judging from the Interstate correspondents, activity on the v.h.f. bands is at a low level, but if things are to form, activity should increase with a rush over the next month or so. I would like to bring to your attention the lead article in the Federal news of October "A.R."

It would be appreciated if Interstate correspondents could type their copy on half a quarto page, leaving a one-inch wide margin on each side, and post it so as to reach me by the fourth Friday of the month. Some copy for this month's issue arrived at the end of the first week in October. 73, Cyril VK3ZCK.

NEW SOUTH WALES

The last meeting of the V.h.f. and T.v. Group was entertained by a Brains Trust. Thank you to the brave lads who fronted up on the rostrum to face an inquisitive audience. Gentle prompting by Vice-Chairman, 2ZTM, produced several questions and interesting answers.

During the past month another 2 mx day event was held and voted a great success. As results of this event have not been passed to your scribe, I am unable to give further details. The swing to v.h.f. day events is proving quite popular as it allows the family to join in the fun.

The New Year's Field Day is drawing closer and the following is a resume of the rules for this contest. The contest will run over three days, 30th Dec., 31st Dec. and 1st Jan. The event will be split into five periods of four-hour duration: (a) 1700 to 2100 on 30/12/67; (b) 0500 to 0900 on 31/12/67; (c) 1100 to 1500 on 31/12/67; (d) 1700 to 2100 on 31/12/67; and (e) 0500 to 0900 on 1/1/68. The bands in use will be 2 mx and above. A further division will be made of two sections, one for tuneable equipment and one for net equipment. Logs can be submitted for either tuneable section, net section, or both. If you submit logs for both, the contacts must have been made in the same period.

Logs should be submitted for all periods worked, but points can only be claimed for one period. One hour must have elapsed before stations can be re-worked on the same band in the same section. Contacts can be pre-arranged by any method. Contacts via artificial satellites, repeaters, moonbounce, etc., are not permissible. Multiple operators are permissible but only one call sign may be used from each station. Numbers will be the usual readability, signal strength followed by three figures. Scoring distances will be evaluated from military survey maps or similar. The scoring has been derived from a graph which gives one point for contacts up to 62 miles, then the graph rises linearly until there are twenty points for 300 miles. A further increase gives 25 points for a distance of 500 miles and remains a constant 25 points for all distances over 500 miles.

My apologies for any error in this resume as the contest committee failed to supply this information for retransmission and it was necessary to cull the information from the Sunday evening broadcast. All modes may be used in the contest and your presence during the contest would be most welcome.

During September a 6 mx opening to JA occurred but no N.S.W. station is known to have a two-way contact although it is understood that VK8KK revelled in numerous contacts. Of note was the large number of JA stations using s.s.b. There is no doubt about this mode for DX operation and it will pay to be equipped to receive s.s.b. if not to transmit this mode. 73, Keith VK2ZAU.

Hunter Branch.—52 Mc.: The band has been quiet. Channel 0 has been heard at times, but no DX so far. New stations that should be heard from the Hunter Branch this DX season are Frank 2ZFX, Gordon 2ZSG and Dick 2ZSL. Maybe a few others will show up on 52 Mc. as the DX season gets into swing. 144 Mc.: This band has been quiet most nights. Monday nights have been rather active, probably to hear our local broadcast being transmitted on 3.5 Mc. and relayed on 144.443 Mc. a.m. and 146 Mc. f.m. 73, Mac 2ZMO.

VICTORIA

Most of the v.h.f. activity in Melbourne over the past month has been on the 6 mx a.m. net on 53.032 Mc., and judging by the large number of orders for the V.h.f. Group's 6 mx converter with its better than 3 db. noise figure, gain in excess of 30 db. and excellent cross modulation resistance, it looks as if it could become the most active band this summer. With this in mind, I would like to remind the DX bands in other States that we can hear you but are you equipped to hear us? Powers used in Melbourne vary from 100mW. to 150w. using a.m., s.s.b. f.m. and even some c.w., with vertical polarisation.

V.h.f. Group Conventen.—The V.h.f. Group's 4th Annual Convention was held over the week-end of 7th and 8th October at Geelong. Over 70 Amateurs and S.w.l.'s registered and with their families and friends the number present rose to over 200. Everybody appeared to have enjoyed the week-end of activities. Many thanks to Bob SIC for looking after and arranging the games, to the Geelong Amateur Radio Television Club, and the members of the VK3 V.h.f. Group who organised the week-end. Well that's all for now, until next month, 73, Cyril 3ZCK.

P.S.—VK6 Amateurs look for me on 52.65 Mc. a.m. P.P.S.—Please accept my apologies for the severe cutting of the V.h.f. Notes last month, but there was not enough room for PanSy.

Eastern Zone.—During August and September there was no DX recorded, for the bands 52 Mc. and above. (The m.u.f. is still climbing, each 28-day cycle becoming more interesting.) Trevor 3ZGA, Newborough, and Lee 3ZSS, Moe, are looking for Melbourne contacts. Both are using a frequency of 144.123 Mc. a.m. Peter 3ZDP in Sale is now v.f.o. on 2 mx s.s.b. 73, George 3ZCG.

QUEENSLAND

These notes arrived too late for the October issue and are being included as Nov. notes have not been received. By now with the spring here, activity on all bands should be on the increase, but this year, summer activity may be lower than in previous years. This seems due to a general apathy here in Brisbane and no one really knows why. Anyway, let's hope that the DX period brings back a few regulars on the bands. The VK4 beacon is under construction. Major parts have arrived in Brisbane and regular discussion and construction groups are being held. Several donations of both parts and monies have been offered and these are greatly appreciated. The only major difference between the VK4 beacon and other beacons will probably be the fully transistorised monitor system modified from a D.C.A. design by Alan 4ZLM. The remainder of the system will be standard design with full protection. As regulation has it, the carrier and modulation must be keyed simultaneously, and so a modified system of driver screen modulation will probably be used to simplify keying.

As you have probably guessed, the project is still in the design period at the time of writing and further details will be published when such come to hand.

Winter DX into Brisbane was practically non-existent to my knowledge, but the usual t.v. DX showed up. JA openings were few and far between and evidently the band opened several times from Townsville to Japan in July, but nothing was heard in Brisbane. It is interesting to note that some of the Townsville boys are doing research into trans-equatorial propagation. How about an article in "A.R." Peter?

Alan 4AI is building a high power 6 mx rig for the DX season this year. George 4ZIG should also be on high power soon with a 6/40. Alan 4ZAW is progressing with his s.s.b. exciter, while Rex 4ZRP has given up the idea to be content with mobiling. 73, Mike 4ZMW.

WESTERN AUSTRALIA

With the warming up of the weather, activity is increasing, the 6 mx a.m. channel is so full of stations that the rest of the band seems empty by comparison, although it comes into its own on Sundays. The "Old Timers' Club" continues with its twice-a-day sessions. Some beams have already been scanning the skies towards distant places and it's rumoured that Japan has been heard around the 50 Mc. mark. So far I have heard no reports of contacts with the Eastern States. Don't forget to try for South Africa. We know stations are looking for contacts with us. They are transmitting s.s.b. and a.m. around 50.1 Mc. and s.s.b. around 144.1 Mc. at 1530 GMT (0130 E.A.S.T., 2330 W.A.S.T.)

Wolf 6ZAY is back in Australia from West Iran. We are hoping to hear Rod 5ZSD (ex-6ZDS) soon. Jack 6ZBB is building crossed dipoles, hoping one day to hear Australia— if it still possible when some of the new high-

voltage transmission lines near his QTH come into operation. This looks to be an increasing problem in Perth (And in Melbourne.—Sub-Editor.) 73, Laurie 6ZEA.

TASMANIA

2 Mx: Activity is on the increase as the warmer weather approaches. Mike 7ZMC has re-built his 2 mx tx to eliminate a few "birdies" so we can now expect a much better signal from the QTH of 7ZMC. For those on the mainland who don't know, there is a beacon operating on the northern coast of Tasmania at Don Heads, near Devonport. The operating frequency is 144.9 Mc. There are approximately six 2 mx f.m. units operating on the north-west coast using Channel A only, as far as I know, but I hope to find out more information on this matter in the near future. If any of these guys would like to forward me information regarding this matter, drop me a line to: Brian Yeoman, VK3ZBR/P/VK7, Flat 6, 7 St. George's Square, Launceston, Tas., 7250.

6 Mx: Activity on this band has taken a turn for the best over the last month. The warmer weather has enticed the would-be Hams away from the one-eyed monster and into the shack. Most of the activity is on the 6 mx a.m. net frequency of 53.035 Mc., but some stations have been heard operating away from this frequency. A new station heard on this band is 7ZLR, but at the time of compiling these notes I did not have any information on his name, QTH or equipment. If he so desires, he can contact me at the above address with this information. Jim 7JO has become active at last on this band, so we hope to hear more from you in the near future, Jim.

On Sunday, 24th Sept. there was an ardent group of Amateurs who were aeronautical mobile over Flinders Island. They were Bevan 7ZBW, Peter 7ZPD, Mike 7ZMH, Trevor 7ZLX and Norm 7ZRG (the latter was also the pilot). They managed to contact a few stations up the northern coast, but did not make it to Melbourne (hard luck!). 73, Brian 3ZBR/7.

EDITORIAL COMMENT

Under normal circumstances, Mr. Maude's P.P.S. would have been deleted from his notes. However, in order to set the record straight, the amount of space taken by PanSy has nothing to do with the cutting of the v.h.f. notes. The fact of the matter is that copy date is the fifth of the month as Mr. Maude well knows. His notes for this issue reached me on 10th Oct., which is about the average delay with v.h.f. notes. By this time the composition of "A.R." is fairly well decided, and late material has to take "pot-luck".

Whilst it is possible that the Postal Department is to blame for much of the delay, it surely is possible for Interstate correspondents to send their material off a few days earlier. Mr. Maude has reported VK3 activities for 7th and 8th October (i.e. after copy date), so must admit to being late with his own contribution.—Editor.

YOUTH RADIO SCHEME

We are fast approaching examination time which inevitably means a temporary lull in Y.R.S. activities, but first things first. However, it won't be long before the swing is back to radio and the talk of aeriels and gear. It will be interesting to hear how many school leavers have chosen electronics as a career as a result of their contact with Y.R.S. It is general knowledge now that employers favour boys with Y.R.S. certificates.

All those who receive Coyryra, the journal of the Y.R.S. Correspondence Section, will be interested in the new series of vocational guidance information. The last article gave a lot of important details regarding apprenticeships with Qantas. Coyryra is a very important publication for the Correspondence Section, but anyone can receive a year's subscription simply by sending \$1.00 to the Editor, Roger Davis, 14 Hovea St., Canberra City, 2061. Individual copies are also available from the same source.

CONTEST CALENDAR

11th/12th Nov.: R.S.G.B. 7 Mc. DX Contest (c.w. section).
11th/12th Nov.: OK C.w. DX Contest.
25th/26th Nov.: "CQ" W.W. DX Contest (c.w. section).
9th Dec., 1967/14th Jan., 1968: Ross Hull Memorial Trophy V.h.f. Contest.
3rd/4th Feb.: 34th A.R.R.L. International DX Competition (phone, 1st week-end).
17th/18th Feb.: 34th A.R.R.L. International DX Competition (c.w., 1st week-end).
2nd/3rd Mar.: 34th A.R.R.L. International DX Competition (phone, 2nd week-end).
16th/17th Mar.: 34th A.R.R.L. International DX Competition (c.w., 2nd week-end).

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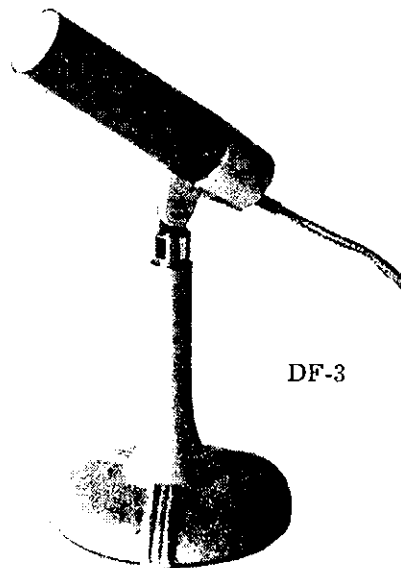
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FEDERAL AND DIVISIONAL MONTHLY NEWS REPORTS

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

FEDERAL QSL BUREAU

The new address for the W8 QSL Bureau is Paul R. Hubbard, WABXCY, 921 Market St., Ganesville, Ohio, 43701.

The correct address for 9M2 cards is P.O. Box 777, Kuala Lumpur, Malaysia.

QSLs for the recent DX-pedition to Trinidad and Tobago should be sent to PV1TX, P.O. Box 4, Resende R.J. Brazil. Nothing was heard from the DX-pedition on c.w. at this location.

The second International Convention of Radio Amateurs is scheduled to open in Zarazoga, Spain, in May 1968. A competition open to all Amateurs will be held as a memento of the Convention.

To be eligible for an award it is necessary to establish communication with an Amateur in the province of Zarazoga and in addition to have contacted 30 other different I.A.R.U. countries. Any band or mode may be used and the time period is 31st October to 31st December, 1967, inclusive. The 31 QSLs accompanied by 10 I.R.C. should be sent to Delegation U.R.E., Apartado 86, Zarazoga, Spain.

Details of the OK DX Contest to be held from 00z to 24z on Sunday, Nov. 12, may be had from this Bureau. The contest is all bands 1.8 to 28 Mc. for c.w. only.

Old DX-ers will be sorry to learn of the sudden passing on 29th September of Earl Lucas, W2JT.

—Ray Jones, VK3RJ, Manager.

NEW SOUTH WALES

VICE-PRESIDENT RESIGNS FROM COUNCIL

Council has advised that the resignation of Bill Lewis 2YE has been received and accepted. Bill as Councillor was Vice-President but due to his recent illness was unable to carry on. Bill has recovered quite remarkably and was present at the last general meeting where he was looking quite well. After many years of Institute activities, many of them on Council and various committees and as a President and lastly a Vice-President, Bill has played an enviable part in the Institute and Amateur affairs, such that his assistance and guidance will be missed.

In calling for a nomination for Council, President Keith Finney said that it would be difficult to find someone willing to work as hard as Bill had done, however Council would like to receive nominations for a Councillor to fill this vacancy on Council.

I would like to take this opportunity, if I may, to thank Bill on behalf of Council and members for the many years of untiring service to the Division, members and Amateur Radio, and to wish Bill a complete recovery so that he may be able to carry on the good work and enjoy many more hours on the key working DX and the like.

SEPTEMBER GENERAL MEETING

The September General Meeting was held at Wireless Institute Centre on the 22nd and a good attendance of members was present. The Chairman, President Keith Finney, opened the meeting at 8 p.m. with the usual formality of the reading of the minutes of the last meeting. The chairman gave a brief report of Council activities to the meeting. The minute secretary, Warwick Johnstone, then read out the list of new members which were approved and are welcomed to the Institute.

President Finney reminded the meeting that the drive for more members must continue so that the Divisional services can be maintained. Speaking of Dural, Keith said that the new transmitters had arrived at the station and that the S.W.I. Group were in the process of tidying up the property and generally getting the buildings in order. The work on the communications room in the basement is complete to the stage where it is ready for the installation of the equipment, and the renovations and clean-up of the radio equipment store is all but complete. While on the subject of the store, there's quite a few bargains to be had if you care to visit and look around.

After concluding the report, Keith handed the meeting over to the lecturer, John Featherstone, who spoke on a very popular group of subjects under the title "The antenna as a coupling medium to the Ionosphere". John explained in a fairly detailed yet concise and easily understood way the part played by the

ionosphere in making radio communications possible, and with the aid of five printed sheets, including a detailed reference list of authors, John proved to be a well appreciated lecturer so those present learnt a great deal on a little known subject. Going into the subject of receiving signals, John explained the various causes of fading and described how antennae were used to best effect to combat this difficulty and went on to describe a revolutionary design of a wide-band antenna consisting of some 80 vertically polarised discone type antennae which are coupled together via different lengths of co-ax. to provide diversity reception from virtually all directions.

Although hardly suitable for an Amateur station, John said he had an idea he would like anyone to try out and let him know the results, good or bad! Briefly, it is this: Set up two antennae as far apart as possible, both different types, differently polarised, and connect each to a receiver, and then connect the output of the receivers each to one headphone of a pair of stereo or split headphones so that the signal from each antenna/receiver can be heard simultaneously. In explanation, John said that the ears and head acted as a unique phase and amplitude combining network, a function which he felt could not be done electrically! John concluded by saying that if this set-up was done well, then if a signal was received 99% copy should be possible.

After answering several well placed and interesting questions, the lecture was completed and a vote of thanks moved by yours truly was appropriately carried. The meeting was then closed by the chairman.

The November meeting will feature a lecture on DX to be given by the well known, Sid Molen, VK2SG.

ANNUAL CONVENTION, AUSTRALIA DAY WEEK-END, 1968

The Convention is now drawing closer and inviting visitors to the Dinner are reminded to place the necessary bookings with the Secretary. The Dinner will be held in the very beautiful Windsor Gardens restaurant at Chatswood. The tickets are limited to 150 and already half have been taken. The tickets are priced at \$4.50 and include admission to the display of commercial Amateur equipment to be arranged prior to the Dinner. Cocktails will be available as well as the other amenities which are available so the ladies will be able to get together while the OMs decide on what to blow the family funds on!

Council have still not yet decided (at the time these notes were written) on the details of the Field Day. Council did say that the day will be held on the Sunday, as is usual, but that this time the field events will be different. Full details of the events should be available for publication in next month's "A.R."

V.H.F. AND T.V. GROUP CABARET

On 15th Sept. the Group Cabaret was held at the Ramsgate R.S.L. Club where eventually nearly 80 or so enjoyed a well presented supper and floor show interspersed by dancing. The Cabaret was planned to be held at the South Hurstville branch but at 4 o'clock on the day concerned the organiser, Norm 2ZXC, found that no booking had been made and in the following four hours he did a super human task and arranged for the Ramsgate Club to hold the function. Although the evening was slow starting up, the four-course supper was well taken care of and enjoyed by all.

REQUEST FOR ASSISTANCE—QANTAS

In a letter to Dave Jeans, 2BSJ, a Councillor of this Division, Mr. Gibson, the Controller of the Research and Information Bureau of Qantas Airways, says that they have a very comprehensive library on the history of avia-

tion and the development of the aeroplane. It currently contains approximately 2,500 volumes. Qantas have been trying to locate a copy of "Sea, Land and Air" Vol. 2, which commenced in April 1919. This journal was the official journal of the Wireless Institute of N.S.W. and the Australian Aero Club. Qantas have Volume 1 published in 1918, and are anxious to obtain a copy of Volume 2. Any information on this request should be forwarded to Dave at his QTH or to the Divisional Secretary.

LIBRARY SERVICE

The Library at Atcheson Street contains many and varied books and magazines and the service is now handled by the Secretary. Books can be obtained for one month by forwarding your request with postage fee. At this time it may be better to use another mode of transmission and reception! Very shortly the room at Atcheson Street where the Library is housed and the office area is going to be repainted. 73, Stan 2ZRD.

CENTRAL COAST RADIO CLUB

For the September meeting, Central Coast Radio Club members and visitors enjoyed a trip on the Asian Highway from Bombay to London. This was the subject of the talk given by Phil. Levenspell, VK2TX, following his recent return from overseas.

The 62-day bus trip covering some 13,000 miles, through 16 countries, probably provides the greatest variety of scenery and situations.

The talk was very well illustrated by colour slides, some of which were taken under extreme difficulties. 73, Bill 2TST.

VICTORIA

WORKED ALL NATIONAL PARKS AWARD

In an endeavour to stimulate activity, the Victorian Division proposes to establish an award to be known as the Worked All National Parks Award. Final details have still to be decided, but it is proposed that the award will be completely "open", that is any band, any mode, any time. Awards will be made not only to those who work all National Parks, but also to those who work FROM all National Parks. As there are 20 parks classified as "National" in Victoria, it is not anticipated that the award will be easily won. We expect to have the final details ready for publication next month, in order that advantage may be taken of the Xmas holiday period to get the award away to a flying start.

The award will be available to all Australian Amateurs be they W.I.A. members or not. Awards will also be available to S.W.I.'s who hear all National Parks.

This award has been discussed with the Secretary of the National Parks Authority, and we have his co-operation and blessing.

QUEENSLAND

IPSWICH AND DISTRICT RADIO CLUB

Once again the club has had a very eventful month, both socially and radio-wise, so here are a few jottings on how we spent our time.

The club was most fortunate to have had a visit from Don 4GP and Don gave us a very interesting lecture accompanied by photographs on Relaying Television Programmes via Satellite. Don was involved in both "Our World" and "Give 67" programme, so he was able to give first hand knowledge, and on behalf of all club members, our thanks to Don. Seems that since our membership is on the increase, the size of the club house is also increasing, since we had to add an extra room underneath to accommodate our junk. We now have found a corner of the club rooms lost some time ago when the A14 was deposited there.

One of our newer members, Cyril Renton, arrived at the last meeting very pleased with himself. He had received notification from the P.M.G. that he had passed the A.O.C.P. exam.

Norm 4KO and Ron 4RG played hosts to members of the Ipswich Boys' Grammar School Radio Club. The boys were able to talk to numerous DX stations as well as have a chat to one another via Ham Radio.

Club member Tom has recently returned from a spot of leave at Bowral in VK2. Seems

SILENT KEY

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

VK3AJL—J. F. Long
VK7XL—George Groves

Tom has been trying to get his 6 mx receiver mounted in his Mini, but can't find room on the dash, because of a most elaborate instrument set-up. Looks like it will have to hang from the roof, Tom.

Much discussion about 2 mx club project, but nothing concrete as yet. May be next month we will have decided our net frequency and type of gear we will all build. That's all for this month. 73, Warren 4G.T.

BUNDABERG AMATEUR RADIO CLUB

The month of September has been a very busy one for the Club. Most of the Fye Mk. 3 Taxiphones have been converted and are in going order. We can get a contact on 6 mx most times now. 53.032 Mc. is the net frequency.

Prior to the State-wide V.h.f. Field Day on 17th of the month, we had scouting parties out in all directions trying to find some high mountains to work all the long haul ground wave on 6 mx. Our club members, the younger ones, had a marvellous time on two or three week-ends climbing around some of the Dawes Ranges, about 80 miles north of the city, picking the best spot. Eventually the site was chosen and 5/8 signals were exchanged with the older members who elected to stay at home, including yours truly.

On the day of the 17th, the big day, two parties went out, one north to the Dawes Ranges, and one south to Mt. Goonenaman, 50 miles away. What a feast these chaps had, with 5/9 exchange of signals with other Amateurs in Rockhampton, 200 miles away to the north, and Brisbane, 200 miles away to the south. There is more in the v.h.f. business than meets the eye.

I presume a full account will be presented in the v.h.f. news, so I will press on.

On Saturday, 30th, we held a very successful W.I.C.E.N. Exercise with both h.f. and v.h.f. stations participating. For a first run, there were surprisingly few holdups and the exercise was finished with nothing worse than many flat batteries.

The emergency power plant is progressing slowly towards being finished. We have had to put the launching date back several times but will definitely have it finished before the next cyclone season.

On the h.f. side of things, the boys are, of course, having a ball with the bands as lively as they are with many new countries worked each week. It is nice to have not been on the air long enough to have worked them all. That winds it up for now. 73, Rusty 4J.M.

SOUTH AUSTRALIA

The monthly general meeting of the VK5 Division was held for September in the club rooms to a slightly below average attendance of members and visitors, the reason for which still remains obscure. However, the only reason I mention it is because these monthly notes always mention the fact that standing room only is usually the case with such meetings, and if I occasionally failed to mention the sometimes below average attendance, one of the Wise Men from the East would smartly pick me up on the matter, with the consequent loss of faith on my honest reporting—Ahem.

No Federal business was in hand, not much Divisional business was discussed, which meant that our worthy President, Murray 5ZQ, declared the business side of the meeting closed and without much ado, introduced the guest speaker, Mr. F. Oxer, of the Electricity Trust of South Australia, who took as his subject, "Electrical Safety Standards".

Mr. Oxer divided his lecture into three main parts—the causes of electrical shocks and their medical effects; the prevention of shock, with several practical demonstrations of the efficiency of earthing; and the causes and effects of electrical fires. He soon established the fact that he knew his subject, and throughout the entire lecture and the questions that followed, the audience was entertained and instructed on the sometimes little known safety factors and safety standards required by E.T.S.A. in this State, and the nature of the questions and the rapt attention paid to the lecturer by all present, should have amply repaid Mr. Oxer for the undoubted thought and time that he had put into his subject.

The vote of thanks to the lecturer was proposed by Warwick 5PS and the applause that followed was sufficient indication of the success of the lecture and the lecturer.

The meeting closed at 10.30 p.m. and as I heard no complaints from any direction, I can only conclude that all of the demonstration equipment was returned safely after travelling up and down the rows of seats, and thus can close this report of the meeting by stating that our Divisional reputation for honesty remains unscathed, despite several covetous glances at the circuit breakers by one or two members, who must remain unknown for safety reasons—my safety!

Just before the meeting, if members had kept their peepers open, they would have had

the unusual chance of seeing the VK5 Disposals Committee in action in the far corner of the club room. A fine upstanding body of men are they, ever ready to do battle for the benefit of members, and ever ready to speak coarsely to the brave member who might have thoughts of thwarting their plans, and their outstanding run of success disposal-wise over the past months must be as music to their ears. Our congratulations, gentlemen, you will all be rewarded some day, don't ask me when exactly, I am still trying to find out.

Apparently arising from the above impromptu meeting, the chairman, Gilbert 5GX, spoke to the meeting on the availability of a supply of resistors which had just become available from an undisclosed source. Nice work.

Rex 5DO, although still in the testing period of his new quad for 10-15-20 mx, is more than pleased with the results. He tells me that he had a contact with Roy 5AC, something he has waited about 48 years or so to accomplish, because all that time ago, when he was only an eight or ten year old, he saw the gear of Roy's, and from this was given the necessary inspiration to have a go at Amateur Radio. How is that Roy? What does it feel like to be an inspiration?

Rob 5WA recently arrived back from a visit to his old stamping ground of VK6, was quite enthusiastic about his trip. He was hoping to meet one or two of the locals that he has worked at various times, but went down with a virus for about a week, and this did not help the visiting schedule. Incidentally, he left VK6 for VK5 back in 1916, so we won't hold it against him, after all he could have gone on to VK3!

Talking of VK3, and why I persist in this deplorable habit beats me, I hear that Les 5NJ has been jaunting in that general direction for the past fortnight. His 90w. mobile has been heard from the main street in Ballarat, from Cooma, Eden, Canberra and many points east. What it is to be a member of the idle rich and live a life of travel and luxury. What is the secret of success, Les? What about a lecture on the subject to the general membership? You beaut!!

Harry 5MY heard contacting Don Miller, VQ8LCR-VQ8CBR, on 20, 40 and 80 mx, to say nothing of Johnny 5KO doing the same and on 1.8 Mc. as well.

ADVERTISERS PLEASE NOTE!

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

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

TOWNSVILLE AND DISTRICT

Just don't know what is happening these days, apparently my sples have defected, as there appears no news of what is happening in this part of the State. Who knows, maybe, I will have to be like PanSy. See the Editor and get a few more zeros added to my salary.

No one knows better than I, how the DX conditions are not favouring the north. Why the other afternoon heard 3MO giving a 20 db. over 9 to a G, when he was hardly audible at my shack. This being quite common at the present time. How I long for the old days when I was able to work plenty of them. The wheel must revolve ere long.

Do I listen at the wrong times as I seem to notice quite a lull amongst the locals on the various bands. My latest exploit was the working of the DX-pedition to Easter Island. So will have to watch "A.R." to find out his QSL manager.

This winter season saw very little of the Amateur fraternity passing through, chasing the Sunshine. Must be all those droughts causing lean pockets. Speaking of droughts, sincerely hope Black Friday does not return to VK3 land. Especially after VK7 this year. Padding will have to cease! 73, Bob 4RW.

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There used to be a saying in VK5, copied no doubt, that if one stood on the Beehive Corner in King William Street for long enough that one would be a certainty to see everybody that one knew in VK5. This is somewhat true for 7 Mc. these days, as I always seem to get my answers to my questions by listening long enough on this band. What I wanted to know this time was just how that ex-VK5 character, Rupert 7RM, was making out these days, and sure enough I listened in to the mail of a couple of VK3 jokers the other early evening, just in time to hear one of them say that he had recently paid a visit to "Roop," and he was still as active as ever and thoroughly sold on his s.s.b. equipment ("The Thing" to you). In view of the fact that he must be that close to 80 years young that it does not matter, I think he should be proud of himself. Good to hear about you "Roop," and that goes for the gang over there.

Don 5DX could almost claim the title of being the VK5 beacon station on 14 Mc., as any time that I have been listening on that band he has been sure to be there with his characteristic c.w. fist. This bloke is one of the "younger oldtimers," in fact he could get away with that title, in view of his years of activity in the radio game, both amateur and professional.

The XYL went out to the post the other afternoon and returned with the doubtful statement that "here is a letter from your friend in Broken Hill." Now only an XYL, with a charming and innocent viewpoint, could make such a statement about Dud 2DQ, and naturally I was prepared for the worst, but there was no cause for alarm as all the utopies in envelopes contained was an advance publicity blurb for the annual Hamilton Sidebanders "Get Together" which is tentatively scheduled for the Australia Holiday Day in 1968. To add insult to injury, there was also an application form attached for booking accommodation, etc., and provision to let them know if I would be attending. I intend to treat the whole thing with the ignore that it rightly deserves, in the somewhat vain hope that "my friend from Broken Hill" will at last get the message, but knowing his reputation for persistency I fear it will be a waste of time. Incidentally, Dud, I never get those messages via "The Thing" that you keep on sending down to me via those misguided users of your favourite mode of communication. Well, not all of them anyway!!

Came upon an old copy of "CQ" the other day during one of my somewhat feeble attempts to tidy up the shack and was intrigued to note the Amateur frequency allocations for 1928. You might be interested, dear reader, to note that it went like this: 1,500 to 2,000 Kc., 3,500 to 4,000 Kc., 7,000 to 8,000 Kc., 14,000 to 16,000 Kc., 56,000 to 64,000 Kc. What a Utopia?

DX to me has of course always meant distance, and on my day there was nobody keener on such a facet of Amateur Radio, and for that matter I am still as keen, but to a lesser degree. In view of this opening statement I was somewhat taken aback to read in the latest issue of "CQ" a letter to the Editor which I respectfully will repeat in the hope that the moral will strike you as it certainly struck me. The story is about an Amateur who lived in Eastport, Maine, U.S.A., to whom DX was his supreme delight, and one day his first CQ brought forth a call from Penzance in Cornwall, to be followed by Vimianzo in Spain. Then in succession he worked Scotland, Iceland, Greenland, The Azores Islands and Ireland, to be followed after lunch by Panama, Costa Rica, Honduras, Guatemala, Mexico, El Salvador, The Dominican Republic, Trinidad, Cuba, French Guiana, Venezuela, Colombia and an expeditionary party in Brazil. In the late afternoon he worked VE4, 5, 6, 7 and also a VE3, and about ready to call it a day he worked a KL7 in Hyder, Alaska. About ready to give it away for the day, a W6 called him and he had a f.b. ragchew with the local stateside station. He went to bed that night and dreamt about all the wonderful DX he had worked that day, but what he did not dream about was that the W6 was the best DX he had worked all day! The letter ended by saying that nobody must be alarmed or provoked, all of the distances have been carefully checked using the correct latitudes and longitudes, and a real sophisticated computer programme. Pleasant dreams, 73, and DX!! My sincere thanks to John W6OA whose letter, quoted above, has a moral for all to read and absorb.

Some weeks back, Gary 5ZK began to dismantle his tower and prepare to remove the said tower to another QTH. Either he has got the stitch or the tower is too high, because there is still a lot of tower visible from the Marion Road. Possibly my undercover agent has been mis-informed.

Talking of towers. I recently commented in these notes that Johnny 5MX had erected a quad up in the sky at Woodville. Now, lo and behold, a yagi decorates the skyline, which leads me to wonder if we have discovered a new "umbrella man" in our midst. Shades of the late Jim 5JK.

The Sunday morning W.I.A. broadcasts are certainly getting around. It is now learned with some authority that 5ZKR is relaying it on 144 Mc. for the benefit of the Mount Gambier area. Reports are also to hand of a possible re-broadcast of the session in the Darwin area on 52 Mc. for the local consumption, this being taken from the 14 Mc. transmission of 5NM. The signal must be getting into the Darwin area to permit this.

We definitely have a successful gardener in our midst. Athol 5LQ still talking about his tomatoes and such like. There was some slight reference, to which I turned my famous deaf ear, to the fact that he had some raspberries for any nosey listener-in to the conversation, but I don't think he was dinkum. Who would grow a raspberry tree near an aerial?

Max 5GF heard reporting that his mobile was off the air due to a car accident. He has another car but apparently not another mobile rig, one of the disadvantages of having two motor cars. Ho hum, life is full of such disadvantages—so I have heard!!

One of our "elderly brethren" was recently advised that he had been logged overseas as being out of the band on an occasion. Not very amused, and decidedly mystified, he produced his 7001 crystal for checking and was informed from two reliable sources that it was spot-on. To make sure for the future, and as a further precaution, he now has a base frequency of 3502, again crystal controlled. Nothing like being careful, is there?

My comment about the Morse classes at the School of Modern Languages at North Adelaide moved Phil 5NN, he of the poultry section in VK5, to suggest that the so called "pump handle" method of communication is a dead language, not a modern language. How cruel can they get? Fancy telling Johnny 5KO, Harry 5MY, George 5RX, Uncle Tom 5TY—to name a few—such a story. Why they would cut him to pieces and have him for Sunday's dinner!

In an endeavour to do something for the Associate members' welfare, Council recently agreed to stage a special meeting on a Friday night at a suburban venue. Reports to hand seem to indicate that it was not altogether a success due to the lack of attendance of the Associate members. Despite this, it is intended to have another go soon.

Had a quick visit from Claude 5CH, together with his XYL, the other early evening. They did not stop long, as they were on their way to listen to the big Salvation Band that was visiting VK5 for a couple of days or so. Did not get much news of the S.E. boys from Claude, due to the shortness of his visit, but he has promised to call in again some time in November and make the visit longer, so probably I will catch up on the doings of Mount Gambler and surrounding areas then.

Heard somebody querying at the meeting as to why on the R.D. scoring table a VK5 gets five points for a VK6 contact, but a VK6 contacting a VK5 only gets three points. Did not buy into that one at the time as no doubt there is a good reason for it and I am an old shrewdite on such discussions. I never comment until I am sure.

Noticed in the article on Joe 5JT in the Sept. issue of "A.R." that somewhere along the line he lost four years somewhere or other. "81 years old last May, which makes him born in 1896, he enlisted in the R.A.A.F. in 1940 at the age of 40 years. Anyway, what is the matter of four years between friends? Joe is good for another forty years or so, judging by his 14 Mc. c.w. I wish I had his energy and ability.

I have heard nothing for some time from Jack 5LE who at my last mention in these notes had just shifted his QTH down to Victor Harbour and was in the throes of building a new home and all that goes with it. Hope you and Flo are in the pink Jack, and with the finer weather coming along now, will probably harness Dobbins up again to the sulky and visit Victor Harbour ere long. See you on the screwpile jetty, Jack.

Once every year I bump into the old, old, old question, "Why do I write a paragraph about an Amateur who is not a member of the W.I.A.?" This year it was asked by a member who is a pretty solid joker, quite tolerant, and one who has made a name for himself in our grand old hobby, mostly on c.w. Once again I explained that providing anybody had a call sign and had some news value, I did not care whether he was a member of the W.I.A. or not, to me he was an Amateur, and that was all that mattered. If he did not have the gumption to see just what value being a

member of the W.I.A. could bring him, then that was his business, although how anybody with the brains to pass the exam. could fail to see this always amazes me. Incidentally, it is surprising the number of non-members who have joined up after seeing their name in the magazine, apparently they get the message quicker that way.

Well, wrap it up again for this month, and all being well will see you next month. The reason I write this is that I am off next week to the wilds of VK3—Ballarat to be exact—and once I enter VK3, anything could happen, that Pincott 3AFJ has his spies everywhere! Will I make it, will I return, will they break my spirit? Tune in next month for the gory details of my encounter with the unknown in VK3. What's that? You won't, gerchall! 73 de 5PS—FanSy to you.

WESTERN AUSTRALIA

Hi customers! As mentioned last month, the Institute Picnic was held at Yanchep and was attended by somewhere in the vicinity of 100 people. The use of the north oval was allowed free of charge by the Yanchep Park Board, for which we are extremely grateful. It was stressed right from the start that this was not to be a radio day, but a family day, consequently XYLS, YLs and harmonics appeared in relatively good moods.

Talking about appearing in things reminds me of a fairly recent arrival to our sunny shores. No doubt some shocker had been regaling him with dreadful tales about folk being lost in the Australian bush, and the effects of snakebite, etc. Not wishing to fade into the obscurity of one lost in the dense scrub of Yanchep, our friend "KKK" appeared in a very snappy ensemble, so vividly coloured that it almost defied description. Let it suffice to say that his shirt was the colour of a fiery sunset, while shorts and matching cap were of floral design. I am almost certain that his preparations included ample provision against snakebite, artfully concealed within his wagon. Nice to see you "KKK".

Considerable interest was shown in the chariot of one Doug 6EP, who with XYL and family was holidaying in Perth at the time, and thus was able to represent Kalgoorlie. Pat 8PH and family journeyed up from Narrogin to make sure that this thriving township was not struck from the roll. In fact the Haywood family enjoyed quite a deal of success in the sporting section of the outing. Fat won the "kicking the football" contest, while daughter Jan really showed up the rest of the field by hurling a soft-ball far beyond her nearest rival.

Perhaps the highlight among the many sporting events was the "tug-o-war" in which a team of "Limited" licensees pitted their "skill" against the "Full" call. Not satisfied with the results of their first attempt, the Z boys foolishly challenged for a second try, but weight, and superior staying power were again theirs. Coinciding nicely with the picnic day was the birthday of our President, Roy 6RY, who repaid our rendition of "Happy Birthday" by taking photos of the assembled group. Graham 6ZEZ was thoughtful enough to provide "music to munch to" per medium of the p.a. system, and I feel that a good time was had by all.

It is pleasing to see the relatively large attendances at our meetings of late. Among the visitors at the September meeting were Pete G3JFS, Jim G3HJF, Bernie 6KJ and son Kim. The two G-boys are to stay in VK6 for the next couple of years and both were eager to get their VK6 calls and get on the air.

At the time of writing, Vic 6VK has departed these sunny shores and taken up temporary residence amid the icy wastes of VK3, becoming assimilated in preparation for a spell in Antarctica. I wonder why Melbourne is chosen for all these hijinks, anyone would think it was cold over there. Strike, they don't get as much rain there as we do in Perth! Clambering back to safer ground, I might mention that Vic has left the r.t.t.y. rig at home but has included his sideband gear in the old kit bag and will be looking for contacts while stationed down in the cold, cold snow. Good luck Vic.

Nearly every station I have worked lately drives home the point that 10 metres is good. Blowed if I know, perhaps I don't use the right soap or something, but I can't hear a thing! It's getting to be like fishermen and fishing—"you should have been here yesterday." Rumour has it that some of the locals have been doing a spot of early rising in the hope of working ZS stations on 80 metres. While on the subject of ZS, a couple of v.h.f. types, ZS2FX and ZSASA, will be swinging their antennae in the direction of VK5 using both s.s.b. and a.m. on 50 and 144 Mc. Watch for them.

Anyone fortunate enough to be visiting overseas countries (and I don't mean Rottnest Island thank you) should contact the Institute

for letters of introduction and general information on who's who and what's what before shooting through.

Following this line of thought, it may be of interest to note that WACHA will be visiting Christmas Island during February and if his previous visit to Norfolk Island is any guide, will be very much in demand by the DX merchants.

Jack 6RT has just had a new 12 ft. mast erected for him (it comes complete with a new three storey shack attached) and is looking forward to hoisting a few wires just as soon as the builders evacuate.

There is a move afoot to "revive" the Zone 29 Award just as soon as the rules and regulations can be sorted out, so watch this space for further details.

News to hand just as I was about to close indicates that JAs were heard last eve on 6 metres and also some commercial type t.v. This could be a pointer to the coming DX season. Happy Ham-ing, Ross 6DA.

TASMANIA

As I was exiled by my place of employment into the wilds of the State last month I am unable to give an outline of the meeting that occurred, but in place of that I feel the time is long overdue to give a commendation to the gentlemen of our disposals committee. The committee consists of a small and able group of volunteers (most of whom also hold other positions in the Division) who donate a remarkable amount of time and effort to acquiring and supplying to members a large array of parts and equipment, and managing things like circuit board sales. Full marks to this very able group for a job well done.

It was announced recently that W.L.C.E.N. (in Tasmania at least) is now recognised as an emergency communications network. We did operate at the beginning of this year during the fires, but now that we have been officially recognised and our system is in the process of being revised, we should be able to meet any situation presented in the future.

During the year we have had one resignation from Council (due to a move from Hobart) and rumour has it that several other members will not seek re-election next year. Because of this, several positions will fall vacant, so if you wish to see the Division continue as at present, give serious thought to joining Council and helping to ensure the well-being of all.

On October 1st, daylight saving was introduced to Tasmania and the clocksetting is now referred to as Tasmanian Summer Time. The trend in Amateur log-keeping lately has been towards the use of G.M.T., and this change in systems may encourage other operators to follow this trend.

The aeronautical mobile trip by Launceston Amateurs did occur, but due to weather conditions it was two weeks late. Although VK3 was not worked as they hoped, the group received good reports from the north and north-west of the state (and no one was air sick).

It is with regret we announce that George Groves, VK7XL, died suddenly on Saturday, 7th October, while playing golf. George was well known as Secretary of the North-West Zone for many years. Deep sympathy is extended to his wife and family.

Very little personal gossip this month, and what there is, is concerned only with s.s.b. (a sign of progress?). There is Winston 7WH, whose newly acquired transceiver is one of the finest pieces of workmanship I've seen for a long time (and its results prove its worth). My spies tell me that Brian 7TX is also planning a high power s.a.b. rig. Two more are therefore joining the clan. 73, 7ZLP.

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FROM THE ESTATE of late John Duncan, VK3VZ, late Technical Editor of "A.R.": TH4 Thunderbird Beam on 32 ft. telescopic 3-section tubular self supporting tower, complete with turning motor, transformer, and selsyn, \$120. Console consisting of Galaxy V., power supply, remote v.f.o., vox, 50 and 25 kc. calibrator, 813 g.g. linear with power supply; control panel with beam indicator, reflected power meter, all relays and cables, 33 in. high by 22 in. wide by 17 in. deep, with cantilever desk attached 22 x 17 in., cabinet on Shepherd castors, \$750. AMR200 (Super Pro copy) Rx with power supply, \$70. All wave Rx, home brew, 80 through 2 mc., 7 bands, plus 3 to 6 Mc. and 13.5 to 16.9 Mc. 6 bands, crystal locked, includes two Command Rxs, one being BC453 Q5 with p.s., no cabinet, \$40. S22 Set, 2 mc., \$8. LM14 Frequency Meter with p.s., \$80. Eddystone transistorised Absorption Wave Meter, \$8. TU7B Tuning Box, \$4. UM2 Woden Modulation transformer, 120w. audio, Henderson output transformer, 5000 c.t. to 2.3-500, \$10. The following home brew instruments: 5 inch CRO, pwr. sup., and probes, \$30. Resistance-Capacity Bridge, tone input, \$8. Sig. Gen., r.f., f.m., a.m., square and sine wave, \$14. VTMV, \$15. GDO and pwr. sup., \$10. Antenna Scope—phone-c.w.-g.d.o., Absorption Wave Meter, \$5. Multi Vibrator, 500 Kc., 100 Kc., and 10 Kc., \$8. Valves, meters, transformers, etc., etc. Prior enquiries to Russell Bradshaw, VK3SX (phone 82-2152). Gear only available at 6 Columbia St., North Balwyn, from 10 a.m. on 4th and 11th Nov.

FOB SALE: Drake 2B Amateur band Receiver, complete with O Multiplier speaker, 100 Kc. crystal calibrator, extra crystal for 2B Mc. band and handbook, perfect order, \$300. Also, Amateur band Rx with Gelofo Front-end, double conversion, containing parts costing \$180 including Collins mechanical filter, working but requires some attention, \$80. UM3 Woden Modulation Transformer, new condition, \$16. LSG Type 11 Signal Generator, \$16. VK3MJ, phone 45-6252 (Melbourne).

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FOR SALE: R-23/ARC5 Command Rx, 190-550 Kc., brand new, \$30. BC453B, excellent condition, \$30. Offers for d.s.b. tx described in Electronics Nov. '65, or will sell any part thereof. VK5FR, 7 Short Ave., Glenelg East, S.A., 5045.

FOR SALE: Transistor Power Supply A.W.A. 12 or 24 volt, as used with MR20B Carphone, \$26.00. Tubes, 6/40, \$10. Wanted, AR7 dial and gear box. Also BC348 Receiver, VK3IZ, phone 437-1811.

FOR SALE: Viceroy Mark 2 Transmitter with power supply, had very little use, excellent condition, \$400. E. J. Porritt, VK2AL, 18 Currawang St., Blakehurst, N.S.W. Phone 54-1556 (Sydney).

GELOSO G4/214, double super Rx, \$150. Heath DX40U with three crystals, \$60. Gelofo 4/102 VFO with valves, \$16. Sell as lot, \$200. Foster, VK5EW, 10 Haldane St., Elizabeth Downs, S.A.

HALLICRAFTERS HT32B Filter Xmitter, s.s.b., a.m., c.w., complete with dynamic mic. and desk stand, 600w. 240/110 transformer, spare tubes and handbook, \$400. Hallcrafters SX101 Amateur Rcvr., s.s.b. 160 through 10, complete with spare tubes, 240/110 transformer and handbook, \$200. Hallcrafters SX62A Communications Rcvr., 550 Kc. to 108 Mc., a.m., f.m., c.w., var. selectivity, xtal cal., with handbook, 240v. a.c. op., \$300. TA33 Triband Beam, complete with prop. pitch motor, 240/24 trans., reversing relay and pair unused Selsyn motors, \$135. Pair 813s with sockets and 10v. 10 amp. fil. trans., \$20. This equipment is in excellent condition and is for genuine sale. VK5XB, W. M. Crawford, Box 142, Kingston, S.E., South Aus. phone 205.

REMOTE VFO for Galaxy Transceiver, \$20. Ferguson Tape Recorder, Model 3200, twin track, in new condition, \$50. Tech VTMV, complete with r.f. probe, used twice, \$45. Aerial Coupler, \$2. Stromberg Carlson Gramo Motor with crystal pick-up, \$5. Amplifier or above, push pull 6V6s, \$20. Broadcast Radio to go with above, \$5. Set Letter Punches, 1/2 inch, complete alphabet, \$1. 8 mm. Photo Outfit, \$160 lot, or separately, Canon Reflex Camera, 8-2 F1.4 Zoom Lens, in leather case with pistol grip and 25 ft. Kodachrome Film, \$100; Noris Projector, Zoom Lens, \$50; Academy Editor, new, \$15; LPL 8 and 16 mm. Splicer, new, \$5. Apply Alf Chandler, VK3LC, 1536 High St., Glen Iris, Vic., 3146. Phone 50-2556.

SELL: AT5 Tx, 5 bands. 522 144 meg. Tx, both with tubes. What offers. S.a.e. for reply, VK7TE, 44 Mayne St., Launceston, Tas., 7250.

SELL: Bendix Compass Rx, re-built, with separate 20 and 15 mc. crystal converters, excellent a.m. and s.s.b., \$50 lot. 2 x 38/300 (4-125A) tubes, sockets, \$15. Two identical AVA filters 5286 Kc., carrier crystals, \$30. 80-10 mc 100w. a.m. Tx; Gelofo 4/104 VFO, OOE0640 p.a., Gelofo pl. output, t.v.l. proof, \$30. Type A Mk. III, 80-40 c.w. Tx Rx with 3510 crystal, \$20. Class C Wavemeter, \$10. AMR300, works, needs attention, registered V.R.C. may collect. D. Fisher, VK2AFD, 25 Kapooka Ave., Dapto, N.S.W. Phone Wollongong 61-2144.

SELL: Hammarlund HQ145 Receiver, general coverage with bandspread, 550 Kc. to 30 Mc., double conversion, product detector, xtal cal., etc., 240v. operation, in mint condition, \$300. G. A. van der Harst, VK5XV, 21 Dudley Cres., Marino, S.A., 5049. Phone 96-3136.

SELL: Heathkit Apache/SB10 combination, antenna relay, ready to go, \$275. H. Trutmann, 7 Nerita Gardens, Corio, Vic., 3214. Phone 79111.

SELL: 40 ft. Wooden Mast, 20 ft. Gin Pole Ladder and 7 pulley block and tackle. Mast hinges at base. One man can erect pole. Ideal 2 el. beam. \$29.50. VK3XU, Phone 772-2880.

SEND two 5c stamps for catalogue of bargain priced new and used radio equipment and instruments. Eastern and Mountain District Radio Club, Disposals Committee, P.O. Box 33, Olinda, Vic., 3786.

WANTED: Collins F455-40 Mechanical Filter, 4 Kc. Sell: General coverage Receiver, BC348 type, handbook, essential mods. only, appearance fair, performance good. Details, VK1AU, Col Harvey, 16 Leane St., Hughes, A.C.T.

WANTED TO BUY: Valves: A442, A415, B406, A306, 201A, UX199, with reasonable emission. Phillips' 3003 Eliminator (complete). Pre-1930 receivers—such as PCJ4 and one with commercial honeycomb coils. (Also early radio maps.) Not for re-sale—reasonable prices paid. I. Drysdale, P.O. Box 50, Sandringham, Vic., 3191.

WANTED: Back numbers of A.R.R.L. Handbooks, "73", "OST" and "A.R.". I pay freight, details and price to J. Wayland, 97 Cambridge St., Camp Hill, Qld., 4152.

WANTED: Control Box for AD704 V.h.f. Nav. and Comm. Receiver. 108.0-135.9 Mc., also Command Receiver in any condition. David Hughes, L3242, phone 29-3706 (Melbourne).

WANTED: Group Leaders with knowledge of Radio to supervise small Y.R.S. correspondence groups of keen young people. For further details write R. Davis, 14 Hovea St., O'Connor, Canberra, A.C.T.

WANTED TO BUY: Pre-1927 Radio Sets and parts, especially bright emitter and early tx valves, neodyne rx's. Also magazines (not Listener In) and A.R.R.L. Handbooks, pre-1934. F. K. McTaggart, VK3NW, 37 Ryeburne Ave., Hawthorn East, Vic., Phone 82-1141.

WANTED: T.v.l. proof, Table-top a.m. Rig, xtal cr v.f.o. control, capable 150 watts minimum, both 80 and 40 metres. Offers with full details to the Secretary, W.I.A., P.O. Box 36, East Melbourne, Vic., 3002.

WANTED: Urgently to get back on the air, trimmer capacitor assembly for Gelofo v.f.o. type 4/102/V set. This consists of set of three air trimmers. Ted Owen, VK5UK, 26 Symonds Cres., Modbury, S.A., 5092. Phone 64-3877 (Adelaide).

WANTED: Vox Unit for Galaxy Transceiver. Russell Bradshaw, VK3SX. Phone 82-2152 (Melbourne).

WANTED: 4CX250B air system socket. Good price. VK3ZVV, Phone 277-8295 (Melbourne).

A LARGE RANGE OF TRANSMITTERS, RECEIVERS, TEST GEAR, AND DISPOSALS RADIO PARTS AVAILABLE

● TECH T03 3" OSCILLOSCOPE

Specifications.—Vertical Axis: deflection sensitivity, 0.1v. p-p/cm.; freq. characteristics, 1.5 c/s. to 1.5 Mc.; input impedance, 2 megohms, 25 pF.; calibration voltage, 1v. p-p/cm. Horizontal Axis: deflection sensitivity, 0.9v. p-p/cm.; freq. characteristics, 1.5 c/s. to 800 Kc.; input impedance, 2 megohms, 20 pF. Sweep Osc., 5 ranges: 10-100 c/s., 100 c/s.-1 Kc., 1 Kc.-10 Kc., 10-80 Kc., 50-300 Kc. Synchronisation: Internal (negative or positive), external, or line. Cathode ray tube, 3KP1F. \$136.00.

● TECH TE40 MILLIVOLTMETER

AC volts: 0.01, 0.03, 0.1, 0.3, 1.0, 3, 10, 30, 100, 300. Accuracy: 5 c/s. to 1.2 Mc. ± 2 db. (db. scale $+2$ to -25 db.); 10 c/s. to 1 Mc. ± 1 db.; 20 c/s. to 250 Kc. ± 0.2 db. db. scale: -40 , -30 , -20 , -10 , 0, $+10$, 20, 30, 40, 50 dbm. \$59.25.

● TECH TE65 V.T.V.M.

DC volts: 1.5, 5, 15, 50, 150, 500, 1500. AC volts: 1.5, 5, 15, 50, 150, 500, 1500v. r.m.s.; 1.4, 4, 14, 40, 140, 400, 1400, 4000v. p-p. Resistance: $R \times 10$, 100, 1K, 10K, 100K, 1M, 10M. Decibel: -10 db. to $+65$ db. £50.00.

● MILLER 8903B 455 Kc. PRE-WIRED I.F. STRIPS

Comprises two i.f. stages, diode detector, in-built a.v.c. 55 db. gain, NPN silicon transistors. DC requirements, 6 v.d.c. 2 mA. Size, $1\frac{1}{2}$ " x $\frac{1}{2}$ " x $\frac{1}{2}$ ". \$8.70 inc. tax.

● STAR SR700A AMATEUR-BAND RECEIVER

Freq. coverage: 80 mx, 3.4-4.0 Mc.; 40 mx, 7.0-7.6 Mc.; 20 mx, 14.0-14.6 Mc.; 15 mx, 21.0-21.6 Mc.; 10 mx (A), 28.0-28.6 Mc.; 10 mx (B), 28.6-29.1 Mc.; 10 mx (C), 29.1-29.7 Mc. Triple conversion: 1st i.f., 3.4-4.0 Mc.; 2nd i.f., 1650 Kc.; 3rd i.f., 55 Kc. Sensitivity: a.m. less than 1 μ V. for 10 db S+N/Noise Ratio; c.w./s.s.b. less than 0.5 μ V. for 10 db. S+N/Noise Ratio. Selectivity: 0.5 Kc., 1.2 Kc., 2.5 Kc., 4 Kc., all at -6 db. In-built 100 Kc. Crystal Calibrator (crystal supplied). \$461.50.

WANTED TO BUY

Communication Receivers, Test Equipment, etc. Call, write or phone. Equipment inspected and picked up at your convenience any night or week-end.

● STAR ST700 SSB TRANSMITTER

250w. p.e.p. Employs high efficiency AB2 final. Incorporates vox, p.t.t., mechanical filter for max. suppression. Freq. coverage: 80 mx, 3.4-4.0 Mc.; 40 mx, 7.0-7.6 Mc.; 20 mx, 14.0-14.6 Mc.; 15 mx, 21.0-21.6 Mc.; 10 mx (A), 28.0-28.6 Mc.; 10 mx (B), 28.5-29.1 Mc.; 10 mx (C), 29.1-29.7 Mc. Emission: CW, LSB, USB, AM with carrier injection. In-built c.w. sidetone monitor. Clickless keying with unique tone osc. system (no keying of relays). \$519.20 inc. tax. Note: SR700A and ST700 couple together for complete transceive operation.

● VALVE SOCKETS, P.T.F.E.

7-pin complete with can, 20c ea.; 9-pin complete with can, 50c ea. Ideal for 144 or 432 Converters or Tx's.

● ELECTROLYTIC CONDENSERS

50 μ F., 125v.w. pigtail type. Late manufacture. 20c ea.

● A111 9 Mc. SSB EXCITER

A fibre-glass printed circuit board, the finest German crystal filter, diode ring modulator, and solid state circuitry all contribute to make the A111 the finest SSB Exciter available. Specifications: Sideband suppression, 80 db.; carrier sup., 65 db.; audio freq. response, 350 to 3,000 cycles; mic. input, 1 mV. on 5K ohm load. Incorporates vox amplifier and relay amp. Price with KVG. XF9B Filter, \$240.

● A112 5 Mc. VFO

Freq. coverage: 4950 to 5550 Kc. Freq. stability better than 100 c/s. over 12 hrs. long term; better than 8 c/s. over 10 mins. if enclosed in suitable box. Output: 350 mV. on 220 ohm load. Price \$22.

● EICO 753 TRI-BAND SSB TRANSCEIVER KIT

180w. p.e.p. on SSB or CW, 80w. on AM. 5.2 Mc. crystal filter. Sideband sup., -40 db.; carrier sup., -50 db. Receiver sensitivity: 1.0 μ V. for 10 db. signal to noise. Receiver selectivity, 2.7 Kc. at 6 db. 10 Kc. receiver off-set tuning. Printed circuit i.f. strip. Pre-aligned xtal filter. Freq. coverage: 80 mx, 3490-4010 Kc.; 40 mx, 6990-7310 Kc.; 20 mx, 13890-14410 Kc. (LSB 80 and 40 mx, USB 20 mx). Price \$328.78.

● PETERSEN RADIO PR100 CALIBRATORS

Comprising 1 transistor 100 Kc. crystal oscillator, 1 transistor emitter follower, fibre-glass printed circuit board, trimmer on crystal for zero beat with WWV. Crystal accuracy 0.005%. Power requirements, 15v.d.c. 14 mA. Price \$22 inc. tax and plus postage.

● K109 SWR METERS

75 ohms or 52 ohms input and output. SWR 1:1 to 1:10 $\pm 3\%$. 100 micro-amp. meter. \$18.50.

● CO-AXIAL CABLE

UR70, $\frac{1}{4}$ " diam., 72 ohms, supplied with Belling Lee Connector. 27 yards \$2.00. Post and packing 75c.

● RESISTORS

Wide range of values available in $\frac{1}{4}$ watt, $\frac{1}{2}$ watt or 1 watt. Welwyn, I.R.C., Ducon, and Erie. \$2.00 per 100.

● CAPACITORS

Miniature 600v.w. pigtail type: 0.001, 0.005, 0.0002, 0.0005. Also Ceramic. \$2.00 per 80.

● POTENTIOMETERS

Wire-wound, 100 ohms to 100K ohms, 1 watt to 3 watt. 40c ea. Carbon, 100 ohms to 5 megohms, 20c ea.

● VALVES

New Philips: QB/250 (813), \$10; 815, \$1; 807, \$1.50; TZ40, \$1.50; 416B, \$4; VR150/30 and VR105/30, 75c ea. or 3 for \$2; ECC33 (6SN7), 40c.; 6AM5, 50c; 6AC7, 20c or 12 for \$2; 6K8, 75c or 3 for \$2; 6J7, 40c or 6 for \$2; 6J6, 50c or 5 for \$2; EF50, 20c.

● TELEMAT T75 FREQUENCY METER

85 to 1,000 Mc. Heterodyne type with 5 Mc. internal standard. VHF version of BC221. Immaculate condition. \$150.

● PANEL METERS, P25 TYPE

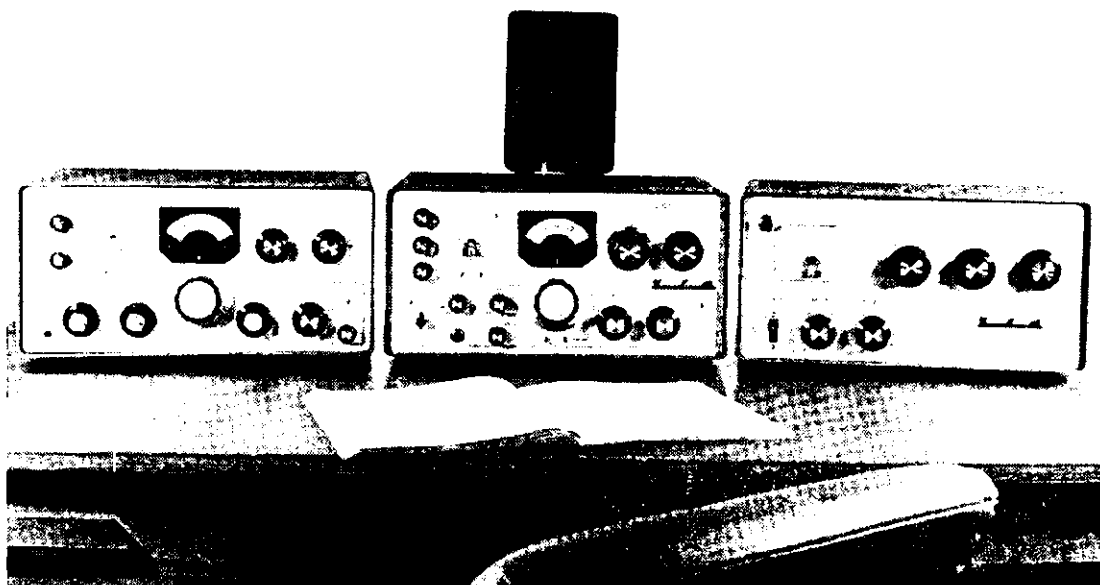
100 μ A., \$6.95; 500 μ A., \$5.25; 1 mA., \$4.50; 10 mA., \$4.50; 50 mA., \$4.50; 100 mA., \$4.50; VU meter, \$6; S meter, \$4.80.

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A COMPACT DESK-TOP HIGH POWER INSTALLATION FROM THE FINE RANGE OF YAESU "F" SERIES EQUIPMENT FIVE BANDS 80-10 METRES MECHANICAL FILTER

S.S.B. with V.O.X. & P.T.T., C.W. break-in, and A.M. Transceiver or separate operation.

FL-200B Transmitter (centre) provides all these facilities—no extras required.

FR-100B Receiver (at left) has features you expect for modern S.S.B., C.W. and A.M. reception.

FL-2000 Linear (at right) provides safe and EFFECTIVE output power. Equally suitable on other transmitters and transceivers. Best linear value in Australia.

All sets have built-in solid state 230v. a.c. 50 c.p.s. Power Supplies. Cabinet color, dark driftwood. Engraved satin-finish panels.

SPECIFICATIONS:

FR-100B: RECEIVER, DE-LUXE MODEL. S.S.B.-A.M.-C.W. dual conversion with crystal locked front end. Now includes 100 Kc. calibrator and three ranges on 10 mx. Sensitivity, 0.25 micro-volts for 10 db. S plus N/N ratio. Two mechanical filters, 2.1 Kc. for S.S.B. and 4 Kc. for A.M. Crystal filter for C.W. High reduction precision gear-driven dial with read out of 1 Kc. A.N.L., "S" meter, A.G.C., offset tuning, crystal controlled B.F.O. with selectable sidebands, built-in monitor, ring demodulator. Freq. ranges: 3.5-4.1 Mc., 6.9-7.5 Mc., 13.9-14.5 Mc., 20.9-21.5 Mc., 27.9-28.5 Mc., 28.5-29.5 Mc. Additional crystals available for WWV and three other s.w. ranges between 7.5 and 30 Mc. Adaptor kit available for F.M. \$399.

FL-200B: TRANSMITTER, S.S.B.-A.M.-C.W., two 6JS6As (similar 6HF5) tubes in p.a., 240w. p.e.p. Input. Includes in-built antenna relay, V.O.X., A.L.C., U.S.B.-L.S.B. selection, extremely stable V.F.O., Kokusai M.F. Carrier and sideband suppression better than -50 db. Accessory socket provides connections for receiver muting and linear control. Frequency ranges. 3.5-4.1 Mc., 6.9-7.5 Mc., 13.9-14.5 Mc., 20.9-21.5 Mc., 27.9-28.5 Mc., 28.5-29.1 Mc. All plugs, inst. manual and p.b. microphone supplied. Nothing else to buy. On C.W., break-in operation is possible, T9X note, clean, chirpleas keying, V.F.O. runs continuously. \$478.

FL-2000: LINEAR AMP., four 6KD6s in g.g., 80-10 mx. Adds 2 to 3 "S" points to your DX reports. Will match any S.S.B. exciter capable of output power of 30 to 100 watts p.e.p. Power switch controls built-in relay for barefoot or amplifier operation without any cable changes. Standby switch for instant change-over. A real signal booster for any Amateur exciter or transceiver available in VK. Simple to connect, easy to tune. Fully metered for plate current, output, and SWR indicator built-in. Fan cooled. \$278.

FOR ELEGANCE, CONVENIENCE AND VERSATILITY—CHOOSE "F" SERIES

We stock "F" Series valves, diodes, matching speakers and spares; TA-33JR tri-band beams, SWR meters, co-axial connectors, etc. All prices incl. S.T., freight extra.

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amateur radio

Vol. 35, No. 12
DECEMBER
1967

25c

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CITIZENS BAND CRYSTALS

To suit Japanese Walkie-Talkies and Transceivers. P.M.G. approved. Freq. 27.240 Mc. (ix), 26.785 Mc. (rx).

HC6/U Subminiature 1/2 in pin spacing, 27.240 or 26.785. \$3.50 each or \$6.50 a pair.

HC18/U Miniature 1/4 in pin spacing, 27.240 or 26.785. \$3.50 each or \$6.50 a pair.

(HC18/U also available with flying leads.)

MULTIMETER Model 200H

20,000 ohms per volt d.c., 10,000 ohms per volt a.c. Specifications.—DC Volts: 0.5, 25, 50, 250, 500, 2,500. AC Volts: 0.10, 50, 100, 500, 1,000. DC Current: 0.50 uA.; 25, 250 mA. Resistance: 0.60K ohms, 0.6 meg. Capacity: 0.01-0.3 uF. (at AC 5v.); 0.0001-0.01 uF. (at AC 250v.). Decibel: Minus 20 db plus 22 db. Output range: 0-10, 50, 100, 500, 1,000. Battery used: UM3 1.5v., 1-piece. Dimensions: 3 1/4 x 4 1/2 x 1 1/8 in. Price \$11.00 Post Free. Complete with internal battery, testing leads, prods.

TURNTABLE BASES

Unpolished, to suit Garrard, Balfour, Princess, Dual 1010. Price \$7.00 each.

All Channel Transistorised TV Antenna Boosters, Price \$10 each. Post 50c.

PK633 BROADCAST TUNER

550 Kc. to 1600 Kc. a.m. circuit. 3 Transistors, one diode. Tuner Assembly, excluding audio amplifier, driver and output circuitry and etched printed circuit board. Containing a variable condenser, oscillator, converter, i.f.s detector, and associated components. Power 9 volts d.c. Dimensions: 4 1/2 x 2 1/2 x 2 1/2 in. Special Price \$11.75.

STEREOGRAM AND TUNER CHASSIS

Medium Fidelity, 4-valve (two 6BM8s, one 6N8, 6N7), Aust. made. Straight line dial, mono tuner, 15 ohm, approx. 3 watts per channel output, as new. Fully tested. Ideal for use as Tuner or Built-in Unit, etc. Price \$30 inc. new valves, or \$25 less valves. MSP 6 in. speakers to suit, \$4.50 ea.

STEREO RECORD CHANGER

Balfour "Princess" Stereo, 4-speed, automatic 10 record changer. Made in England. Complete with Ronette Ceramic Cartridge. Brand new in carton. Price \$25 inc. post.

STEREO AMPLIFIERS

Model ST-100, valve type, 5 watts per channel. Frequency response, 50-15,000 c/s, 4, 8, 16 ohm output, crystal and ceramic inputs. Price \$38.00.

Model TRM-10, 5 watts per channel, Solid State, 8 ohm, etc., output. Frequency response, 40-15,000 c/s, plus or minus 3 db. Crystal or Ceramic inputs. Price \$68.75.

Model TRM-20, 10 watts per channel, Solid State, 8 ohm load, etc. Freq. response: 30-16,000 c/s, plus or minus 3 db. Magnetic and Ceramic inputs. Filters and Tape facilities. Price \$106.25.

Model TRM-40, 22 watts per channel, Solid State, 8 ohm load. Freq. response: 20-20,000 c/s, plus or minus 1 db. Magnetic, Ceramic and Tape inputs. Scratch and Rumble Filters, Loudness Control, etc. Price \$126.00.

Solid State, Stereo Phono-Tape, Pre-Amplifier. AC operated. Freq. response: 30-18,000 c/s. Normal input 5 mV., matches most types of Magnetic Cartridges and Tape Heads. Output max. 900 mV. Price \$19.50.

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Trio Model 9R59DE, four bands covering 540 Kc. to 30 Mc., two mechanical filters for maximum selectivity. Product Detector for SSB reception. Large tuning and bandspread dials for accurate tuning. Automatic noise limiter, calibrated electrical bandspread, S meter and BFO. 2 microvolts sensitivity for 10 db S-N ratio. Price \$160.88 inc. packing.

OTHER RECEIVERS AVAILABLE

TRIO JR-200 550 Kc. to 31 Mc., seven tubes, bandspread tuning, four bands. Price \$124.67.

TRIO JR-60 540 Kc. to 30 Mc. and 142 to 148 Mc. in five bands, 14 tubes, calibrated electrical bandspread, SSB-AM-FM. Price \$253.55.

TRIO JR-500SE Amateur Band Receiver, seven bands, covering 3.5 Mc. to 29.8 Mc. Crystal locked front end, transistor VFO with external output. Crystal locked BFO, mechanical i.f. filters, WWV section for calibration check, S meter and ANL. Product Detector for high quality SSB reception. Price \$268.08.

TRADE-IN ACCEPTED

F.M. TAXI RADIOS

T.C.A. (Philips) Low Band, FM Mobile Units, 12 volts, xtal locked, 120 Kc. bandwidth, operating frequency approx. 80 Mc., complete with all valves and vibrator and microphone. Suit Amateur conversion. Good condition. Our Price, less Xtals, \$25 freight and packing extra.

TRANSISTOR INTERCOM UNITS

Four-Station: 1 master, 3 sub-stations. 3 Transistors, 250 mW. Amplifier. Battery operated (Eveready 216), complete with battery, wire, staples and fitting instructions. Price \$19.75.

Two Station Model also available. Price \$10.50.

Three-Station Intercoms, as per above, one master and two sub-stations. Price \$14.75.

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Model PT34. 300 uA. movement. AC and DC Voltages: 0-10, 50, 250, 500, 1,000v. Current ranges (mA.): 0-1, 100, 500. Ohms range: 0-100,000. Size 3 1/4 x 2 1/2 x 1 1/4 inches. Price \$5.75. Complete with leads.

BATTERY SAVER or A.C. ADAPTOR

A & R Type PS64

- Unlimited operation of battery operated transistor equipment from 240v. a.c. mains at negligible power cost.
- Ideal for 6 or 9v. Transistor Radios, Tape Recorders, Transistorised Small Amplifiers and Test Equipment.
- Approved by Electricity Supply Authorities.
- Maximum voltage limited to 7.75v. or 11v. at low current to protect transistors and capacitors.
- Filtered to ensure hum-free operation.
- 6 or 9v. (nominal voltage) selected by external switch.

Specifications.—Input: 220-240v. 50 c.p.s. Output DC: 7.75/11v. over no load to full load current range; or 5.6/7.75v. over no load to full load current range. Ripple voltage: 6v. output, 1.5 per cent. max. Ripple voltage: 9v. output, 0.5 per cent. max. Dimension 3 1/2 x 2 1/2 x 2 in. Price \$10.50.

WALKIE-TALKIE TRANSCEIVERS

CITIZENS BAND

"Communicator" Model WT400, 4 transistors, 27.240 Mc. Crystal locked transmitter, 50 mW. output. Range approx. 2 miles open country. Price \$35.00 a pair.

"Lamie" Model FR907, 9 transistors, superheterodyne, crystal locked receiver and transmitter, 100 mW. output, 27.240 Mc., P.M.G. approved. Range approx. 5 miles in open country. Price \$59.50 a pair.

"Total" Model TC-911, 9 transistors, superheterodyne, crystal locked, individual speaker and microphone. P.M.G. approved 27.240 Mc. All metal construction, complete with leather case. Range approx. 1 to 8 miles in open country. Price \$80.00 a pair.

Spare Aerials for above sets, \$3.80 each. Other Spares readily available.

2 Watt and 5 Watt Transceivers are available also. Price on application.

LOUDSPEAKERS, "PEAK" HI-FI

Type	Size	Frequency C/S	Maximum Input	Price
Twin Cone Types:				
6A7	6 in.	60-16,000	5 watts	\$5.50
8A7	8 in.	50-16,000	8 watts	\$7.50
12A9	12 in.	30-13,000	20 watts	\$18.75
Coaxial Type with "Free Edge" bass cone and horn tweeter				
8CX50	8 in.	30-22,000	15 watts	\$23.75
10CX50	10 in.	25-22,000	20 watts	\$36.00
12TX50	12 in.	18-22,000	25 watts	\$62.50
Single Cone "Free Edge" type:				
5A50	5 in.	50-15,000	8 watts	\$15.00

Professional Series:
H50 Horn Tweeter, 2,000-20,000 15 watts \$11.10
6M50 6 1/2" Sp'ker 200-6,000 25 watts \$21.00
8L50 8 in. Woofer 37-4,000 15 watts \$28.25
10L50 10 in. Woofer 25-3,000 20 watts \$41.00
12L50 12 in. Woofer 17-2,500 30 watts \$64.00

Please Note.—A7 and A9 types are available in either 8 or 16 ohm Voice Coil. A50, CX50, TX50 and Professional types, 16 ohms only.

WIDE RANGE TWIN CONE

LOUDSPEAKERS

5 in. Tweeter, 4,000-18,000 c/s, 15 watts r.m.s., 15 ohm V.C.	\$4.30
8 in. Twin Cone, 40-12,000 c/s, 2, 8, 16 ohms V.C., 8 watts r.m.s., 16 watts peak power handling	\$7.50
Twin Cone, Elliptical, 85-10,000 c/s, 5 watts r.m.s., 9 in. x 6 in., 7 watts peak power, 3.5 or 15 ohm V.C. Impedance	\$6.55
12 in. T.C., 45-10,000 c/s, 8 watts r.m.s., 10 watts peak, 2, 8 or 15 ohm V.C. Impedance	\$9.80
12 in. T.C., 30-14,000 c/s (in recommended enclosure), 8 or 16 ohm V.C., 20 watts r.m.s., 30 watts peak power	\$41.80

S.W.R. METERS Model KSW-10

Specifications.—Standing Wave Ratio: 1:1 to 1:10. Accuracies: Plus or minus 3% scale length. Impedance: 52 ohms and 75 ohms. Meter: 0-100 DC microamperes. Price \$19 inc. tax.

ALARM BELLS

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"AMATEUR RADIO"

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W.I.A. OFFICIAL BROADCASTS

NEW SOUTH WALES		QUEENSLAND	
VK2W1, Sundays, at 1100 hrs. E.A.S.T.		VK4W1, Sundays, at 0900 hrs. E.A.S.T.	
3595 Kc. a.m.	145.130 Mc. a.m.	3580 Kc.	53.995 Mc.
7146 Kc. a.m.	146.000 Mc. f.m.	7146 Kc.	144.36 Mc.
53.866 Mc. a.m.	(53.960 Mc. f.m. proposed shortly)	14.342 Mc.	
VICTORIA		SOUTH AUSTRALIA	
VK3W1, Sundays, at 1030 hrs E.A.S.T.		VK5W1, Sundays, at 0900 hrs. C.A.S.T.	
1825 Kc. a.m.	144.500 Mc. a.m.	3.5, 14, 52 and 144 Mc. bands.	
3800 Kc. s.s.b.	145.854 Mc. f.m.	WESTERN AUSTRALIA	
7146 Kc. a.m.	432.500 Mc. a.m.	VK6W1, Sundays,	
53.032 Mc. a.m.		TASMANIA	
		VK7W1, Sundays, at 1000 hrs. E.A.S.T.	
		3672 Kc., and re-transmitted by representative stations on—	
		7146 Kc.	144.1 Mc.
		53.032 Mc.	432.6 Mc.

FEDERAL ORGANISATION OF W.I.A.

Last month a series of news items appeared on Divisional broadcasts and in "A.R." which referred to Federal matters. What is the Federal set-up of the W.I.A.? Broadly speaking, the situation under the existing constitution is this. Each Division appoints a Federal Councillor, who represents that Division's views at the annual Federal Convention of the W.I.A., held over Easter. At this Convention, W.I.A. policy for the coming year is determined, by all Divisions exercising one vote each, and voting on motions which had been submitted prior to the Convention. These motions having been previously discussed by all Divisions at Council meetings and general meetings, the Federal Councillor carries to the Convention his Division's voting instructions and exercises a vote on behalf of his Division. If there is a simple majority of votes in favour, then the motion is passed and becomes part of Institute policy. However, minutes of the Convention are prepared and circulated to all Divisions after the Convention and the vote of their Federal Councillor is ratified by each Division. It is becoming common procedure for Divisions to instruct their Federal Councillor to vote "at his discretion," and later ratify that vote. This allows for an open exchange of views between delegates, and allows the Federal Councillors to change their views on any matters, having listened to the points of view expressed by other States.

Following the Convention, the task of implementing W.I.A. policy falls to Federal Executive. This body consists of seven voting members, and several co-opted officers. It has been traditional for the personnel of Executive to be appointed from the Headquarters Division—that is the Division in which the Central Office of the Postmaster-General's Department is situated. This has been Victoria for some time, and thus the Divisional Council of the Victorian Division appoints Executive each year. These appointments are circulated to the Divisions for acceptance, and nominations are made to the offices of President, Secretary, etc.

What tasks do the members of Executive undertake? Generally these can be summed up in the three words **representation, liaison and administration**. Executive represents the whole Australian Amateur Service to outside bodies; especially to the regulatory bodies—the P.M.G.'s Dept., the I.T.U., etc. This representation is also often on behalf of a particular State, or an individual Amateur. The **liaison** undertaken is between the six States, and also between overseas Amateur Societies, the I.A.R.U., etc. **Administration** concerns Executive in the fields of contests, awards, QSL, SWL, YRS, etc., much of this activity being undertaken by co-opted officers.

All these activities are financed through the "per-capita" payments made each year to Executive by Divisions. Each Division contributes a lump sum based on total membership at the rate of 30 cents a head. This payment gives financial standing to a Division at the annual Convention and allows its vote to be exercised. In addition to this money, there is the I.T.U. Fund. This is in the nature of a trust fund for the sole purpose of sending a representative to a conference of the I.T.U. which may be discussing Amateur frequency allocations.

One implication of all this is that if you, the individual member of W.I.A., feel that you have some aspect which is causing concern, then send details to your Federal Councillor. These will be discussed and a Federal Convention motion drafted, circulated to all Divisions, and eventually discussed and voted on in Sydney next Easter. This is the time of year for submitting items for the Federal Convention. Do you have any? (Practically all items submitted to the Hobart Convention this year have been dealt with by Executive, and we will be giving details in forthcoming news releases.)

I.A.R.C. ANNUAL CONVENTION

The convention of the International Amateur Radio Club was held in Geneva over the week-end of 23rd and 24th September this year. Some details of events there have been received by Executive, both directly from I.A.R.C. and from the I.A.R.U. Region I. Committee. A word of explanation; there are at least two important International Amateur Radio organisations with which Amateurs should be concerned.

Firstly, the I.A.R.U., which is an international organisation of Amateur Societies, with its present headquarters with A.R.R.L. in the U.S.A.

Secondly, the I.A.R.C., which is an international organisation of individual Amateurs, with its headquarters in Geneva, Switzerland, and with the well known Amateur Station 4U1TU.

Both these organisations have as an ultimate aim the encouragement, maintenance and preservation of Amateur Radio, but they go about this in different ways. I.A.R.U. and I.A.R.C. are not in competition, members of I.A.R.C. are office-bearers in I.A.R.U. regional organisations, and also office-bearers in national societies such as A.R.R.L., R.S.G.B., W.I.A., etc. Hence the liaison between I.A.R.U. organisations and I.A.R.C. is obtained in this personal manner, as well as on a formal level as between I.A.R.C. and I.A.R.U. member societies. (As a member of W.I.A. you have a connection with I.A.R.U. because W.I.A. is a member country of the Union, however you can join I.A.R.C. as an individual Amateur for the fee equivalent to \$US5 (I.A.R.C., Box 6, CH-1211, Geneva 20, Switzerland), just as members of Federal Executive and Federal Councillors have joined as individuals.)

I.A.R.U. states as part of its objectives, "... the effecting of co-operative agreements between national Amateur Societies ... on matters of common welfare." The President of I.A.R.C. has been quoted as saying, "I again wish to state emphatically and clearly, that we have always opposed any attempt to compete with national organisations or the I.A.R.U. The I.A.R.C. is not an instrument to perform duties which are incumbent upon those institutions. We see our aims in doing something for our hobby which can be done more easily by us than the I.A.R.U. We are at a somewhat different level, but have exactly the same feeling for the development of Amateur Radio as all national associations and their co-ordinating bodies have."

The I.A.R.C., being located in Geneva, has a unique opportunity to liaise with the officials of I.T.U., and with delegates to I.T.U. conferences. In fact, as stated in last month's "A.R.," the World Maritime Mobile Conference has been held in Geneva this year, and the Secretary-General of I.T.U. (M. Mohamed Mili) held a reception for the heads of delegations and invited representatives of the Amateur Service. M. Mili has consented to become Patron of the I.A.R.C. and he attended the opening of their Annual Congress, at which he delivered an address. His concluding comments are worthy of note:

"... Your movement is therefore a magnificent one which brings men closer together—a movement which, in addition to its contribution to scientific progress, ... fosters the fraternalism which is the very basis for the maintenance of peace.

"Yesterday I happened to read an article written by one of you, Mr. Peter Schroder. It was written in 1957—just ten years ago—and published in the I.T.U. Telecommunication Journal in January 1958. In that article, Mr. Schroder attempts to define the aims of the Amateur Radio movement and in conclusion, I cannot do better than repeat two sentences at the end of the article which, in my opinion, provide a perfect definition of your movement. This is what the author said: 'One of the most significant aspects of the I.A.R.U. lies in its role as a force for world peace and understanding. It has already been noted that the furthering of international fraternalism was a stated objective of the Union, and to this aim it has consistently adhered since the organisation was first devised a quarter of a century ago.'

(Continued on Page 12)

CONVERTING A.W.A. LOW-BAND CARPHONES FOR 6-METRE OPERATION*

JOHN BECKETT, VK3FE

OVER the past few years many Hams have acquired one of the A.W.A. low-band f.m. units with a view to converting it to 6 metres. The author has converted several of each type of unit and presents here some ideas for the guidance of those who wish to get going on 6 f.m.

There are three basic types of units which have been released on the surplus market. The older, two-chassis unit we will refer to as the "20" (20 watts of r.f.); the smaller type 10A (10 watts of r.f.), and the Junior (nominally 3 watts out). The receivers in the 10A and Junior are identical.

In commercial service these sets all used a two point something megacycle crystal which, when multiplied by 36, gave an output around 78 Mc. For Amateur use, we employ a similar crystal multiplied by 24 and change the last tripler to a doubler for output on 52 Mc.

The conversion is very simple on the two smaller units and moderately so on the 20, where we alter the muting and oscillator chain to the later type.

RECEIVER CONVERSION

R1, all sets: Remove from the receiver the following components— aerial coil, r.f. plate coil, 1st mixer grid coil, multiplier plate coil, and the multiplier injection coil. (Coils marked † are not used in the 20).

In the 20 the coils are bolted in and use brass mounting blocks and copper slugs. Solder the new coils onto these blocks and retain these slugs. Winding the copper slugs in raises the frequency.

In all sets wind up new coils according to Table 1 and solder into place. Do not attempt to close-couple the r.f. plate to mixer grid coils in the Junior and 10A as you will only increase the risk of spurious signals entering the i.f. strip.

	20	10A and Junior
Aerial	9½ turns tapped at 2t.	18 turns tapped at 3t.
RF Plate	not used	17 turns
Mixer Grid	8½ turns	16 turns
Mult. Plate	10 turns	20 turns
Inject. Coil	not used	20 turns

Table 1.—Receiver Coil Dimensions.

Note: All coils are close wound. The 20's are ½" i.d. and wound with 16 B. & S. The 10A and Junior are ¼" i.d. and wound with 20 B. & S. All are self supporting.

* Eastern and Mountain District Radio Club's "The Radio Bulletin," C/o The Editor, P.O. Box 33, Oatlands, Vic. 3788.

On the 20, replace the DC11 crystal socket with a D type.

It is strongly urged that you alter the 20's oscillator chain to the later type although it is simpler to use an overtone crystal in the existing circuit. This precludes multi-channel operation however.

R2: Alter the muting circuit of the 20 to the specifications shown in Fig. 1. Remove all components associated with the 6SN7 stage except the heater wiring. Replace the 6SN7 with a 6SL7. Remove the VR tube and associated wiring. The muting level pot. can be preset and an additional muting control incorporated in the control unit.

This new circuit is very similar to the 10A electrically.

R3. I.f. alignment: Before tackling this most important step, it is suggested that the following steps be taken.

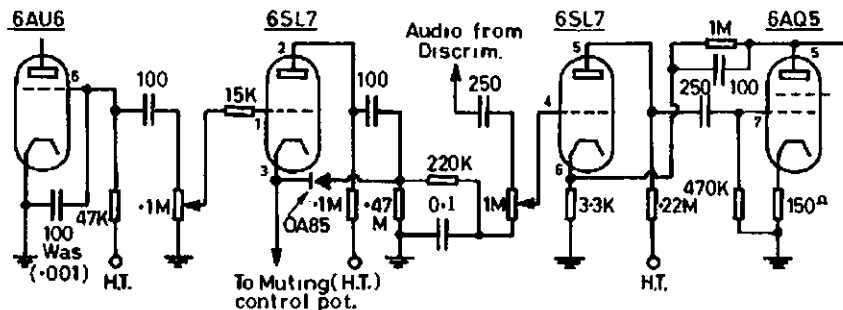


FIG. 1. MUTING CIRCUIT FOR "20"

Check all valves and replace any which are doubtful; should the 6AK5 r.f. amp. be down, replace it with a M8100 (premium 6AK5, available from Mullard for about \$2.80).

Clean any dust or grime from the set.

Apply a little acetone on a match stick to soften the sealing lacquer on the i.f. slugs, and after checking the h.t. rail for shorts, prepare to fire up the receiver.

The alignment is simple, but you must follow the instructions. Into the grid of the 2nd mixer (6AU6) feed a signal from a generator, preferably controlled at precisely 2 megacycles. Adjust the generator output so that a 0-1 mA. meter plugged into the "1st Lim." socket shows about 200 uA.

On the 20, you simply adjust all the i.f. transformers down the line to the 1st limiter for maximum meter reading.

For the 10A and Junior, the process is identical except that you must damp the winding of the transformer you are not tuning with a 4.7K resistor. In other words, when you tune the primary (bottom slug) you damp the secondary (top slug).

Having gone along the i.f. strip once, go over it again using the lowest input

from the generator which will give an indication on the 1st limiter meter.

Transfer the meter to the 2nd limiter socket and with the generator advanced just enough to cause the meter to read just-up-scale, tune the 2nd limiter slug (there is only one—on the top of the can). This is a single wound coil.

R4, now for the discriminator: Wind the generator up to a healthy output so that the 1st limiter current is about 500 uA. Place a 25-0-25 uA. meter in the discriminator socket (marked "Disc."). If you haven't such a meter, use a v.t.v.m. on the 1½ volt range with the "hot" lead of the meter to the "hot" lead of the discriminator. If you have not a v.t.v.m. either, use a multimeter on the 60 uA. range and squint hopefully at the zero mark.

Whatever method you use, you will probably find that the meter does not

read zero. Screw the top slug of the discriminator coil in and out and observe the meter pass through zero and back. Now with the needle a little to one side of zero, adjust the bottom slug of the discriminator for maximum deflection away from zero. Then adjust the top slug for exactly zero. Disconnect the generator.

This completes the i.f. alignment which can be carried out quicker than you can read this!

R5: Here is an option for owners of the 20. You can simply plug in a crystal on 16841.3 Kc., tune up the oscillator coil and the new multiplier coil and you are in business. However, should you later wish to go multi-channel, this crystal will be unsuitable.

You must now decide whether to convert the set to the 10A oscillator chain as shown in Fig. 2.

To set up the oscillator chain on the 10A and Junior, plug a 0-1 mA. meter into the socket labelled "Trip. Ig" and tune the two top cores of the oscillator coils for maximum. Then tune the bottom of the 1st oscillator coil for minimum—a very tiny dip, so watch the meter closely. There is no bottom slug in the second coil.

With an absorption wavemeter tune the first air-spaced coil to maximum output (about 30 Mc.). Ignore the multiplier injection coil until you are receiving signals.

R6, high I.f. alignment: With a 0-1 mA. meter in the 2nd limiter socket, adjust the top and bottom slugs of the first i.f. (20 Mc.) transformer for maximum. This is adjusted on the noise level from the front end r.f. noise, not audio noise from the speaker (see R9 comment on noise).

R7, Front End Alignment: With a 6 metre aerial connected, adjust front end coils for maximum 1st limiter reading on a weak signal. If no signal available, adjust on aerial noise as shown in 1st limiter meter reading.

At this stage you can adjust the multiplier injection coil for maximum 1st limiter reading. You should now be receiving signals and you can repeat R6 and R7 for maximum 1st limiter readings.

Finally, on a weak signal adjust by ear for best signal-to-noise ratio the oscillator injection coil. You should now have a standing 1st limiter current of 80-100 uA. without signal. The Junior and 10A 1st limiters "saturate" at about 900 uA. The 20 saturates at about 500 uA.

R8, Frequency Adjustment: With a strong signal known to be on frequency, adjust the receiver crystal trimmer to

In A.W.A. equipment, the **top** slug is the secondary and the **bottom** slug is the primary.

Check that the front end trimmers are not shorting.

Check that the antenna relay is clean and making good contact.

Noise: In f.m. work "noise" refers to an up-scale reading on a limiter meter. The more "noise" in the i.f. strip, the less "noise" in the speaker (more or less). You can not tune an f.m. set by ear (or to be more precise, I can't).

The receiver should now be going like a beauty.

TRANSMITTER CONVERSION

T1: Let's start with the easiest first—the 10A. From the plate of the second last 6AQ5 to B+ add a 18 pF. mica. Across the grid of the last 6AQ5 (driver) coil add 12 pF. Across the plate coil of the driver add 12 pF. Across the grid coil of the p.a. add 20 pF. If you are unlucky, you may have to add 1 turn to the p.a. plate coil. That's all! But as there appears to be variation in the original coils, check the frequencies with a g.d.o. or wavemeter.

Now for the 20. Remove transformer V84 (grid of 6AQ5 driver) and rewind with 13 turns of 16 B. & S. Change plate coil of this stage to 12 turns of

comes 7 + 7 turns 16 S.W.G. close wound $\frac{3}{8}$ " i.d. with small gap at centre for the link. Wind in opposite sense to grid coil.

T2, Tuning Up: Plug a 2188.54 Kc. "D" type crystal into the set. Plug tuning meter into successive sockets and tune for maximum (or dip in the case of the two plate metering points). In those units where slugs are provided in the phasing coils never alter them. In the 10A and 20, the phasing coils are the first two coils in the rig and have slugs only on the underside. In the Junior adjustments are not provided anyway.

T3, Frequency Adjustment: The whole set should now be working well and can be set on frequency by checking with another station whose receiver is known to be correct. Simply adjust the transmitter frequency set trimmer to read centre zero on his discriminator.

T4, Power: As these sets are now running on 2/3 of their designed frequency, it follows that the rated output can be reached with less drive. The whole matter of preventing t.v.i. on 6 metres rests with using sensible power and a minimum of drive to the final. In all rigs, 1 mA. drive to the final is adequate. However, all stages must be peak tuned so lower the drive by lowering the screen resistors along the multipliers if t.v.i. is a problem.

T5, Deviation Set: The several experts on the air will tell you if the control needs resetting. Make sure that your frequency and his frequency are correct before altering.

T6, Neutralising the 6J6: With the set tuned up and the grid current meter in place, pull out the transmitter crystal. The grid current should drop to zero. If it does not, adjust the neutralising trimmers until it does. Replace the crystal before calling CQ!

POWER SUPPLIES

The 10A and Junior operate happily from their vibrator supplies. The 20 has very onerous power requirements if operated from a battery and most of us run it as an a.c. powered base. In the interests of t.v.i. run only about 240v. d.c. on the transmitter. This is easily gained from a t.v. power transformer. The 10A will also work well from a similar supply.

All the receivers run on 150 volts h.t. The transmitters require —30v. of bias. Heaters can be 6 or 12 volts by altering the heater chain connections. But remember, low power means minimum t.v.i.

PLUGS AND SOCKETS

10A Set:

- Pin 1—Tx filaments.
- " 2—Rx filaments.
- " 3—Negative.
- " 4—Mute.
- " 5—Speaker.
- " 6—Speaker.
- " 7—Bias.
- " 8—PTT relay.
- " 9—Trans. HT.
- " 10—Rec. HT.
- " 11—Mic. active.
- " 12—Mic. return.

(Continued on Page 18)

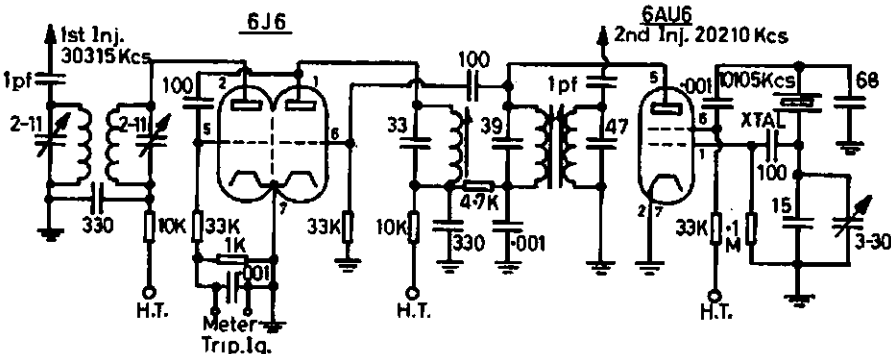


FIG. 2. MR-10A. OSCILLATOR-MULTIPLIER CIRCUITS.

give centre zero at the disc. socket. On the 20, unless you have converted the oscillator chain, you must re-adjust the discriminator top slug for centre zero. On the 10A and the Junior do not alter the discriminator top slug after stage R4—the adjustment must be made on the crystal oscillator trimmer.

R9, Some Comments: If you cannot hear signals you can use the early stages of the transmitter as a signal injector by operating the transmit oscillator and a couple of multipliers. You will have to dig into the h.t. circuitry to do this. A g.d.o. or signal generator can be useful, but do not use too much signal as the set may be tuned to a spurious quite easily. The spurious response is way down on a correctly aligned set.

It is not unusual for a receiver to "take off" with the aerial not connected. Therefore make sure you have an aerial on the set when you are tuning up.

16 B. & S., tapped at 2 turns, and retaining the original copper slug and base plate. This coil is $\frac{3}{8}$ " i.d. The grid coil for the p.p. 2E26s becomes 9 turns centre tapped 14 B. & S. close wound $\frac{3}{8}$ " i.d. The p.a. tank is altered to 6 + 6 turns 14 B. & S. spaced approx. 1 wire diameter with an 11/18 inch gap in the middle to take the link. The only other changes are to alter the DC11 crystal socket to a "D" type, and replace the screen to ground capacitor in the 6AU6 oscillator from a 10 pF. to 68 pF. Also add 15 pF. across the frequency set trimmer.

For the Junior with 6J6 final. Change the grid coil of V22 to 30 turns of 20 B. & S. $\frac{3}{8}$ " i.d. close wound self supporting (26 Mc.). Change the plate coil of V22 to 11 turns of 16 S.W.G. $\frac{3}{8}$ " i.d. close wound (52 Mc.). Change the grid coil of the 6J6 to 11 turns centre tapped close wound 16 S.W.G. $\frac{3}{8}$ " i.d. wound in the same sense as the previous coil. The p.a. plate coil be-

MORE TRANSISTOR SIDEBAND

COL HARVEY,* VK1AU

WHILST the circuits published in "A.R." Feb. 1967 worked well enough, further fiddling produced some improvements which are worth considering for any similar project.

MIXING

Because the conventional transistor mixer was somewhat critical in respect of injection voltage, and produced an undesirably large amount of the injection frequency in the collector load, many alternative types of mixer were tried. The simple double diode mixer, rejected initially, because it looked too simple to be effective, when tried, turned out to be the equal of any transistor mixer which had preceded it! It was also cheaper, smaller and easier to install. The revised circuit appears at Fig. 1.

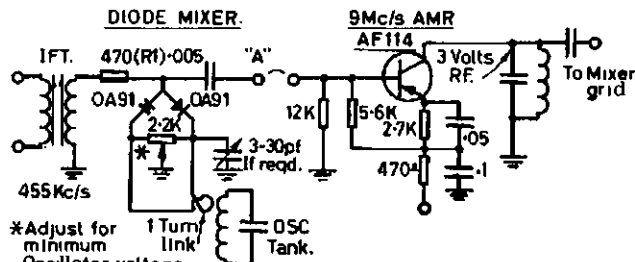


FIG. 1.

If R1 is removed, gain and distortion rise, therefore choose a compromise value. About 1/2 volt r.f. is all that is needed across the balance potentiometer, and 1 volt across the i.f. transformer secondary. Too much oscillator r.f. may prevent balance. Note that the emitter resistor should be 2.2K and not 2.7K as shown. Also the supply voltage is 12v.

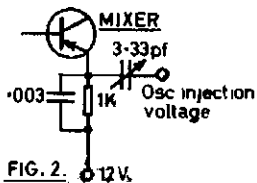


FIG. 2.

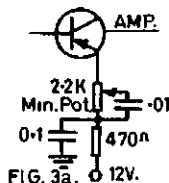


FIG. 3a.

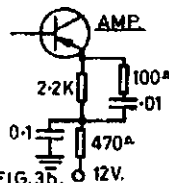


FIG. 3b.

Notation for Fig. 2.—Although the 0.003 uF. by-pass capacitor would appear to shunt the injection voltage to ground, VK1AS reports increased conversion gain, and a need for considerably less injection voltage.

Fig. 3a.—By adjusting the emitter resistor slider upwards, the stage gain can be increased to the level desired, or to a point which just precedes regeneration!

The original mixer transistor has become a 9 Mc. amplifier which (with full carrier) now provides about 3 volts of r.f. at the collector. By using a miniature 1K pot. in the mixer, it was easy to mount the diode mixer and its amplifier in the space previously occupied by the transistor mixer alone.

VK1AS experimented along similar lines in his transmitter and reached the same conclusion. But later, in developing his receiver mixer, he found the circuit at Fig. 2. advantageous.

For those using conventional emitter injection mixers, it may be worthwhile to try varying amounts of emitter by-pass capacity, before deciding upon Fig. 1.

INSTABILITY

In the case of VK1AU's exciter, the extra output from the latest mixer board (Fig. 1) caused some minor difficulties with regeneration, which became noticeable when the linear amplifier was in use. The classical cures of resistance damping, and/or neutralisation were unattractive due to the adverse effect on the r.f. drive level to the linear, and mechanical difficulties. Fortunately, there is a solution, so simple that it shouldn't work—but it does.

Again, a miniature pot. allows the modification to be done on the original matrix board. This method provides better flexibility than that provided by a fixed resistance in series with a by-pass capacitance—Fig. 3b.

Slight regeneration can be hard to identify. Large amounts will always

"spiky" with no residual thickening of the time base on speech peaks.

Up to 1/2" of flattening of peaks (on a 5" c.r.o.) seems to be unnoticed in listening tests on the wanted sideband. However, excessive flat-topping is best recognised by the increase in monkey-chatter (i.e. distortion products) appearing on the unwanted sideband as the amount of flat-topping is increased. For this reason alone, it is best to adjust stage-gains (and audio and r.f. peak limiters) so as to avoid more than a small amount of visible flat-topping. So far as residual carrier is concerned, listener reports remain favourable unless the c.r.o. time base shows more than a thickening of about 1/4".

V.F.O.

Since the original exciter was submitted, a transistor 1.7 Mc. v.f.o. has been added, based on the "Electronics Australia" circuit of Jan. '67. Intending constructors can be confident of plenty of output, with stability to match.

Worthwhile alterations are the mounting of the v.f.o. transistor in a heat sink—a 1/2" square aluminium rod bolted to the matrix board, with a transverse 1/4" hole, into which the transistor case of the AF114 "plugs", thus eliminating mechanical and thermal instability. The other alteration is a series trap in the v.f.o. amplifier collector circuit to reduce a troublesome v.f.o. fourth harmonic, which (by bad choice of frequencies) fell on the high end of the 7 Mc. band and appeared as carrier which could not be fully suppressed.

If it is desired to use PNP transistors such as the AF114 as I did, rather than the NPN BA102 and BC108s specified in "Electronics Australia," simply reverse the power supply polarity (e.g. by use of a separate battery).

POWER SUPPLY

Initially, the exciter was run from a so-called voltage "doubler" supply, fed from a 6.3 volt filament winding (Fig. 4). A surprising amount of capacitance was needed to remove ripple from a voltage doubler supply. In my case, 1,500 uF. was barely enough.

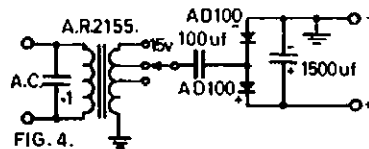


FIG. 4.

Again the effect shows well on the c.r.o., which displays a definite 100 c.p.s. component superimposed on the residual carrier. This shows as a thickening of the time base, or at low sweep speeds, as an unsynchronised and distorted wave form drifting along the time base, which cannot be eliminated by operation of the carrier balance controls.

At low current drain, voltage doubling (and almost tripling) does indeed take place. However, on heavier loads

appear as unsuppressible carrier, accompanied by sluggish action of the linear plate mA. meter.

The effects of regeneration can best be seen on an oscilloscope. If the time base frequency is first chosen so as to display an easily identifiable audio pattern, regeneration will be seen as a "blurring" of the r.f. pattern, generally accompanied by a rise in amplitude of the pattern immediately adjacent to and along the horizontal time base. Close examination suggests that this is carrier re-insertion due (and proportional) to modulation.

When the carrier is sufficiently suppressed and regeneration is absent, the r.f. pattern on the c.r.o. looks just like a normal audio pattern, i.e. crisp and

* 16 Leane Street, Hughes, A.C.T., 2605.

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Book Review

"WORLD AT THEIR FINGER-TIPS"

By John Clarricots, past R.S.G.B. General Secretary, 1930-1963. This magnificent 300-page volume traces the history and growth of the R.S.G.B. and Amateur Radio in the U.K. since the turn of the century. It contains 31 chapters and more than 40 illustrations.

Pat Hawker, writing the "Introduction," comments: "No longer can we be sure that all newcomers to the hobby will hear firsthand reminiscences of the pioneers; more and more vital has it become for the records to be written into one continuous story."

John Clarricots does this admirably. Every discerning Ham, wishing to know what his hobby is all about, must have this one on his bookshelf.

Price: Paperback 12/-, de luxe 42/6 (Stg.). Available from R.S.G.B., 28 Little Russell Street, London, WC1.

"THE WORLD OF MR. SHERATON"

By Ern. Henderson, W1AUC/W1UDY. This is an amazing "Rags to Riches" autobiography, of one of our fraternity. This man, from the most humble

beginnings, built himself a Motel and Hotel Empire in the U.S.A., to the value of 400 million dollars.

Humorous episodes vie with fascinating accounts of business ventures. Mr. Henderson, who became universally known as "Mr. Sheraton," devotes a thought-provoking chapter to his own personal philosophy of life. Many references are made to Amateur Radio throughout its pages. The author is an extremely good story-teller, and it is difficult to put this book down.

Price: Originally \$4.50 (U.S.).

CHANGE OF MEETING PLACE

MOORABBIN AND DISTRICT RADIO CLUB

Editor "A.R.," Dear Sir,
As from Friday, 20th October, 1967, the Moorabbin and District Radio Club has been holding its meetings at the rooms of the Moorabbin Baseball Club in Summit Avenue, Moorabbin.

Summit Avenue is on the eastern side of Bluff Road, half a mile south of the intersection of Bluff Road and South Road.

Club meeting nights will continue to be the first and third Fridays of each month and, as always, non-members are welcome.

For purposes of correspondence, the club's address will be:

4 Elizabeth Street,
East Brighton, Vic., 3187.

—Harold L. Hepburn, Hon. Sec.

Modification of BM3 Mike for Switch-to-Talk Operation

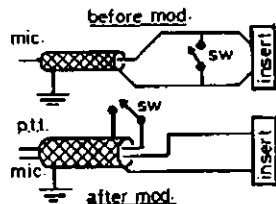
GEOFF WILSON,* VK3AMK

The Japanese BM3 crystal microphone has been available for some years now at a reasonable price and has been quite popular. Having used one for four years on an a.m. rig, I decided to modify it for use with a s.s.b. transmitting using switch-to-talk.

As supplied, the BM3 has only the normal single-core shielded cable and a miniature screw type microphone plug and socket. The in-built switch simply shorts the insert to earth in the "off" position.

To convert to switch-to-talk the following method is used: Firstly, remove the switch retaining screws. The next step is to carefully remove the chrome retaining ring and cut the leads from the insert. Now the connector on the other end of the case is unscrewed and the leads cut. The switch is now drawn clear of the case.

Unscrew the grub screw on the cable connector and remove the spring cable protector. Knock out the fibre insulation in both connector pieces as in the converted set-up the connectors are used as an inlet for the cable only. The switch-to-talk requires the in-built switch to close in the "on" position this means turning the inner section of it 180° to retain correct reading of the "on-off" indications.



The switch modification is simple and only requires easing the clamps on one side of the assembly to allow the inner section to be removed and turned end for end and replaced. Tighten the clamps and check the switch function to ensure it closes in the "on" position.

If it is not considered important that the switch shows "on" or "off" in the correct order, it may be left unaltered but it may cause confusion especially if used by someone who is in the habit of using properly marked gear!

Rewire the microphone with two-core shielded cable, connecting the insert directly to the co-ax. The switch-talk lead is taken to one side of the switch, the other side to earth. The cable is passed through the modified connector and the grub screw tightened to hold the cable. All that is now required is simply a suitable three-connector plug to suit the transmitter.

* 7 Norman Ave., Frankston, Vic.



"He's a Sideband Operator — hates all carriers!"

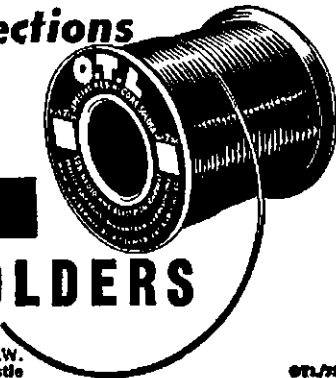
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A PRINTED CIRCUIT TRANSISTORISED S.S.B. GENERATOR

A. S. LUNDY,* VK2ASI

FOLLOWING is a description of a compact all transistor 5 Mc. s.s.b. generator. Circuit board dimensions are 5" x 2 3/4" with a component depth of 2". Operation is from 12 volts at 8 mA. It was constructed as a basis for a 40 metre all transistor transceiver, which is planned for construction in the near future as an aeronautical mobile unit. Heterodyning to 2 metres with a balanced mixer is also contemplated.

of the trace exhibiting a greater slope than was really present.

The method of feeding the voltage dependent capacitor was also altered so as to cure an annoying back and forth drift of the scope pattern. The use of a potentiometer and a voltage dependent capacitor as the tuning element has also been used in the v.f.o. for the proposed transistor transceiver and gives excellent results. The filter shape obtained was quite satisfactory, ripple

CIRCUIT

Output from a high impedance crystal microphone is fed to the gate of a 2N4360 field effect transistor, then into a 2N3565 audio amplifier. A small interstage audio transformer supplies push-pull audio to the bases of a pair of 2N3693 balanced modulators. R.f. is fed in parallel to the emitters and the output is push-pull in the bifilar wound output coil. Exact balance is obtained by means of the 500 ohm pot. in the emitters, and this control can be mounted away from the unit if desired. Audio gain is controlled by the 100 ohm resistor in the positive supply to the audio stages. This can be replaced with a 500 ohm potentiometer if desired.

Input to the filter is via a capacitively tapped slug tuned coil wound on the same former as the balanced modulator bifilar coil. This former has two tuning slugs, one for each coil and is a t.v. plug-in coil 9/32" in diam. and 2" long. S.s.b. output from the filter is directly coupled to the 2N3693 amplifier base, the 470 ohm bias resistor is also the terminating resistor for the filter.

High impedance output to the grid of a following valve stage is taken from the collector of the 2N3693. A low impedance output is also provided to suit the base of a following transistor stage by means of the capacitive tap arrangement. The toroid coil across the filter was wound on the ferrite nut from the tank coil of the BC611 walkie talkie. A straight slug tuned bifilar coil can also be used.

TUNE-UP

The current drain of the various stages is as follows: 2N4360 1.5 mA., 2N3565 1.0 mA., balanced modulators 0.5 mA., crystal oscillator 3 mA., amplifier 2 mA.

(Continued on Page 10)

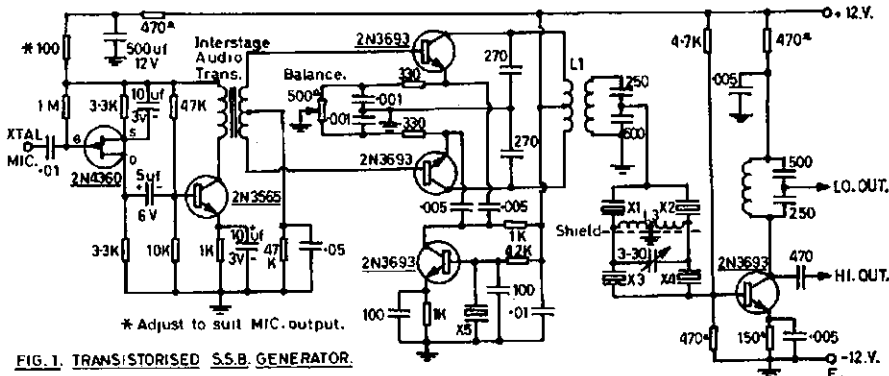


FIG. 1. TRANSISTORISED S.S.B. GENERATOR.

FILTER

The filter was constructed using 5205 Kv. FT243 crystals as per articles in "A.R." and "R.T. & H." The crystals were etched to frequency using dilute hydrofluoric acid, washed in water and dried with methylated spirits, then ether. Separation between pairs was approximately 1.5 Kc. The bandpass shape was determined by means of a modified version of the "R.T. & H." December '63 sweep unit and a c.r.o. with a suitable vertical amplifier. Sweep speed was 6 cycles per second. The sweep unit as described in the "R.T. & H." article was unsatisfactory at this slow speed, the right hand side

was less than 2 db. and the shape factor less than 2 to 1.

CIRCUIT BOARD

The required pattern was painted onto the blank board using Shellac in methylated spirits, and then etched in ferric chloride solution. The shellac was then removed with spirit. Holes for the components were drilled with a 1/32" drill. Crystal holes are 3/32" slightly enlarged. The shield between the pairs of crystals is attached by means of 18 gauge copper wire through the board in three places, and goes across the full width of the board.

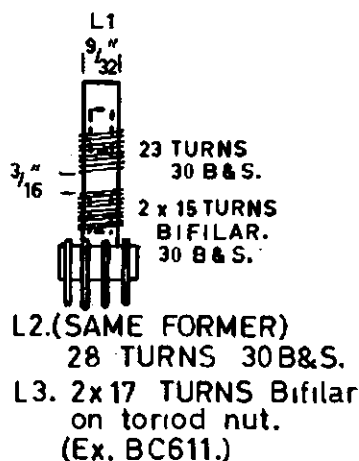


FIG. 2. COIL DETAILS

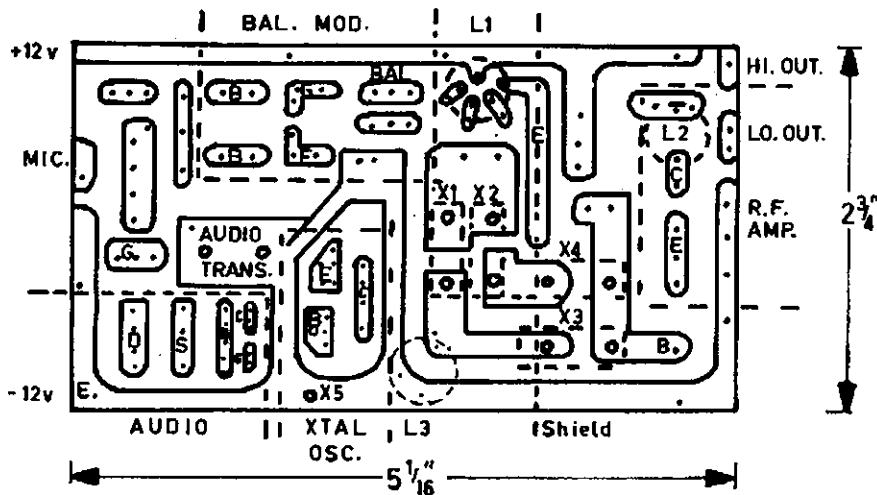


FIG. 3. PRINTED CIRCUIT BOARD LAYOUT.

* 36 Otho Street, Inverell, N.S.W., 2360.

Transistorised S.S.B. Generator

(Continued from Page 9)

The crystal filter was adjusted first using the sweep unit and c.r.o. No voltage was applied to the s.s.b. generator. Output from the sweep unit was applied to the collector of one balanced modulator via a few pF. capacitor and input to the c.r.o. was taken from the 470 ohm filter terminating resistor through a voltage doubling detector. The balanced modulator bifilar coil was adjusted for maximum scope pattern, then the filter input coil and toroid coil trimmer were adjusted for best filter response. A few pF. across one or more of the crystals will sometimes help.

The sweep unit was then disconnected and voltage applied to the s.s.b. generator. Input to the c.r.o. was then taken from the collector of the ampli-

fier stage via a small capacitance and the c.r.o. r.f. probe. The balance potentiometer was turned fully one way and the balanced modulator bifilar coil repeaked for maximum pattern, then the amplifier stage tuned circuit was peaked. The balance control was then adjusted to reduce the carrier pattern, and it should be possible to get the carrier down to an almost indiscernible level.

Audio is then applied to the microphone and the usual s.s.b. pattern should appear. Output is about $\frac{1}{2}$ volt peak to peak, which should be sufficient for a following mixer. It is not possible to get any indication on a g.d.o. or diode plus meter, the use of a scope is necessary at the small power involved.

All transistors used are inexpensive Fairchild types, available from the manufacturer direct.

YOUTH RADIO SCHEME

There is no news this month which is not surprising as everyone is flat out working and studying for the end of the school year.

At this point I wish everyone a happy and safe holiday season and trust that all your hopes and plans for 1968 come true. Don't forget the Y.R.S. rule for safety—"Build projects which operate on low voltage as mains work can be quite dangerous until you have considerable experience with the power of electricity."

Each State now has an active Y.R.S. Supervisor and shortly I hope to have a complete list of names and addresses. However, in the meantime, if you wish information, the quickest way would be to contact the Secretary of your State W.I.A. to get the name of your Y.R.S. Supervisor.

There is a special correspondence service for those unable to attend a radio club or classes. Roger Davis, VKIRD, 14 Hovea St., O'Connor, A.C.T., 2601, is the Supervisor for the Correspondence Section and is always pleased to hear from anyone interested in learning radio by mail. There are printed courses available for each section of the total course which consists of the Elementary, Junior, Intermediate, Senior and Advanced. The course is designed essentially for school children and, therefore, is done in easy stages to cover a period of three years approximately. However, it is not limited to school children and several adults have already started the course. A letter to Roger could open up a whole new world for you. Best 73, Mona VK2AXS.

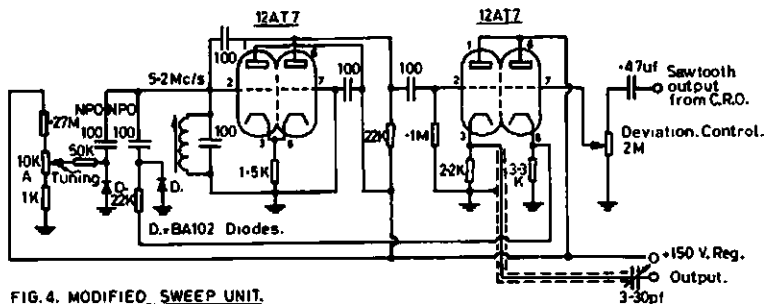


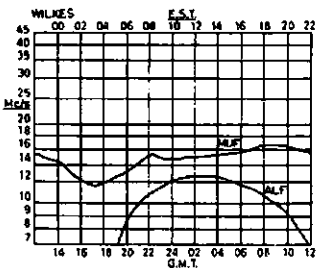
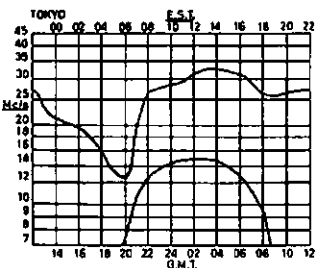
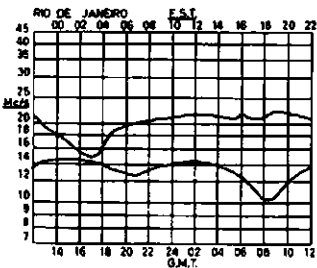
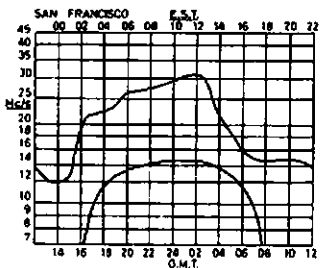
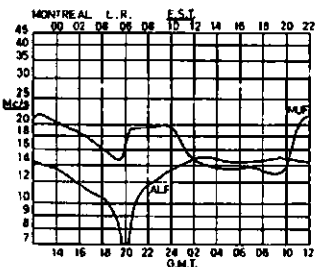
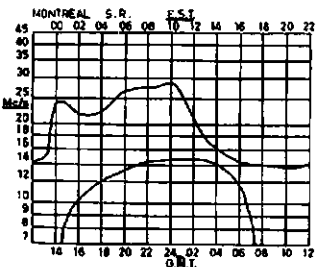
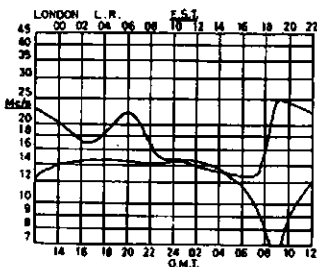
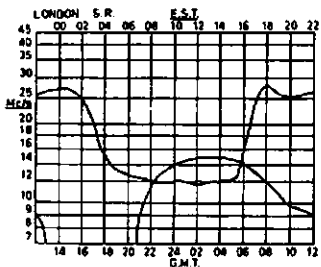
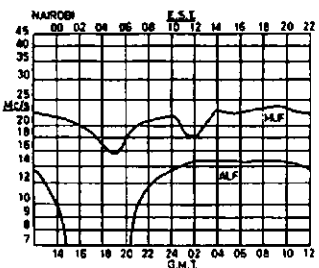
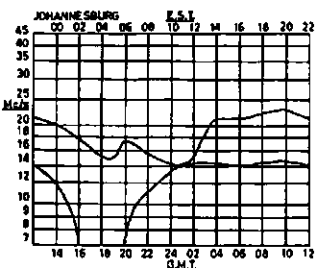
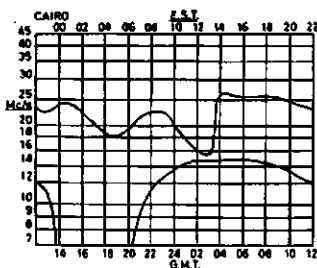
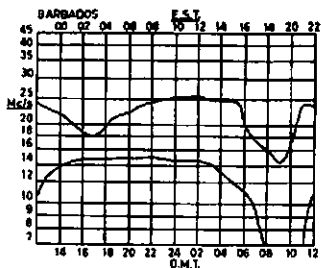
FIG. 4. MODIFIED SWEEP UNIT.

CHANGE OF ADDRESS

W.I.A. members are requested to promptly notify any change of address to their Divisional Secretary—not direct to "Amateur Radio."

PREDICTION CHARTS FOR DECEMBER 1967

(Prediction Charts by courtesy of Ionospheric Prediction Service)



RHOMBICS AND CHAOS

A. J. C. THOMPSON,* VK4AT

WE, as a group, exist on sufferance as experimenters, mainly because of past pioneering radio successes by our Amateurs and to a certain extent also to our present Amateurs who toil by day in the professional field. This semi-professional type of writing by the above group is a product of modern trends. Without them the incomprehensible would remain as such to the average Amateur.

This does not necessarily mean that the non-technical Amateur is doomed to spend his leisure hours dial-twiddling or, if his pocket is elastic, to "duck talking". A glance through advanced technical books shows that all admit to having only a fractional knowledge of the subject under review.

Fortunately, advanced technical works are available from our city libraries, and are also available to the country dweller. These modern works include Electronics and Antenna Engineering Handbooks, etc. Except in the case of the research type their authors usually set out in understandable terms the non-technical principles discussed in the ensuing chapter. So actually the lofty title of the book can be ignored and similar treatment meted out to all squigly things observed in the text. Having spent some years in an institution where thousands of experiments were annually conducted, it was no hardship for me to curb my wishful thinking propensities and to judge facts without bias.

My present role as experimenter was forced on me. My QTH unfortunately is in the wrong end of a valley 100 miles N.W. from Brisbane. It is very badly situated for both t.v. and the Amateur bands, although the latter were tolerable with good conditions. I cast envious eyes on my southerly ridge 300 feet high and 2,000 feet distant, too far for transmission lines. Long wires towards Adelaide then Brisbane were followed by vees, then finally by a rhombic towards Sydney. (The rhombic encloses about 10½ acres with two-thirds mile of wire.)

In all cases, when their noses were poked over the top of that ridge they gave that consistency of signal which the multiband type situated inside the valley had failed to give. The results were still disappointing, due to their directional characteristics and lack of signal strength in the desired direction. A combination of the two would be ideal. Actual contact on various points of the multiband proved a failure.

Erratic success followed on the parallel connection of the 300 and 600 ohm feed lines and the inductive interaction of the fields, feeder to feeder, feeder to aerial, aerial to aerial, together with a right angle take-off from the apex of the rhombic's main axis. Swift switching arrangements were made for tests. These were:—

- (1) Rhombic alone.
- (2) Multi-band alone.
- (3) Short section multi-band to right half of rhombic.
- (4) Long section multi-band to left half of rhombic.
- (5) Condenser across feeders.

The results were chaotic! Persistent efforts and consistent reports over long periods by long-suffering Amateurs gradually evolved a pattern of sorts. This became clearer when feeder radiation tests were conducted to see which legs were actually radiating during test periods. It appeared then that these curious and conflicting reports were due solely to an unorthodox application of standard procedures. The feeder tests showed that the transmitter would "see" the rhombic as one vee, the No. 3 group as another vee, and the No. 4 group as another vee. No. 5 would act as a slow switching device.

Once the rhombic and multi-band were connected by their feeders in parallel they ceased to exist as such. At this junction we could assume that:

- (1) The physical and electrical axis of the rhombic differed.
- (2) The impedance of each half differed.
- (3) The impedance (as connected) of half the rhombic matched that of the multi-band one way, but not in the other configuration.

The surprising features were that:—

- (1) Grounding of the feeders had little effect on either receiver or transmitter, but appeared to alter the radiation pattern.
- (2) The rhombic was a quiet aerial under QRN conditions with a tremendous advantage over all combinations on the receiver.
- (3) The multi-band combinations collected all the static around but, although more efficient, it was erratic in both cases.
- (4) The radio blanketing or skip conditions that affected the multi-band in the valley could mean at times a gain of up to 4 S points in favour of the rhombic combinations if they were unaffected (on reception).
- (5) The low-level rhombic gave a below-standard performance (on transmitter).
- (6) The signal strength as registered on the receiver would be an indication of transmission suitability on that particular aerial in the case of 80 metres but it was not so on 40 metres.
- (7) A slow QSB varied with two different aeriels and it was less pronounced with both together than with either separately.
- (8) The four ground "spears" were not at the same potential.

The minor effect produced by grounding both feeders could perhaps be explained by the unusual behaviour of terminating resistors. It appears that, under certain conditions, two receivers can operate at opposite ends (across a R) and in opposite directions. The terminating resistor may be a "tapered" or transmission line of similar characteristic-impedance or a suitable high loss attenuation line culminating in a resistor, centre tapped to earth. (The rhombics evidently are not fussy about which end these things go on) and I evidently just about reproduced these conditions on my end while still retaining an equally unorthodox resistor on the other end.

We note in passing that terminating resistors change "standing waves" rhombics to "travelling wave" types. This latter type have no antinodal points. The potentials and currents are approximately constant throughout its entire length. The feeder-radiation tests in conjunction with signal reports showed curious factors. The rhombic appeared to give its best performance when one half radiated. The least output was when both sides appeared to be electrically balanced with equal radiation. Each vee combination gave similar results. In each case, maximum signal strength coincided with maximum radiation from only one leg. We could reasonably assume that the other leg is acting as a conveniently situated "ground" or counterpoise.

To conclude. I do not advocate such stunts for transmission purposes but long wires and dual aeriels give very efficient service for receivers that single aeriels could not equal. The very thought of returning to a single aerial appalls me. The fact that I got the right results by the wrong methods worries me not at all. What does worry me is the null that I have down Victoria way on 40 metres.

There is little doubt that, under my abnormal conditions, the combination multi-band and rhombic give the best results on transmission. (This is my standard antenna.) The multi-band is equal under good conditions. The same applies to reception except where QRN is present and presumably side-on. In that case the low-level rhombic is outstanding. (This is my standard antenna at night time.) I belong to the non-technical group, but I still have accumulated enough knowledge to realise that some of those results are not what you would reasonably expect. The multi-band is off-centre fed with 300 ohm line with an aerial-tuner. The transmitter is a Command.

The low-level rhombic's main axis is along the top of a ridge and would be approximately 100 feet average height above the actual wires themselves. This means that the left hand side is separated from the right hand, except at each end, by this ridge.

* Skyring Creek, Pomona, Qld.

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1-16	1/2"	16	3"	No. 3003	59c
2-08	5/8"	8	3"	No. 3006	70c
2-16	5/8"	16	3"	No. 3007	70c
3-08	3/4"	8	3"	No. 3010	82c
3-16	3/4"	16	3"	No. 3011	82c
4-08	1"	8	3"	No. 3014	95c
4-16	1"	16	3"	No. 3015	95c
5-08	1 1/4"	8	4"	No. 3018	\$1.28
5-16	1 1/4"	16	4"	No. 3019	\$1.28
8-10	2"	10	4"	No. 3907	\$1.55

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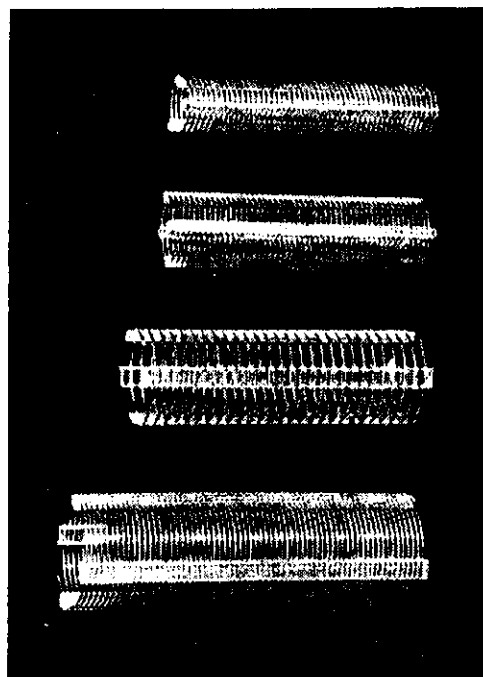
7" length, 2" diameter, 10 turns per inch, \$2.76

References: A.R.R.L. Handbook, 1961; "QST," March 1959; "A.R.," Dec. 1959.

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TRANSISTORISED 2-METRE F.M. TRANSMITTER

Herewith are circuit diagram and the layout of a 2 metre f.m. transistorised transmitter built and tested on the air about 18 months ago by VK3ZRZ. Since then he has not been able to write an article on the subject, and these brief details may be of interest to Amateurs.

Coils L1-L6 will work if they resonate with the capacity shown; a g.d.o. will fix this. Tune for maximum output.

L7 is a problem. VK3ZRZ had one on hand that worked but the filter should roll off at 3 Kc.—values for C25 and C26 were used.

A red insert dynamic microphone was used in conjunction with the equipment. Power output was 250 mW. at 145 Mc. and can be increased to 500 mW. with selected transistors at higher voltages (changing Q5 to 2N3643 may be necessary).

Ranges of 12 miles with ground plane to mobile, and about 6 miles mobile to mobile have been recorded.

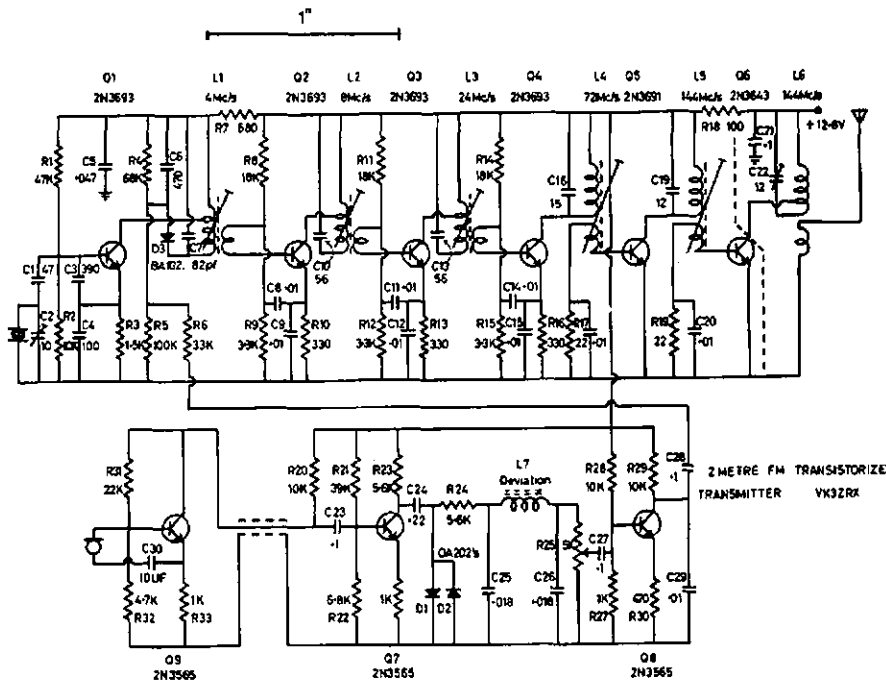
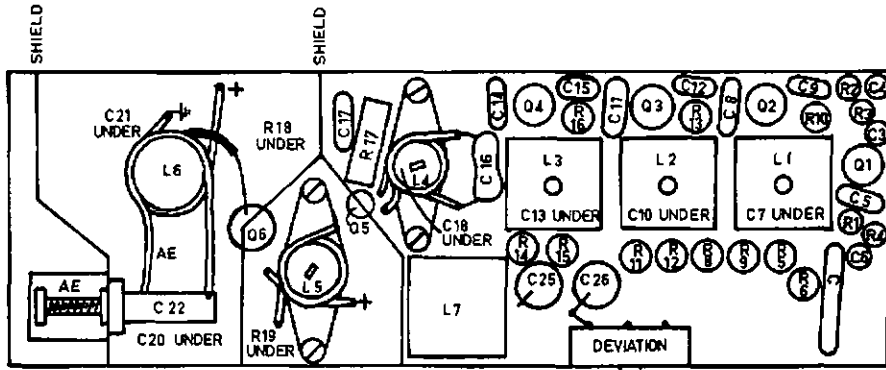
Deviation of 60 Kc. was obtained without any trouble.

The circuit indicates what can be done without sophisticated circuitry or test equipment.

If the oscillator works then the whole thing can be aligned using only an r.f. probe and a sensitive multimeter. The deviation was set "on air".

Apologies that the audio section is not shown on the layout diagram. At the time the drawings were made this was still in breadboard form, all over the bench, but there is enough room if a pot core is used for L7 and the mike preamplifier is external.

—D. M. Bennett, VK3ZRZ.



CONVERTING CARPHONES

(Continued from Page 4)

- | | |
|---------------------|--------------------|
| 20 Tx to Rx: | Rec. Octal: |
| Pin 1—LT active. | Vib. tans. |
| " 2—LT active. | Vib. reed. |
| " 3—Rec. ON relay. | Earth. |
| " 4—Audio com. | LT active. |
| " 5—Speaker. | +150v. HT. |
| " 6—600 ohm out. | Audio com. |
| " 7—Earth. | Speaker. |
| " 8—+150v. in. | 600 ohm out. |
| " 9—+150v. out. | |
| " 10—Bias. | |
| " 11—Mute. | |
| " 12—Mute. | |
-
- | | |
|--------------------------|------------------|
| 20 Tx to Control: | Tx Octal: |
| Pin 1—LT active. | Vib. coil. |
| " 2—Trans. ON rly. | LT active. |
| " 3—Rec. ON rly. | HT return. |
| " 4—Audio com. | Bias. |
| " 5—Speaker. | PTT relay. |
| " 6—600 ohm out. | +300v. |
| " 7—Mic. | Earth. |
| " 8—PTT relay. | Mic. |
| " 9—+150v. | |
| " 10—Bias. | |
| " 11—Mute. | |
| " 12—Mute. | |

ACKNOWLEDGMENTS

The author wishes to thank Jim Stewart, VK3AS, for checking the manuscript before publication and making several useful suggestions. Acknowledgment of the help of Bert Smith, VK3AAF, and Ed Manifold, VK3EM, is also made.

FEDERAL COMMENT (Continued from Page 2)

"Once again I thank you for giving me this opportunity to make my humble contribution to this international fraternity and it is my hope that the Radio Amateur movement will progress, expand and prosper as it deserves."

Those comments from the Secretary-General of the I.T.U. made in Geneva at the 1967 I.A.R.C. Convention seem to indicate a favourable attitude to Amateur Radio on his part!

With regard to the International Amateur Radio Club, Roy Stevens, G2BVN, Immediate Past President of R.S.G.B., Vice-Chairman of I.A.R.U. Region I, Executive Committee, who recently attended the I.A.R.C. Convention, comments in a report kindly sent to Federal Secretary W.I.A. as follows:

"... the I.A.R.C. can fulfill a worthwhile function. It provides an entry to the I.T.U. and to the Secretary-General and the members of the C.C.I.R. and the I.F.R.B. Without the annual Convention and the permanent Amateur Station (4U1ITU Geneva) it would be more difficult to find an opportunity to talk freely with the staff members of the I.T.U. M. Mili has shown himself to be sympathetic to the Amateur movement, and I believe I have established with him a degree of personal friendship which might be of advantage at some future time."

This comment clearly shows up the value of personal contact between Amateurs at international level, and between Amateurs and the I.T.U. Australia was not represented at either of the I.A.R.U. Regional Conferences held recently, or at the I.A.R.C. Convention in Geneva!

NEW CALL SIGNS

JUNE-AUGUST, 1967

VK1AM—L. L. McGarry, 20 Harris St., Hackett, 2602.
 VK1DB—D. A. R. Brown, 9 Arkana St., Yarralumla, 2600.
 VK1FB—J. B. B. White, 38 Cox St., Alnsalle, 2602.
 VK1GS—G. A. Sangster, 105 A'Beckett St., Watson, 2602.
 VK1VE—T. Van Eck, 162 Duffy St., Alnsalle, 2602.
 VK1ZRS—R. J. Swan, 16 Barkly Cres., Forrest, 2603.
 VK2AQ—R. Tapper, 9 Sullivan Ave., Wagga Wagga, 2650.
 VK2JG—School of Applied Electricity, Sydney Technical College, Harris St., Ultimo, 2007.
 VK2WJ—L. G. H. T. Robertson, 63 Rosedale Rd., East Gordon, 2072.
 VK2WN—J. A. Hampel, 3 Sylvia Pl., French's Forest, 2088.
 VK2YX—P. D. Williams, 52 Acacia Rd., Sutherland, 2232.
 VK2BBF—G. C. Fletcher, 19 Brook St., Thornleigh, 2120.
 VK2BCK—R. C. Kirkwood, 15 Grant St., Port Macquarie, 2444.
 VK2BCY—R. P. Coleman, Station: Port Hacking Rd., Miranda, 2228; Postal: P.O. Box 19, Kingsford, 2032.
 VK2BCY—C. T. Young, 2 Iredale Ave., Cremorne, 2090.
 VK2BEF—C. E. Fredrickson, 14 Hillpine Ave., Kogarah, 2217.
 VK2BEL—E. L. Colyer, 20 Burgoyne St., Gordon, 2072.
 VK2BHV—Maitland Y.M.C.A. Radio Club, Station: 284 High St., Maitland, 2320; Postal: P.O. Box 54, Maitland, 2320.
 VK2BJG—J. E. George, 59 Greenestopes Cres., Mt. Ousley, Wollongong, 2500.
 VK2BPK—Parkes and District Amateur Radio Club, 53 Clarinda St., Parkes, 2870.
 VK2BPO—J. C. Smyser, C/o D. Duff, 34 William St., Hornsby, 2077.
 VK2BPP—N. L. Pinkerton, 1 Kings Pl., Carlingford, 2118.
 VK2BUG—R. F. D. Voight, Officers' Mess, R.A.A.F. Richmond, 2755.
 VK2BWR—W. R. Rindone, 34 William St., Hornsby, 2077.
 VK2ZHR—P. Halpin, 19 Morton St., Waverton, 2060.
 VK2ZIQ—C. J. Nutt, 8 Spearman St., Roseville, 2069.
 VK2ZJT—J. A. Craike, 400 Avoca St., Kingsford, 2032.
 VK2ZJY—B. B. Jones, 23 Amarna Pde., Roseville, 2069.
 VK2ZKX—R. G. Dixon, 17 Lanthams Rd., Model Farms, 2153.
 VK2ZKZ/T—K. E. Riley, 11 Chapman St., Strathfield, 2135.
 VK2ZMY—K. A. McGarrity, 229/31 Macquarie St., Sydney, 2000.
 VK2ZMZ—J. G. McCloughan, 450 Blaxcell St., Gulldford, 2181.
 VK2ZNK—A. K. Nikku, Cabramatta Hostel, Cabramatta, 2186.
 VK2ZOG—M. W. O'Grady, 216 Ellesmere Rd., Guymea Bay, 2227.
 VK2ZPB—P. F. Bell, 59 Station St., West Ryde, 2114.
 VK2ZQC—G. V. Cooley, Lot 6, Main Rd., Medowie, 2301.
 VK2ZSN—R. Shuetrim, 19 Stirling Cres., Lilli Pilli, 2229.
 VK2ZST—E. R. Cousins, 34 Fiona Rd., Beecroft, 2118.
 VK2ZTW—E. W. Howell, Werombi Rd., Camden, 2570.
 VK2ZUP—W. H. Holliday, 3 Koora Ave., Warrongga, 2076.
 VK2ZVM—Maitland Y.M.C.A. Radio Club, Station: 264 High St., Maitland, 2320; Postal: P.O. Box 54, Maitland, 2320.
 VK2ZVP—R. H. Little, Station: 53 Clarinda St., Parkes, 2870; Postal: 4 Fisher St., Parkes, 2870.
 VK2ZWO—J. H. Howe, 9/2 Dolphin St., Randwick, 2031.
 VK2ZWP—W. T. Rice, 60 O'Connor St., Kogarah, 2217.
 VK2ZYK—D. S. Frazer, 221 Park Ave., Kotara, 2288.
 VK3HI—J. A. F. Grant, 2 Wellington St., Lower Templestowe, 3107.
 VK3OI—W. J. Miller, 25 Rivette St., Mordialloc, 3195.
 VK3OO—M. M. Thompson, 15 Dover Pl., Parkdale, 3194.
 VK3AFE—B. F. Huggard, 18 Elster Ave., Gardenvale, 3185.
 VK3ATQ—T. E. Whitfield, 1024 Nepean H'way, Rye, 3941.
 VK3AUH—R. R. Hooper, 13 Laurens St., Rosebud, 3939.

VK3ZCJ—G. G. Baker, Old Dandenong Rd., Heatherton, 3202.
 VK3ZCQ—G. D. Johnson, "Weller Lodge," 169 Canterbury Rd., Canterbury, 3128.
 VK3ZDS—E. W. Templeton, "Carinya," Tahara Bridge, 3301.
 VK3ZKD—K. D. Schuhen, 20 Scott Gr., Burwood, 3125.
 VK3ZMB—N. W. G. Barker, 458A Kooyong Rd., South Caulfield, 3182.
 VK3ZQR—G. A. D. Thomson, 115 Hawdon St., Heidelberg, 3084.
 VK3ZUU—V. Kondratiev, 5 Wren St., Altona, 3018.
 VK3ZVM—L. C. Morgan, 23 Walbundry Ave., North Balwyn, 3104.
 VK3ZVU—Z. Svalbe, 45 Surrey Rd., Mt. Waverley, 3146.
 VK3ZWC—T. J. Conboy, 38 Laurence St., Middle Brighton, 3186.
 VK3ZWW—J. H. Hubregtse, Jr., 74 Maddox Rd., Newport, 3015.
 VK3ZWX—R. K. Whalley, 3 Dwyer St., Blackburn, 3130.
 VK3ZXS—P. A. Stroude, Lot 38, Shelley Ave., Bayswater, 3153.
 VK3ZYH—L. N. Hocking, 7 Noonan St., Benalla, 3672.
 VK3ZYT—G. S. Taylor, 19 Simpsons Rd., Box Hill, 3128.
 VK3ZZM—L. P. Mion, 114 Esdale St., Nunawading, 3131.
 VK4GI—G. A. Bonney, 18 Greatheads Rd., Bundaberg, 4670.
 VK4GU—J. G. Karrsberg, 30 McDowall St., Toowoomba, 4356.
 VK4HG—J. M. Hamilton, Station: Willis Island; Postal: 37 Byfield St., Reservoir, Vic., 3073.
 VK4IH—I. H. Mullins, 45 MacIlwraith St., Cairns, 4870.
 VK4KF—W. D. Macaulay, 25 Parkmore St., Boondall, 4034.
 VK4KG—K. G. Avery, Officers' Mess, R.A.A.F. Base, Amberley, 4305.
 VK4OP—R. K. Pietrala, Samsonvale Rd., Strathpine, 4500.
 VK4ZCE—C. E. Meredith, King's College, Upland Rd., St. Lucia, 4087.
 VK4ZCO—R. H. Coat, 14 Jellicoe St., Coorparoo, 4151.
 VK4ZDC—D. C. Hunter, 94 Prince St., Annerley, 4103.
 VK4ZGS—G. C. Squeelch, 10 Row St., Ingham, 4850.
 VK4ZVH—H. V. Hunt, Flat 2, 371 Coronation Dr., Auchenflower, 4066.
 VK5DN—R. A. Daniells, 22 Jervois Ave., Magill, 5072.
 VK5IE—T. H. Baker, 28 Wilkins St., Glengowrie, 5044.
 VK5UW—R. F. Daniels, 2 Ridgcrest Ave., Darlington, 5047.
 VK5VK—W. P. Kempster, Emmetts Rd., Crafers, 5152.
 VK5WU—N. J. Worthington, Lot 199, Doradus Ave., Hope Valley, 5090.
 VK5XG—G. N. Antuar, 40 Main St., Peterborough, 5422.

VK5XW—G. P. Shields, Warland Ave., Victor Harbour, 5211.
 VK5ZBL—R. L. Mayfield, 35 Astrid Ave., Warradale, 5046.
 VK5ZBQ—B. R. Williams, 13 Chatsworth Gr., Toorak Gardens, 5085.
 VK5ZEI—O. A. Isaachsen, 70 Arthur St., Unley, 5061.
 VK5ZFL—J. R. Birrell, 5 Franklin Tce., Mt Gambier, 5290.
 VK5ZKD—K. D. J. Prendergast, 34 Manningford Rd., Elizabeth South, 5112.
 VK5ZSV—V. L. Schwinger, 86 Hincks Ave., Whyalla, 5800.
 VK5ZWK—K. D. Wildash, 82 Baker St., Glengowrie, 5044.
 VK5ZWW—W. A. Watkins, Station: 45 Edward St., Norwood, 5067; Postal: C/o. Dept. of Interior, Box 336C, G.P.O., Adelaide, 5001.
 VK6AD—A. W. Stewart, 8 Palm St., Bunbury, 6230.
 VK6CZ—G. R. Potter, 18 Tautog St., Exmouth, 6707.
 VK6PA—K. C. Parker, 82 Broadway, Bassendean, 6054.
 VK6ZCE—C. Morey, 32 Redcliffe Rd., Redcliffe, 6104.
 VK6ZHB—H. G. Buckley, 388 Fitzgerald St., North Perth, 6006.
 VK7HE—H. E. Hewens, 176 Charles St., Launceston, 7250.
 VK7WF/T—W. J. Emmett, Station: 134 Wilson St., Burnie, 7320; Postal: 6 Haig St., Lenah Valley, 7008.
 VK7ZAE—A. R. Everts, 88 Goulburn St., West Hobart, 7000.
 VK7ZCW—C. D. Walker, 122 Granville St., Launceston, 7250.
 VK7ZDF—R. H. Ferris, C/o. Mersey General Hospital, Latrobe, 7307.
 VK7ZED—I. L. Eadie, 23 Culloden Ave., Moonah, 7009.
 VK7ZRV—R. J. Verrall, 105 Arthur St., West Hobart, 7000.
 VK8GU—W. B. McIntosh, Station: Eldo Tracking Station, Gove, N.T., 5777; Postal: 1433 South Rd., Bedford Park, 5042.
 VK8PT—C. C. Talbert, Batchelor, N.T., 5791.
 VK8UG—Gove Social Club, Eldo Tracking Station, Gove, C/o. P.M.B. Darwin, N.T., 5794.
 VK8ZEG—H. N. G. Broadbent, Peko Mines, Tennant Creek, N.T., 5760.
 VK9AA—E. R. Metzger, Station: Portable; Postal: Gafamo, P.O. Goroka, T.P.N.G.
 VK9BK—B. M. Kidgell, Station: No. 25, First St., Lae, T.P.N.G.; Postal: C/o. Posts and Telegraphs, P.O. Box 399, Lae, T.P.N.G.
 VK9WB—W. Bowles, Station: S.I.L., Ukarumpa, E.H.D., T.P.N.G.; Postal: S.I.L., P.O. Ukarumpa, E.H.D., T.P.N.G.
 VK9ZCH—C. H. Hocking, Station: Lot 5, Section 74, Pepigari St., Korobosea, Port Moresby; Postal: C/o. A.B.C., P.O. Box 1359, Boroko, T.P.N.G.

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JOHN MOYLE MEMORIAL NATIONAL FIELD DAY CONTEST, 1968

SATURDAY, 3rd FEBRUARY, 1968, TO SUNDAY, 4th FEBRUARY, 1968

The Federal Contest Committee of the Wireless Institute of Australia invites all Australian Amateur and Short Wave Listeners to participate in this Annual Contest, which is held to perpetuate the memory of John Moyle, whose efforts advanced the Amateur Radio Service.

There are two divisions of this Contest, one of 24 hours continuous duration, and one of 6 hours continuous duration. The six-hour period has been included to encourage the operator who is unable to participate for the full 24-hour period.

Operators using 25 watts or less input to the final stage will be considered for a certificate where his activity warrants its issue.

DATE

From 0800 GMT, 3rd February, 1968, to 0800 GMT, 4th February, 1968.

OBJECTS

The operators of Portable and Mobile Stations within all VK Call Areas will endeavour to contact other Portable/Mobile and Fixed Stations in Australia and Overseas Call Areas.

RULES

1. There are two divisions, one of six (6) hours, and one of twenty-four (24) hours duration. The six-hour period for operating may be chosen from any time during the Contest, but the six-hour period so chosen must be continuous. In each division, there are six sections:—

- (a) Portable/Mobile Transmitting, Phone.
- (b) Portable/Mobile Transmitting, C.w.
- (c) Portable/Mobile Transmitting, Open.
- (d) Portable/Mobile Transmitting, Multiple Operation, open only.
- (e) Fixed Transmitting Stations working Portable/Mobile Stations, open only.
- (f) Reception of Portable/Mobile Stations.

2. All Australian Amateurs are encouraged to take part. Operators will be limited to their licensed power. This power shall be derived from a self-contained and fully portable source.

(a) Portable/Mobile Stations shall not be situated in any occupied dwelling or building. Portable/Mobile Stations may be moved from place to place during the Contest.

No apparatus shall be set up on the site earlier than 24 hours prior to the Contest.

All Amateur bands may be used, but no cross band operating is permitted. Cross mode operation is permitted.

Entrants in Section (d) for Multiple Operator Stations can set up separate transmitters to work on different bands at the same time. All such units of a Multiple Operator Station must be located within an area that can be encompassed by a circle not greater than half a mile diameter.

For each transmitter of a Multiple Operator Station a separate log shall be kept with serial numbers starting from 001, and increasing by one for each successive contact. All logs of a Multiple Operator Station shall be submitted by the operator under whose Call Sign the transmitters are working. No two transmitters of a Multiple Operator Station are permitted to operate on the same band at any time.

3. Amateurs may enter for any section.

4. One contact per station for phone to phone, also one for c.w. to c.w. per band is permitted. Cross mode operation will be accepted for scoring.

5. Entrants must operate within the terms of their licences and in particular observe the regulations with regards to portable operation.

6. Serial numbers consisting of RS or RST report plus three figures commencing with 001 and increasing by one for each successive contact shall be exchanged.

7. Scoring—

(a) Portable/Mobile Stations:

For contacts with Portable/Mobile Stations outside entrant's Call Area 15 points

For contacts with Portable/Mobile Stations within entrant's Call Area 10 points

For contacts with Fixed Stations outside the entrant's Call Area 5 points

For contacts with Fixed Stations within the entrant's Call Area 2 points

(b) Fixed Stations:

For contacts with Portable/Mobile Stations outside entrant's Call Area 15 points

For contacts with Portable/Mobile Stations within entrant's Call Area 10 points

8. The following shall constitute Call Areas: VK1, VK2, VK3, VK4, VK5, VK6, VK7, VK8, VK9 and VK0.

9. All logs shall be set out under the following headings: Date/Time (G.M.T.), Band, Emission, Call Sign, RST/No. Sent, RST/No. Received, Points Claimed. Contacts must be listed in numerical order.

In addition, there shall be a front sheet showing the following information:—

Name..... Address

Call Sign..... Section

Division..... (6-hour or 24-hour)

Points Claimed.....

Call Sign of other op./s (if any)

Location of Portable/Mobile Station

From..... hours to..... hours

A brief description of equipment used, and points claimed, followed by the declaration:

"I hereby certify that I have operated in accordance with the rules and spirit of the Contest."

Signed..... Date.....

10. The right is reserved to disqualify any entrant who, during the Contest, has not observed the Regulations and the Rules of this Contest, or who has consistently departed from the accepted code of operating ethics.

11. The decision of the Federal Contest Manager of the Wireless Institute of Australia is final and no disputes will be entered into.

12. Certificates will be awarded to the highest scorer of each section of each division. Additional certificates may be issued at the discretion of the F.C.C. The six-hour certificates cannot be won by a 24-hour entrant.

13. Return of Logs:

All entries must be postmarked not later than 29th February, 1968, and be clearly marked "John Moyle Memorial National Field Day Contest, 1967," and addressed to:—

Federal Contest Manager, W.I.A.,
Box N1002, G.P.O., Perth, 6001,
Western Australia.

RECEIVING SECTION

14. This section is open to all Short Wave Listeners in VK Call Areas. The Rules shall be the same as for the Transmitting Stations, but may omit the serial numbers received.

Logs must show the Call Sign of the Station heard, the serial number sent by it, and the Call Sign of the Station being worked.

Scoring will be on the same basis as for Transmitting Stations. It will not be sufficient to log a station calling CQ. A station may be logged once only for phone and once for c.w. in each band.

Awards: Certificates will be awarded for the highest scorer in each Call Area.



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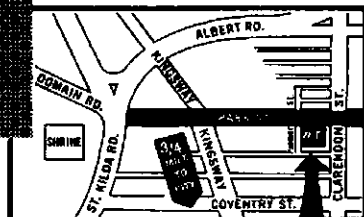
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WORKED FROM ALL VIC. NATIONAL PARKS AWARD

AND

WORKED ALL VIC. NATIONAL PARKS AWARD

In order to stimulate activity, and to have awards available for those whose interest is mainly centred round the 160, 80 and 40 metre bands, the Victorian Division of the W.I.A. has inaugurated these awards, to be effective as from the 1st December, 1967.

Although primarily to stimulate low frequency activity, any Amateur band may be used, as may any authorised mode. The rules, which are set out below, have been kept simple, but it is suggested that operators from any of the Parks be careful to show on their cards the location from which they operate.

The twenty National Parks in Victoria are listed below:

1. **Alfred**—On Princes Highway, 300 miles East of Melbourne.
2. **Bnlga**—On Grand Ridge Road, South Gippsland.
3. **Churchill**—On Scoresby-Rowville Road, between Dandenong and Ferntree Gully.
4. **Ferntree Gully**—22 miles East of Melbourne beyond Upper Ferntree Gully.
5. **Fraser**—On the Western shore of Lake Eildon.
6. **Glenaladale**—18 miles North of Princes Highway at Fernbank, 180 miles East of Melbourne.
7. **Hattah Lakes**—22 miles North of Ouyen.
8. **Kinglake**—40 miles North of Melbourne.
9. **The Lakes (Spermwhale Head)**—200 miles East of Melbourne. Access by road from Sale or by boat from Gippsland Lakes.
10. **Lind**—On Princes Highway, between Orbost and Cann River.
11. **Mallacoota Inlet**—340 miles East of Melbourne, near N.S.W. border.
12. **Morwell**—100 miles East of Melbourne, near Jumbuck Road.
13. **Mount Buffalo**—200 miles North-East of Melbourne.
14. **Mount Eccles**—200 miles West of Melbourne.
15. **Mount Richmond**—20 miles West of Portland.
16. **Port Campbell**—On Great Ocean Road, 150 miles West of Melbourne.
17. **Tarra Valley**—On Tarra Valley Road, 20 miles from Yarram.
18. **Wilson's Promontory**—150 miles South-East of Melbourne.
19. **Wingan Inlet**—23 miles South of Princes Highway at a point about 310 miles East of Melbourne.
20. **Wyperfeld**—287 miles North-West of Melbourne and 30 miles North of Rainbow.

The awards are available without cost to any licensed Amateur who fulfils the requirements of the rules.

To maintain interest, participants are invited to advise the Victorian Divisional Secretary of their progressive scores for publication in "Amateur Radio".

To assist in the inauguration, Zone Secretaries and any other interested parties are requested to make an effort

to get operators into National Parks on **Sunday, 9th December**. If there proves to be sufficient interest, the Victorian Division will consider a **Worked All Parks From All Parks Award**.

WORKED FROM ALL VICTORIAN NATIONAL PARKS AWARD

Object: This award has been created to stimulate portable and mobile activity on the lower frequencies, to assist participants in the W.A.V.N.P. award, and to give successful operators some tangible evidence of their achievements.

This award, to be known as the W.F.A.V.N.P. award, will be issued to any Amateur who satisfies the conditions hereunder.

Requirements: Two-way contacts must be made while operating either portable or mobile from Victoria's National Parks.

Applicants may use any Amateur frequency and any authorised mode. Contacts through relay or repeater stations will not be accepted.

Awards: To qualify for an award, contacts must be made from at least 15 of the 20 National Parks in Victoria.

Awards will be endorsed for Parks over and above the minimum requirement of 15.

Verifications: The Secretary of the Victorian Division may use his discretion whether or not QSL cards are to be submitted, but in general a declaration, signed by the applicant, that he has operated in accordance with the spirit and rules of the award, and listing the Parks from which he operated and the dates and times of such operation, will be accepted as sufficient evidence that the operations have taken place.

Applications must be made in writing to the Secretary, Victorian Division, Wireless Institute of Australia, and accompanied by the declaration mentioned above.

The Victorian Division reserves the right to vary the minimum requirements in the event that the number of National Parks be altered.

In all cases of dispute, the decision of the Victorian Secretary and any two members of the Victorian Divisional Council shall be final and binding.

No charge will be made for this award.

WORKED ALL VICTORIAN NATIONAL PARKS AWARD

Object: This award has been created in order to stimulate activity on the lower frequencies, to increase appreciation of Victoria's scenic attractions and to give successful operators some tangible evidence of their achievements.

This award, to be known as the W.A.V.N.P. Award, will be issued to any Amateur who satisfies the conditions hereunder.

Requirements: Contacts must be made with Amateur Stations operating either portable or mobile in Victoria's National Parks.

Applicants may operate portable, mobile or home station, on any Amateur frequency and use any authorised mode. Contacts through relay or repeater stations will not be accepted.

Awards: To qualify for an award, contacts with at least 15 of the 20 National Parks must be made.

Awards will be endorsed for meritorious achievements, i.e. working all parks on one band. Additional endorsements will be made for each band on which all Parks are worked, as well as for Parks over and above the minimum requirement of 15.

Verifications: The Secretary of the Victorian Division may use his discretion whether or not QSL cards are to be submitted, but in general a declaration signed by two other Amateurs, stating they have sighted the confirmation will be accepted as sufficient evidence that the contacts have been made.

Applications must be made in writing to the Secretary, Victorian Division, Wireless Institute of Australia, and be accompanied by the declaration mentioned above.

The Victorian Division reserves the right to vary the minimum requirements in the event that the number of National Parks be altered.

In all cases of dispute, the decision of the Victorian Divisional Secretary and any two members of the Victorian Divisional Council shall be final and binding.

No charge will be made for this award.

A.R.R.L. TECH. MERIT AWARD

At the Victorian Division's Annual Dinner, held during the first week in November, a very great honour was paid to a Victorian Amateur Radio Operator, in that the Federal President of W.I.A., Max Hull, VK3ZS, on behalf of A.R.R.L., conferred the A.R.R.L. Technical Merit Award for this year on Ray Naughton, VK3ATN.

Max introduced Ray to the Senior P.M.G. Official present at the Dinner (Mr. E. J. Wilkinson, Acting Assistant Director General Radio) and spoke highly of the past and present efforts of Amateurs in pushing back the frontiers of technological and scientific advancement. A handsome plaque inscribed "A.R.R.L. Technical Merit Award presented to Bill Conkel, W6DNG, and Ray Naughton, VK3ATN, for advancing the frontiers of Amateur Radio by proving communication via lunar reflection to be within the realm of conventional Amateur operation" was presented to Ray by Mr. Wilkinson.

In presenting this plaque, Mr. Wilkinson referred to the interest in Amateur experimentation taken by his Department, and also to the assistance which could be given to Ray in his future moonbounce activities. He read a letter from A.R.R.L. which was addressed to VK3ATN from WILVQ, General Manager of A.R.R.L., which stated:

"The A.R.R.L. Technical Merit Award was created by our Board of Directors to be presented to Amateurs chosen for outstanding technical contributions to Amateur Radio. This year's Board voted to present the award to you, VK3ATN, and Bill Conkel, W1DNG, for your outstanding moonbounce efforts. This is the first time the Board has made this award to an Amateur from a country other than the U.S. We want you to know that your work is appreciated by Amateurs in the U.S.

"Congratulations from Headquarters of A.R.R.L. We wish you well in your continuing efforts."

In reply to the Federal President and Mr. Wilkinson, Ray thanked the W.I.A. for the invitation to be a guest at VK3 Division's Annual Dinner, and thanked Federal Executive for arranging the presentation on behalf of A.R.R.L. He referred to the technical aspect of this moonbounce achievement and to the immense amount of time and effort necessary for its accomplishment. Photographs and slides of Ray's set-up at Birchip were viewed later in the proceedings and an appreciation of the complex "tracking" devices was gained.

During this presentation and other formal parts of the Dinner, reference was made to the fine spirit of co-operation and liaison which existed between the State Administration of the Department and the VK3 Division, and between the W.I.A. Federal Executive and the Central Office, P.M.G.

All concerned agreed that this moonbounce effort was yet another fine example of Amateur Radio achievement and the W.I.A. joined with the P.M.G. Department in congratulating VK3ATN on being the joint recipient of one of Amateur Radio's most highly prized awards.

SWL

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

TAPE RECORDING

Recently the Postal Department made some changes in the postal charges and in an obscure corner and with little publicity is an item of very great importance to the tape recording enthusiast, specially those of our number who have many overseas tape contacts. A system known as Phonopost has been introduced. This service is provided for the overseas (only) transmission of tape, wire and disc recordings bearing messages of a current and personal nature. The sender may enclose a printed notice relating to the method of playing the recording. In order to use this service you must not seal the container or envelope, but it can be fastened with tape, although I use a single brass clip. The word "Phonopost" should appear in large letters near the top left of the address.

So much for the conditions, let's look at the benefits. Cost for overseas surface mail is 6 cents per 2 ozs. or part thereof, and they can be sent by air mail for the rate applicable to the "Other Article" air mail rate to the country of destination. How does this affect us? Well, take a typical example of a message tape to England. These weigh almost 2 ozs. and under the old system would have cost 9c. Now they cost 6c. But it is in the air mail rate where the benefit really occurs. The same tape to England by Phonopost air mail now costs 35c, whereas it formerly cost one dollar. The service is not available to all countries, some of the more notable ones which do not subscribe to the system are Spain and Spanish Colonies, French Territories and France, Canada, India, Iron Curtain countries and the Philippines. If you have any difficulty in using this service, refer the officer in question to statement 10 on page 11 of the New Postal Rates and Conditions booklet just released.

OVERSEAS LISTENERS

Meet Edward Hamill, 27 years old electronics worker from Millbrae, California. Using an SX-111, Ed has mounted the impressive score of 326 countries heard in all zones, however like many of us, he does not send out a lot of cards, and to date had 151 confirmations in 38 zones. Other hobbies include stamp collecting, card swapping, and tape corresponding, the latter is made possible with the use of an Ampex 840 recorder. If there are any S.w.l.'s in either VK4 or VK1 who would care to swap their cards with Ed, I will be only too pleased to pass them on.

BAND CONDITIONS

Outstanding news at the moment is the condition of the 10 metre band, particularly over the week-end of the A.R.R.L. Contest (Oct. 21). I am indebted to Mac Hilliard for an excellent tape of some of the highlights of that period. 15, and of course 20, still produces the majority of our DX. The 6 mx band has shown signs of life these past few days, with openings between JA and VK4.

I have noticed a remarkable improvement in the 6 mx band at this QTH (Hazelbrook, N.S.W.), and the VK2 broadcast, also the v.h.f. version last Sunday were heard for the first time 5 by 9.

Down to Peter Drew at Balcombe in Vic., where the DX treated this keen listener really well in the VK/ZL Contest. I am not able to reveal his exact score, but let me say that in 17 years I have never known a larger one.

DX NEWS

Recently, I promised a list of stations whose QSL chores were under the control of John Cummings, W2CTN, whose address is 159 Ketcham Ave., Amityville, 11701, New York. As there are over 100 in this up-to-date list, I will have to spread it over several issues, but here are a few to start with:

CN2BK, CN8FE/FW/GB/GC, CP1EA, CP-1EA/5, CR3KD, CRA4H/AX, CR6DX, CT1NW, CX9AA, DUIOR, EA2AT, EL5A, EP2RW, FA3CT, FA9UO, FG7XK/XS, FK8AH/AI/AT/AW, FM7WU, FS7RT, FY7YG, GC3MWR/POI/SHZ, GM2YH, HB0SJ, HB9AET/HZ, HC1GC, HC4IE/JM, HI8MMN/XAG/XBG, HK1AAAF, HK-3LR, HK4RQ, HK6LR, HK6RQ, HK0RQ, HR-2FG, HS1JB, KA2DF/JH/KD/LD/RC, KB6CY, KC4UA/USK, KC8AA/FM, KG4AM/BX, KG-6APR, KR6BQ/JZ, KW6CU/EJ, KZ5LC, LX-3AA/AB, LX0AA/AB, LX3KP, MP4BFK/MAH/QBG, OA7F, OE9DZ, OH2AM/OH0, OH-

2BH/0, OH2EW/0, OH5TW, ON4QJ/3AO, OX-3BZ/KC/RH/UI, OZ3UD, PX1FO.

Remember fellows, John gives a lot of time to his task and does it well. When you send cards to him please don't forget the self-addressed letter and I.R.C.'s, this will take a little of the strain from him.

NEW SOUTH WALES NEWS

Following several exchanges on the subject of the handling of QSL cards, I have to hand a letter from the Secretary of the VK2 S.w.l. Group. I pass extracts of this letter on to you. These have been taken at random, but their meaning is not altered by doing this:

"The QSL system is being modified so that members will receive their cards with the minimum of delay. The new system will allow members to collect their cards from the S.w.l. meeting and if they are not collected, then they will be posted free of charge to members at the end of every fourth week of every month. Members using numbers other than WIA-L numbers will be required to inform the Secretary of this, so as to determine their address. . . . I assumed the office of QSL officer in order to save double postage of cards. . . . The motion regarding payment of fee for postage was revoked at the last meeting, so we hope the delivery of QSL cards will be much improved from now on. This system should be in operation by the first of next month."

This is the basic message of the Secretary's letter to me. There are a few points I would like to bring to the notice of all listeners who could possibly have cards arriving via the Bureau, particularly non-members of the W.I.A. There are many S.w.l.'s in Australia for a known fact, who use W.P.E. and I.S.W.L. prefixes, to name a few, who are not W.I.A. members. Now it appears that the Group have no plans to cater for these chaps and this is within the W.I.A. rules. (I believe that Amateurs who are non-W.I.A. types can keep a s.a.s.e. with the QSL manager), however let it be placed on the record that I, in reply to this communication, and in the interests of other listeners, and public relations, have offered to handle all cards which arrive at the Bureau for chaps who are not members. This will apply also to interstate listeners whose cards drift into the VK2 Bureau. Provided it is carried out correctly, I feel this new system is excellent, and the overall result will depend entirely on those who do the job.

For the benefit of country members, and newcomers if any, I would like to briefly outline the manner in which cards reached us over the past few years. I refer to members who lived in the country, or didn't get to meetings. When I first came to VK2 in 1956, our cards came direct from the W.I.A. manager with our bulletin. Eventually, they were handled by the Group, when my good friend Chas. Abernathy used to collect them, pass them out at meetings, and mail the country members' cards on to those who kept a s.a.s.e. with him. This, too, was quite okay. When Chas. resigned earlier this year, I offered to take the task on, on the condition that I was not expected to travel 70 miles to meetings, but to make amends for this concession (which by the way was granted), I undertook to mail at my own expense, all S.w.l. QSLs regardless of the fact that they were for members or non-members, or in which State they lived. A supply of s.a.s.e. were sent to the VK2 Bureau for any S.w.l. cards to be mailed to me. The first batch arrived and were sent out the same day. To this date no further cards have been received by me. Finally, the new system has been instituted, in fact I was not consulted, and I doubt if country members have been aware of the change over. I have refrained from any comment on this matter, and still do so, but I present the facts, as I believe all of our members should know just what has taken place.

QSL LADDER

Here is the latest I have, in the usual order, confirmations, countries heard, zones, states, Eric Trebilcock 293/300/40/50, Peter Drew 197/263/33/41, Don Grantley 174/307/39/35, Ernie Luff 152/224/37/38, Mac Hilliard 103/252/33/14, Alan Raftery 79/197/31/13.

That winds it up for this month chaps. Best of luck to all who enter the Ross Hull Contest. 73, Don L2022.

TO WHICH DO YOU BELONG?

There are three types of people: The few who make things happen, the many who watch things happen, and the big majority who have no idea what's going on.

Swiped from "Siran," South India Radio Amateurs Newsreel.

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DX

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

Predicted sunspot number for December is 99. The future trend will be interesting. Conditions are good as of now. Are we near the top of the curve or is the best yet to come? How long will ten mx hold up? This latter band is open at this QTH daily from 2200z to 1000z. Mostly W and J prefixes, but the Europeans appear around 0900z. 15 mx is good to Europe from 1000z, often till 1600z. The usually good early night path (SR) to Europe on 20 mx seems loath to put in an appearance, but this band does improve to the NW from 1500z onwards when the signals are at S8/9 strength.

NOTES AND NEWS

Pitcairn Is.: Ron W3DWG/VR6 passes on the info that he will look for the VK boys on 14190 and 21350, 0530z. QSL K4YFQ.

Mainland China: Reported active and working lots of Ws is BY5FX. 2128Z 1200z. Says QTH is Peking and QSL to VU2LM. (I wonder —Al)

Sao Tome: CR5SP 14195 0600z, 28630 1900z. QSL W2GHK.

Jersey: GC2LU QRV all bands daily. QTH, Flat 1, 14 Clarendon Rd., St. Heller. Also active daily GC8HT. All bands and modes.

Easter Is.: CE0AE 14220 0500 and later. QSL Ham Shack, P.O. Box 37, A.P.O., N.Y., 09339.

Thailand: H5IHC 14105 1530. QSL to HS Bureau.

Hong Kong: VS6FS active 21030 1000z and 28030 1100z. He says will QRT in January and commence operation from Zambia with call 9J2NW. VS6FX and VS6FZ also sometimes on 10 and 15 mx c.w.

Curacao: PJ3CR 14175 0500z. QSL P.O. Box 569.

Franc Josef Land: UA1EK 14009 1300. Many seem to be seeking this one. Keep listening. He is on quite often.

Swan Is.: KS4CF QRV 14108 0630, 28800 1900. Also worked here on 21 and 28 mx c.w. QSL Box 483, Miami, Fla. 33157.

Ceylon: 457PB 14170 1500. Also 45TNE and one or two others active on 14 c.w./s.s.b.

Sint Martin: PJ2MI 28800 1400. QSL VE3EUU. Caicos: VP5AB 14162 0630. QSL W1WQC.

Aldabra: VQ9JW active on several freqs. 7055, 14080, 21080, 28600, 28080, 21440. Various times from 1600z. Also listens on 160 and 80.

Niger: 5U7AL 14165 2345. QSL W4WHF, L. Leper, 255 Suntan Ave., Sarasota, Fla., 33577.

Wrangle Is.: UA0KIP 14029 1835. No other information.

S. Sandwich Is.: LUZZI 14200 0100z. Botswana: ZS9Q 14047 1515. P.O. Box 45, Francistown.

S. Orkney Is.: VP8JD 14190 2300. Swaziland: ZD5X 14020 1330z.

St. Helena: ZD7FF 14218 0000z. QSL W8UAS. Tunisia: 3V8BZ is active again, 14195. QSL DL7FT.

Senegal Rep.: 8W8BE 14200 2230z. Haiti: HH9DL 14288 0400z.

Reunion Is.: FR7ZF 14070 1300z. Fr. Somali: FL8FP 21246 2000z.

Sudan: ST2SA 14021 1500. P.O. Box 224, Pt. Sudan. (What's happened to ST2AR?)

Gibraltar: ZB2BH 14210 0330z. QSL via ZB2A. Tromelin Is.: FR7ZF/T 14028 1500.

Glirioso: FR7ZO/G 14028 and 14095 1150. Vatican: HV3SJ 14205 1700. 14175 0630. P.O. Box 9048, Rome.

Togo: 5V1ZR QRV 14150 and 21350 1500-1800. More activity from there coming up.

Galapagos: HC3JG 14172 0600z. Bay Is.: HR6EB 14205 2230.

Marion Is.: ZS2MI 14230 1700. Uses a.m. phone and still reported as active.

Christmas Is.: VK9DR 28600 0600z. Uses other bands—VK8RU can supply further info.

Guernsey: GC8HT daily active using all bands and modes. Always a good signal here.

Mexico Oaxaca City: XE0OPC. An Archaeology Expedition, 14 s.s.b. 0030 and later. QSL K5OPC.

Rio de Oro: EA9AQ 28500 1600, 21030 also 1600, 14166 2015. EA9EJ 14125 1830.

Svalbard: JW5YG 14009 2245. Jan Mayen: JX2XF 14164 0700, 14065 2100.

Gordon W8IDB has written seeking assistance. He is particularly anxious to work VKs especially VK3s. He is on every morning at 5 a.m. Eastern Daylight Saving Time (U.S.) and listens between 14200 and 14230, but he can work any band from 10 to 80 mx, mode is s.s.b. If you hear him, please give him a call.

ACTIVITIES

Peter VK4PJ is a busy family man but usually finds time to snare his share of DX. He reports working the following: 10 mx s.s.b. —4X4CJ, HC5CQ, OE1KW, UF6ACR, LX1RB, F3II, HB9AKJ, EP2GI, ON5KY, VS6FZ, UB-5KMX, ZC4CN, PAOLX, EP2BQ, 7X0AH, VE-7AHG, YV5ANE, HP1JC, UF6ACI, OH6WY plus several VEs and many other Europeans. 15 mx—YV5CMZ, ON4ON, OH2BCZ, PAOLX, WOGTA/LA, SMSAPI, ON5KY, UA3KBO, F3II, EP2BQ, ZC4CN, OZ25KG and Europeans. 20 mx—UR2KAW, F2MA, HB9ABM, OK1FV, TI-2PZ, SZ4KL, CR6IS, EI9Q, VESV7, VS9ARS, YV5XS, VP2AZ, 9Y4VP, 7X0AH, 9E3USA, UF6WR, 9Y4AR, JA0IA, HK5AZA, CX3BH, G13SL, UO3VT, Y03LM, UP2OK, HRIKAS, YS1AG, OA4BS, KZ5TW, HC5NW, SZ4KN. Peter says conditions on all bands have been excellent. Thanks OM.

Chas VK4UC busy working all the DX he can and reports 20 mx in fine shape. On c.w. CE3EK, CR6CK, GM3JZK, OA5V, CT1OI, EA-8FJ, VQ9B, 4U1IU, AP5HG, CE3CF, VK5XK/2 Lord Howe, DK1DH, PA0VO, FM7WO, E15BH, CR4BB, VP8JG, YU1XD, PY20U, LA8U, etc. S.s.b., VK4HC Willis Is., VK9XI Xmas Is., VR1L, W3DWG/VR8 ZC4CB, TI2HK, HS4AK, XW8X, EP3AM, ITI2GY, IS1AV, HRIKAS, CR4AJ, HK0AI, EA3NI, Z55PG, GI4RY, VK0CR, VR6EG, 9Y4LF, KZ5FN, ET3REL, AP2MR, ZB8JW, FH8CD, UR2KAW, CR6BK. Most of the above worked between 0500z and 1300z. Chas reports making DXCC mixed in four weeks. Remember the days when 100 countries was a BIG achievement—now it's a piece of cake.

Ken VK3TL, who never misses much, noticed these 20 mx: CE0AE, EL2E, EL2T, HR6EB, VP2V, 4MSA, 5H3KJ, 9L1JJ. QSLs rcd. OA8V, 5UT4V, YA5RG, 5N2AAX, 5N2AAF, CR7GJ. QTHs: 9L1JJ GSHZP; VP2VV KV4CX; CE0AE WA5PUQ; EL2E, EL2T, P.O.B. 1425, Monrovia. (Thanks Ken.)

Dud VK4MY writes to say conditions are continually on the improve. Now working mainly s.s.b. 20, he lists these as worked: VE1RD, UC2AA, LZ1BE, CE0PC (QSL to DL-9KRA), EA8FG, VE8WT, FO8BT, SZ4KL, 3BBZ (QSL DL7FT), Y8BW (QSL W4WJF), 9G1FF (P.O.B. 1387, Kumaasi), UV3TP (Dorkey), VK0CS (Mawson), Z55XA, OX3BX, HPIJC, HV3SJ, UB5SR, UB5KMX. On c.w.: IT1MG, GM2HCZ, GMSAHS, UO6FW, PIKMA, FW-8RC, VE8CC, PZ1CQ, 4U1TU, CE1CF, VO1FB. Mostly between 0700 and 1200z.

Al Rechner, VK5EK, reports a feast of DX on 28 Mc. During the VK/ZL on this band he logged 30 countries plus and some 150 QSOs in a few hours. Some landed were SZ4KN, HM1BB, ZC4CN, 4X4BI, ODSEY, OK1VK, OZ4FP, CT1LN, LAIKI, UC2AA, G3HCU, 9V1NT, OF2AM plus several Gs.

SOME QTHs

AP2NMK—Via W8QWI.
ZB2BE—Via KIOTA.
TA4BK—Via DJ4EK.
TA2FM—Via DJ2PJ.
TA1SK—Via DL2OE.
CT2CF—Via W4VPI.
ZC4MO—Via WB2ZMK.
ZD3G—Via K6ENX.
ZD7DI—Via R.S.G.B.
ZD8HAL—Via K0ETY.
PX1NV—Via WA9HJM.
EA8CB—Via DL7FT.
E13SU—Via G3KML.
FM7WO—Via WB2SSK.
FP8DI—Via WA9PYY.
AP5HQ—Signal Training Centre, Kohatt Cant., West Pakistan.

Can anyone help with the following: ZBIAS, VR1C, MP4BFL, VS0OSC, VSSADF, VPSAY. If so, please drop Barry VK5BS at 18 Cornish St., North Glenelg, 5045, a line.

AWARDS

The following might prove to be topical as its creator is very much in the world DX news at the moment.

The Colvin Award is issued by Iris and Lloyd Colvin, of W6KG-Yasme fame, who are currently operating from Africa.

To obtain this award it is necessary to work PAIRS of land based stations licensed to the same family under the following conditions:

- Three pairs of stations with each pair located in a different continent, or
- Four pairs of stations with each pair located in a different country per A.R.R.L. list, or
- 10 pairs of stations with each pair located in a different state of the U.S.A.

Separate sticker endorsements are available for each of the above categories. QSLs to be sent to W6KG, 111 Purdue Ave., Berkeley 6, California.

CONTEST CAPERS AND COMMENTS

The 1967 c.w. VK/ZL Contest just past went off like a New Year's Eve Revelry, i.e. the

usual cacophony of sound and QRM. Fast and slow fists all vying for space in the crowded spectrum. Generally speaking, the battle was conducted with the utmost fraternalness and in the spirit of the thing. There were, however, as happens in all such contests, some gross examples of bad operating and sportsmanship:—

The VK who worked the VK DX-pedditor and called CQ continually on his frequency. The SM who, after working a VK8, called CQ four times through a horde struggling to work the latter. The "big gun" who zero's in and takes over in running through a good string of DX QRZ. These are but a few samples. Another bad operating technique is the over-use of BK-BK on QRM freqs. To have two or three doing this on the one freq without adding the call sign only adds to contest confusion. QRM, of course, is part of the scrap. We're in it to win it and not bow politely to one another—but ethics must remain.

It seemed that rare DX and VK participation were down a little this year in the c.w. section, even though overseas participation in general was up. The R.S.G.B. 21 and 28 Mc. phone test was listed for the same week-end and this no doubt to some extent divided the participation.

If one takes a look at the World Wide Contest Calendar, it appears now that week-end sharing of contests will soon be the order of things.

Let me gratefully acknowledge the assistance given by overseas Editors during this past year of 1967: Dr. Howard Klein, of "LIDXA"; Geo. Studd, N.Z., "Break-In"; Gene Sykes, "Fla. DXer"; Geoff Watts, "News Sheets"; Jim Coote, "Air Waves"; Rod McNicoll, VE3FKR and others.

On the local scene, my thanks also to those who keep the column in mind: VKs 3TL, 4MY, 4DU, 4UC, 4DV, 4FJ, 5BB, 3QV, 5BS, 3AMK, 3AKN, 4VX, 4ZO, 2NS, 8HA and lots more.

In order, is a special mention to Chas. VK4UC who weekly has never failed to keep me posted on DX doing.

The Season's Compliments to Reader and Contributor alike. May '68 be Great—for DX. 73, Al, VK4SS.

CONTEST CALENDAR

- 9th Dec., 1967, to 14th Jan., 1968: Ross Hull Memorial Trophy V.h.f. Contest.
- 3rd/4th Feb.: John Moyle Memorial National Field Day Contest.
- 3rd/4th Feb.: 34th A.R.R.L. International DX Competition (phone), 1st week-end.
- 17th/18th Feb.: 34th A.R.R.L. International DX Competition (c.w.), 1st week-end.
- 2nd/3rd March: 34th A.R.R.L. International DX Competition (phone), 2nd week-end.
- 16th/17th March: 34th A.R.R.L. International DX Competition (c.w.), 2nd week-end.

W.I.A. D.X.C.C.

Listed below are the highest twelve members in each section. Position in the list is determined by the first number shown. The first number represents the participant's total countries less any credits given for deleted countries. The second number shown represents the total D.X.C.C. credits given, including deleted countries. Where totals are the same, listings will be alphabetical by call sign.

Credits for new members and those whose totals have been amended are also shown.

PHONE

VK5MS	317/338	VK2JZ	292/307
VK3AH0	314/328	VK4FJ	279/296
VK6RU	305/328	VK3TL	262/286
VK6MK	303/320	VK4TY	257/258
VK5AB	300/314	VK2APK	256/259
VK4HR	292/308	VK2AAK	246/250

C.W.

VK2QL	295/315	VK3NC	266/286
VK2ADE	291/313	VK3ARX	263/271
VK3CX	291/312	VK4HR	263/285
VK4FJ	291/313	VK6RU	262/283
VK3AHQ	290/302	VK2APK	257/264
VK2AGH	282/295	VK3TL	251/254

OPEN

VK2AGH	311/329	VK4TY	296/308
VK6RU	308/331	VK2EO	295/316
VK2AE	305/329	VK4FJ	295/318
VK6MK	305/322	VK3ARX	281/289
VK4HR	304/326	VK3TL	281/285
VK2VN	300/315	VK2ACX	276/300

VHF

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

NEW SOUTH WALES

Well another year has passed and by this time the 6 mx DX season will be in full swing. At least two of the 6 mx operators have already had early Xmas presents; these are 2ZDW and 2ZVL who succeeded in working into Japan during October.

The Group will once again be holding a Xmas Party and this year it is planned to stage the event at Dural. This is the first time that this venue has been used for this purpose and we trust it will be the medium of introducing the home of VK2WI to more of our members.

There has been little talk but quite a bit of back-yard action in past weeks as the v.h.f. fraternity prepare for the New Year Field Day. With stations ranging further afield each year, it is being consistently proven that v.h.f. coverage is larger than some Amateurs realise. For those stations who prefer to stay home, please remember that the contestants are travelling long distances and nothing is more discouraging under these circumstances than to listen to long conversations between home stations who fail to tune for field stations. It only takes a few minutes in every hour to exchange numbers with field stations.

Active stations may be found in Orange, Bathurst, Dubbo, Coonabarabran, Parkes, Forbes, Cowra and other townships. A W.I.C.E.N. exercise is anticipated in the near future in the Dubbo and Forbes district to gauge the effectiveness of the network under emergency conditions. Thank you, Brian VK2ZQK, for this information.

We are sorry to hear that, despite warnings regarding operating procedures, some official QSL cards have been received by a number of v.h.f. operators. Please bear in mind that your transmissions are heard by persons other than the operator to whom you are speaking and temper your remarks to those which you would normally make in mixed company. I think that all Amateurs realise just how much interest is shown in our v.h.f. bands by commercial interests, so do not do anything to jeopardise our claim to these frequency allocations.

On behalf of the V.h.f. Committee and myself, may I wish you all good things for the coming festive season and lots of DX. 73, Keith 2ZAU.

Hunter Branch.—144 Mc.: This band has been quiet but showed some life on the night of Oct. 16 when the band opened to Sydney and beyond, the longest contact for the night was when 2ZMO at "Raymond Terrace" worked 2TR at Bega, 30 miles from the Victorian border. 2ZSG and 2ZCT also worked 2TR. For the night, Bill 2ZWM worked 12 Sydney stations, 2ZMO worked 10. The following night conditions were nearly as good and Sydney stations were again worked.

52 Mc.: The band has been quiet over the last month, no DX has been heard but the band has showed some promise at times. New stations are 2ZFX, 2ZSG, 2ZGK, 2ZSI and 2AAM. On the whole, conditions have not been the best over the last month. Channel 0 has only been heard at times and at times it could have been Wagga. 73, Mac 2ZMO.

VICTORIA

Other than a couple of small openings, 6 mx DX has been almost nil, although 6 mx activity in VK3 is fairly high, especially on the a.m. net frequency of 53.032. A few strange signals have been heard on the low end of the band and between 48 and 52 Mc.

Two metres has not been that active, but stations appear from nowhere when a trace of DX shows up. During the month there was a good opening to VK5 extending across to Adelaide and a brief opening to Northern VK7.

Other activities in Melbourne which are still very popular are the 2 mx scrambles held on the second Sunday of each month at 2045 hrs. V.h.f. Group meetings on the third Wednesday at 2000 hours, and the 2 mx fox hunts on the fourth Wednesday at 2000 hours. Remember the Ross Hull Memorial Contest which starts in a couple of weeks and don't forget to send

in your log sheets this year. The compliments of the Season and good DX to all. 73, Cyril 3ZCK.

Eastern Zone.—32 Mc.: Activity nil, but the m.u.f. running very high, up to 45 Mc. 144 Mc. a.m.: The first extended ground wave DX for the season is with us again. 3ZGA 144.165 and 3ZCG 144.015 took advantage by working VK7 and VK5; George 3ZCG also heard 5ZDY Mt. Stirling, near Adelaide, 5 x 7 (15th Oct.) and Lee 3ZSS 144.125 heard a VK5 for the first time. Peter 3ZDP 144.080 at Sale, 140 odd miles East of Melbourne is looking for DX using a.m. (v.f.o.) and excellent s.s.b. 146 Mc. f.m.: 18 stations now very active, using Channel A; 9 are equipped for B, 5 for C, and 2 only on Channel 1. During October, 3ZCG Morwell found a good 70 mx f.m. path existed up to Mt. Buller (5934 ft. 3ATC/3), and 3ZDP also found he had a good 100 m. path up to Mt. Buffalo (5645 ft., 3BX/3), but these two paths did not exist vice versa. 3ZCG also heard that day 3AJM Wangaratta. 73, George 3ZCG.

SOUTH AUSTRALIA

Ultimately the diligence and patient attitude shown by the VK5 v.h.f. enthusiasts had to be rewarded. On 11th Oct. between 1900 and 2130 S.A.S.T. the 6 mx band was open to the districts of JA. In all there were about 11 VK5s on the band at the time duly doing battle. Due to inexperience in the science of linguistics the rate of contacts per station was extremely slow. Nonetheless, the most was made of the opening. Signals during the opening were peaking S7 with slow QSB, not unlike the DX propagated by sporadic E. An interesting aspect of this DX opening was that it was previously predicted. However, reference to an article in "A.R." October issue, page 17, headed "Position of Plans Linked to Solar Flare Prediction," will yield that relevant details. In the midst of the JA signals Doug 8KK provided an S9 contact to those who wish to exchange pleasantries.

During the same period, 2 mx also provided some excellent openings. Numerous openings to VK3 have been recorded during October. The most prominent was noted on Oct. 15 when an area between Mt. Gambier in the S.E. of VK5 to Melbourne yielded numerous contacts into the Adelaide area. It was at the peak of activity that Ces 5GP, located at Nairne, and Tony 5ZDY, at Stirling, worked Den 7DK in Launceston at R5 S9. However, the majority of Adelaide stations had to be content with simply working into VK3. It is reported that Ces 5GP has worked 45 separate VK3 calls on 2 mx in recent weeks.

Although an increase of 432 Mc. activity is expected in future months, the only signals audible and visible on 432 Mc. belong to the t.v. group. Of interest is the colour t.v. signal emanated from the QTH of Matland 5AO. Briefly, the equipment in use consists of a 3-tube vidicon fed into an encoder, constructed by another member of the group, namely Allan Nation. Reception is on the group's original colour receiver constructed from components imported from JA-land.

The mention of 576 Mc. activity by Rod 5ZSD and Charles 6LK, now resident in VK5, appears imminent, with a view in recapturing their previous record. 73, Colin 5ZHJ.

TASMANIA

6 mx: Activity on this band is still mainly confined to the net frequency of 53.035, but some stations have been heard working away from this frequency.

2 mx: Activity on this band has been on the increase due to the warmer weather. Peter 7ZPD has worked a number of Melbourne stations on 2 a.m. and Bevan 7ZBW has worked into Melbourne on 2 f.m. Also Den 7ZDK has worked into Adelaide.

A large number of high-band f.m. units have found their way into Launceston, and in the near future there should be quite an active net operating on Channel A, and eventually Channel B and C. 73, Brian 7ZBY.

ERRATA—VK3 V.H.F. CONVERTER

The circuit board and layout diagram published in November's "A.R." are not full size, also R3 and R4 have been interchanged on the layout diagram.

The converter committee regret that they cannot accept any more orders for kits for the 6 metre converter for the time being, but it is quite possible that more kits will be made available when the 2 metre and 432 Mc. converters have been established.



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FEDERAL AND DIVISIONAL MONTHLY NEWS REPORTS

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

FEDERAL

FL2000 LINEAR AMPLIFIER

The following letter has been received from the P.M.G. Department, Radio Branch:—

Dear Sir,

Further to recent correspondence from this Department concerning equipment for the Amateur Service, would you please note that the operation of the Yaesu Musem FL2000 linear amplifier will be accepted as meeting power output requirements for single sideband emissions when such equipment is operated with the high tension power transformer employing the 440 volt secondary tapping.

Yours faithfully,
C. M. Carroll,
for Director-General.

REGION III. AND SOUTH-EAST ASIA

At the Hobart Convention a 2½-hour debate was adjourned "Sine Die" (to another day). This debate will no doubt be resumed at the 1968 Convention in Sydney, and will concern the policy that the W.I.A. should adopt towards Region III. and the I.A.R.U.

As a lead-up to that, Federal Executive was asked to prepare some suggestions for a policy to be adopted, and this has been done and circulated to Divisions as a suggested basis for W.I.A. policy towards Region III. and South-East Asia. As a basis, it is not meant to be complete, or final, but meant as a starting point. Please consider this problem and suggest any extensions or changes, any acceptance or rejections, to your Divisional Federal Councillor, or to Executive.

Preamble:

Executive has examined the matter of I.A.R.U. organisation on a regional basis and is of the opinion that at this time the resources of the Region would not support the sophisticated organisations which exist in Regions I. and II. We note with interest the holding of a Region I. triennial conference in Opatija, Yugoslavia; also the meeting of the Region II. I.A.R.U. Executive Committee in Salvador. Such methods of liaison and administration of the I.A.R.U. in Region III. may have to await an increase in the number of economically advanced countries, and an easing of currency restrictions by less developed countries.

Nevertheless, it is the opinion of Executive that greater liaison between I.A.R.U. countries in Region III. must occur, and that countries without I.A.R.U. member societies should be encouraged to develop an Amateur Radio Service, and seek admission to I.A.R.U.

Accordingly, the more developed countries in the Region II. should undertake the organisation of liaison and development activities in the Region, in conjunction with I.A.R.U. Headquarters, and the Region I. and Region II. administrations.

Proposals:

1. The W.I.A. is the logical unit for the implementation of any I.A.R.U. activities in Region III.

2. That assistance, either financial or by a more practical expression, be sought from the N.Z.A.R.T. and J.A.R.L.

3. In the event that either of these two societies is unable to make any contribution, the W.I.A., in conjunction with I.A.R.U. Hdq. follows through this policy.

4. The basis of W.I.A. assistance to South-East Asian countries to be the Youth Radio Club Scheme courses.

5. In order to establish initial liaison with I.A.R.U. member societies in the Region, a number of Y.R.C.S. courses be offered to assist the development of Amateur Radio in those countries which are I.A.R.U. members.

6. These I.A.R.U. member countries be encouraged to adopt a neighbouring country—in which no I.A.R.U. society exists—and to assist that country to develop Amateur Radio.

7. In accordance with this policy, Australia adopt Indonesia and attempt to establish an Amateur Radio Service in that country, providing Y.R.C.S. courses, help and advice in a concentrated fashion. It would be hoped that other I.A.R.U. societies could follow this example, the W.I.A. providing Y.R.C.S. courses to any I.A.R.U. member society who can place them in a neighbouring country.

8. W.I.A. Federal Liaison Officer and a member of Federal Executive visit the recipient country as needs determine and finances permit.

9. That prior to any I.T.U. conference of a Regional nature, which may concern Amateur frequency allocations, I.A.R.U. societies in Region III. liaise and determine a common policy to be adopted.

10. Headquarters of I.A.R.U. and other interested societies be requested to send a senior officer to Sydney Convention in 1968 (Easter) to assist W.I.A. Federal Council in formulating the eventual W.I.A. official policy on these matters.

— . . . —

FEDERAL QSL BUREAU

The following accompanies all QSLs sent out by HK5AOH: "During the course of our lifetime, we keep and preserve documents which remind and show us that in such a year we were born, vaccinated, married, promoted, applauded, received honours and finally retired from active life. This is of great value to us. The QSL card, which the Amateur finds in his mail box or under the door, is his document of a meritorious contact, evident proof that it was fulfilled. Without the QSL cards, there would not be DXCC, WAS, WAZ, or Diplomas of any species and the reward for valuable work would never be a reality. The active and hard working Amateur who keeps his equipment up to date and makes laudable international contacts is always awaiting the confirmative QSL. The QSL card makes me happy. Will you please co-operate by sending me your card? Thank you and I hope you will likewise be rewarded for your courtesy and consideration."

The Philippine Amateur Radio Association (P.A.R.A.), which is the direct successor to the Philippine Radio Club, founded in 1924 by Col. H. Roberts, KAIHR, well known to old DXers, is celebrating its 35th anniversary in November. A variety of celebrations are planned.

Further news from Tubby Vale, VK8NO, at Gove, N.T., reveals he has just returned from a trip south to view his first grandson, Timothy, the progeny of Jeff VK5ZP. Jeff is living at the home in Gawler and currently the VK5NO/ZP shack is used only to hang out nappies on wet days.

The VU2/457 DX Contest notification was received too late for inclusion in "A.R." for November. The phone section was held on Nov. 18 and 19. The c.w. section is scheduled for 0600z, Saturday, Dec. 2, to 0600z, Sunday, Dec. 3. Logs go to Contest Committee, P.O. Box 907, Colombo, Ceylon. Details of rules and awards may be obtained from this Bureau.

At last the J.A.R.L. have got the message on the new VK QSL Bureau set-up. It now only remains to whip Box 88, Moscow, and the A.R.I. into line and all major bureaux will be covered. Cards fell to 4,500 during October.

This Bureau extends its best wishes for Xmas and the coming year to all Amateurs and particularly to the outgoing and inward managers of the Divisional Bureaux.

—Ray Jones, VK3RJ, Manager.

— . . . —

NEW SOUTH WALES

COUNCIL NEWS

Council activities have for the most part been confined to the book work of the Division. The employment of a Secretary has meant that work in this field which has been unable to be performed due to limited time and facilities

SILENT KEYS

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

VK2BCR (ex VK3CR)—

J. K. (Ken) Ridgway.

VK3WC—Ewen Cameron

VK6DR—Bill Wedemeyer.

can now be completed. It is hoped that soon the result of this work will make the tasks of this and future Councils far easier than that of the past.

As yet no Councillor has been appointed to bring the Council up to full strength. Although well occupied during the past year, Council will have a busier than usual start in the new year.

Following on the Divisional Convention will be the Federal Convention which will be held in Sydney this time.

The President, Keith Finney, and Councillors wish to extend Christmas Greetings to all members for the forthcoming season, and would like to take this opportunity of thanking all those people for their help and courtesy during the past year and hope in some way that Council's efforts have been worth while. Councillors are, after all, only fellow members giving up much spare time in an effort to help Amateurs and their hobby.

OCTOBER GENERAL MEETING

The October general meeting was held at Wireless Institute Centre on Friday, 28th Oct., and an attendance of over 80 turned up to hear a lecture to be given by Maurie Brown, VK2OR, of Mullard Ltd.

The meeting was opened by President-Chairman, Keith Finney, VK2KJ, and followed the usual format of reading of minutes, etc. During the formal part of the meeting an additional 17 members were accepted and welcomed to the membership ranks. While membership is on the increase the rate of obtaining new members is still far too slow to achieve the large increase in members to realise a bigger and better Institute.

The lecture by Maurie was more of an insight into new present and future developments in the use of electronics in industry. Maurie did some very interesting samples to illustrate his talk as well as many slides on various topics. Maurie spoke on many and varied new devices and was restricted by insufficient time to give too many details.

On display was a 5 h.p. petrol engine which had an all electronic ignition system. The system used a piezo-electric device which when flexed mechanically by the timing cam generated the h.v. directly for sparking, no points or transistors being necessary. A similar element operated by a spring and release knob made up a gas lighter. As can be expected, these devices brought out questions and in reply Maurie said that the gas lighter should sell for a few dollars. Regarding the ignition device, Maurie said that the maximum switching speed was low and the h.t. fell rather poorly as speed increased, thus spoiling the device. He went on to say that the Repco-Brabham cars had the coil ignition but used a ferrite core saturated coil with a transistor fired primary. The saturation of the core held the output steady at low speeds while the transistor could well handle the high speeds; and although the coil point type ignition system was 30 years old, only recently had electronics been involved in this area. As an example, Maurie said that by pre-magnetising the cores only half the primary turns were required and this alone raised efficiency considerably.

While speaking on cars, Maurie went on to say that the new U.S. made V.W. would have electronic fuel injection controlled from the exhaust in such a way to ensure complete combustion without pollution.

Because of air pollution by combustion engines it was now certain that electric traction was for the future. To illustrate this point, graphs were shown of efficiency curves of motors and batteries under various speed and operating conditions. Taking a power source of 700 lbs. weight the lead-acid battery could give 8 kWh., the newly developed zinc air cells 49 kWh as opposed to the petrol engines' 120 kWh. In spite of poorer performance, these power sources had a place at present, and development of new systems of traction were needed to use the limited power available for best use.

In this area, G.M. have developed a traction system using thyristors to vary the frequency of supply to a synchronous motor, thus bypassing the series d.c. motor and its wasteful starting system. The Japanese Toshiba Co. has developed an experimental d.c. motor without a commutator by using Hall effect devices to control thyristors (SCR's).

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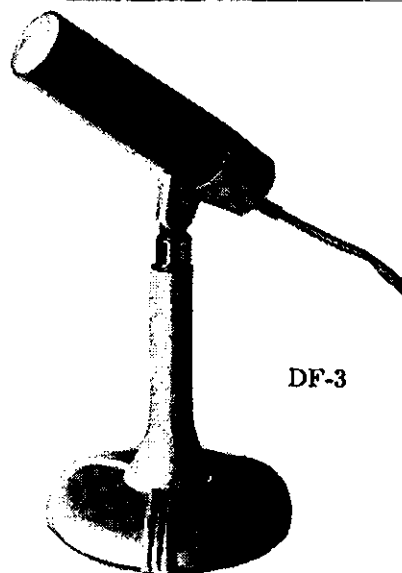
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OBITUARY

J. K. RIDGWAY, VK2BCR (ex VK8CB)

We regret to record the death on Tuesday, 17th October, of J. K. (Ken) Ridgway, VK2BCR.

Ken first joined the W.I.A. in July 1941, and was soon engaged in Institute affairs. He was co-opted to the Victorian Divisional Council in April 1942 and elected Vice-President during the same year. In 1943 he convened a sub-committee to form an Experimental Laboratory, and in 1944 joined a committee to organise an Amateur Emergency Network.

While engaged in all these activities, he found time to act as one of the instructors conducting W.I.A. classes for those who proposed joining one of the Armed Services as W/T operators. He also constructed a number of audio oscillators which were hired out by the W.I.A. to those wishing to practice the code at home.

In 1942 he joined the staff of "Amateur Radio" as Technical Editor and also gave a great amount of assistance operating the duplicator, co-relating wrapping and addressing.

When licences were re-issued, Ken took out his call sign of VK3CR in January 1948. "Amateur Radio" became a printed magazine again in October 1945. Ken retained his position of Technical Editor until February 1948, when the pressure of business compelled him to resign.

He was one of the partners in the firm of Precision Electronics in Melbourne. When International Resistance Co. bought out Precision Electronics in 1964, he was appointed Chief Mechanical Engineer to International Resistance Company and moved to Sydney, where he took out the call sign of VK2BCR.

In June 1967 Ken had to resign from business activities due to ill health. Although his health improved slightly, his illness finally caused his death in October. The W.I.A. extends to his bereaved wife, Jean, and daughter, Christine, deepest sympathy in their sad loss.

Bill Henry's comment summed-up the Institute's feelings when he said, "He was a real white man and one of nature's gentlemen."

BILL WEDEMAYER, VK6DR

It is with regret that we have to report the passing of another of our radio fraternity in the person of Bill Wedemeyer, VK6DR. He died at the early age of 39 and leaves two children, a son of 17 and a daughter of 10.

He was originally a diesel mechanic, but gave that away and joined the P.M.G. Dept., of which he was on the staff at the time of his death. He got a limited licence in 1958 and soon afterwards obtained his full ticket.

To his wife and family the Institute extends their sympathy in their loss.

GEORGE GROVES, VK7XL

George Groves passed away on 7th October, 1967, at the age of 56 years, and looking back over the years, not so dim, there are many incidents which can be recalled.

He spent most of his life in Devonport and was quite a brilliant scholar, concluding his education at the High School and entered the employment of the Union Steamship Co. of New Zealand in Devonport.

A great interest in radio developed and around 1929/30 a number of chaps got together to form the Devonport Radio Club under the call sign of VK7DR. The transmitter was a pair of 210s in push pull Hartley circuit, modulated by a pair of 250s in push pull—the results on 220 metres were excellent until the oscillator became unstable and the P.M.G. requested a crystal controlled transmitter. George, with another, came to the fore and re-built the rig into the familiar 47 c.o., 46 buffer and a pair of 46s in the final.

About 1935, George was transferred in his employment to Melbourne where he used the call sign VK3XA, having taken out a licence in Tasmania in 1936 using VK7XL. He operated on all bands with phone and c.w. and managed to make some large scores in the then Flisk Contest. Great interest was also taken in 5 metres, although working other stations was extremely difficult—no other Hams in that area.

With the years came the Second World War and George, now married, was stationed in Launceston where he still operated VK7XL. The inevitable enlistment followed and he was in the R.A.A.F. and was stationed for a long time at the Technical College, Melbourne, where his knowledge was of great use, and later spent some time in New Guinea. The subsequent demobilisation followed and George was back in Launceston, but was transferred back to his home town, Devonport.

Six metres interested him and during those early years on the very high frequencies, he worked many stations all over Australia, New Zealand and Japan, a first VK7/VK2 came up during those contacts. Although interest in radio never waned, during those years he was keenly interested in surf live saving and was a prominent musician on a number of instruments although he preferred the piano, he conducted his own dance band and was playing all his life.

Those who knew him of late years were familiar with him on sideband with a Swan 350 and rotary cubical quad. His interest in golf occupied many enjoyable hours and it was here, on a golf course, where George went to meet the Great Operator.

can't tell the difference! Anyway, the outcome of all this was a win for Bill 2ZCV who beat Les 2RJ by a short head so the binocular clutching tic-tac men tell me.

After lunch it was on again. Notwithstanding the fact that the rules dictated that the aerial should be wholly supported by the vehicle, the event attracted a good field. My own secret weapon for this one didn't arrive in time or else I'd have been unbeatable. Anyway, Les 2RJ beat me to it this time, making 13 contacts in the half hour or so. Just as well I didn't give him a quiz paper or he'd have taken that as well. In fact, the quiz was divided into two sections this year with an especially hard bit for the licensees. John 2ZPQ, a visitor from Sydney, took this one, while Neville Threlfo outsmarted them all again in the second division. The ladies were not forgotten either and Mrs. Branston, a close relation of Mrs. 2RU, knew nearly all the answers. Imagine what sort of a fiend would ask questions about the unit of currency in Afghanistan. Probably owns one of them hawks! The poor ladies were most bewildered. Later Mrs. Branston told me that she was having second thoughts about entering the quiz at all. One can be lucky, can one not?

In the later afternoon a most interesting contest developed among the 2 mx boys when Tony's crew again went a-hiding, but this time with three tx's! They used caves and all those tricky places to hide the r.f. The result was another win for Les 2RJ who found all three in the time allowed. Some of the gear being used was clearly developed for this occasion and flexible drives and angle gears

The point being made by Maurie was that electronics are making tremendous advances in all engineered devices and that these advances in semiconductor technology will help the Amateur in many ways.

Maurie demonstrated some semiconductor products and spoke about the development of silicon diodes and thyristors. A useful idea was put in that if a diode such as OA210 is connected across the coil of an electric petrol pump (in the correct polarity of course) then the contacts in these pumps will outlast the life of the car! Maurie said that the automotive manufacturers should include this item in the pump assembly but said that they probably didn't know about the idea. However the use of silicon diodes with alternators in cars resulted in cheap high current diodes for Amateur use.

Continuing, Maurie went on to Integrated Circuits and said that the transition to these devices was more dramatic than the advent of transistors and the introduction of these devices would mean that the electronics man of today must think in this new language and not in the language of valves which have just been left behind. The fact being that electronics is entering a new complex and exciting future.

This lecture proved very interesting to all present and difficult to describe in a few lines. The vote of thanks was moved by Dave 2BSJ, who thanked Maurie for this interesting evening and a suitable acclamation by applause was carried.

The meeting was closed at the end of the lecture at 10 p.m., when supper was served and the gang descended on Maurie and his samples to ask many more questions and look at the goodies which contained, among the many items, the latest locally made transistorised turret tuner for television sets of local manufacture.

The general meeting this month will not have the usual lecture, but will instead be a film evening. The feature film will be about television and is reputed to be a popular and very well produced item. Harold Burtoft assured "A.R." that the films will be of good quality, being much better than last year's lot, employing such things as sound and pictures at least more often than in the past.

Harold has suggested that next year one meeting be given over to an exhibition of home-brew gear to be briefly described by the builder. If you would like to be in it and have a suitable gadget to display and describe, would you contact him.

W.I.C.E.N.

The W.I.C.E.N. group of the N.S.W. Division held a 24-hour exercise on 20th and 21st last in conjunction with the Colo Shire Civil Defence Organisation. The exercise was held in the Windsor-Kurrajong area, with the control station being at the Wilberforce Council Chambers and mobile stations placed at strategic points at Colo, Weeny Creek, Bilpin, Bowen Mountain, North Richmond and Clarendon.

Channel A was used for this event and in all cases direct communication was affected and maintained throughout.

ANNUAL DINNER, 1968

The Annual Dinner of the Convention for 1968 will be held at Windsor Gardens, 258 Mowbray Rd., Chatswood, a place well known on the North Shore of Sydney for its excellent catering and service, and Council feels confident that those attending will be pleased with the choice of this venue. It is used all year round for conferences, etc., requiring good taste and warm and comfortable surroundings. The service is very good, the meals well served with generous helpings for all.

DURAL TRANSMITTING STATION

The transmitters recently delivered to Dural have created some interest and a brief description is in order. The transmitters consist of an r.f. unit capable of 500 watts aerial power output. Some delay is being experienced in the installation of these transmitters and other equipment at Dural due to the lack of three phase supply, which at present is not available from the Council mains. The position should soon be rectified.

LECTURE CLASSES FOR A.O.C.F., 1968

Those intending or contemplating to sit for the A.O.C.F. examination next year are reminded that the classes at Wireless Institute Centre, Crows Nest, start in early February and early booking may be necessary this year as the number of places is quite limited. For those unable to attend in person, an excellent correspondence course is available. Enquiries should be directed to the Class Supervisor at W.I.C.

Well, as Christmas nears again our thoughts turn to things which we take for granted. We can ask many questions of ourselves, among which will be: Have I helped the Amateur cause? (Next year will see a new Federal body which will want the support of every Amateur since indications are that the Amateur will soon have to justify having the bands he now enjoys.) Have I been courteous on the bands? Have I helped the new operator? What about that pest of a kid down the street and his questions? Well, it's your job. Do your best. Merry Christmas and a Happy New Year. 73, Stan 2ZRD.

HUNTER BRANCH

Outstanding weather and an excellent attendance ensured success for the Branch Field Day held this year on 15th Oct. The highly salubrious location at Bolton Point was again used (must get in a plug for the old home town). After a later than usual start, the programme of hunts and other activities commenced. Tony 2ZCT had some cunning hide-away for the first one and he fooled them all, for a time at least. Then came another event, this time on 40 when David 2BSC, Jan 2BJO and Bruce approached what might be described as low trickery to conceal the rig. Using such remote control devices as pieces of string and satellite relay (their explanation, not mine) they put on a very powerful signal which almost defied location. Those with transceivers did some ever decreasing circles for a bit looking for the signal but we, the good old 7 meg. Command mob, had no difficulty in hearing it. What's 10 kaycees anyway? I

were the order of the day. For this type of thing, Ray McCook would nearly take the biscuit with a most professional looking array. Of course those intrepid hunters, Paul ZFPJ and Vince Z2OD, also had a great collection of the where-with-all in their four-wheel drive vehicle, as the A.B.C. says.

And so the field day came to a close with prize-giving performed by David ZBSJ who came all the way from his council duties in Sydney with Peter ZAKJ to represent the Division. Of course, as well as these prizes there were others for lucky numbers and Y.R.S. blindfold tx hunts and all that, but the big mystery of them all was solved when it was announced that Tony Z2CT had won the constructors' prize. This was awarded to the gear, which, in the opinion of the audience at the October meeting, most deserved high praise.

Tony described a transistor two metre tx with a high power valve final. Others in this contest were Bill Z2WWM, who showed some fancy 6 mx gear; Mac Z2MO, with a field strength meter; Jack Z2JE, with a universal test set; and Gordon Z2SG, who told us all about a transistor tester.

By now every one of you should have chosen a suitable present for Santa to bring. I have asked for a 6 mx converter since I reckon that I'll be needing it to work all that DX in January. There'll not even be time to go to the meeting! Another reason for this is that there isn't a meeting in January, but we'll all be back again if we can drag ourselves away from the v.h.f. DX on Friday, 2nd February, 1968, in room 6 in the Clegg Building, Newcastle Technical College, Tighes Hill. Have a happy festive season and keep up the good work and use all the bands you can. See you all again after the holidays, so until then, Christmas and New Year 73, ZAKX.

CENTRAL COAST RADIO CLUB

Simplified transistor circuit design and ham radio in the early days were the topics for two talks given to the members at the October meeting. Lindsay ZON enlightened many with his transistor circuits and design techniques. Ern ZEH, with the help of a tape made prior to the meeting, brought back the early days of "hamming". Unfortunately, due to sudden sickness, Major ZRU was not able to give his intended talk on development of communications over the years. Everyone wishes Major a speedy recovery.

Activity on 2 mx is on the increase with some half dozen on the air in the district. Alec VK2AAK has taken to "moon bounce" projects, and is in the process of building a special rhombic antenna for 2 mx. 73, Bill ZTS.

VICTORIA

COUNCIL MEETING

Council met on 23rd Oct., all members excepting J. Taylor being present.

The following new members were admitted to the Division: VKs ZGZX, ZEFK, 3AHV, Z2JC, 301, Z2ZR, Z2ZN, Z2ZW, and 3UB as full members with Associates A. D. Baker, H. Chitcock, P. R. Forbes and R. A. Eldred.

A long discussion was held on the troubles being experienced with the official station 3WI.

Peter Ward has volunteered to organise a party to do essential maintenance on the equipment, and to facilitate this work, Peter has been appointed Assistant Technical Officer. It was decided to form a technical committee headed by John ZFE to investigate and report to Council on the defects and failings of 3WI, and to recommend a suitable course of action to effect improvements. John is free to select the members of the committee. John ZEL is to act as liaison officer between the committee and the technical officers.

Discussion was also held on the subject of the proposed Worked All Victorian National Parks Award. It was resolved that the President and the Secretary formulate the rules and inaugurate this award.

Other matters considered included the problems of obtaining permits to erect towers in the municipality of Waverley and Federal matters, neither of which were finalised.

It was decided to abandon the practice of holding the Annual Xmas Party. Among the reasons for this action was the fact that far too much work fell on too few people, the cost was not warranted, and the rooms are not a suitable location for such a function. We will, in future, hold a normal monthly meeting in December.

GENERAL MEETING

The general meeting was held at the rooms on 1st Nov. when Mr. R. Humphreys, of Defence Standard Laboratories, spoke on power supplies. The Secretary outlined the proposal for the W.A.V.N.P. Award and a number of suggestions were made by members present. These will be taken into consideration when the rules are being formulated. Although the meeting was closed at 2230 hours, the stragglers did not leave until just on midnight.

The December general meeting will be addressed by Robin Bailey, VK3ZAO, whose subject will be "Ionospheric Predictions".

INSTITUTE OF RADIO AND ELECTRICAL ENGINEERS

RADIO FOUNDERS' DAY ADDRESS

12th December at R.M.I.T. Radio Lecture Theatre at 8 p.m.

Speaker will be Dr. W. A. S. Bute-ment (VK3AD), subject will be "The Amateur in the Development of World Radio and Electronics."

Members of the W.I.A. are welcome to attend, but as seating space is limited, intending visitors are requested to phone or write Mr. A. G. Pither (VK3VX), 3 Riversdale Court, Hawthorn, 3122, for an official invitation.

EASTERN ZONE

I must commence these notes with an apology for lack of notes in Nov. issue; my fault, don't blame our Editor. During Oct. some enjoyable QSOs with mobiles travelling through the Zone were made by the 6 and 3 mx operators. Gordon 3TH, of Yinnar, appears to be making a come back on the bands. We welcome to the Zone Trevor Z3GA, of Newborough, who has recently been issued with his call sign. He has a big signal on 144.165 Mc.

Zone's first W.I.C.E.N. meeting was held on Friday evening, Oct. 6 at QTH of 3QZ. George Z3CG reported the doings of the Zone v.h.f. wise at V.H.I. Convention at Geelong on 7th and 8th October. Harold 3AFQ and Ken 3ACS made a trip to Lindenow, near Balrnasdale, to help Merv 3LL erect h.f. aeriels and tower for 146 Mc. beam. Traralgon Tech. School Youth Radio Club now has call sign Z3OT. David Z3OZ is the push behind this one, and from young members of the club, with whom I come into contact, Z3OZ is doing a mighty job. 73, Albert Cash.

MOORABBIN AND DISTRICT RADIO CLUB

The Club now meets in its new rooms at the Moorabbin Baseball Club in Summit Avenue, Moorabbin. The first meeting to be held in the new rooms was the October general meeting, which was followed by a tape-recorded lecture on linear amplifiers for a.s.b. The new club rooms are ideal for meetings and social evenings, being self-contained and well equipped, but unfortunately, there is no room for any radio gear.

At the October social evening, held at the home of Kevin ZARD, a highlight was the presentation to Laura Hall of a jewel case and a sheath of flowers, as a token of the Club's appreciation for making the previous club room available.

The latter-night in November coincided with the Institute Annual Dinner, consequently attendance at the Club was small. Final event of the year will be the Xmas Party in the club rooms on Friday, Dec. 15, 73, Alan 3ASL.

QUEENSLAND

TOWNSVILLE AND DISTRICT

I shall take this opportunity to wish one and all a Merry Xmas and a Happy New Year, hoping that the New Year fulfils all your expectations of plenty of QSOs wrapped up in DX.

The last meeting of the local club only saw eight present with a couple of apologies from a few that are interested. One of the chaps journeyed all the way from Charters Towers, some 80 miles distant. Just shows how a new one to the band can become interested. Has also promised to come if the boys put on the old time Xmas break-up.

I was real interested to learn of how a few of the members raised some money for the club. It appears that on the grape vine one of the boys heard of a small chore that could be quite easily done and to donate the proceeds to the building fund. So a quick round up took place and a few hurried along to help out in the mammoth task of folding circulars and placing same in envelopes. Total of some 5,000, which earned the sum of \$75. Our thanks must go out to the ones who readily gave their time. So here is hoping that a few other chores come their way. Call on yours truly next time.

Plans are under way to prepare the necessary paper work, etc., for the new club house. Feelers have gone out in many directions to raise the necessary finance. The building will be of first class materials. Sure will be the envy of all when it comes to fruition.

Evie 4EQ and her other half, Charlie 4BQ, did take great part in the recent Scout Jamboree, in setting up a station at the camp site of a half dozen Scout Troops at Bluewater. I take my hat off to these two for a job well done. thanks.

The club has managed to procure quite a lot of tubing, 9 ft., which they are selling to the local lads for their beam arrays. So it augurs well for the Ross Hull Contest this year, when the Z boys hope to work their share of the States and the DX that is offering.

WIRELESS INSTITUTE OF AUSTRALIA

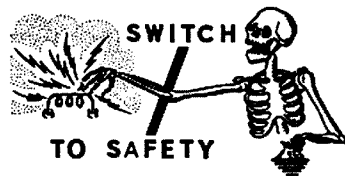
FEDERAL EXECUTIVE

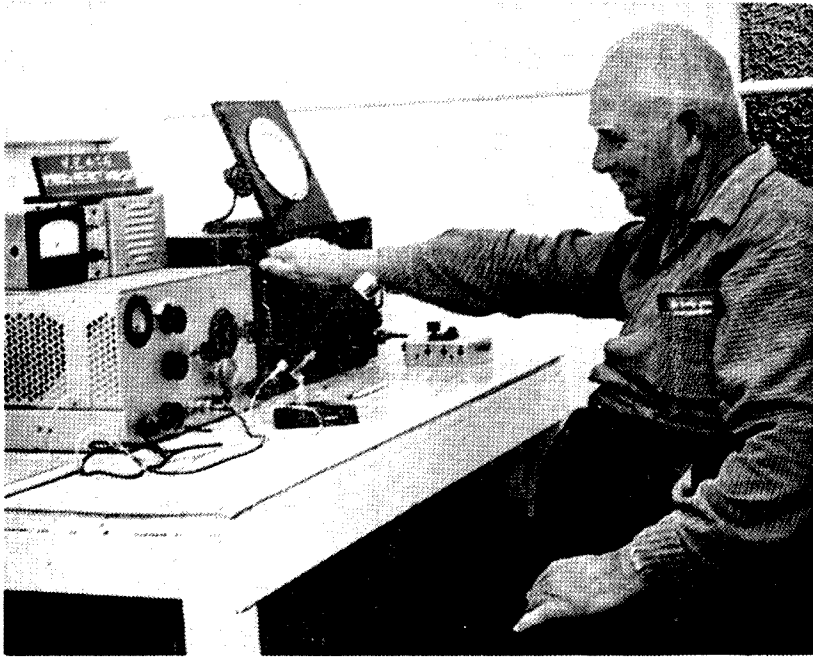
The Institute can now offer annual subscriptions to the following Amateur Journals:—

- ★ "QST"—Associate membership and renewals, \$6.40.
- ★ R.S.G.B.—"The Bulletin" is only sent with membership of the Society. Send for application form and FREE sample copy of the R.S.G.B. "Bulletin," \$6.25.
- ★ "CO" Magazine, \$5.20.
- ★ "73" Magazine, \$4.50.

R.S.G.B. Publications and A.R.R.L. Publications available.

Send remittance to Federal Executive, C/o. P.O. Box 36, East Melbourne, Vic., 3002.





Ipswich and District Radio Club's Public Relations Officer, Mr. Bill Jehn, WIA-L4001, in the operating position of the club station VK4IO. Equipment includes BC342 and home-brew three-band s.s.b. transceiver constructed by club member VK4SF. (Photo "The Queensland Times")

are hoped to be both for mobile and home station use. The 6 mx net of 53.032 Mc. is not to be dropped, but as its use is restricted to non t.v. hours it is hoped the 2 mx net will be able to be used at all times. The popular fox hunts can now be carried out on 2 mx and all are looking forward to their starting again.

The Famfest at Kingscliffe: The club hopes to have a good representation at the Famfest to be held at Kingscliffe. Some keen members will spend the week-end under canvas, while others will probably take motel accommodation. Merry Christmas and a Happy New Year. 73, Warren 4GT.

SOUTH AUSTRALIA

The monthly general meeting of the VK5 Division for October was held to an average attendance of members and visitors in the club rooms, and opened right on the dot of 8 p.m. There were no apologies, no interstate or international visitors, and the minutes of the previous meeting were read by Tom 5TL, due to the temporary absence of the usual Minute Secretary. Very little Divisional or Federal business was discussed, although the matter of the electrical and contractors' licensing act was discussed by the Chairman, Murray 5ZQ, the matter of the availability of crystals was explained at length by Gilbert 5GX, who also spoke on the plentiful supply of resistors available to members both at the meeting and by writing in to the disposals committee, with special emphasis on the fact that the interests of country members were being taken care of with plenty to spare, full details of which would be available in the next issue of the journal.

The coming Xmas V.h.f. Group Picnic and Barbecue, two separate events, were announced, and Geoff 5TY gave details of the participation of W.I.C.E.N. members in the recent E.F.S. procession, and thanked members for their interest and enthusiasm for anything in connection with W.I.C.E.N. activities.

At this point, members were asked to stand in silence for one minute in respect for the passing of VK5 Life Member, Professor Sir Kerr Grant, and a suitable expression of sympathy was expressed by the Chairman.

The business side of the meeting now being concluded, QSL cards were distributed by George 5RX and a smoke-oh was announced, after which the decks were cleared for the main form of entertainment for the night, to wit, a jumble sale, which is the VK5 way of saying, a buy and sell night, and with all the members present eager to give the auctioneer for the night a suitable welcome—not so suitable to the auctioneer—the name of Warwick W. Parsons, 5PS—PanSy to you—was announced with all the pomp and splendor, to say nothing of the necessary interjections and coarse remarks, usually associated with such an event. Now there is very little that can be said about such a night that has not been said before, so I will not labour the point. (Hurrah!—Ed.)

It seems hard to believe that I am about the only member of the club who was in the foundation of the club when it originally started. Here is hoping that at least some of the old originals rejoin in the New Year and help the new boys get the club house which we were unable to get in the past. All social chit-chat curtailed this time. So once again, cheers for the Festive Season. 73, Bob 4RW.

IPSWICH AND DISTRICT RADIO CLUB

I would like to wish everyone the Season's Compliments on behalf of all the Ipswich Radio Club members.

The past month was filled with activity for the club and its members. The 21st birthday party for our secretary, Phil 4ZPE, went off without a hitch.

It is with a little sadness we are saying "cheerio" to Marie s.w.l. L4026, as she is leaving to join her OM, 9WD, in New Guinea.

Several club members spent a most enjoyable week-end camping out at Wyberba National Park, near Stanthorpe, and the fact that

it rained almost all night did not dampen their enthusiasm. All made an assault on one of the close mountains nearby and the views from the top were most rewarding, however all attempts to contact club members back home on 40 mx were of no avail.

Our Treasurer, Joan, and her OM, George 4ZLG, are off to ZL land and we wish them a happy holiday. While on the club members who are going away, Col. 4ZMA will be in VK2 for a couple of months in the Wagga Wagga area. He is on 53.032 Mc. and plans to visit Melbourne while away.

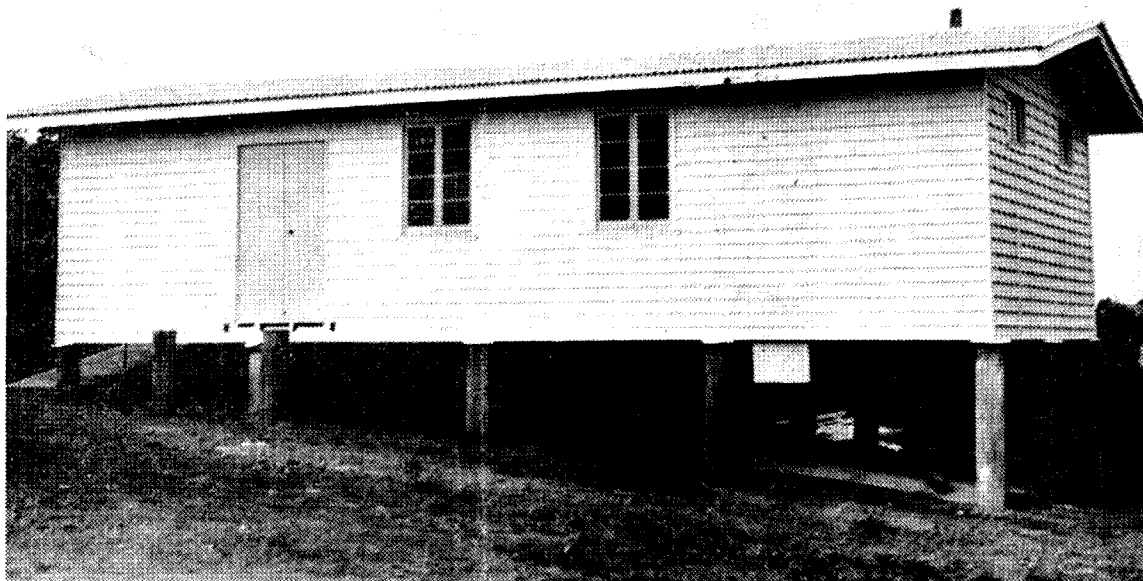
The club's 80 mx net at 8 p.m. on Mondays is to be changed to 20 mx for a short time, the QRN on 80 mx is getting a bit thick of a night now; the move to 20 mx is only temporary until our new 2 mx net can be operational. The club's new 2 mx net is on 145.2 Mc. This was decided last meeting, so it seems as if there will be a large order for suitable rocks lodged soon.

The club members are planning to use xtal locked receivers for the net, and the units

☆

The club house of the Ipswich and District Radio Club situated in Deebing St., Ipswich, which was built by club members on land donated to the club by Ipswich City Council. (Photo "The Queensland Times.")

☆



Noticed a real stranger at the meeting, none other than Lionel 5LB whose happy and cheerful face has not been seen at a meeting for many a long year. Not very active, but still interested in the hobby, he told me, when I asked him if he was on the air these days, that he had been on that evening when he worked Athol 5LQ to say that he would be along to the meeting.

Talking of Athol 5LQ, I usually manage a paragraph about him each month, but he is at the moment in my little black book as a possible user of "The Thing."

Had a telephone call this month from an unknown, and unexpected, voice who said in honeyed tones that a certain Mr. Pincott, 3AFJ, had told him at the conference held in VK7 that there were two things that should never be missed if ever passing through Adelaide, to wit, the River Torrens and none other than Pansy 5PS. The voice eventually identified himself as Pierce 2APQ, the VK2 Federal Councillor, who was on his way home via Mount Gambler and Victoria, from the Upper Murray district.

Realising that Federal Councillors were somewhat rare and august personages, especially interstate visitors, I suppressed my suspicious thoughts and invited him and his family to visit my bark hut and partake of some bullant soup and fried lizard.

This was where I made my first mistake. No sooner had I met his XYL, daughter and son-in-law, a charming threesome, if I might say so, than the conversation seemed to drift towards "The Thing," and no matter how hard I tried to stifle such tendencies, I was overcome by superior numbers. To make matters worse, after the evening meal, I was forcibly dragged out to the car parked in the scrub alongside my QTH and, under the threat of injury, forced to examine what is probably the smallest edition of "The Thing" set up under the dash that I have ever seen, and horror of horrors, even forced to handle it.

To add to the indignity, before I could even say product detector, or even harmonic oscillator, the said miniature "Thing" was bodily transported to my shack, connected to my electricity, connected to my shame stricken antenna, and JAs, Ws, ZLs, etc., etc., worked with reckless abandon. I have never been so mortified in my whole life, to think such a thing could happen to me, and all without as much as by your leave. Anyway, despite their attempts to brainwash me on the merits and de-merits of "The Thing," I thoroughly enjoyed their short visit and was sorry to see them leave, but I am finding it a little monotonous to have my XYL on the slightest provocation, keep on saying "Why don't you buy one of those things that Pierce showed us," plus the fact that the way she says "Thing" makes it sound like an art treasure, rather than the monstrosity that it really is. Nice to have met you Pierce, although my aerial has never forgiven me, because all those signals that you could hear on "The Thing" have vanished, which only goes to show just how ashamed the aerial really is!

The latest news on Jim Paris—one time Associate members' representative—is that he is slowly on the mend from his heart trouble, and providing he takes normal care, all will be well. Good news Jim.

George 5CV will be looking for my blood. In a recent paragraph in these notes I referred to him as being of "Thunderbird" fame, when it should have been "Firebird" fame. Will you forgive me George? I thought you—thank you!!

Most members of the VK5 Division will have noted with sincere regret the passing of Professor Emeritus Sir Kerr Grant early in October, but few are aware that he was a Life Member of the Division, an honour bestowed upon him many years ago for his interest and availability to help the Division at all times. A regular guest speaker at the Xmas socials pre-war, he will always be remembered for possessing a wonderful knack of putting over complicated matters in a simple, amusing and charming manner.

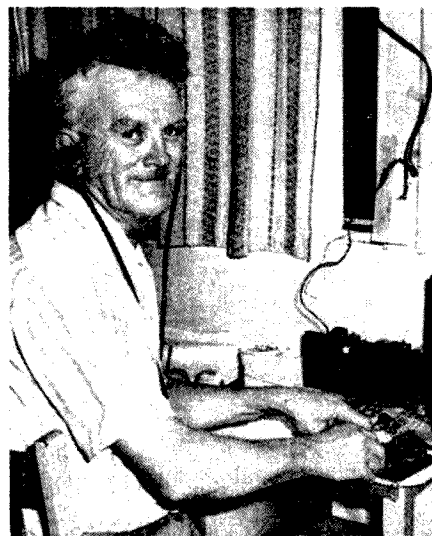
The subject of as many warmly humorous good stories as any notable Australian, most of which related to what was supposed to be his excessive professional absent-mindedness, he had a never failing sense of humour and an unerring ability to get close to his often boisterous young students. His students took a great delight in pushing his trusty steed—a 1929 vintage air-cooled Franklin—which had travelled a virtual 150,000 trouble-free miles—out of sight round a corner of the Physics building of the University and waiting for the "Prof." to look for it at the front, talking aloud to himself and pretending that he could not remember whether he had driven it to work or not, and if he had, where had he parked it?

On the occasion of the professor's 50th year of association with the University of Adelaide, the daily paper feature writer, Stewart Cock-

burn, wrote: "The University sometimes needs a bridge to span the intellectual chasm between its cloisters and the community at large. For as long as most people can remember our University has possessed such a bridge in the person of Professor Sir Kerr Grant."

The Division has lost another of its Life Members, and a good friend as well.

What does one do when a friend of long-standing association in Amateur Radio decides to lower the flag of allegiance and turn renegade? The first hint came from one of my spies who sighted a certain gentleman from out Kingswood way boarding the Overland en route to VK3, and returning next day. The second warning came from a source planted in the freight department of a certain airways who informed me that there was a large and heavy parcel awaiting collection by the said certain gentleman from out Kingswood way. The third and final warning came when I resolved a very strong signal on 14 Mc. and from it came the voice of the certain gentleman from Kingswood way—by now certainly no gentleman in my eyes—quacking his way enthusiastically to all and sundry throughout the world, and when I say the world, I definitely mean the world! Yes, you have guessed it, Cec 5BZ has defected, and is enjoying every minute of it!



ARCH VK5XK/2 IN "LOTUS LAND," ON LORD HOWE ISLAND

Arch reports having a good restful holiday. So balmy were the days, he was more inclined to rag chew than flog DX. However, several hundred QSOs were made and many European countries worked. Arch also admits to enhancing the euphoric environment of the island by occasional libations at the shrine of Bacchus, i.e. breasting the bar at the local Bowls Club. He describes it as a "Choir Session". (Sounds like a perfect way to top off a day OM. Nice work; where to next year?)

Putting my pride in my pocket—or what serves these days for a pocket—I decided to ring him and hear the worst, and would you believe it, he had the audacity to tell me, without even batting an eyelid, that he has had more fun out of Amateur Radio in the past month than in all of his previous years, and he regrets not having taken the step a lot earlier. May I be permitted to ring down the curtain on such a sordid story before I break down and burst into tears of disappointment at human nature!!

Have just returned from my short visit to Ballarat, quite unscathed, and in my little sight-seeing trips around the area I was impressed with one or two of the beams that stood so proudly in the skyline. At one of these installations I had stopped the car to take a better view, when out of the side of the house appeared a female figure with what appeared to be some sort of a space weapon and pointed it straight at me. Realising that Pincott (3AFJ) must have tipped them off in Ballarat of my presence, I waited not upon the order of my going, and took off at all of 10 m.p.h. My XYL said that the lady only had a hose with a sprinkler on the end, but

don't you believe it—I know those VK3s—and I reckon I was lucky to have escaped. What was I doing in Ballarat? Well, my daughter was adjudicating at the annual physical culture competitions held there, and I felt that she might need some protection from those rough VK3 types!

On the way to Ballarat I naturally passed through Narana, and it goes without saying that could not miss the beam on my left in the main street. It never dawned on me that it belonged to Ses 5GP until I was well past, otherwise I would have stopped long enough to say hello to him. When I told him that the beam was certainly a landmark, he somewhat pugnaciously said "and it works too," so I hurriedly agreed with him, especially in view of the bunch of cards that he had just collected from George 5RX.

Carl 5SS was mobile on his recent trip to Port Lincoln. Heard to claim that the 80 watts was a decided improvement on the 13 watts of the old one, and judging by the signal that I heard a couple of times I definitely agree.

Dave 5DS heard on 53.1 Mc. the other night, not from his QTH but from the station of 5JQ, whom he was apparently visiting. How did I know it was Dave? Well, there was just that little something about the voice that gave him away—Hoot Mon!!

Our wandering one-man DX expedition, Arch 5XK, seems to be having a good time from Lord Howe Island, judging by the number and variety of the calls heard chasing him, especially as he is only using 25 watts input. Any time that he contacted a VK5 he was quite anxious to know if we had seen any rain, but nobody was able to cheer him up on that score. I received a communication from him, plus a postcard, but do not subscribe to his somewhat uncouth suggestion that writing to me was the only way he would ever contact me from Lord Howe. Why, for all he knows, I might have been calling and calling him, and he never heard me!!

Following the success of Geoff's (5TY) talk to the Black Forest Methodist Men's Fellowship recently he has received an invitation to strut his stuff at Clarence Park in the near future. This is quite good publicity for W.I.C.E.N., and a few eyebrows were raised at his first talk when he explained just what was being done by a bunch of chaps in their own time and at their own expense, to try and help should the occasion ever arise.

Noticed that the new call sign books were going off like hot cakes at the meeting, and once again the reaction of the buyers was more than favourable. I wonder just how many of the buyers ever stop to think how much work and time goes into this excellent production, all voluntary at that. It is against my principles to hand out bouquets to any VK3s, but those concerned deserve a pat on the back for their efforts in this direction, even if I have to include Pincott (3AFJ) in these sentiments, hurt me though it may!

Due to a mix-up, the reason not disclosed, a recent edition of the VK5 W.I.A. notes in the local paper appeared under the heading of "Prices for vegetables," much to the delight of my fans and my natural discomfiture. Don't bother to ring or write me regarding the prevailing price of raspberries, everybody else has thought of that!

Arthur 5HY rang me this week to let me know when was the best time for me to bring my grandson out to his QTH next month to have a free look through his telescope at the celestial beings. During the conversation he told me that recently he had a bunch of young visitors at his QTH for the same purpose, and after the viewing was finished they brought up the question of Amateur Radio, with the result that Arthur packed the 35 or so visitors inside his shack and managed to contact Heard Island, with the chappie at the island giving the youngsters a run down on the life and habits of the seals in his vicinity, much to the youngsters' delight. I understand that the walls of the shack still show a slight outward bulge!

A rather nasty rumour has just reached me that Jim 5FO has joined the renegades and has been quack-quacking all over the place. With all these desertions from the cause, Comps 5EF will have to get himself a bigger black book to write the members of his poultry farm down. You know what you can do with your little black book, Comps—or do you?

Well, here we are again, the Festive Season is upon us, and naturally on behalf of the Council and members of the VK5 Division I extend to all the other Divisions and members, the Compliments of the Season and all that goes with it. To the users of "The Thing," may I say, "tread warily for the next two or three weeks, this is your most dangerous time, many a quack has stopped suddenly around the 24th of this month." Anyway, why should I be so rude, this is the season for burying the hatchet!! '73, de 5PS—PanSon to you!

WESTERN AUSTRALIA

CQ, CQ, gather round mob, and let us see if we can rattle your speaker cones. Firstly, let's count noses and see just who is present and who is A.W.L. There has been so much East-West traffic lately that it's hard to keep accurate records of all the comings and goings. I do know however that among the inwards traffic over the last few months there have been some very well known personalities—Dudley 2DQ, Arie 2AVA, Lew 3LW, Reg 2KI. This is where I start running into trouble because there are many others of whom I have made no mention—excuse please?

Bill 6WY has been doing stirring work extending hospitality to various visitors and it was at Bill's QTH that I had the pleasure of an eyeball with Jan Andresen, LA9TY/MM, who was in port for a few days. This call sign must surely have raised a few eyebrows when heard on 6 mx, particularly in view of the recent JA activity. Not many logs can boast LA9 among their pages. I understand that Graham 6ZEZ is going to frame that particular page.

It did these tired old optics a heap of good to see the walls of the Chemistry Lecture Theatre start to bulge under the strain of the huge attendance at the October meeting. If anyone had told me about it I would have been inclined to give them the fishy stare—but seeing is believing. Seating accommodation was taxed to the limit, in fact quite a number of late-comers had to acquire chairs from other rooms. Of course they replaced them afterwards! At the moment, the reason for the record turnout is still undetermined, perhaps the ever popular junk sale which followed had something to do with it.

No further information to hand at the moment concerning the Zone 29 Award, but keep watching this page, as they say in the newspapers.

And talking of newspapers, which we weren't, but we will, did you see the illustration and write up about Wally 6AG in the local? Quite a photogenic old gentleman if I may say so.

John 6ZFD has again turned his back on the glittering illuminations of the city and

clutching such vital travelling equipment as toothbrush and 6 mx mobile gear, has made off into the gathering twilight. John will be operating from some obscure location out Hyden way, so keep an ear to the ground for him.

According to John 6ZW, signals he has been receiving from the East have been so strong lately that his garden shrubs have taken on a decided tilt to the West. What do you think? He has certainly been active on 10 mx anyway.

Sounds as though John 6NJ is preparing for bigger and better DXing from Binnu, one of my spies reports the erection of a rhombic and John has been putting out a very healthy signal on 40 mx.

It's not very often that a Ham will openly admit to "swinging the lead". Not so Bob 6RG, but it's not as bad as it sounds because the aforementioned action was all in a good cause. The result was a 40 mx antenna, carefully oriented to favour the Eastern States. The new wire plus a new v.f.o. has enabled him to fire up on 40, but alas and alas, where are all the other stations?

What did you think of the interference tapes which were re-played on the news broadcasts recently? General comments appear to indicate an admiration for the equipment and methods used to analyse and identify the offenders. It will be interesting to see the Report Forms when they come to hand and it is hoped that some effective means will be found to remove the interlopers—'toot sweet'.

Haven't heard much of Ian 6XX since his return from overseas, but I suspect he is putting in a bit of extra time trying to catch up with Pat 8PH, Aub 6XY and Carl 6XW in their quest for the DXCC. Right fellers?

VK0VK will be Vic's new call sign when he commences to shake the snow out of his glove.

Incidentally, Vic's departure from this Division left a vacancy in the ranks of Council which has been filled by "KX" (VK6LZ), who will no doubt make available his vast experience to the mutual benefit of all concerned. Thanks for stepping into the breach, OM.

Heartiest congratulations to VK3 Division for their concerted effort in winning the R.D. Contest this year. A word of commendation also for the runners-up who came within an ace of carrying off the trophy. Well done all—but look out, we'll be trying harder than ever next time.

Well, that just about winds it up for now, all that remains is for me to offer sincere good wishes for the festive season to our Division to your Division.

A Merry Xmas and a Happy New Year. 73, Ross 6DA.

HAMADS

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ANY offers for gear advertised last month? Alf Chandler, VK3LC, Phone 50-2556 (Melb.).

COLLINS TCS-6 Transmitter and Receiver and Speaker, with 230v. a.c. power supply Type S, connecting cables and handbook, \$50.00 the lot. O'Brien, San Remo, Vic., Phone 107.

FOR EXCHANGE: Will swap 6 and 2 metre gear for equiv. in photographic equip., particularly enlarger. J. T. Higson, VK3ZTH, 24 Stapley Cres., Chadstone, Vic. Phone 56-3428.

FOR SALE: Altimeter "Kollman," guaranteed accurate, ideal for survey purposes or v.h.f. field work, \$39. Also Bendix Freq. Meter and Calibration Book, \$29. VK3AOK, Phone 560-9168 (Melb.).

FOR SALE: Galaxy V. Transceiver plus Galaxy Callibrator, with a.c. power supply, Eddystone speaker, Turner microphone p.t.t., and some spare tubes including finals. In excellent condition, \$450. VK6GU Tri-band Beam with tuning unit, prop. pitch motor, selsyn indicator, power supply and cables, and 40 ft. self-supporting tower; reasonable offer. Bill Clowes, VK6RX, 4 Nicholson Rd., Subiaco, W.A., 6008.

FOR SALE: Gelsoso G209 Receiver, O Multiplier OF-1, pre-selector, 120 metre converter, \$300. Wanted: Cabinet for 21 in. Precedent t.v. Wm. F. Sievers, 132 Orrong Rd., Toorak, Vic., 3142. Phone 24-4154.

FOR SALE: Heathkit MT1 80-40-20-15-10 a.m./c.w. Transmitter, 90 watts c.w., 35 watts a.m., complete with Heathkit HP20 a.c. power supply and set spare tubes, \$60. D. D. Kinnersley, VK4X1, 27 Oxley St., Edge Hill, Old., 4870. Phone 53-2068.

FOR SALE: Oregon mast 38 ft. 4 x 4 inch, complete with climbing facilities and anchor post, etc., \$20. AT5 Transmitter, complete, and 12v. to 220v. 40 m.A. d.c. Rotary Transformer—What offers? VK3LS, Phone 379-3819, 5 Hillside Pde., Strathmore, Vic.

FOR SALE: Transmitter, Heathkit Apache, with SB-10 s.s.b. adaptor, mike, \$200. VK5OD, 2 Claring Bold Rd., Christies Beach, S.A.

FOR SALE: V.h.f. Transceiver, Heath HW20, 144-148 Mc., v.f.o. plus 4 switched xtal positions, sens. less than 1/2 mv., CQE03/12 final, c.w. and phone, in-built 12v. d.c. power supply for mobile use, instruction manual will consider terms, \$190. VK3AOK, Phone 560-9168 (Melb.).

FOR SALE: (1) A.W.A. 3BZ Receiver, 200 Kc. to 30 Mc., complete with built-in 240v. a.c. power supply and S meter; good condition, \$35. (2) 3 k.v.a. 240v. 50 cycles Petrol Driven Alternator, complete with governed Coventry Climax 4-cylinder engine and control box; all on wheeled trolley; f.b. condition, \$200 or near offer. Hepburn, 4 Elizabeth St., East Brighton, Vic., 3187. Tel. 96-2414 evenings.

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SALE, Specials for SWL's: General Coverage Receiver: Marconi CR100, 12 valves, 4 diodes, \$80; AR7, 12 valves, rack mounted, \$80; AMR200 plus LF Rx, 8 bands, 130 Kc. to 30 Mc., 23 valves, in 5 ft. rack, \$130. Ham Bands Only: 16 valves, 5 diodes, Gelsoso Front-End, 85 Kc. i.f., \$100. Receivers are equipped with xtal filter, S meter, product detector and noise limiter. All in very good condition. H. L. Roach, 28 Foster Ave., Glenhuntly, Vic. Phone 58-3757.

SELL: Channel Master TV Aerial Rotator and Direction Control Unit. Ideal for v.h.f. beams. Little used. \$25. K. Hoffmann, VK4ZKH, 10 Druce St., Toowoomba, Old., 4350.

SELL: One Pye Base, low band, less xtals, good condition. Also one Contax Taxiphone converted to 53 Mc., less xtals, clean condition. No reasonable offer refused. VK3UT, Private Bag 40, Warrnambool, Vic.

SELL: Z Match Antenna Coupler, 80-10 mx, \$20. Heathkit SWR Bridge \$20. 522 Tx with a.c. p.s. complete with bias supply, \$32. Large Eddystone Tx Dial in prof. black crackle cabinet, has temp. comp. v.f.o. coll. etc., \$25. 20 mx wide spaced Beam, 1 1/2 to 1 3/4 in. diam. elements, all aluminium including 21 ft. boom, \$44. Dow Key Antenna Change-over Relay, 110v. a.c., \$18. 230v./110v. 300w. Auto Trans., \$5. 6 mx home-brew Low Pass Filter, \$4. 3 only Avco Electronic Testmeter (v.t.v.m. and multimeter), Model 4, as new, \$95. Tx or Amp. Cabinet, large, \$3. V.t.v.m. Meter and chassis, \$4. 2 only Multimeters, \$3 pair. Valve and Circuit Tester, \$15. Assort. R.H.s. and A.R.s., approx. 50, \$5. 2 only 12BY7, 2 only 12AX7, 3 only 6DQ5, new, \$6 lot. S.s.b. balanced armature Microphone, \$8. S.s.b. balanced armature Mic. Inserts, \$2.50. Phone 848-3018 (Melb.).

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WANTED: Communications Receiver in good condition, preferably general coverage, with facilities for s.s.b. and bandspread. Peter Simpson, 5 Lawrence St., Glenroy, Vic. Phone 306-5456.

WANTED: Disposals Mic. Trans., type 10K/245 or 10K/246. Good price for any quantity. O'Brien, San Remo, Vic.

WANTED: Gelsoso Front-End Unit 2620A, less valves. State price, must be in good condition. Colin King, 35 Louisa St., Gympie, Old., 4570.

WANTED: Good, commercial, Tri-band Beam. Details and price to VK5ZE, 20 Blencowe St., Elizabeth Grove, S.A.

WANTED: Manual for AT5-AR8. W. Jennings, phone 93-6082 (Melb.).

WANTED TO BUY: Pre-1927 Radio Sets and parts, especially bright emitter and early tx valves, neodyne rx's. Also magazines (not Listener In) and A.R.R.L. Handbooks, pre-1934. F. K. McTaggart, VK3NW, 37 Ryeburne Ave., Hawthorn East, Vic., Phone 82-1141.



PRESENTATION TO JIM RUMBLE, VK8RU

The presentation was made at the October 1987 meeting of the Wireless Institute of Australia, VK6 Branch, for 21 years' service as OSL Manager of the State. Jim is shown receiving the token from Roy, the President of the VK6 Branch. The token took the form of Jim's own QSL card done in silver and mounted on a stand with words of appreciation on a small silver plate mounted above.

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Comprises two i.f. stages, diode detector, in-built a.v.c., 55 db. gain, NPN silicon transistors. DC requirements, 6 v.d.c. 2 mA. Size, $1\frac{1}{2}'' \times \frac{1}{2}'' \times \frac{1}{2}''$. **\$8.70** inc. tax.

● STAR SR700A AMATEUR-BAND RECEIVER

Freq. coverage: 80 mx, 3.4-4.0 Mc.; 40 mx, 7.0-7.6 Mc., 20 mx, 14.0-14.6 Mc.; 15 mx, 21.0-21.6 Mc.; 10 mx (A), 28.0-28.6 Mc.; 10 mx (B), 28.6-29.1 Mc.; 10 mx (C), 29.1-29.7 Mc. Triple conversion: 1st i.f., 3.4-4.0 Mc.; 2nd i.f., 1650 Kc.; 3rd i.f., 55 Kc. Sensitivity: a.m. less than 1 μ V. for 10 db S+N/Noise Ratio; c.w./s.s.b. less than 0.5 μ V. for 10 db. S+N/Noise Ratio. Selectivity: 0.5 Kc., 1.2 Kc., 2.5 Kc., 4 Kc., all at -6 db. In-built 100 Kc. Crystal Calibrator (crystal supplied). **\$461.50.**

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Communication Receivers, Test Equipment, etc. Call, write or phone Equipment inspected and picked up at your convenience any night or week-end.

● STAR ST700 SSB TRANSMITTER

250w. p.e.p. Employs high efficiency AB2 final. Incorporates vox, p.t.t., mechanical filter for max. suppression. Freq. coverage: 80 mx, 3.4-4.0 Mc.; 40 mx, 7.0-7.6 Mc.; 20 mx, 14.0-14.6 Mc.; 15 mx, 21.0-21.6 Mc.; 10 mx (A), 28.0-28.6 Mc.; 10 mx (B), 28.5-29.1 Mc.; 10 mx (C), 29.1-29.7 Mc. Emission: CW, LSB, USB, AM with carrier injection. In-built c.w. sidetone monitor. Clickless keying with unique tone osc. system (no keying of relays). **\$519.20** inc. tax. Note: SR700A and ST700 couple together for complete transceive operation.

● VALVE SOCKETS, P.T.F.E.

7-pin complete with can, 20c ea.; 9-pin complete with can, 50c ea. Ideal for 144 or 432 Converters or Tx's.

● ELECTROLYTIC CONDENSERS

50 μ F., 125v.w. pigtail type. Late manufacture. 20c ea.

● A111 9 Mc. SSB EXCITER

A fibre-glass printed circuit board, the finest German crystal filter, diode ring modulator, and solid state circuitry all contribute to make the A111 the finest SSB Exciter available. Specifications: Sideband suppression, 80 db.; carrier sup., 65 db.; audio freq. response, 350 to 3,000 cycles; mic. input, 1 mV. on 5K ohm load. Incorporates vox amplifier and relay amp. Price with KVG. XF9B Filter, **\$240.**

● A112 5 Mc. VFO

Freq. coverage: 4950 to 5550 Kc. Freq. stability better than 100 c/s. over 12 hrs. long term; better than 8 c/s. over 10 mins. if enclosed in suitable box. Output: 350 mV. on 220 ohm load. Price **\$22.**

● EICO 753 TRI-BAND SSB TRANSCEIVER KIT

180w. p.e.p. on SSB or CW, 80w. on AM. 5.2 Mc. crystal filter. Sideband sup., -40 db.; carrier sup., -50 db. Receiver sensitivity: 1.0 μ V. for 10 db. signal to noise. Receiver selectivity, 2.7 Kc. at 6 db. 10 Kc. receiver off-set tuning. Printed circuit i.f. strip. Pre-aligned xtal filter. Freq. coverage: 80 mx, 3490-4010 Kc.; 40 mx, 6990-7310 Kc.; 20 mx, 13890-14410 Kc. (LSB 80 and 40 mx, USB 20 mx). Price **\$328.78.**

● PETERSEN RADIO PR100 CALIBRATORS

Comprising 1 transistor 100 Kc. crystal oscillator, 1 transistor emitter follower, fibre-glass printed circuit board, trimmer on crystal for zero beat with WWV. Crystal accuracy 0.005%. Power requirements, 15v.d.c. 14 mA. Price **\$22** inc. tax and plus postage.

● K109 SWR METERS

75 ohms or 52 ohms input and output. SWR 1:1 to 1:10 $\pm 3\%$. 100 micro-amp. meter. **\$18.50.**

● CO-AXIAL CABLE

UR70, $\frac{1}{4}''$ diam., 72 ohms, supplied with Belling Lee Connector. 27 yards **\$2.00.** Post and packing 75c.

● RESISTORS

Wide range of values available in $\frac{1}{4}$ watt, $\frac{1}{2}$ watt or 1 watt. Welwyn, I.R.C., Ducon, and Erie. **\$2.00** per 100.

● CAPACITORS

Miniature 600v.w. pigtail type: 0.001, 0.005, 0.0002, 0.0005. Also Ceramic. **\$2.00** per 80.

● POTENTIOMETERS

Wire-wound, 100 ohms to 100K ohms, 1 watt to 3 watt, 40c ea. Carbon, 100 ohms to 5 megohms, 20c ea.

● VALVES

New Philips: QB/250 (813), \$10; 815, \$1; 807, \$1.50; TZ40, \$1.50; 416B, \$4; VR150/30 and VR105/30, 75c ea. or 3 for \$2; ECC33 (6SN7), 40c.; 6AM5, 50c; 6AC7, 20c or 12 for \$2; 6K8, 75c or 3 for \$2; 6J7, 40c or 6 for \$2; 6J6, 50c or 5 for \$2; EF50, 20c.

● TELEMAX T75 FREQUENCY METER

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● PANEL METERS, P25 TYPE

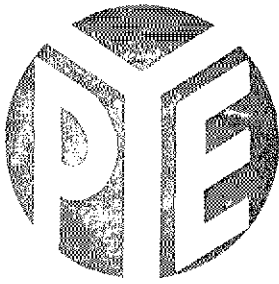
100 μ A., \$6.95; 500 μ A., \$5.25; 1 mA., \$4.50; 10 mA., \$4.50; 50 mA., \$4.50; 100 mA., \$4.50; VU meter, \$6; S meter, \$4.80.

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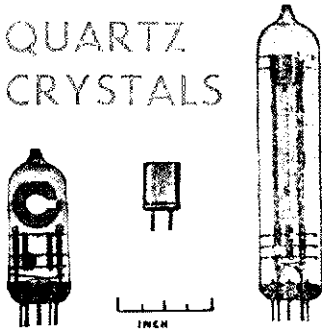
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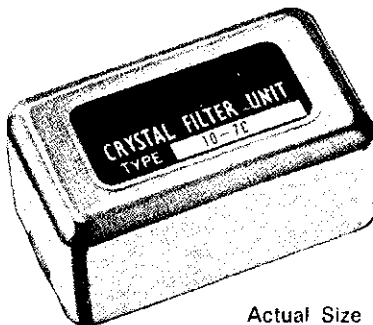
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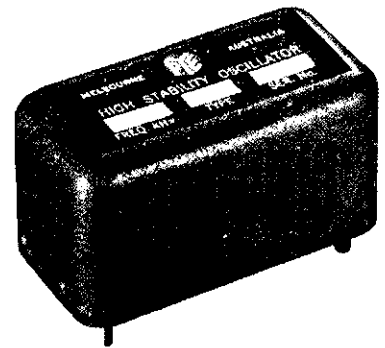
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