

# The SHORT WAVE Magazine

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JULY, 1967

NUMBER 5

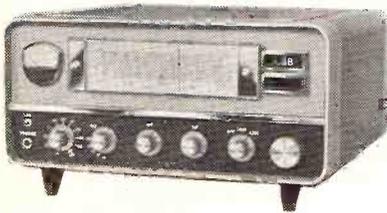


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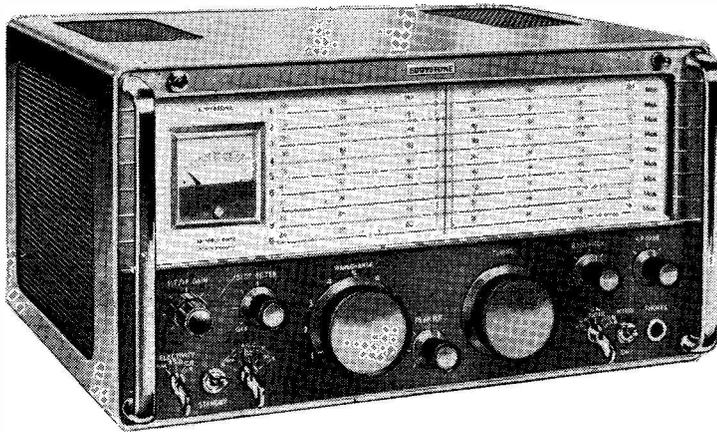
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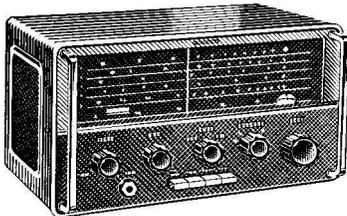
## Amateur communication receiver



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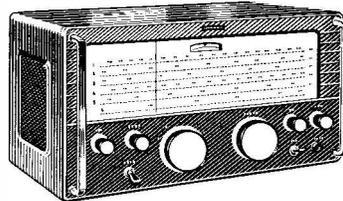
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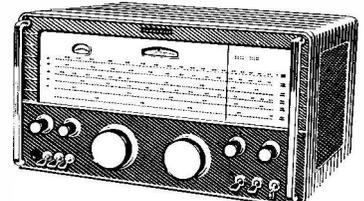
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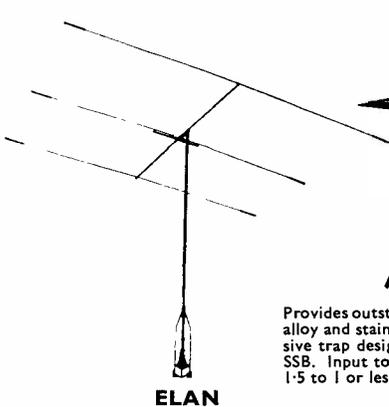
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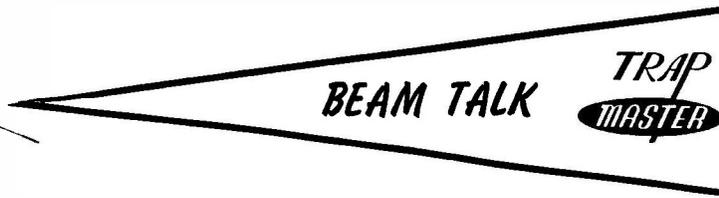
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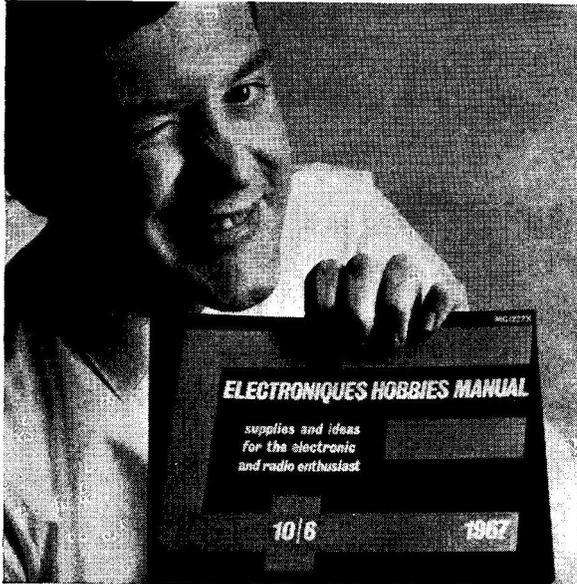


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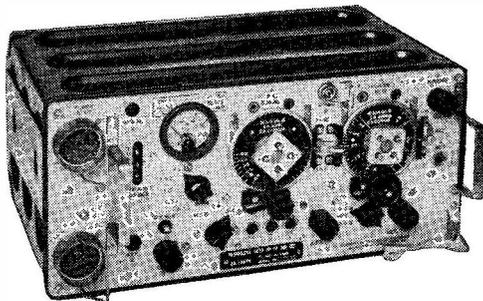
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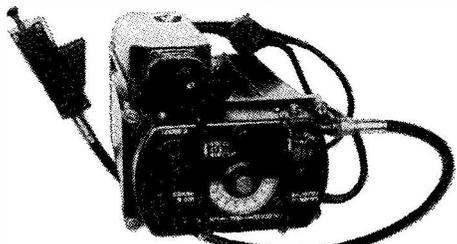
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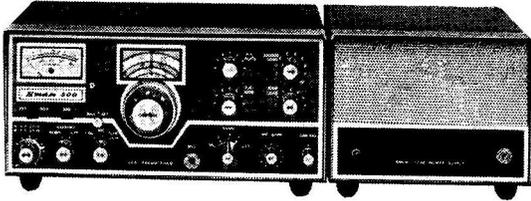
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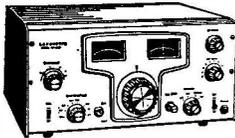
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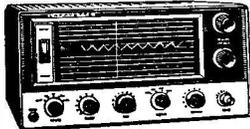


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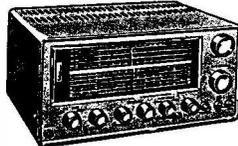


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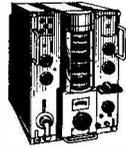
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JULY, 1967

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**ABSORPTION :** The anti-social habit of conventional antennae to "soak up" RF from the compact V.F.A.  
**DX :** The exotic calls heard by the "Conventional Operator" during television hours (see Frustration").  
**DIPOLE :** See "Long Wire."  
**DOOR KNOCKER :** Two knocks means "You are blotting out my TV" (not to be answered!).  
**FRUSTRATION :** The lot of the many conventional operators who hear all the best DX calls during television hours.  
**GROUND PLANE :** See Trap Dipole.  
**HARMONIC INDICATOR :** Museum piece, used only by conventional operators.  
**HARMONICS :** R.I.P. buried by V.F.A.

**JOYMATCH :** The modern successor to the A.T.U.  
**LONG WIRE :** A device erected at great personal hazard by radio amateurs to enable TV viewers to pin-point T.V.I.  
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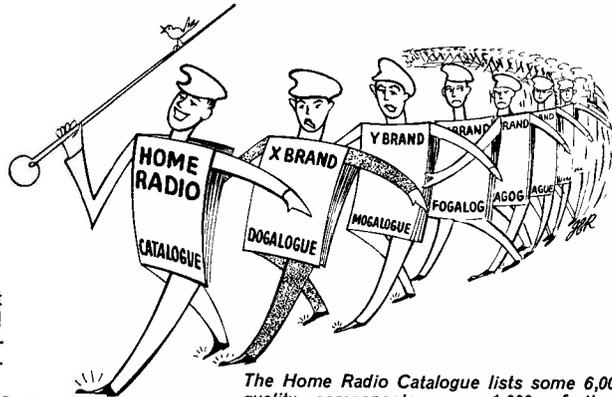
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# The SHORT-WAVE Magazine

## EDITORIAL

**Possibility** Last month in this space we drew attention to the fact that the total of AT-licences in the U.K. is nearly equal to the amateur population of the six Common Market countries put together. It might also have been mentioned that, in addition to an active manufacturing industry based on Amateur Radio, we have the strongest and most varied Amateur Radio press in the world outside the United States.

And it might likewise have been brought out that it is precisely because we in the U.K. have this specialised press devoted to the amateur interest that we have such a large proportion of AT-stations in comparison with the Common Market. In turn, the reason for this is that a periodical such as "Short Wave Magazine" is all the time creating its own market, and so constantly widening the field. We have been doing it for twenty years! Did this Magazine not exist, the U.K. amateur population would be no larger now than that of Western Germany, if as great. America excepted, no other country in the world has this sort of advantage so far as Amateur Radio is concerned.

This strength in the publishing field and on the industrial side vis-à-vis the Common Market means that we would enter it in a completely dominating position in the Amateur Radio context—so much so, in fact, that within any European Amateur Radio Organisation (as suggested here last time) our position would have to be secured against the preposterous "one-country one-vote" procedure—which is now breaking up the United Nations as surely as it did the League of Nations before it.

To avoid the ludicrous proposition that the LX vote should carry the same weight in the E.A.R.O. as, say, that of DL, it would be more realistic to distribute the E.A.R.O. voting power in the proportions G/7—DL/6—F/5—I/4—PA/3—ON/2—LX/1, this being in order of the size of the amateur population in the seven countries. Such an arrangement would always prevent, by coalition among the others, the most powerful member (the U.K.) dominating the rest, while at the same time preventing the members with most to lose on major issues being out-voted, by forming a coalition. In other words, on the suggested voting scale, it would need 15 votes to make a resolution effective. This could be secured by a coalition of, say, DL-F-I or G-DL-ON.

Similarly, the financial structure for the E.A.R.O. could be worked out on the same basis, which would make the U.K. the largest single contributor. Fair enough—we would also have the strongest voting power!

Of course, all this must be for thinking in the future. It is only thrown out now as offering lines of thought, since so much of the talk is about the Common Market, and we have all been exhorted by those in authority to "think and discuss what it is going to mean for Britain."

Austin Foxth,  
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DESIGN FOR INDOOR  
OPERATION ON 160 METRES

THE indoor aerial system described here was first conceived as a receiving aid for Top Band, to reduce strong local noise interference and minimise QRM from neighbouring stations. It worked so well on reception that the possibility of using it for transmission on 160 metres had to be investigated—with equally gratifying results.

From the outset, it should be made clear that the frame configuration as discussed here and sketched in Fig. 1 bears no electrical resemblance to the conventional frame aerial of the early days—which was a closed loop of so-many turns with the ends of the loop coupled into the receiver. In the present design, the electrical arrangement is more that of a compressed dipole with its ends free, coupling being at the low-impedance centre—see Fig. 2, p.270, which is a representation of the electro-mechanical layout.

Furthermore, the frame as a whole is made “resonant at the frequency” (see Fig. 2 again). That is to say, it is self-resonant at some frequency in the band. It can be regarded as a high-Q winding of low feed-impedance, of very low-loss construction, and intended to take RF power at or near its resonant frequency. In effect, it couples into the Top Band Tx/Rx exactly as would any other low-impedance feed 160m. aerial, used with or without an ATU. In this case, an ATU as such is not necessary because of the factors of low impedance and self-resonance at the working frequency.

### Constructional Considerations

The main dimensions—6ft. width by 6ft. 7in. vertically from the base-board—were arrived at quite empirically as being the maximum convenient size for operation in the radio room, on the table beside the gear! Nothing more than this consideration—and the desire for a certain degree of symmetry, so that the end-product would look tidy—dictated the diamond shape with four feet across the ends, to give a winding length of 16ft. per turn.

Working from first principles, it was evident that the inductive effect and hence the resonant frequency, could be somewhat controlled by the *spacing* of the turns, as well as by the amount of wire put on. As will be shown, to get resonance in the 160-metre band with the four turns eventually used each side of centre (see Fig. 2), the optimum wire spacing was found to be a quarter-inch at the four supporting end pieces (Sketched in Fig. 1).

Since for Top Band a half-wave in free space can be taken as around 270ft., it was thought that with the form of construction used, involving so much compression, about half this quantity of wire, put on

at 16ft. per turn, should find resonance.

In fact, resonance was found with 128ft. of wire, i.e., 64ft. each side of the feed point, with the  $\frac{1}{4}$ in. spacing between turns, and 1in. between the sections (of 4 turns at 16ft.) as shown in Figs. 1-2.

This “1in. between sections” was itself dictated by the fact that the frame is made up of 1in. square planed deal (batten), the 6ft. and 6ft. 7in. pieces being fixed at the centre of the two 6ft. lengths to form a cross with 3ft. arms. (The odd 7in. lengthways is simply for fitting to the mounting board.) The ends of the four arms have small hardwood strips screwed to them to carry the windings; these strips are slotted to enable the turns to be tightened up on the frame (see Fig. 1 for main details).

Fixing at the centre of the cross is by brass bolt and washer, with small brass right-angle brackets to give the frame rigidity. The upright member is made a tight fit in a square hole at the centre of the  $\frac{1}{2}$ in. thick baseboard, pushed in to be a shade proud on the underside, and held in square by right-angle brass brackets. Since the whole assembly is symmetrical about the upright member and is thus in balance, not only does it stand quite steady on the baseboard, but is easily rotated when on the table beside the rig because of the slight protrusion of the upright under the board.

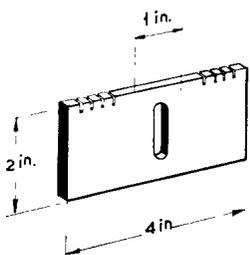
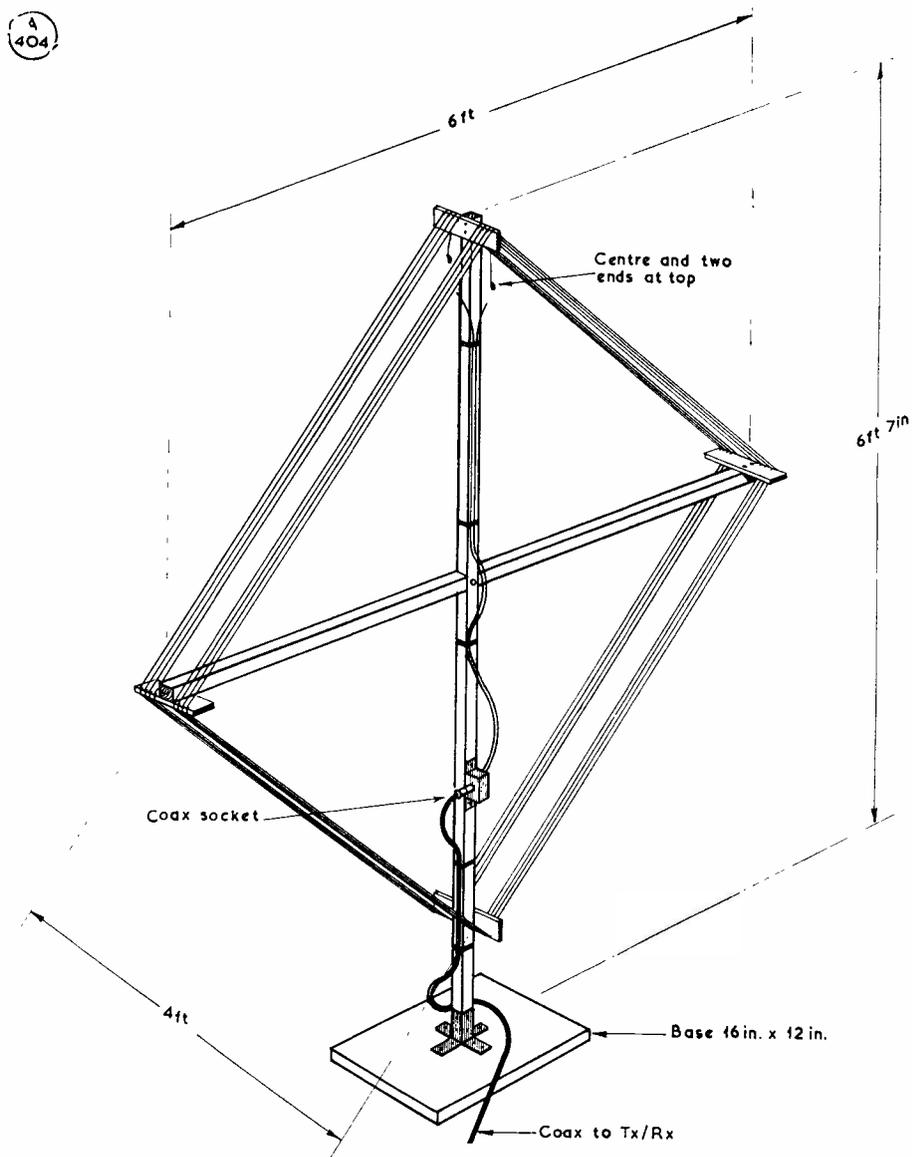
### Finding Resonance

The method (and apparatus) used to trim the frame into the band and make the necessary measurements and adjustments was based on that previously adopted to adjust and evaluate the Top Band whip aerials for /M, as described in the May issue of SHORT WAVE MAGAZINE—that is to say, a calibrated GDO, a receiver having an S-meter, and a field-strength indicator, scaled in microamps, and with an aperiodic (untuned) input circuit.

As a starting point, the frame, looked at as a dipole, was first checked for self-resonance using the GDO, with a random length of about 75ft. of wire wound on each side of centre. Resonance was found outside the band on the LF side. Then the turns were evenly spaced out all round to about one wire diameter; this brought the point of resonance just inside 1.8 mc. Taking 15ft. off each side threw the resonant point well HF. Then, by putting a quarter turn (4ft.) on each side, and adjusting the wire spacing to  $\frac{1}{4}$ in., resonance was found at 1960 kc—making it 64ft. in each arm, or 128ft. overall (see Fig. 2).

Frequency measurement and resonance checking were by using the GDO and the Rx together, thus: The coax lead from the frame was terminated in a small loop loosely coupled to the GDO. This gave enough radiated power for the receiver to pick up a strong beat. When the GDO dip was located and the coupling backed off sufficiently to prevent pulling the GDO “right out,” the frequency of the beat (which was the GDO signal at frame resonance) was read off on the Rx by tuning to maximum on its S-meter.

This method of turns adjustment and frequency measurement is easy and straightforward and is described in some detail as a recommended approach



Material: 4 in. square planed Deal - 13 ft.  
22 yds flat twin plastic lighting flex - separated.

Hardwood end piece,  
grooved 1/4 in. to take turns.  
Slotted at centre for tightening.  
(4 off)

Fig. 1

**Fig. 1. General constructional detail, Frame Transmitting and Receiving Aerial for Top Band.**

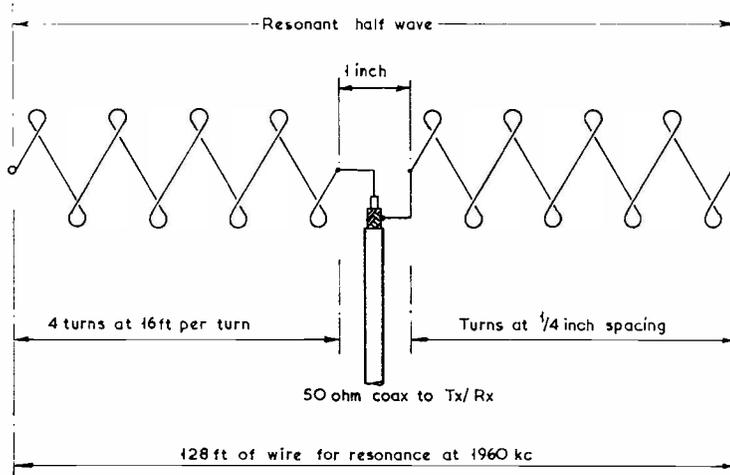


Fig. 2

A  
405

Fig. 2. Electro-mechanical configuration for the Frame Aerial.

for others who may be interested in constructing frame aeriels.

As it happens, in the present design the configuration finally arrived at brings the centre feed point and the two ends on to the same mounting strip, at the top of the frame. With the two dipole ends left free, the centre ends are brought down to a coax socket mounted at a convenient point on the upright—see Fig. 1, and photograph.

### Results on Reception

With the frame standing beside the KW-77 receiver, it was found that locals normally S9+ on the main outside aerial were giving S7+ with the frame lined up in the right direction—this being along the line of the frame itself. Rotation of the frame takes any such signal down to below noise and in most cases a critical *null*—within  $\pm 1^\circ$  of bearing—could be found to remove the signal almost entirely. (This with locals within 10 miles, normally giving very big signals on Top Band.)

Many (happy) hours were spent in trying the frame purely as a receiving aerial, both during daylight and after dark. It was found that good directivity could be obtained on nearly all 160-metre signals, at any distance, and though the best results were always near frame-resonance (1960 kc, as it had worked out), in fact accurate directivity and reasonable sensitivity were being given on distant CW signals (GM, GW and northerly G's) in the 1800-1830 kc area of the band. On some after-dark sessions, results on distant signals were occasionally blurred by multi-path arrival—meaning that directivity did not remain constant and it was not always possible to get a sharp *null*. But this is just what one would expect on 160 metres in darkness.

In all full-daylight tests, however, the most striking result was the very sharp *null* on the

minimum heading, broadside to the frame (see Fig. 3). Another fact is that any station receivable with the normal outdoor aerial could also be heard on the frame, often with a better signal-noise ratio even if at a lower level of actual signal strength.

### Transmission Tests

On attempting to load the Tx with the frame, the first problem arose by reason of its high-Q characteristic and low input impedance, which demanded extra capacity on the output side of the Tx *pi*-coupler.

Loading adjustments and tuning were carried out using a field-strength meter having an inert (aperiodic) input, the object being merely to push the F/S meter needle over as far as it would go at the 10 watts input. (It was noticed that even with the F/S meter only a few feet from the frame, good max.-min. effects could be obtained when the aerial was rotated.)

### Resonance Curve on "Transmit"

At this point, with the receiving results already obtained across the band in mind, the resonance curve of the frame under "transmit" conditions was checked.

This was done by taking the frame aerial, the Tx and its PSU, and the F/S meter outside and well into the clear, using a temporary long cable-run to feed mains power to the Tx. The result of this investigation, using constant input as nearly as possible and with the Tx output circuits kept at resonance throughout the frequency range, is shown plotted in Fig. 4, p.273, the resonance peak being about 6 kc wide.

It is evident from this curve that the frequency area usable with acceptable results on "transmit" is about 1940-1980 kc. Below 1940 kc or so the

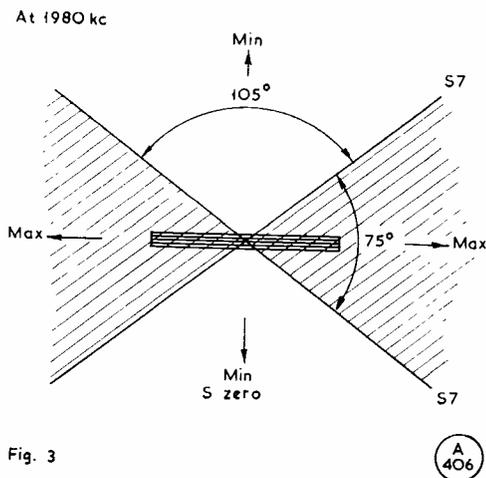


Fig. 3

Fig. 3. Directivity pattern obtained with the Frame Aerial on transmission.

frame tends to behave as just a "lump of aerial" and though it can be made to load, as the curve flattens off the F/S meter reading drops from 25  $\mu$ A at 1940 kc to about 15  $\mu$ A at 1800 kc.

For plotting this curve, the Tx and frame were set up on a garden table and the F/S meter on a stool about 50ft. away and in line with the aerial maximum. As the frequency band was swept and the Tx circuits resonated, the F/S meter was viewed through a binocular. The frame was tried "both ways round" and with the F/S meter at varying angles, but each plot was substantially the same as the curve given in Fig. 4.

**Results on "Transmit"**

These far exceeded expectations. Local and more distant stations regularly worked under full-aerial conditions were able to give direct comparisons between the signal off the frame and that when using the main aerial—which is 3/8th of a wavelength at 1980 kc, with the current antinode at 40ft. above ground.

The general result on "transmit," at distances from 10 to 30 miles in daylight, showed a 25 dB drop in signal level between maximum and minimum frame directivity, well in accordance with Fig. 3. In one case, a station at 8 miles gave meter readings of 48 dB on the main aerial; 36 dB at maximum directivity on the frame; and 22 dB with the frame set on the minimum heading—the Tx, frequency and input of course being kept the same with both aerials.

Another station, 15 miles distant and in a different direction, confirmed meter reading changes corresponding to about 25 dB as the frame was rotated through maximum and minimum. Stations at 25 and 27 miles gave readings of S7 at maximum and down into noise (with CW still just readable) at minimum. Several SWL's, privy to all these pro-

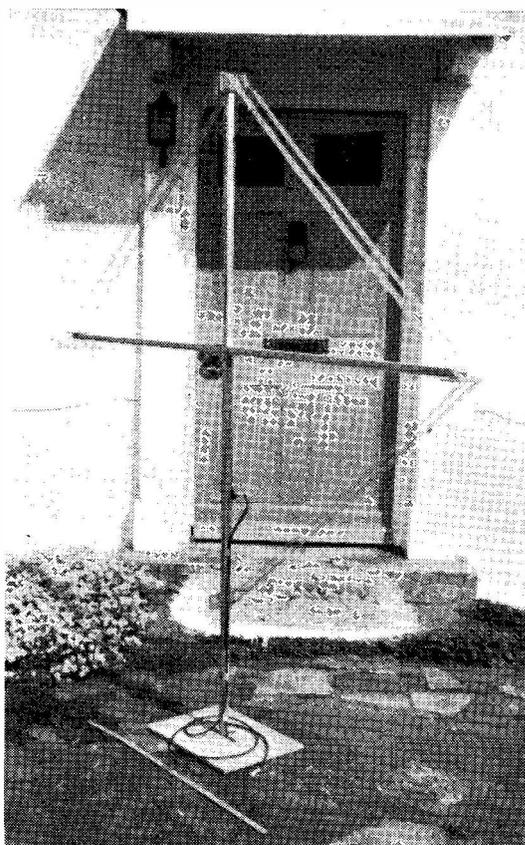
ceedings—which in the nature of normal Sunday operating took place over several weeks—also wrote in from time to time to confirm the observations.

**Convincing Result**

So far, so good—but in discussions over the air with other operators interested in the tests, the idea began to take root that *perhaps* these rather unexpected transmitting results with the frame aerial were being confused by the presence of several open-wire outside transmitting aerials for different bands, including Top Band, in position at the site from which the indoor frame-aerial tests were being conducted. Indeed, there was at times some evidence that, with the frame about 40 feet from the general line of the main aerial for 160 metres, inductive coupling was taking place between them.

While the obvious thing would have been to lower all these outside wires and go through the whole programme of tests again, that was not entirely practicable, for reasons that need not be gone into here.

[over



Showing the general construction of the Frame Aerial described in the article, used for transmission as well as reception on Top Band, with very interesting results. On the ground, beside the baseboard, is a 3ft. rule for size comparison. Each section of the winding consists of four turns, with the feed connection at their mid-point (see text and Figs. 1-2).

A much better idea seemed to be to operate /A from some location at which there could be no possible assistance from any existing outside wires. So the frame and the Tx/Rx gear were taken to the house of a non-radio friend about a mile away (and, incidentally, on the same contour) and set up in his garage under conditions where there could not possibly be any "outside assistance"—he having no more than the usual TV aerial, about 200ft. from the garage.

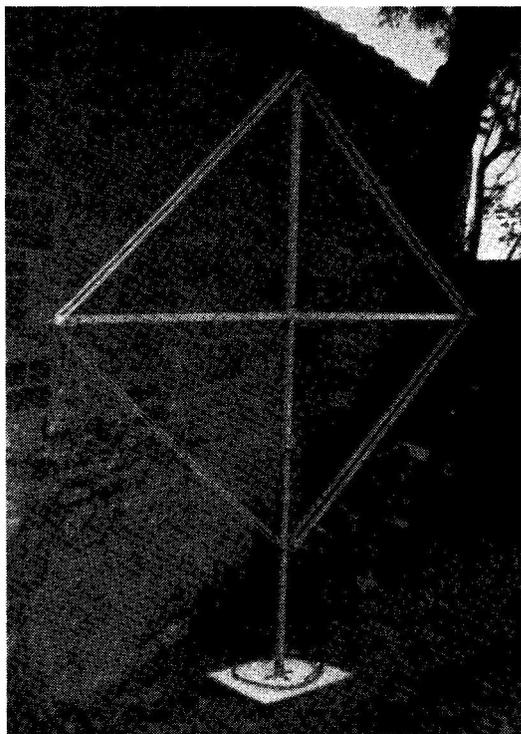
Some other interested stations at various distances from eight to 30 miles having been alerted for this experiment, a Sunday morning session was spent working them—with what can only be described as most convincing, if not spectacular, results. If anything, received signals were stronger on the frame than when using it at the home QTH, while reports on transmission were quite as good as (and in two instances rather better than) from home. Some very satisfactory "beam swing" tests were carried out from this /A location, confirming absolutely the results already mentioned and the general pattern of directivity as shown in Fig. 3.

### Practical Conclusions

Obviously, there is not much point in using a frame aerial for transmission on Top Band, or any other band, if there is the possibility of getting out a reasonable length of wire. But there are a great many amateurs confined to flat-life, or otherwise without proper aerial facilities, who could embark on a frame, on the lines discussed here, with the certainty (a) Of being able to work Top Band locals, and probably out to quite reasonable distances, (b) Of avoiding in large degree adjacent-station QRM if active on Top Band from any sort of location, and (c) Of deriving a good deal of interest from being able to engage in directional transmission and reception on 160 metres, irrespective of QTH.

It hardly needs emphasising that a frame-aerial of this sort is not in any way a "beam," giving gain in the accepted sense—it simply transmits and receives in two directions, with minimum signal at right angles to these directions. But it is a practicable answer for Top Band operation where a "proper aerial" is not possible, and should give much better results than any kind of short (in relation to the frequency) indoor wire loaded to resonance.

While anyone making an exact electro-mechanical version of this design could be reasonably certain of hitting Top Band first time, even a Chinese-copy would still need to be measured and adjusted for resonance. This is because the whole configuration is "touchy" in the RF sense, meaning that small variations in size or turns spacing can affect the resonant frequency quite considerably. On the other hand, it is this that makes resonance adjustment easy, as one soon reaches a point where a few inches of wire on or off the ends make all the difference. It is rather like making a loaded whip for /M resonate correctly at around the required frequency. The same principles apply—except that by using the constructional concept of a "rotary compressed dipole" (as this frame aerial has been called) one



Another impression of the Frame Aerial for 160-metre operation—it proved rather difficult to photograph in such a way as to bring out all the constructional points.

gets the prime advantage of signal directivity, and on Top Band at that.

### Lines for Further Investigation

Those interested in pursuing the experimental work further could try, among other possibilities: (1) A smaller frame; (2) Measuring the actual input impedance by  $I^2R$ , with power known; (3) Getting better band coverage by using loading sections; (4) Flattening the response curve by resistor loading across the free ends; (5) Using the resonant frame as the Tx tank, *i.e.*, as itself the direct load on the PA; (6) Trying the same idea on other bands, and (7) Improving the portability by making the arms of the frame swivel at the centre, so that the whole thing folds up.

In regard to (6) here, one interesting fact observed is that the frame as described and illustrated resonates strongly at the third harmonic (which is what one might expect if it is working properly). But due to the sharpness of the resonance curve, it would mean peaking at about 2340 kc for third-harmonic operation in the 7 mc band. This would result in much reduced efficiency at any practical Top Band frequency unless the frame could be loaded up for operation on that band—which brings in suggestions (3) and/or (4). Apart from this,

**Fig. 4. Resonance curve of the Frame Aerial on transmission.**

the evidence already is that a frame-aerial design based on the same principles would in fact give interesting results on 40 metres if constructed for fundamental operation on that band.

Incidentally, the total cost of this Frame Aerial, everything being bought for it, was about 21s. only. The wire used for the windings is plastic-covered flat twin lighting flex (rated 2 amps., 8d. per yd., ex-Woolworth's) pulled apart to form two single lengths—25 yards having been purchased "for experimental purposes" and about 22 yards actually used. The advantage of using this wire is that it is light, strong, pliable, and well insulated, with sufficient current-carrying capacity for normal low-power work. (However, if making a frame for an HF band, using powers around 100 watts or so, a heavier wire would be needed for the frame windings, since much higher circulating currents would be involved.) Total all-up weight of the frame as illustrated is less than 5lbs.

Finally, thanks are due to the following Top Banders who co-operated so willingly and so help-

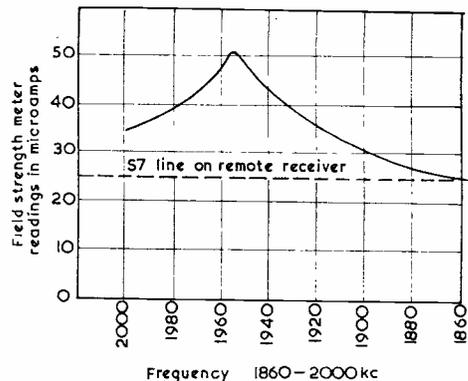


Fig. 4

(A 407)

fully in what for G6FO (and G6FO/A) were these very interesting tests: G3HBN, G3IYX, G3OLS, G3VOD and, in particular, G5WW, the most distant. Many direct and indirect "heard" reports were also received.

A.J.F.

## TACKLING TVI THE PRACTICAL WAY

### NOTES ON PROCEDURE, APPARATUS AND APPROACH

E. P. ESSERY, A.I.E.R.E. (G3KFE)

*Like the subject of Aerials, the topic of TVI is an endless one. While most cases pose individual problems, there are certain guiding principles that should be followed in every instance, if only to narrow down the probabilities. In theory at least, it should be possible to trace and cure any cause of TVI. In practice, this is not so easy—but our contributor's ideas and suggestions, based on experience, should go a long way to clearing up a great many of them.—Editor.*

WHILST it is true that there is a lot of published material on the cause and cure of TVI, and every newly licensed amateur has to show himself capable of understanding (by R.A.E.) something about it, there are a surprisingly large number of amateurs who still either have to QRT during TV hours, or go to extreme lengths to avoid letting their local presence become known as amateurs owing to the possibility of TVI! Quite apart from the personal inconvenience of having to operate out of TV hours, there is the other, probably more important, aspect of the situation—the question of the public image of amateurs as a group.

Let it be emphasised at this point that there is no

case of TVI yet which cannot be cured, provided the correct procedure is adopted to track down the cause. It is fair to say that in every case where the writer has become involved in helping a colleague to tackle a case of "intractable TVI," the reason has turned out to be simply that the amateur concerned has either failed to apply a logical set of tests, or has drawn the wrong conclusions and given up before it was necessary.

Perhaps, therefore, it will not be out of place to reiterate some of the basic factors and to offer a method of localising the trouble—although it is not proposed to describe in detail how the transmitter should be treated, as this is already well documented.

#### Essential Requirements

Before any attempt can be made to tackle TVI successfully, certain simple bits of gadgetry must be available. It is suggested these be put together at some time when there is nothing much else to do, and kept on hand as test-gear, along with such items as the GDO and oscilloscope. Alternatively, they could be made up as Club project items, to be loaned to members when any member finds himself up against TVI.

These items are three in number, and comprise a mains filter (Fig. 1, p.274), a wavetrap to reject the local TV channel (Fig. 2) and a similar wavetrap to reject the amateur signal frequency. In general, it may be said that with these three, and a clear plan of action, one can be virtually home-and-dry before starting operations.

Looking at Fig. 1, the mains filter consists of a couple of chokes and a few condensers, mounted in a box and arranged so that a plug of the type used on the TV in question can be attached quickly and easily. The writer built his into an Eddystone die-cast box—wicked waste of a good box, admittedly, but with a lick of paint

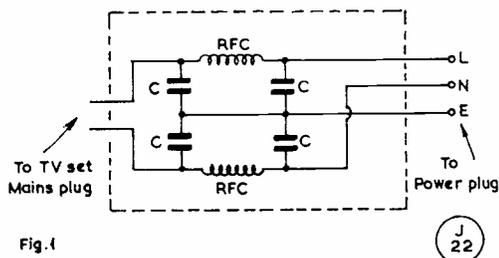


Fig. 1

Fig. 1. A mains filter suitable for installation in the input lead to a TV receiver. The chokes can be Electroniques Type CCC-2, and the condensers .01  $\mu\text{F}$ , rated 1000v. working.

on the outside it looks good and so aids in giving the TVI victim the impression that one knows what one is doing! Similarly, the two wavetraps are built into nice boxes, the one covering the TV channels being grid-dipped to make sure that it covers the range from 40 to 70 mc. For the one to cover the amateur frequencies, it will be found easiest either to switch coils, or to arrange for the coils to be plug-in, to cover all the bands from 1.8 mc through to 28 mc fully—although here, as with the TV channel trap, the coil and condenser must be inside the box, with only the tuning knob protruding. Coax connections to each can be made with ordinary Belling-Lee or similar sockets, so that the TV feeder can be plugged in to one end, and the other connected to the TV aerial-socket through a short (the shorter the better) piece of coax with a plug at each end.

### Tackling the Job

These tools being to hand, battle with the TV Rx may now be joined. To explain how diagnosis proceeds, an actual case will be considered.

First, of course, one has to be clear on the home TV, and so this must be tackled. The transmitter is connected into a dummy load, such as a lamp-bulb, and a run made on each band, to check that no TVI occurs. If any TVI appears, then action must be taken to clear the transmitter, by adding more screening and filtering as necessary. If the transmitter is commercial, then one should not normally find any TVI unless there is a fault on the Tx when this local test is applied. *It is useless to attempt to proceed further until this test is passed.*

Assuming some TVI is found in this check, points to look for, in addition to the basic screening and filtering, are the length of all leads (other than aerial) emerging from the cabinet—as for instance that the key leads, the microphone cable and the power line are in no case either a quarter-wave or half-wave, or their multiples, at any of the TV wavelengths of interest. Those using 807's anywhere in the transmitter would be well advised to shop around to see if they can get 807's of a different make, which can make all the difference in the world to the look of the picture on the small screen. Very careful checking on the neutralisation of the PA is often a factor—and it has to be said that the majority of pentode and tetrode PA stages could do to be neutralised.

Having, in one way or another, obtained a clear screen on the domestic TV on all local channels whatever

band the Tx is switched to with the dummy load on, we are now at a safe starting point. It would be as well to mention at this time, to be kept in mind and remembered throughout the course of any real investigation, that the symptoms of TVI are vastly different when the TV station "cuts its carrier" for the day. This is because the characteristic herring-boning results from the beating of the Tx harmonic and the TV carrier, rather as CW does when you switch off the BFO. Thus, one must be on one's guard if tests are being done out of TV hours. Secondly, it is not an atom of use fitting a low-pass filter in the transmitter output stage if one is mug enough to permit the harmonics to escape past the filter due to the presence of standing-waves on the feeder connecting the transmitter to the filter and the filter to the ATU. Statements of the obvious, these, in all probability, but many an amateur has been trapped into a wrong conclusion by them—including the writer!

### On-Aerial Tests

The next step is to reconnect the aerial to the ATU, fit the LPF and tune the transmitter for zero reflected current in the monimatch or reflectometer, which being done, another look at the picture may be ventured. The chances are that on some bands, the picture will be free from interference, but on others matters will be either nearly as bad, or as bad as, before.

On those amateur bands where things are still bad, the TV receiver should be checked on all the channels in use, both BBC and ITA, to determine whether they are all affected to a greater or lesser extent. If the TV set turns out to be clear on all channels then we are in luck and the case is closed.

In the more likely event that there is still some QRM, the next move is to unplug the aerial from the TV set, and recheck. Any interference remaining—and here remember that the interference will look different, because of the absence of the TV signal—is either being picked up on the mains lead and its wiring, or in the set wiring. Now is the time to call our mains filter into action, and as we have made it so that it will fit the TV set mains connector, the change-over can be made quickly and easily. Let the TV set cool for five minutes or so and then switch on again (so that there is no risk of

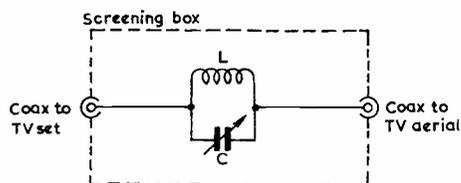


Fig. 2

Fig. 2. Circuitry of the wavetraps discussed in the text. To cover TV channels between 40 and 70 mc, the coil can be 5 turns,  $\frac{1}{2}$  in. diam., and the condenser 50  $\mu\text{F}$ ; adjust the coil, by means of a GDO, to cover at least the required frequency range. For coverage of the amateur bands, for the second trap (see text), the condenser should be 100  $\mu\text{F}$ , with coils tailored to the amateur bands from which TVI is being experienced. Normally, the 14-21-28 mc bands can be covered on one coil, again adjusted by GDO.

catching an ailing valve in the TV Rx) and use the time to explain to the complainant that he should "never switch off and on again suddenly as it does the valves no good"—which will induce him to think you really are knowledgeable about your subject, and hence made him all the more ready to co-operate.

With the mains filter fitted, check all the channels once again, both on bare carrier and with keying and modulation of the transmitter, the TV still being kept disconnected from the TV aerial. Any interference still remaining cannot be picked up through the aerial or the mains and *must*, therefore, be getting in on the set's internal wiring somewhere. If this is the case, retire from the complainant's premises with promises of no operation until you can come back and finish the job; when you get home, write to the set-maker, quoting the serial number and model number of the thing, and any other information which may help in identification, and say that you find, after tests, that your signal is getting in on the set-wiring *internally*, giving symptoms of the effects observed, and ask for advice and assistance. No details can be given here, other than to remark that most manufacturers are pretty good and will produce answers quite rapidly.

### Trying the Filters

Assuming the set-maker or the mains filter results in a state of no-interference on the screen, one may now reconnect the TV aerial, and look at the picture. If it is clear on all channels, well-and-good. If not, you are not yet beaten, by a long chalk. Fish out your two coax filters (Fig. 2) and insert the one that covers the TV channels between the TV Rx and its aerial. Watching the screen closely, rotate the tuning condenser of your filter. If the TV picture *and the interference* both disappear together, you have a case where something in the set is generating harmonics of your signal and setting your work to naught. On the other hand, if the rotation of the knob results in the disappearance of the picture but the interference remains, swap over to your other coax filter, fitted with a coil tuning over the amateur band in question, and watch as before. If the interference clears when the trap is tuned to the amateur signal, the TV set is being overloaded by fundamental signal from the Tx, and the use of a high-pass filter in the TV aerial lead, either bought or built to the design in the *Amateur Radio Handbook*, should effect a cure of this type of QRM. However, it should be said—very loudly at that—that the high-pass filter should be fitted *inside* the TV, between the aerial-input socket and the tuner front-end.

The reason for this is probably not immediately obvious. It is that, as all current TV sets are designed to use AC/DC techniques, the chassis is "live." Thus, for safety reasons, the coax connector at the aerial input of the TV is isolated from the chassis by capacitors on both the centre conductor and the outer; these condensers are, relatively speaking, of very small values, and should not be changed as they are made small to prevent shock to anyone plugging the aerial into the TV. The value is such as to represent a dead short to the TV frequencies, but as far as lower ones are concerned, they are a pretty high impedance, and will tend to upset the operation of the high-pass filter. It is, in any case, preferable to fit

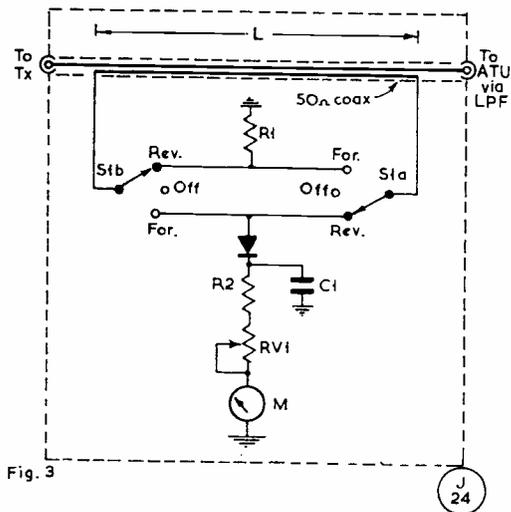


Fig. 3. Monimatch modification to enable the diode to be switched out in the "off" position—see text. Values are: C1, .001  $\mu$ F; R1, 33 ohms; R2, 1K; RV1, 5K pot.; L, pick-up wire less than 1/20th wavelength.

these inside the TV set case, and the filter may then be grounded as well as may be to the chassis of the set. Incidentally, it will be found that this particular action is absolutely essential if one is dealing with a case of TVI from a transmitter on the 3-5 mc band.

### The Harmonic Problem

Now, let us revert for a spell to the case mentioned earlier where the installation of the trap in the TV aerial lead and tuned to the TV channel caused the loss of both picture and QRM. As already said, the reason for this is that somewhere, somehow, something is generating harmonics of your signal which are getting in to the TV feeders. Here you have to watch your step, and the first move is to borrow another low-pass filter and put it in series with the one already fitted, retune the transmitter as before and recheck, just in case your own filter is not potent enough. Similarly, if this works, take out your filter, leave in the borrowed one, and see if that does the trick—if it does, then you can either rebuild your own, or possibly make a Chinese copy of the good one. (However, a good filter should be right first time!)

If this ploy does not do the trick then you are facing a case of what is known as "non-linear element," which may, or may not, turn out to be a real so-and-so to locate. A non-linear element, briefly, is nothing more or less than a diode, and may be found anywhere two bits of metal are in contact, the oxides of the metal in between the contact producing the rectification effect.

First of all, investigate the transmitting aerial system between the output socket of the low-pass filter and the far ends; all connections should be soldered, and all soldered joints remade to ensure that there are no unsuspected dry joints in the system. Whilst on this point, don't forget that if you use a Monimatch or Reflectometer, it may be the cause of a certain amount

of TVI; this is produced by the diode in the Monimatch and is easily cured by adding a centre "Off" position between the Forward and Reverse motions on the switch, the "Off" position being so wired that the diode and meter are disconnected from the pickup wire in the coax or trough, as shown in Fig. 3. Follow this up by a similar check of the TV aerial system, and remember that it is almost certain that the coax connections on the TV aerial, if it has been installed by a commercial aerial erector, will have no soldered joints in the coax plugs; neither is it at all likely that there is any paint or protective coating on the aerial connections "up top." All these should be attended to, and particularly the TV aerial itself—but don't fall through the roof, and don't go up without taking plenty of precautions and having someone footing the ladder, at least till the top has been lashed securely.

### Other Rectifiers

All this being done, chances are good that you are now out of trouble; but if not, there is still the fact that there are a lot of places in a house where two bits of metal can come into contact and produce the rectification effect, so that all one has to do is find the offending point. To this end, what is needed is a simple indicator of harmonic energy with which to scout around until the source is located. To use the TV receiver as an indicator is the obvious move, but it can hardly be regarded as portable—however, it can in fact be used, in conjunction with a long coax lead terminated in a loop at one end as a probe, with the other end plugged in to the TV. A sort of RF sniffer.

A better solution is to build up a simple two-valve (or transistor) receiver, tuned to the frequency of the harmonic which one is seeking to locate, having a sensitive meter as the output indicator and a directional (ferrite rod) aerial, which can be used to trace the source of the offending energy while the transmitter is radiating; once again this seems to be an opportunity to invite a brother amateur round and get him to drive the rig while you do the D/F work, or, better, get him to crawl around while you drive the transmitter! As a matter of interest, those who are professionally in electronics may find a good solution in borrowing a device such as the Rohde & Schwarz portable field-strength meter, which covers the whole range of Band I TV channels, the FM band, and the Band III TV channels, as well as the area in between, and is ideally constructed as a portable instrument. Alternatively one of the field-strength indicators used for the installation of TV aerials could be used.

It is well to remember, while doing this work, that the source of the TVI, when found and repaired, will almost certainly turn out to be something that was overdue for maintenance or actually unsafe—as an example, house wiring that was corroded, found in a power outlet in the kitchen to which an electric kettle was plugged. On the other hand, it may give you a bonus in the way of a better signal, as occurred when the writer found that his TVI was caused by a staple holding wire-netting to a post as part of the boundary fence to the garden—bonding all the fence wire together with soldered joints, using insulated staples, and then bonding the whole fence to the earthing system gave a couple

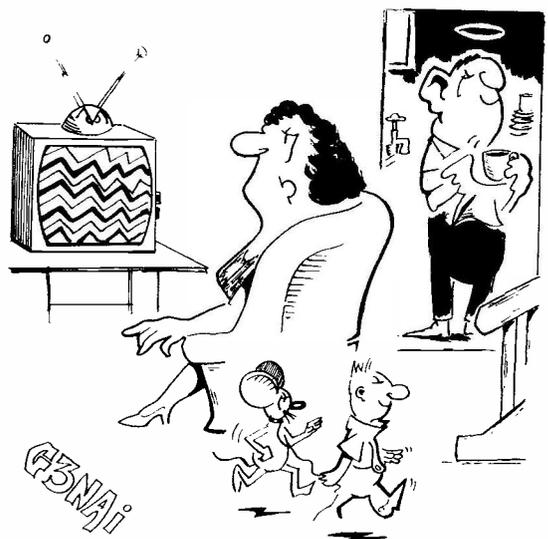
of S-points improvement on Top Band, and did a lot to improve the local noise level in the receiver as well.

### Public Relations Aspect

In conclusion, perhaps a few comments on the "politics" of TVI prevention and cure would not be out of place. The writer is firmly convinced that the best attack is to set up the home receiver and do TVI tests outside TV hours—in his personal case this means burning a spot of midnight oil—rather than conduct tests in the evening, mainly because if the TV carrier is not being received the vision AGC will render the TV a bit more sensitive. When one is satisfied that then one can operate any band free of TVI on the home set, then one has a trump card in handling a complaint. As soon as the complainant calls to indicate his business, try the transmitter on each band and each TV station used locally, and let him see that you are clear at home—the chances are that he will immediately get up to leave; but you can then cut his apologies short and offer to look and see what his troubles are.

By this means, you are giving him the impression that you are only too pleased to help, and invariably more effective co-operation results, to the benefit of both sides. The writer is likewise convinced that in all areas, the local amateurs should get together to form a TVI committee, equipped with test gear as may be thought necessary, who can come to the aid of an amateur with a sticky case to deal with—there are almost always a few chaps in the club who are competent to help out in this way, and would be only too pleased to do so.

And when local viewers realise that you are not the only AT-station operator in the neighbourhood and that you can call in a lot of moral support, they are less likely to strike an aggressive attitude!



" . . . Rodney, nip upstairs and tell Dad he's messing the picture up again . . . "

# VHF BANDS

A. J. DEVON

WELL, it is to be hoped that nobody with even the vaguest interest in VHF will need to be told that since about May 25 we have had openings which must rank with the best ever recorded on VHF. As ever, it was the weather pattern that gave the signs and—though it was all familiar stuff to the old hands, who have been on VHF or years—it was exciting and intensely satisfying for those with not much experience of big openings. And what was even more satisfactory, the main EDX development started by favouring stations in Scotland and the north-east, so that unfamiliar G callsigns could be heard peeling off the Scandinavians, with stations down-south waiting for a chance to get in. In other words, it was all a Big Thing for many people who previously had only been reading about working EDX.

Taking events roughly in chronological order, there was a tremendous display of Aurora during the night of May 25/26, visible right down into the Midlands. During this period,

GW2HIY, Holyhead (who is always around when anything interesting happens) worked nine countries after midnight on May 26, with SP2RO as undoubtedly his best EDX and making his 16th country on the two-metre band. In his "heard" list are DM2CO and—UR2CQ! All this on a beam heading of 25-30°, which shows how the reflecting curtain was hanging. Numerous G, GM, GW and OZ stations were coming through until at least 0300z and the beacons were strong signals on the northerly heading.

By June 2, there was a uniform pressure area covering the U.K., with plenty of GDX about, and evidence of sporadic-E. It was then that ZB2VHF broke through on four metres, to make a QSO with G3RIK, right up in Rochdale, at 1708z. Without going into all the details, ZB2VHF went on to work 70 G's in 23 counties during the openings occurring on June 2/3 and June 11—all this on four metres, be it noted, under propagation conditions that were partly spor-E and in part tropospheric. This working between Gibraltar and the U.K. produced "Firsts" for GM/ZB2 (GM3EGW) and GI/ZB2 (GI3RXV)—and this alone shows the coverage being achieved by ZB2VHF.

For those who may not know, ZB2VHF is a beacon station on 70.26 mc, using quite modest power, with a J-Beam aerial and equipment provided by the Plessey Group. The station is under the control of ZB2AP, who puts it on the air for operational purposes when it is not functioning simply as a beacon. Hence, ZB2VHF may often be heard in the U.K. when Ossie is not there to make QSO's—he has to toil to the top of The Rock when conditions seem right for manual working. (To keep a check on the possibilities, ZB2AP can be worked on ten metres, as a talking channel.) Conversely, when standing by for operation, G/M's can often be heard by ZB2VHF but are quite impossible to raise! What this comes to is that whenever the 70 mc band seems to

be giving, 70.26 mc should be carefully monitored. If ZB2VHF is coming through, there is the chance of a QSO.

Our congratulations to ZB2VHF/ZB2AP on these outstanding 4-metre results in June, and our thanks to G3JHM (one of the many U.K. operators successful with ZB2VHF, and largely responsible for his being on the air) for details of the ZB2VHF working. It is unfortunate that no other European country licences for 70 mc (though the French used to have a partial cross-band) which means that Gibraltar is the present DX limit on four metres. Malta could be in on this if we had a 9H1 station operative on the band.

\* \* \*

Getting back to two metres and EDX by tropospheric propagation, the evening of June 9 showed evidence of an anomalous situation, by reason of there being many foreign stations tunable on the 80-90 mc FM band, normally rather frigid as far as DX is concerned. By Sunday, June 11, the Wx had stabilised with an anti-cyclone over the U.K. and "expected to last for several



Two well-known VHF personalities, often to be heard on two metres—left, G5DF (Reading), with G5HZ (Henley-on-Thames).

days." There was even to be "a touch of early-morning ground frost here and there"—FB for a DX development, even if murder for the new potatoes! Be that as it might have been, GDX was good for north-south contacts. June 12 was a perfect evening—rather cool, no cloud, with the high-pressure area stabilised from the U.K. across the North Sea to Scandinavia. An interesting contact heard was G3BA/GM3EGW on SSB, with LA3VHF coming through and conditions very good to the north and north-east. It was then that stations in that area were working the Scandinavians, many of them experiencing this sort of DX for the very first time. A particularly successful EDX station was LA4FE, who also worked G6NB down-south. At about the same period (2200z onwards), G3MED, with a very nice SSB signal, was busy with the PA's, giving a

rather different pattern of activity. On CW, our old friend ON4FG was on CW calling GM.

June 13 showed the perfect Wx formation for EDX/GDX. The big anti-cyclone steady, and a fine, warm day followed by a cool evening, with fog locally in the early morning. At about 2200z on the 13th, ON4FG was having a solid QSO with GM6IZ on CW, and GM3EOJ also coming through. Another interesting Continental was PA6MB—an unusual callsign from that direction with a very nice CW signal; he also worked GM6IZ, while G3CO was busy with GM3EOJ. At the same time, ON5CG was having it out, on Phone, with G3EDD. Some of the PA's on Sideband were putting in good signals on the SSB channel. At about 2245z G6NB worked DL6CU, and then OZ5TX was coming through, calling CQ on Phone. The other Danish stations

to be heard and worked were OZ9PZ and OZ9SW. By this time on June 13, the two-metre band was open from France right round to Scandinavia and up to GM. At 2330z, ON4TQ was working GM6IZ and G3RHJ was in contact with OZ5TX.

Things went on in this sort of way for the evening of June 14/15. At 2145z SM6CHK was calling CQ/DX at the LF end with a good strong signal—and all round him were G's also busy calling CQ/DX. And through all this schemozzle, it was G5YV, right at the other end of the band, who got the contact—because he was listening. In the course of this QSO, and some other contacts later, SM6CHK revealed himself as a very good CW operator.

Again, on the evening of June 16, with a half-moon in a clear sky, riding high over a quiet country-side, the two-metre band was wide open for DX. The SM's, OZ's and PA's were getting into the Midlands with healthy signals, and GW3LEW (Cardiff) was busy calling CQ on CW. G3LTF was working an SM, G3MPS was very strong on Phone and G3LHA/P was getting out well to the east. G3SZX, from down in Wiltshire, was also doing well with the Scandinavians. By the 17th, the Wx pattern again favoured the northerly stations but in fact the coverage was pretty general, and most U.K. stations found it easy to work the EDX—if they could make themselves heard through the QRM. It being a weekend, many operators stayed up late and saw it through—in fact, G6CW was on all night, and got his best EDX in the early hours of Sunday morning, the 18th. The coverage reached into DM (which is real DX, as the DM's are east of Berlin).

But then the weather situation changed suddenly, and by the evening of June 18/19, the EDX had more or less gone, though GDX conditions were still quite good. The sign of failing propagation over distances was that all GDX was subject to severe QSB.

Which brings us right up to the deadline, after a sustained period

### THREE-BAND ANNUAL VHF TABLE

September 1966 to August 1967

Station	FOUR METRES		TWO METRES		70 CENTIMETRES		TOTAL pts.
	Counties	Countries	Counties	Countries	Counties	Countries	
G3EDD	34	3	50	10	35	5	137
G3BNL	21	2	37	6	34	3	103
G3LAS	32	3	39	8	16	2	100
G3FIJ	31	6	36	10	6	3	92
G3OHH	35	6	27	5	4	1	78
G5UM	14	2	30	3	22	2	73
G2AXI	24	2	34	10	—	—	70
E16AS	26	6	25	7	3	2	69
G3EKP	27	7	14	5	11	4	68
G5FK	26	3	13	4	13	2	61
G3AHB	11	2	26	4	12	2	57
G3TLB	9	2	39	6	—	—	56
E12A	5	2	31	7	—	—	45
G3KQF	—	—	25	7	11	2	45
G3WHK	1	1	22	3	11	1	40
GW3CBY	4	2	18	6	7	2	39

Scores are since September 1, 1966, and will accrue until August 31, 1967. Position is shown by last-column total as aggregate of all scores. Own county and country score as one each. Entries may be made for a single band, any two or all three. Claims should be sent in as often as possible, to keep the Table up-to-date.

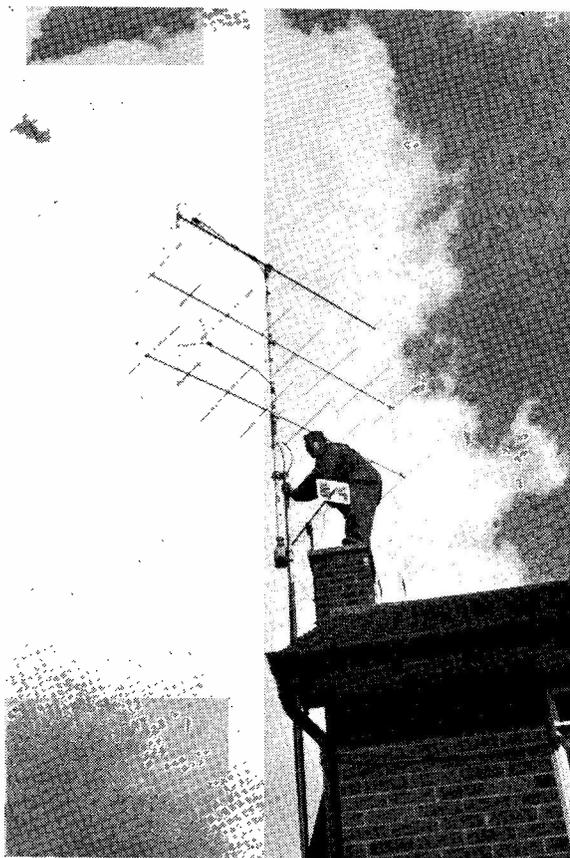
of outstanding interest on VHF, during which many two-metre operators—new, or fairly new, to the band—worked a lot of DX for the first time. And it will happen again, as always it has done over the years. So it is worth watching the signs and paying attention to the possibilities.

\* \* \*

On Sunday, June 18, the ARTOB balloon transponder was again due for a flight, from the neighbourhood of Hanover. Though tropospheric conditions were good in that direction, so far as we know nothing was heard of or done with the balloon by stations in the U.K.—on the other hand, it was too late for us to have had any hard reports. So there may be something to say about this next time—although it is interesting to note that G3BA, who stood by for ARTOB most of that Sunday morning and had even worked DL's in the Hanover area before the time of take-off, heard nothing whatever. In fact, one of Tom's DL contacts was with a chap who was just off out to help with the balloon launch!

\* \* \*

We must keep up with the DX-pedition plans so—first drawing your attention to p.222, June, where details are given of the EI3SU/P safari during July 20-30—here are some more details about the G3BA/G3BHT trip to Ireland. Unhappily, this time they cannot have the support of G4LU, because Stan has got himself snarled up with some tiresome, but nevertheless urgent and demanding, work stuff. (He has a senior job at one of the country's long-distance HF communication stations.) Signing EI2AX/P and GI3BHT/P, the objective is to make a circular tour of Eire and parts of GI, covering in all ten counties in the period July 7-17—sounds to us like a lot of hard work (especially without G4LU to cook the breakfast!). Their operating periods will be 7.0 p.m.



The new beam array for two metres and 70 centimetres at G3COJ, Flackwell Heath, High Wycombe, Bucks.—with G3NBB doing the roof work. (Brian says that somebody has to do the ground work and keep a foot on the ladder!) The two-metre aerial is an 8.8 and the 70 cm. beam a 14-element job.

till about 11.30 p.m. each evening, using CW only on 145.9 mc, with a short SSB session during 10.0-10.30 p.m. on 145.41 mc. While they will endeavour to work all comers, those on the sked list (which is being sent by G3BA to all who have made firm schedules) will naturally be tried for first. To keep all this in hand and under control, a talking channel has been arranged on 3690 kc, with G6CW/G6HV, 6.30-7.0 p.m., through which news can be passed or further skeds arranged (if times/dates can be fitted in).

The gear being provided for this ambitious expedition is being du-

plicated as an insurance against failure. It will include a 10-ele Skybeam; receivers having an NF better than 3 dB; and a Tx giving 60 watts RF out. Further than this, Tom and Brian will be patient with weak signals, because their serious aim is to give as many rare counties as possible to those who otherwise might never have the opportunity to work such GDX. Your A.J.D. might add that both G3BA and G3BHT are highly competent and experienced operators in any mode, and it will not be their fault if G3XYZ is unable to make a QSO

From July 27 to August 9

G3MWZ will be signing EI9BF on 145.5 mc from the counties of Cork, Kerry and Dublin, in that order, running an /M/P rig, also trying on the two LF bands. (G3MWZ, QTHR).

We are asked to say that the Worcester group would be prepared to activate some of the rarer counties on two metres, either at weekends (in Wales) or during their summer fortnight at the end of July. Those with ideas please write as soon as possible to: B. Jones, G8ASO, 12 Woodside Road, Larkhill, Worcester, saying in which counties they are interested.

### Some Gleanings

*Noted at the height of the rush:* "If you hear any DX on the band gives a tinkle" . . . The usual vandals working Phone in the CW area . . . "East Anglia is pretty duff for VHF" . . . An unidentified station with a very nice signal remarking that his is an all home-built station for all bands (we would like to hear from him, please) . . . One of the big boys on CW raining dots all over the band—at least, he was sending readable Morse . . . When G2XV works G6LL/M on two metres, it evokes something of the history of Amateur Radio; if it doesn't signify much to you, no matter—but a few people who see this may sit back for a moment and think . . . Many EU's on AM simply said they were "tuning the band"; during an opening this is most annoying, particularly as CW stations almost always state their tuning procedure (G3USF) . . . Many newcomers to VHF missed the fact that during a sustained opening early-morning conditions are quite as good as, if not better than, in the evening—which means that there is often the chance of a few DX contacts at the breakfast hour . . . "I heard GB3VHF for the first time" (EI6AS) . . . "It's a pity ZB2VHF chose 70.26 mc as that frequency was really chaotic" (G3EKP) . . . "I heard ZB2VHF working G3AYT/M (4-wave whip) and GM3EGW on the 11th" (G3OHH).

As G3USF (Keele) remarks, while most areas had their turn

of the good conditions, at any given time there were often a lot of frustrated bystanders who could hear what was going on but could not get in on it. While in the end almost everyone got some good DX contacts, nearly all missed what seemed (to them) the juicier items! This was, of course, because the opening did not always favour the whole country at the same time—the favoured areas swung from north to south and back again, and it was not till the night of June 17/18 that conditions really widened out to cover the whole country, including Wales and the south-west.

\* \* \*

Not much room for tabular matter this month but the Three-Band Annual is up-to-date, and next time we shall show Annual Counties—which will close for this year on August 31. Both these tables will re-open again immediately for 1967-'68, w.e.f. Sept. 1st. It is now some time since several of the other tables had a showing and it is your A.J.D.'s hope and intention to take one month's space for nothing but Tables (*Oh, no, you won't!*—Ed.). Anyway, that is the hope!

Turning now to some other matters: EA4AO (Madrid) was on for the June meteor showers (*Perseids* and *Arietids*) and on June 9 had a solid MS contact with PA6MB, on 144.200 mc—incidentally, both stations run 500w., and their aerials are: At EA4AO, an 11-ele long-Yagi; and at PA6MB, a 4-by-8-element Yagi. (We don't know if this is what PA6MB had on for the later DX work in June, but it certainly sounded like it!).

According to G3GWL (Bletchley), there is a great deal more activity on 1290 mc (23 centimetres) than might be supposed—he estimates the regulars as numbering about 40, with some good sked contacts over unexpected paths. We would very much like to hear more about this and hope that some of the 23 cm. people will write in, with details of their gear.

As regards the 70-centimetre band, no very detailed reports have been received but it is reasonable to suppose that the recent openings were also effective on 430 mc. Again, we would like to know. A note from G8ALQ (Hemel Hempstead) asks us to let it be known that he is now fully operational on 70 cm. and looking for QSO's.

G3EDD (Cambridge) wrote in just before things really began to happen and was commenting on how indifferent VHF conditions had been "for several months"—then he found ZB2VHF coming in strongly during several non-manual periods, so no QSO, but was later rewarded by an unexpected 70 cm. contact with GW8ASA—unexpected because G3EDD was working GW3NDB on (let it be whispered) 40 metres, and GW8ASA is the latter's son. So a sked was fixed up right away and they made it, Cambridge-Barry, Glam.

G3COJ (Nr. High Wycombe) has now got his aerials up outside, as our picture shows, and is putting out a very potent signal on two metres, with the 70 cm. side coming along. Brian says that as compensation for having to miss the local field day event, because of a domestic preoccupation (his baby's christening, no less), he worked ZB2VHF on 4m. on June 3, in the evening.

G3WHK (Morden, Sy.) is doing very well on all three VHF bands, and we are glad to notice that GW3CBY got his share of the recent DX.

### Deadline

Well, it is good to have had something in the way of real DX on VHF to report for a change—and there is no reason why there should not be more of these openings. Keep an eye on conditions (they can be read as an open book, once you know the trick) and keep us informed of your doings. For the August issue, deadline for "VHF Bands" is **Monday, July 17**. With you again on July 28, all being well. A.J.D., SHORT WAVE MAGAZINE, BUCKINGHAM, is the QTH. 73 de A.J.D.

# COMMUNICATION and DX NEWS

*E. P. Essery, G3KFE*

**S**AFETY Precautions are not normally discussed in this piece, but in view of the thundery weather during the period under review, it is possibly relevant to mention the matter of lightning protection. A friend of your scribe's, a keen SWL who is waiting the result of the R.A.E., has his gear in the kitchen, and outside has two aeri-als which feed into the receiver *via* coaxial feeders. A standing instruction to his XYL was that if ever a thunder-storm threatened, she was to disconnect all feeders, including the TV aerial, and let them trail down to the floor. This she duly did, during one of the recent storms, with spectacular results—the feeders for the TV went short-circuit, and in the kitchen, where the coax leads fell behind the refrigerator, sparks *a foot long* were to be seen leaping from them to the frame of the refrigerator which was, of course, wired to earth at its own power plug. Although no real damage was done, it is a mercy that when the aeri-als were unplugged nobody was hurt.

From all points of view, it is always best to so arrange things that when the gear is not in use all aeri-als are earthed to DC, either by way of the ATU circuitry, or by means of a fat earthing switch just outside the window. The point is that there is very little that can be done to protect against a direct hit, but damage of the sort we are discussing is almost invariably the result of a build-up of static charges on an aerial that is not provided with a DC path to earth, which charge eventually becomes high enough to flash over somewhere-or-other to ground. The damage to gear is a nuisance, and no more; but the risk of injury to women-folk and the children, and the fear they go through when sparks start flashing and crackling with thunder overhead, is a far more serious matter.

Such events are by no means as rare as might be thought—two

cases have come to the writer's notice this very month, and last year it will be remembered that G3NMH returned home to find his beam wrecked by lightning and a large proportion of the gear damaged.

## Scanning The Bands

The general feeling has been that the bands have been a bit down during the period under review. As far as the HF bands are concerned, they have been flat and on the LF bands, the main trouble has been static levels. Overall, the picture is best summed up in G8DI's two words—*Nil Desperandum!*

Looking at 28 mc first, G3NOF (Yeovil) found only signals on the North-South paths, apart from a few W's who broke through around 2030 on the evening of May 21. Even at that, the openings were, in general, confined to the afternoon period. Don came out of the month with SSB contacts recorded with LU, PY, ZC4MO, ZD7DI, 5Z4SS, 9J2DT

and 2VX, 9L1TL, and W1 and 4.

Harking back to the words of G8DI, it becomes evident why—he mentioned *one* call on 28 mc, 9J2GJ, but unfortunately it came under the head of gotaway.

Next is G3UTS (Newcastle-on-Tyne) who "raided the piggybank" and treated himself to a KW-2000A; naturally he has had to try it out, and hence his appearance in the HF band news. Reg sums *his* success on Ten in one word—Nothing!

G3PQF (Farnborough) seems to have got back into the swing of things after his recent change of QTH, but his total offering on Ten is one contact, with the ZD3I party.

The tale from up in the far north of Shetland, where GM3SVK (Unst) hangs out his wires, is very much the same—one contact, and that was, relatively, a local, in the form of 4U1ITU, with 9V1MY, and ZC4MO heard occasionally, and, rarely, the odd W.

Possibly the only correspondent



Membership group of the Kyoto Radio Club, taken by WIBB when he visited Japan on his recent trip. All this lot are JA3's, and some of them are interested in serious DX work on 160 metres.

with a good word to say about Ten, or at least not to make rude comments, was G3GIQ (Ealing) who had SSB dealings with OHØNI, ZD7DI, and ZD8CX.

One of the odd things about all this is that in several cases, the score in the way of all-time new ones has taken an appreciable lift this month. This has happened to G3VDL (Chalfont St. Giles), who contrived to go up six—but all he could do on 28 mc was to have CW contacts with CR7IZ, 9J2WR, and sundry assorted EU calls.

Another lucky one was G3IDG (Basingstoke), who managed to go up five, but once again, Allan only made one of these on Ten, his being CX8CZ. However, to offset that, he also heard a "thing" calling CQ on Ten, signing "BUF" with a T7 note at 1254 on May 7, apparently with no takers—wonder who or what *that* was?

#### Fifteen Metres

At the top of the clip this time is GM3JDR (Golspie) whose CW list shows I9RB, lots of JA's (albeit most hooked on one brief opening), ZSSUT/MM/CR6, 4S7EC, 5H3KJ, 9LITL, 9Q5QR and 9V1NO; the SSB showing is rather longer, and we therefore have to do a spot of selection, which leaves AC3PT, PY's, LU's, CE's, PY7APS/Ø, JA's by the bucketful, SU1AR (wonder if *he* would have come back later in the month?), EL2AM, VS9, VP6, ZE's, MP4BEU, KZ5's and such.

G3NOF who, with his beam, is often able to spot oddities which "wet-string aerial" types might



Very recently licensed is James Heck, G3WGM, of Homefield, Hartsbourne Avenue, Bushey Heath, Herts., whose main interest at present is 80-metre AM/CW, and RTTY. He runs a 60-watt Tx with an end-fed aerial, and his Rx is a BRT-400. The machinery for RTTY consists of a Creed 7B teleprinter, with a tape auto-transmitter, all of which has been in operation for some time under SWL conditions.

miss under poor conditions, says that during the day there has been very little worthwhile activity, with a few south-eastern Asiatics breaking through in the afternoon, the evenings producing Africans and sometimes strong North Americans around 2000z. One evening W6CCP was heard at odd times from 1600 right through till 2330, and saying that "there was often a short path from 0430 to 0530 GMT to him, which had yielded many G contacts." As for contacts, Don mentions YA1FV, VE3, and W's 1, 3, 4, 6, 9, Ø.

Also on the west side of the country, but rather further up, is G8DI (Liverpool), who seems to have done his best work on Fifteen this time, with VP6AK, PY7APS/Ø, EA8FJ, HC2SB, 6W8DD, 9M8II (ex-G3III), VP9EP, and gotaway in the shape of TR7AH.

His new KW-2000A produced for G3UTS a couple of contacts, with ZC4MO on SSB and UL7IQ on CW, which should serve to convince Reg that his new rig does work! Turning to the G3PQF log, Dave comments that on the evening of June 9, about midnight, CEØAE showed up on the band, with the usual hell-fire and brimstone result, and wonders where all the stations sprang from; plaintive tail-piece—"I didn't work him!"

It is always nice to see a new handwriting in the mail, and this time it comes from G3NUT (Wallasey) who has recently put a new aerial up—which has been doing him proud. It has also been used on 7 mc and 21 mc, with the old ground-plane still giving yeoman service on Twenty. The 21 mc list includes CR6, CR7, CX2, HK3AVK, ET3USA, KP4, KZ5, VP6, YV5BNR, TU2BK, ZD8J, ZE4JS and a load of others *plus* W, JA and PY by the hatful. Incidentally, Jack raises the question of con-

### THREE-BAND ZONES and COUNTRIES TABLE

Starting date: January 1, 1967

Station	7 mc		14 mc		21 mc	
	Zone pts.	Countries	Zone pts.	Countries	Zone pts.	Countries
G3IAR	275	45	810	138	728	104
GM3SVK	218	35	805	120	759	98
G3VDL	125	31	540	57	435	58
GM3JZK	135	20	429	50	404	30
G3PQF	111	26	128	23	180	15
G3VWC	22	18	67	20	118	24

Note: The placings this month are based on the "14 mc Zone points" column. For Zone 14 Score card on which this table is based, see p.92, April 1967 issue.

firmations being needed before making an entry in the Tables? No fear—if we did *that*, there would be no Tables for the first nine months of the year!

Caustic is the word to describe the comment of GM3SVK on the HF bands—some days, nothing but EU's and noise! (Your E.P.E. would take leave to wonder, in some cases, just what the difference really is!) However to revert to the point, Fred found the usual pattern of things, with S.E. Asia during the afternoon, shading off to Africa and the South Americans later on, *when* the band was trying. Thus, SSB yielded contacts with CR6AB, FP8DD, IS1RUA, LU's and PY's, VP9FC, XW8AX, ZD3 and ZD7, ZS, 5H3, and 8R1S. The key was used for QSO's with CR6, CE8CF, EP3RO, KZ5JO, PY7APS/Ø, VK9VM (New Guinea), VS9MB, VP6PJ, VP9FC, ZD3I, ZD8JP, and Z54KL.

Sticking to SSB paid off for G3GIQ (Ealing) who rang the bell with FP8DD, KG6FAE, MP4BGE, MP4MAX, MP4TBO, PY7AOA/Ø, VS6, XW8AL, 8R1S, 9M2's, 9M6, 9V1, 9X5GG, and 6O1GB. On the other mode, G3TLX (Edgware) had CW contacts with TA2AC and with an assortment of UAØ's.

Still on the theme of conditions, G3VDL found 21 mc about the best band during the month, albeit there was much short skip, and a very bad patch around May 26. The best contacts during the month, CW to 60 watts and a dipole, were FB8XX, 5X5AU/K6KA, ZD3I, ZE4JJ, and ZE3JO/P.

G3VVC (Bishops Stortford) does not so much as mention the condition of the bands, but this seems to be mainly due to the need for revision in certain subjects in which Andrew is shortly to have his knowledge tested! However, he did manage to find CN8CS, 7XØ, MP4, and 9H1, all in between the studies and out of TV hours.

As always, G3NWT (Risley) has something to say about all that is meant by "conditions" and this time he kicks off with a short SSB list on 21 mc, which includes VK3ABA, VK9XI, VK6DR, YAIDAN, PY7AOA/Ø, HL9KQ, and ST2SA. Geoff continues from this and enquires why the low end of 21 mc from, say, 21·100 to 21·150

kc, is so totally neglected in the SSB context while the similar area of Twenty is intensively used? As he says, some movement in this direction, and away from the W's would improve significantly the DX capability of the band under a given set of conditions.

Reverting back to the Novice W stations, G3IDG says his tally of them is now up to 203. One of these, when tackled about his fine sending, admitted to being an ex-Navy man who could copy 50 w.p.m. but lacked the theory! Another, when called, came back with another CQ—but tackled the words "No G" on to it—seems even the novices are getting fussy. As for his other QSO's, Allan mentions working four new ones on the band, in CR4AG, UJ8AG, TA2AC and ZD3I.

#### Twenty Metres

A Heathkit DX-40U is the Tx used by G3VOK (Luton) to chase the DX; since the addition of a homebrew VFO, things have been rather easier, and a couple of evenings yielded contacts with 9H1, U18, IL7, YV4, VP6, VP9, UD6 and KP4.

A few forays on 14 mc by G3NWT produced 9M2GA, VP2LA,

PY7AOA/Ø and VK1GD. G3VDL damns the band with faint praise, saying that there was "plenty of short skip and noises!" Nevertheless, he considers three contacts worth a mention—with VP8HJ, CE3EX (for his first CE and the CE's first G) and ZE3JO/P.

Business has rather reduced the activity of G3TLX, but Ron did quite a lot even so, with 20m. CW yielding FG7XT, HK4JC, all W call areas, VK2 and 3, and ZS2PX.

SSB only this time from G3GIQ, who mentions HKØQA (San Andreas), KH6GHI, PY7AOA/P, TI8LM, VK2AVA/P, VP2LA, VP8FL, TF2WKM, 8R1S, and 9Y4VT.

Leaving out of account the black-outs and things, GM3SVK seems to feel that things were not *too* bad on 14 mc—at any rate, Fred found such items as EP3RO, HI8XAL, HS1XZ, HV3SJ, UA1CK/JT1, VP8IU, VQ9EF, YA5RG, YN1AW, YS10, ZD3I and 4W1L. Only one contact, on the other hand, was mentioned by G3PQF, who worked ZD3I.

G3UTS seems to have got nicely into the swing of things with his KW-2000A and his list shows this up. All W call areas apart from the fifth and seventh, KP4, YV, ZP, 6Y5AK, VP9FK, HP1MF,



Trevor Murgatroyd, G3AYK, 42 Derwent Avenue, Garforth, near Leeds, Yorkshire, first became involved in Amateur Radio in 1934. After war service in the R.A.F. as a radar technician, he started on the air with a CR-100 as receiver, which is still in use. The Tx is a Tiger Olympic, working with a Joystick, and his favourite bands are 10 and 15 metres. Trevor's job is with the C.E.G.B. locally, and he is an active member of the Leeds Amateur Radio Society.

HK5AOH, PJ2CE, HI7XTM (who comes from Oldham, Lancs.) and LX1DV were hooked on SSB, with a few VE's and SVØWO to prove out the CW arrangements.

One wonders how much time was spent on the band by G8DI, as he turns in a *Nil* report—apart from PZIAP, who ran too fast and got away.

In the middle of a period of no-signals, on several occasions G3NOF happened upon W6WLQ at S8 SSB around 1400. The mornings were mainly unproductive at 0700, but weak signals from FO8, KL7 and KH6 were heard occasionally by 0830. The afternoons again have been dull, but a few Africans appeared after tea. North America has sometimes been heard for a short time around 1100, but was far better in the late evening. Contacts were booked in with

## Reporting the HF Bands

DU1FH, KL7, PYOAOA/P, VK2AVA/2 (the QSL for which came back by return from WA2RAU), VK's, VP2LA, VQ9HJB, assorted W6's, W4UAF/KH6, 9G1BH/KH6, ZD3I, ZD9BI, and so on—quite a good bag, even by the G3NOF standards.

G3NUT seems to have had a successful month, with various rarer U-type calls, MP4BEU, ZD3I, TA1TK, 5H3KJ, CT3AS, VK4MY and VU2VZ. Jack had the mortification of failing to connect with G5RV/OD5, ZD2BAX, VP2GLE, and VK8HA—but that's how it goes!

### QSL Questions

A large pat on the back from G3GIQ to the operators of the PYØ expedition, who came straight back by return airmail although Henry only sent one IRC; others who were quick off the mark were 8R1S and MP4MAX.

Useful information on the essential matter of where to aim the card comes in from G3VDL, who mentions the following: SVØWLL via K3VAL; ZD3I via Yasme; VP8HJ via W2CTN; LX3QT via DJ6QT; DJ9UC/EL2 via DARC; FB8XX via FR7ZD; PJ3CJ via Box 2147, Curacao; HI7MRC via Box 476, San Pedro; VP8JD via CX2AM; 7Q7LC via W4NJF; VS6FX via W2CTN; and ZS8L via Box 194, Maseru.

A counterblast to G3IDG on the subject of QSL cards (p.93, April) was rather to be expected and sure enough it came, from 3C3EFX, who used to sign GM3NQB. He makes a valid point when he says that if a chap for some reason wants a card back by return airmail, then surely he is entitled to ask for it; in his own case, he moves around a lot, and so to work for any sheepskin he has to ask people to QSL direct to get the cards in before he has another move. A parting shot—Bill wants to know what the RAIBC would be able to do with all the IRC's and s.a.e.'s?

Logs for ZD9BH and ZD9BI (the latter is the correct one and only a few QSO's were made before the

change of call) are sent weekly over the air to GB2SM, and all incoming cards, either by way of bureaux or direct, will be handled by them, in the person of G3JUL.

ZB2AM says that he will be QRT on the Rock by the time this is in print; all the logs will be with W2HGT, who has handled a total of over 10,500 QSO's—which means a tidy lot of cards! Mike also mentions that a character signing "ZB2F" and giving his name as "Tom" has been causing rather a lot of annoyance to the ZB2 QSL Bureau.

This is also mentioned by ZB2BA, who also seems to have a "shadow"—but just in case his piratical friend takes it into mind to send out cards as well, Ken sent us one of his own! The odd part of all this is that your scribe now has *two* of Ken's cards, (one as G3RFH) and *neither* is for a QSO! Anyhow, the point here is that ZB2BA will have done his QSL chores by now, all being well, and anyone wanting a card should try G3RFH—*QTHR*.

SWL Peter Brent writes from Malta, to say that he will be there till March 1968, and will be sending reports to G stations; he particularly mentions that the receiving gear will be as stated on the report, namely triple diversity receiver and rhombic bearing so-and-so. However, sadly, with all this gear, he will only be able to quote frequency to the nearest 50 kc or so—oh well!

VR1Q has been heard around giving G3NMH as his QSL manager—the only snag being that G3NMH has never heard of him! The result is simply that a lot of people are going to be disappointed, and in the meantime G3NMH is being inundated with unwanted cardboard.

### Contests, and Results

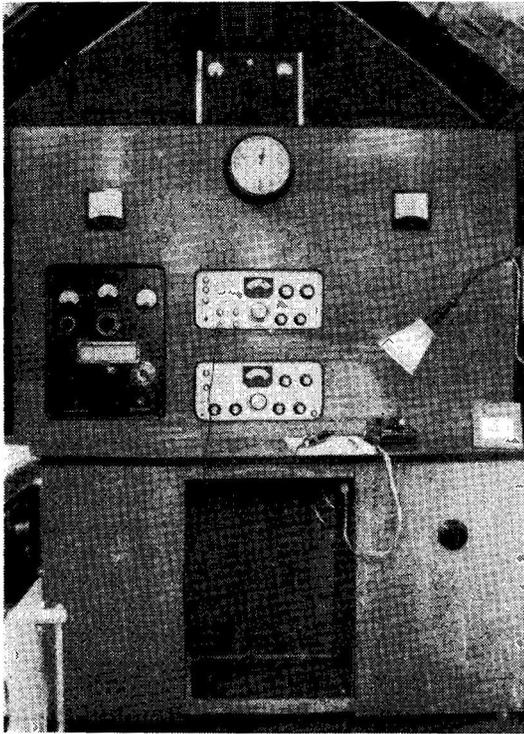
Last time it was the CQ WW Contest (Phone) results, and so this time it is the CW event. In the multi-operator single transmitter category, G3SSO placed in the Top Six, with 756,288 for fifth place; and amongst the single-band entries

### TOP BAND LADDER

(G3U-- and G3V-- stations only)

Starting date, January 1, 1966

Station	Counties	Countries
G3UTS	91	15
G3VGR	86	15
G3VMW	83	16
GM3UVL	82	13
G3UBW	80	18
G3VMK	70	11
GW3UUZ	66	15
GW3VPL	64	16
G3VES	63	16
G3VLT	63	13
G3VOK	61	15
G3UVT	57	11
G3UXP	56	9
G3UGF	54	10
G3VMQ	52	14
G3UJS	51	12
G3USE	51	12
G3VTY	49	9
G3VSL	47	9
G3UGK	43	13
G3VLX	43	8
G3UMK	39	7
G3UCS	36	?
G3VSI	19	4



Ron Plant, G5CP, of Wingerworth, Chesterfield, who has been licensed for many years, runs two stations—one beside his bed (above) and the other at the /A location, a cottage on Bole Hill, Wingerworth.

one notes G2BOZ on 28 mc, with a score of 40,860; G3HCT on 21 mc with 233,988; and G3FKM on 14 mc. G3HDA led the U.K. contingent in the all-band table with G2DC behind him; to all, our congratulations on their performance. It is interesting to notice that the G operators leading in the all-band, 28 mc, and 21 mc categories are related—which probably makes a unique event that even the W's can't better, or even equal.

The DARC WAE contest comes up during August 12-13 for CW, and September 9-10 for the Phone section, to tear up the bands. Apart from the usual six-digit contest exchange, there are other features that make it a little different. Full details can be had from DARC, via DL7EN, QTHR. It is strongly suggested that the entry be made on the official DARC contest log-forms, which can be obtained from the same source. Incidentally, as there is a power classification in the results, this one could be of interest to the lower powered types.

#### Aerials Permits

Our preamble last time touched

off a response from G3NOF, who has a 30 by 30 garden, and came to the conclusion that in order to do better, he had to get the beam up from the thirty-foot mark, which was obviously not "on" with a guyed pole unless the guys went outside his own property. Therefore, he applied for planning permission to erect a Heathkit Tower—not very hopefully, as it was known that the local authorities had handed out a few weird decisions. However, Don got his permission, and put the tower up, with a pole on top, thus getting the beam to forty-three feet. No comments from the neighbours (who probably had got used to the beam at its old level). But G3NOF takes every chance opportunity, in conversation, to point out that his tower and beam has planning permission, and that it is insured against any damage caused if it should fall down. A final, and very pertinent comment, from G3NOF is that, while one does not want to be un-neighbourly, it is good policy "to notice what goes on around you"—it is surprising how many folk are prevented from using a house for business by a clause in

the deeds, and yet, a few doors away from G3NOF, neighbours are running a haulage business, a taxi service and one chap has even built an office in his back garden. No mention has yet been made to them of their transgression, *but* if they mention Don's aerial—well, that would change the situation!

#### Top Band

We have another letter from W1BB, covering various points of interest on this band. KH6JJ has moved, and is now on Oahu, where his space is much more restricted for Top Band operation, albeit he is still interested and hopes to have things organised in time for the next season. Activity from W7 seems to be by W7DL, W7SFA, and W7DOL/7 in the main, with the latter reported heard in the U.K. at least once during the last session. The DX-pedition by W0VXO started on February 5, at PY1NFC, and covered a total of nine countries in a tour that ended on February 25. Results were disappointing, in part due to high local noise levels, and partly to poor propagation conditions.

GM3UVL (Glasgow) has gone up two in Counties, thanks to GM3WIG and GC3RXH, and passes on the news that this summer G5PP will probably be restricting his GM/P holiday activities to Selkirk and Perthshire. Tough luck on the county-chasers, but Bob and his

## FIVE-BAND DX TABLE

(New Cycle)

Starting date: January 1, 1967

Station	Countries	28 mc	21 mc	14 mc	7 mc	3.5 mc
G3IAR	173	57	104	138	45	48
GM3KLA	88	23	16	44	30	43
G3VOK	58	7	1	46	6	36
G3PQF	76	37	15	23	26	23
G8DI	100	23	69	71	33	21
GM3SVK	160	24	98	120	35	15
GM3JZK	75	30	30	50	20	10
G13GTR	44	1	12	35	12	9
G3VDL	89	24	58	57	31	7
G3VWC	39	4	24	20	22	5
VP8HJ	69	17	9	64	1	4
G3NUT	73	—	44	32	18	—
GM3JDR	156	—	122	93	—	—
G3TTG	38	—	—	38	—	—

Note: Placings this month are based on the "3.5 mc" column.

very accommodating XYL deserve a nice quiet holiday now and again—they have worked very hard over the years in the 160m. GDX interest.

GM3WIG (Hawick) comes in to bat at this point, and advises that he is now in business well and truly, every evening between ten and

eleven o'clock, and until after midnight on Friday nights. George is running 10 watts into a strapped-up G5RV aerial which is getting him out quite well down into the South of England.

Two cards from GW3UUZ (Nash Point Lighthouse), the first one with a score for the Table, and a moan about the disruption caused by the contractors' works. The second says he also has to study for exams., which keep him hard at it, so he "flogged the rig" but hopes to get back on Top Band in the autumn, probably using SSB.

It will be remembered that G3VLX (Sidcup) had paint-pot QRM a few months ago—since then he has had the secretarial chores of the local Club to do, NFD, and an Exhibition station to be concerned with—and the prospect of another bout of painting to come! It should be noted that with all his problems, Deryck has still gone up four in Counties.

A brief note from G2NJ (Peterborough) reports his revised Table score, and mentions G3IUD/A in the Scillies, and EIØBI, on Bere Island, both on CW, for new ones.

Brief note and Table entry from GW3VPL (Porthcawl) advises that he is keen on making 160m. CW skeds with any reasonably DX-y station during the summer months; offers to him direct at 300, New Road, Porthcawl, Glam.

What between exams. and the lure of the HF bands, G3VGR has almost lost interest in Top Band DX—though like many others who claim to be in this condition, Dave has added four new counties to the score over the last couple of months. Incidentally, G3VGR had his "baptism of fire" during NFD, and found it very hard work indeed!

G3UTS does not claim to have lost interest, but has obviously spent less time on 160 metres. However, he lists the counties he wants—four Scottish counties which he should see fairly soon if all the expeditions so far promised come up trumps, Alderney and Sark, which he has hopes of, and, still, Hereford, which nobody thinks rare enough to justify an expedition. It will be interesting to see from the G3UTS letters over the next few months which skittles go down first out of that little lot.

Exodus from 160m. to the HF bands is detected by GM3SVK from his lair up in Shetland. Fred mentions that anybody still looking for Shetland had better take a firm grip, because he will QRT from there in November, and reckons there will be precious little activity on this band after then.

## DX-Pedition Arrangements

We are asked to say that G5LJ and G3DUV will be mobile in Southern Ireland during end-July/early-August, signing EI6AT/M and EI7AT/M respectively. Their main rig will be a KW-2000A, operated on 15-20-80m., with EI6AT/M also on two metres and possibly 160m. No skeds or frequencies, but just working what comes through whatever holes there may be.

Another sort of DX-pedition will be that by 5X5AU, who is coming to this country in September, *en famille*, in a Dormobile fitted with a Swan 350 Transceiver and a 160-metre rig. He will have a U.K. call-sign and hopes also to get a reciprocal licence for the Knokke Rally in September.

On the 160-metre front, at home,

TOP BAND COUNTRIES  
LADDER

Station	Confirmed	Worked
<i>Phone and CW</i>		
G2NJ	98	98
G3UBV	76	91
GW3PMR	71	77
G3IDG	55	59
G3VGR	49	86
G3VMQ	32	52
G3VLX	18	43
<i>Phone only</i>		
G2NJ	81	81
G3VMQ	22	40

(Failure to report for three months entails removal from this Table. New claims can be made at any time.)

a mention of some of the DX-pedition plans for the band: The first is by the Chester Radio Club, who will be using GM3GIZ/P from July 8 to 14th from *Orkney*; activity each evening to commence, using a KW-2000, as soon as conditions permit. The operators will be G3ATZ, G3DRB, G3TZO, GW3LDH, GW3TOW, G3UOH, G3FNV, and GW8AOC. During the daytime the rig will be running on the HF bands. Tentative skeds may be made by contacting G3TZO, *QTHR*.

A second one is notified by G3SDK who will be there as E18BK/P/M during July 15-28, on the three LF bands. Operation will be from Limerick, Dingle, Killarney, Cork, Waterford, and Wexford, based on a QTH near Tralee. QSL cards should go either *via* bureau or direct to G3SDK, *QTHR*. And if you should hear GW3SDK at the beginning or the end of the period, it will be Mike *en route* from Luton.

Worcester and District ARC have it in mind to activate some of the rarer U.K. counties on 160m. during a spell of two weeks at the end of July. In addition, they could possibly do a few of the GW ones (weekends only) if requested. They specially ask for suggestions, and from these will sort out a short-list to be dealt with. Correspondence, as soon as possible, please, to G3TQD, again *QTHR*.

On now to the first week in August, when G3VTY, G3VQQ, and G3WDW will be operating /P from Nairn, on CW. If things turn out OK, they will have a second week, during which they will either stay put, or move to other counties, depending on demand and activity.

#### Eighty and Forty

As far as DX is concerned, hardly a mention. GM3SVK managed 9H1AB on 80m. CW, and then renewed the feeder to the Vee used on Forty, which enabled him, on the key, to raise KZ5GN and PY4AO, plus some quite interesting African DX heard in the evenings. Fred mentions that by the time any of this reaches the readers—or if anyone reads it!—MP4TBO and 9V1NV will have put in an appearance on 7 mc. G3UTS mentions a QSO with VP6BX on Forty CW.

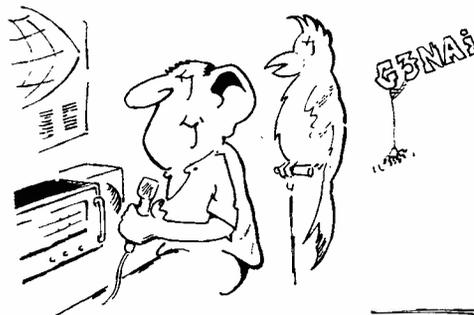
GM3WJF (Hawick) is at present operating with 25 watts on 3.5 mc, but hopes shortly to lift the power to the 60-watt level and transfer his energies to the other bands. Down in the west, G3NOF found things a little rough on the HF bands, and so checked 3.5 and 7 mc, only to find them also virtually dead at times.

G8DI says that GD3FBS is active once again, and he also had a contact with CX8CZ. G3NUT simply dismisses these bands in the phrase "nothing of interest." On the other side of this particular coin, we notice that the real specialists still found something here and there. For instance, G3TLX offers W1 to 4, VE1, and FW8RC/MM on Eighty—but comments that he felt a little deflated when the FW8 told him he was running two watts and off the coast near Liverpool! As for Forty, he had TI2PZ, LU2ZI, HK4EX, PY's, VP1MW, UA9's, 4X4's, assorted W call areas, VE1, VE2, and XR2A/MM, a Norwegian expedition station, cards for which should go *via* the Norwegian QSL Bureau. G3VDL worked LX3QT, and CX8CZ, for his first South American mainland contact on 7 mc, plus a character signing—unless we misread the G3VDL handwriting—A1R, *in* the Pentagon, Washington.

G3VOK bewails the loss of his long-wire and now has only 132 feet, but up a lot higher and straight all the way, on which he worked W11ZY on 80 metres.

And finally, a note of nostalgia: Reading through the April CDXN, G3LRO noticed the comment about GM3IAA being the early bird catching worms, and it took him right back to 1945, when he was a youngster "in the mob" in India. A pal of his had in his kit-bag a copy of a pre-war *Handbook*, and G3LRO devoured it avidly—the point being that the aerial known as the "VS1AA" was the one that G3LRO tried in his attempts at getting the DX as an SWL, starting off the old familiar chain leading, years later, to the ticket. And now, years later again, when people think of G3LRO as getting on in the Amateur Radio context, there is VS1AA, now retired to GM3IAA, *still* showing 'em how to do it. And we might add, still wielding a nifty tennis-racket!

And there you have it; the deadline for our next is first post on Monday, July 10, which means posting the day before, at latest. The address, as always, is CDXN, SHORT WAVE MAGAZINE, BUCKINGHAM. And till then 73, and good hunting.

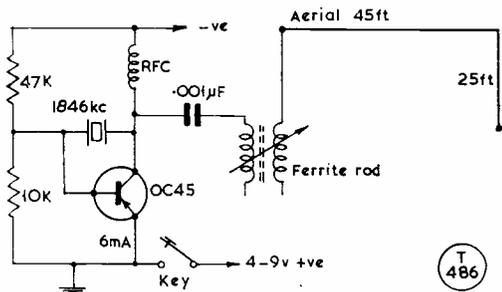


## QRP TRANSISTOR Tx

In some notes on the circuit shown here—about as simple a CW transmitter as one could wish for—G3VRU (Worksop, Notts.) writes that he has been getting reports of 459 (22 miles) and 579 (10 miles), running less than a tenth of a watt, with 9v. HT.

As indicated, the aerial configuration is also quite simple—70 feet of wire under the “average back-garden” conditions, using a ferrite-rod coupler.

It was shown in *SHORT WAVE MAGAZINE* some years ago that interesting results are possible on Top Band using milliwatt transistor transmitters—indeed, at one time (in the “Transistor Topics” series during 1954) we ran a Counties-Worked table on TTx, and in the December 1954 issue we were able to show that it was possible to work over distances of at least 15 miles using not only home-made (point contact) transistors but also a photoelectric PSU with ordinary daylight as the sole source of power! This was 13 years ago, and it is now exactly the system used for all satellite power-supply systems, since the first one was launched by Russia in October 1957.



## TENTH ANNUAL JAMBOREE-ON-THE-AIR

All interested in joining or co-operating in this annual Scout radio event—the objective of which is to link up Scout groups throughout the world—are reminded that the activity period will be 0001, August 5 to 2359 GMT, August 6. The key station overseas will be K7WSJ, at the World Jamboree site, Farragut State Park, Idaho, in continuous operation for the 48 hours on the following frequencies: 3525-3590; 7025-7290; 14025-14290; 21025-21290; and 28025-28590 kc—in each case the first-named is the CW channel, and the second will be SSB.

Another very interesting station, on for the Jamboree, will be GB3BSI, at the original Scout Camp on Brownsea Island, in Poole Harbour—see p.173, May issue, *SHORT WAVE MAGAZINE*.

Any U.K. AT-station operator, in touch with his local Scout organisation, can join in with this Radio Jamboree by offering the hospitality of his station to demonstrate Amateur Radio to keen youngsters—and it need not be all telephony

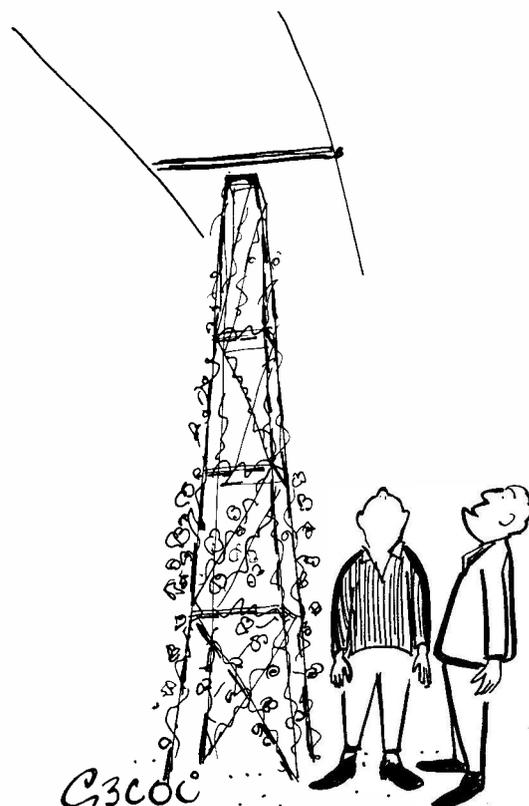
working, for Scouts are also taught Morse. The U.K. organiser for the event is: L. R. Mitchell, G3BHK, Katoomba, Tyneham Close, Sandford, Wareham, Dorset.

## U.K. AMATEUR LICENCE STATISTICS

At our request, the GPO made its most recent count to May 31, the last convenient month-end figure before publication, and came up with the following: Amateur Sound Licences (A)—12,283; Licences (B), which are non-Morse UHF bands only—575; Mobile Licences (A)—2,284; Mobile Licences (B)—11; and Amateur TV, 182. This makes it that officially there are now in the U.K. 12,858 AT-station licences in issue, of which 2,295 also have the /M endorsement.

## TWO-BAND WEATHERADIO Rx

In the Nova-Tech advertisement on p.199 of our June issue, the size of the Weatheradio Receiver should have been given as 5½in. x 3½in. x 1½in., and not as printed. The cost of this miniature transistor portable is £8 complete.



“ . . . Don't work a lot of DX but the sweet-peas are doing FB . . . ”



## SHORT WAVE LISTENER FEATURE

### STARTING AS AN SWL—NOTES, NEWS AND GOSSIP—THE TEN-METRE SLP—IDEAS AND SUGGESTIONS FROM THE MAIL

By *Justin Cooper*

**O**FTEN we hear from folk who are right back at square-one, having the urge to find out about Amateur Radio but knowing absolutely nothing in the way of going about finding out; a state most of us start in, and one that often is resolved by accident. We frequently get such letters and hope these few notes will help not only recent correspondents but any others who may see this issue.

The first move, obviously, is to join a local Club and get together with kindred spirits. Immediately after this comes the acquisition of some sort of receiver with which to listen over the amateur bands—the second move because when one is first starting, the knowledge obtained by Club membership is of great assistance in making sure that one gets suitable equipment at the right sort of price, with the aid of other members' advice. With the receiver comes the question of an aerial, and here again in most cases advice and practical help comes first from the local group.

The next phase, almost inevitably, comes on sight of a station and its collection of QSL cards, when the SWL finds that he too can obtain cards for the trouble of sending a report. A report from an SWL, to be any use to the recipient, has to be detailed, and compare with other stations from the area, or cover several periods of hearing, or give information that the recipient would like to know—such as that when he called CQ, several people went back to him whom he did not hear. Often this is put on to a SWL form of QSL card (samples of which can be obtained from various printers regularly advertising in the *Magazine*). Personally your J.C. much prefers a *report sheet* with more room to give useful information than a QSL card. As soon as this phase is commenced, or even before, our SWL becomes aware that the prefix part of a callsign depends on the operators' whereabouts, and wants to know how to find where a particular prefix comes from; at which stage, a stamped addressed envelope and sixpence will obtain the Country Prefix List from Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1. At the same time, if one's gear is in its own "shack" then a worthwhile purchase is a *Zone Map* to put on the wall (and maybe decorate with coloured pins as the various parts of the world are heard).

Probably, later on, the urge actually to transmit will be felt, and then the R.A.E. has to be passed. The local club will know where there is a course running, and a lot of useful dope on regulations, the exam. syllabus, the Morse Test, and many other things can be obtained by

writing to the GPO, at their Headquarters in St. Martins-le-Grand, London, for a copy of their free leaflet *How to become a Radio Amateur*. There are also various inexpensive books available to help the beginner.

And, of course, as with any other subject one may take up, read all that you can get hold of on Amateur Radio and its allied subjects, by way of the local Public Library, any and all of the magazines on the hobby, and, even though it hurts the pocket, by the purchase of as many books as can be afforded. Radio as a hobby is a thing of *ideas*, and inspiration does not just happen—it needs feeding, generally by a scan through all the available literature, back numbers and so on, until the mind fastens on to something. Often the result is an amalgam of many other peoples' published work, as experienced by re-reading half-forgotten articles on the topic one is interested in at the time.

So there it is, and if any of our beginners get as much fun out of it as your J.C. does, you can bet they will never regret starting!

#### NOTES AND NEWS

Our first offering this month is a long and very interesting letter from *D. Walsh (Carrick-on-Suir, Eire)* ranging from a few comments on the use of BC receivers for HPX'ing to the possibilities of F-layer reception of DX signals on 50 mc or even 70 mc. Des points out that, in order to use a BC set some form of BFO needs to be hooked up to listen to the CW or SSB stuff. As he says, a BFO can be quickly made using a transistor and an old IF transformer, the tuned winding being the primary of the IF can, wired into the collector of the transistor, with the secondary used as the feedback winding and hence being between the base and the base resistors giving the bias. One could add that a small reduction in the existing, fixed, capacity of the tuned winding, and the paralleling of a small variable capacitor across the fixed one—25  $\mu\mu\text{F}$  or so would be about right—would enable the thing to tune right across the IF pass band. The unit could well be built on to a small bit of *Veroboard*, and its DC supplies obtained, if it is a *p-n-p* device, by tapping across the DC bias in the cathode of the output stage. Ability to receive CW and SSB opens up a whole new world to the SWL, thanks to the widespread adoption of these modes for DX working.

Congratulations to *R. Bacon (Thetford)* who adds to his score on the CW ladder—and mentions as an aside that he has now passed the Morse Test! On the other

hand we commiserate with *G. S. Taylor (Wolverhampton)* who explains a thumping increase in his score by saying that being ill gave him more time for SWL activity and re-reading of the HPX rules, which enabled him to comb out the log and find a few overlooked ones.

#### DX/TV Watchers

The devoted band of DX/TV addicts is led by *D. Boniface (Ripon)* who reports the start of the season and, with it, a bumper crop of Spanish TV signals. Dennis has dipoles up for most of the channels, and a four-element beam in addition to a dipole for the R3 and R4 channels which are located in the area we normally associate with Band II—that is, the FM BC band. Just to prove his versatility, he adds quite a sizable increment to his previous score in HPX, thanks to the activity of the ten-metre band, on which a dipole feeds an RF preamplifier, which in turn works with an R.208 used as a converter, its output being fed into an HRO-M.

Another of the TV/DX watchers is *D. Bowers* who sends several very good pictures to prove it, mainly of Spanish and French stations; a pity that it is in the nature of the reproducing process that his pictures cannot be used here. Doug says that if anyone is interested in getting started in this aspect of DX reception he has full details of the necessary mods. to the Bush TV53 or TV62 models, which are the types most favoured for this work. Letters should go to him direct at 95 Grenfell Avenue, Saltash, Cornwall.

Yet a third exponent of the pictorial DX art is *Barrie Stephenson*, who also comes from Ripon and seems set fair to make Dennis Boniface look to his laurels. Barrie has had yet another change of shack and has got the aerials (up in the loft) at a height of around 50 feet so the change is not all for the worse. As an aside, he mentions that he has landed a job with the BBC; we hope he has every success, and as he is going to Evesham first and later to Sutton Coldfield, no doubt he will come under the eagle eye of G3BA.

#### The 10-Metre SLP

We certainly failed with our crystal ball in choosing the date for this one; not only were the comments about it pretty acid, but the number of logs was much lower than for previous Set Listening Periods. However, there is no doubt that the standard of the few logs that came in was very high indeed.

The pick of the crop, as far as the logs were concerned, was undoubtedly that from *Norman Henbrey (Rye)*, who seems to have heard pretty well all there was to be heard, reporting in all on 78 QSO's logged during the period of SLP! Perhaps the cream of these was represented by XW8BJ, heard working G3IAR; this was not mentioned by any of the transmitters—as was reported in "Communications and DX News" by G3KFE last month—even though he appeared to be putting quite a good signal round this neck of the woods for quite a time. Incidentally, XW8BJ also appeared in another of the SLP logs, that of *G. J. Smithies (Halifax)* which was, in fact the next best effort, and could well have been first but for a couple of inaccurate (but nearly right!) loggings that your conductor regrets also to have heard and

logged at the same time as that given by G.J.S. Never mind, that is the way of things. The other logs received had comparatively few entries, though in all these cases the G listings were useful and interesting. Some ground-wave ranges of 100 miles and more were recorded!

#### Research Project

*P. D. G. Milloy (Doncaster)* always has something of interest "on the brew," and this time is no exception. He is interested in trying to assess the factors that go into the compiling of HPX scores, and to that end, of course, he needs information about the results and equipment at other SWL stations. What Peter needs is for as many SWL's as possible to write to him, giving details of the number of new prefixes logged during selected periods of operating, chosen at random by the reporting SWL. In addition, brief information on the location—good, bad, or indifferent in the radio sense—the number of prefixes already in the bag at the start of the selected period, and the number of hours in the period chosen. Further brief details could include data on the equipment used, age, number of years or months of experience on the amateur bands and, of course, aerial used. Your scribe would add to this by suggesting that all the reports should be on periods taken, at random as Peter suggests, during a specific week—say, the second week in July. Results should be sent direct to him at 23 Park Avenue, Sprotborough, Doncaster, to arrive before August 1, so as to give the lad a chance to collate them all before his nose is once again forced into contact with the academic grindstone.

Turning now to the rest of the mail, we hear from *H. M. Graham (Harefield)* of his doings and notice that most of his HPX additions have been of the "rare DX" variety, including TG9EP heard putting a very big signal into the U.K. late on the evening of April 23, the band being Twenty. A VP8 was followed for some considerable time one evening, through several contacts, and because he did not use phonetics he still is not logged for certain although the call was thought to be VP8FKI; maddening, this sort of thing, for the SWL, and even more annoying to the DX man trying to decide whether the station in question is worth chasing. One query is U5ARTEK, who is perfectly legitimate and is a "special" Russian call.

#### SSB Trick

On now to *A. Hydes (Enfield)* who reports a large rise in his HPX score mainly because of making the IF stage *regenerative*, so as to be able to resolve the SSB stuff. The method is to run a wire from the primary of the last IF transformer back to the previous stage, just sufficient to make it oscillate. One might comment that this idea means that some method of controlling the gain of the stage becomes necessary so that the thing can be made either to oscillate or to remain stable. This is most easily achieved by connecting the screen of the IF stage concerned to a potentiometer wired so that rotation of the knob varies the screen voltage of the valve. It will also probably be found that the AGC action, when the stage operates in the oscillating condition, is too high. This can be remedied by earthing the AVC line and controlling the gain of the receiver with a manual control.

Rather the reverse problem is posed by *A. L. Wood* who cannot use his receiver at all until some kind soul can help him with details of the connections going to the three Jones plugs on the right-hand front panel. In addition, it seems that Alan has managed to acquire a transformer which (he has been told) is suitable for powering the R.1155, and so he would appreciate details on a suitable PSU—and, one would think, output stage—for his Rx, together with data on the usual mods. to make it more suitable for use as an amateur receiver. All correspondence should go direct to him at *5 Acacia Terrace, Ashington, Northumberland.*

This time, we received his entry for HPX from *Iain Paterson (Carstairs Hospital)* in the form of a QSL card, and a very nice, and individual, one it is too. One rather gathers that Iain has so much to do that there just aren't enough hours in the day for all his activities.

Some people seem to have to work under extreme handicaps, such as *D. Sapsworth (East Ham)* who is located in the lee, as it were, of a tall factory building that does him the double disservice of absorbing the DX and generating electrical interference!

Technical types will be interested to hear that *A. P. Legg ((Sutton, Surrey)* is thinking seriously of replacing the front-end circuitry of his SR-600 receiver by FET's; this is an excellent scheme if cross modulation is a problem, but it is one that needs care both in the thinking stage and later in the practical part of the proceedings if disaster is not to result—your poor old scribe *knows!*

#### New BBC Feature

A new departure in the broadcasting field, of interest to all SWL's, is the announcement by the BBC of a regular weekly feature programme slanted to SWL's. It is to be called *World Radio Club*, and will go out on numerous frequencies at various times. Saturday morning at 0745 GMT will find the programme on 498 and 324 metres in the Medium-Wave band. On Sundays at 0245 GMT it will be on the SW/BC bands between 49 and 19 metres; Tuesday evenings at 2100 GMT offers it on 211 metres on MW, and the SW bands between 31 and 13 metres; and again at 1245 GMT each Thursday, on the same channels as on Tuesday evenings, except that the Thursday transmission does not go out on 31m., being replaced by an outlet at 11 metres. For all the dope, and a membership card, drop a line to the BBC at Bush House, London, W.C.2. The start of this ambitious programme is slated for July 1, and the producer is John Pitman.

The accumulation of prefixes to a sufficient number to get an entry at the bottom of the Table, but heard on 80 and 40 metres only, is the self-set task of *Richard Allisett (Guernsey)* who has a first crop of 201. However, Dick has a converter in hand for the HF bands to hang on the front of the TCS receiver, and so the next entry should reflect its success or otherwise; all this is being done in the time left over after the regular Morse practice, which is being undertaken while the R.A.E. result is awaited.

A first entry comes from *R. D. Sexton (Gt. Missenden, Bucks.)* who is at present at London University and hence can only get to his receiver, a KT-340, when he is at home. He was surprised to find that nobody in his college is at all interested in Amateur Radio, so he

has joined the Civil Service Radio Club. The writer would suspect that the absence of other SWL's or licensed amateurs at London University is unlikely, and that after the appearance of this piece there could be several faces carefully scanning the ranks of the "first year in Chemistry" crowd for SWL Sexton.

#### Novice Band Notions

Apropos the comments on a "Novices Band" last time round, *Pete Cayless (Exeter)* comes out very much in favour, but with a difference. He would like a compulsory Novice period, CW only, Top Band only, for all new ticket-holders—a proposal with which your conductor could agree. There can be no doubt at all that a period on the key is the *only* way that a new operator can become a good *phone* operator—odd, but nevertheless true, and probably because it is only in this way that the period of learning operating procedures and getting the first on-the-air rig up to a reasonable standard of efficiency can be effectively completed. This has nothing at all to do with the old CW/Phone controversy—which has been with us for 40 years, but merely with the practical application of the principles taught in the R.A.E., and the unwritten but essential rules of conduct which make the bands usable in comfort by all. [over



If not Scotland's youngest SWL (at the age of twelve) Colin Wilson has every intention of being one of its youngest holders of an amateur licence! Already well on with his Morse, he has also built several circuits successfully. The inspiration of it all is Colin's father, who is GM3VCO, Fraserburgh, Aberdeenshire. Good luck to them both!

That CR-100 belonging to *Phil Ashton (Stowmarket)* must have played up just a little *too* much, as he says he has now disposed of it and acquired an 888A, with which he is very pleased indeed. The R.A.E. having been taken, like many others, Phil is now waiting for the results!

Just a little farther along in SWL development is *E. K. Law*, to whom congratulations are due on account of his very new call, G3WGE. As *Walsall* is DX to your scribe, maybe he will oblige with a new county some time!

Right at the other end is *D. Henry (North Berwick)*, who is entering the Ladder at 252; these were acquired on a selection of simple receivers but by the time this appears David will be in full cry with the help of a CR-45, to supersede all the earlier machinery.

Steady progress by *Mrs. M. Worbey (Dartford)* who has been helped by the fact that the apparent aerial problem was finally resolved into a receiver snag, and cured. She mentions the stations signing AJ1AA and AJ1AZ in her list as queries—these are, in fact American MARS (Military Affiliate) stations and as such unfortunately cannot be counted.

Another one to "pass out" is *B. A. Smith (Ruislip)*, who sends in a final claim for HPX, and adds that he is now G3WCY. Our congratulations to Brian, and long may he enjoy his new call.

*I. A. Lucking (Stanmore)* is a "professional" amateur type, and with his first entry sends in a letter in which he complains that he is going to be away from the receiver for a couple of months as he is taking the final C. & G. Telecomms. Technician exams.—quite a tough nut to crack. Ian has proceeded through the chain and is now using a KT-320 on the lower frequency bands, receiving DX/TV, and is also able to take the amateur TV transmissions to be viewed on Seventycems.

Next on the pile is *Jim Dunnitt (Singapore)* who is a little "out-of-phase" with the mail; his latest letter indicates that he is now the owner of an HRO, possibly an original model, and wants to know the aerial input impedance—that's an easy one, Jim, 400 ohms—and for the rest look up the SHORT WAVE MAGAZINE issues for November 1965, January and February 1966 in which will be found the three parts of a piece giving most of the essential information on the pre-war and surplus HRO's, of both the UX and Octal-based varieties.

Any amateurs or SWL's in the area of Newport, Mon? That query comes from *A. Jones (Caldicot, Monmouthshire)* who would like to meet kindred spirits; his address is 14 Shakespeare Drive, Caldicot.

By the time this gets round, *D. Douglas (Dundee)* will be "coming up for air" from his University exams; must be pretty tough going when you have reached the age of 32 and want to take it easy—any way, David, let up hope that the results turn out the way they ought to.

The discussion about local contacts occurring on the DX bands, last time around, brought one of the licensed fraternity out in defence of the practice. G6KD (St. Leonards-on-Sea) feels that what is far worse is the practice of chasing trans-Atlantic DX on Top Band, and suggests that it would make the exercise more difficult, if that is what is desired, were the operator concerned to try it on Two Metres. Having thus, as it were, turned the flank of the enemy, your scribe in his

capacity as umpire, must throw the meeting open to all! What say, then—but please don't shoot the ref.!

Down in the West Country, *A. Pyne (Budleigh Salterton)* would like to know about, and correspond with, others who, like him are using BC receivers to hear the DX with. Letters should be addressed to Alex at 22 Moorstead.

*J. Dutton (Ilkeston)* seemed to have a day of catastrophe after calamity during the SLP, thanks to flat batteries on his EC-10, remedied by a sharp run to the local garage; however, he still managed VK6DS, one of only two VK's reported in the SLP.

It is really surprising what can be done by the use of long aereals indoors. *R. Hyde (Oakham)* has 50 feet

## HPX LADDER

(Starting January 1, 1960)

Qualifying Score 200

SWL	PREFIXES	SWL	PREFIXES
PHONE ONLY		PHONE ONLY	
T. R. Popham (Exeter)	1012	G. Cowling (Goole)	387
P. Cayless (Exeter)	993	D. Edwards (Coalville)	382
D. Douglas (Dundee)	972	R. Gilchrist (Manchester)	380
S. Foster (Lincoln)	851	T. Bailey (Burgess Hill)	378
A. W. Nielson (Glasgow)	835	B. Stephenson (Ripon)	358
D. Rollitt (Navenby)	758	M. A. Lount (Leicester)	357
P. D. G. Milloy (Doncaster)	725	W. L. Rees (Llandudno)	343
C. Squires (Saltash)	711	R. A. Gape (Leigh-on-Sea)	342
A. Niblock (Ilkeston)	706	D. Douglas (Dundee)	342
J. Singleton (Hull)	702	D. Boniface (Ripon)	338
G. S. Taylor		A. Pyne (Budleigh Salterton)	336
(Wolverhampton)	699	D. Sapsworth (East Ham)	333
W. Felton (Lincoln)	696	R. Sexton (Great Missenden)	326
K. Southgate (Leigh-on-Sea)	662	S. Cusworth (Wakefield)	321
J. Tozer (Plymouth)	627	R. Glaister	
J. Hodgson (Gainsborough)	627	(Haywards Heath)	316
R. G. Preston (Norwich)	619	M. R. Warburton (Sale)	316
T. Pinch (Plymouth)	618	P. Freeman (Cheshington)	315
J. Dutton (Ilkeston)	566	T. R. Popham (Exeter)	312
G. J. Smithies (Halifax)	561	(SSB only)	
C. Edwards (Warwick)	556	J. M. Dunnitt (Singapore)	305
J. Fitzgerald		P. Smith (Linby, Notts)	304
(Great Missenden)	553	C. K. Skelcher (Larkhill)	300
S. Swain (Hayling Island)	552	M. G. Toms (Ilford)	293
P. Coull (New Romney)	549	P. D. G. Milloy (Doncaster)	289
R. T. Jackson (Leigh-on-Sea)	540	(AM only)	
S. J. M. Blaber		A. Grove (Bromley)	288
(Haywards Heath)	527	J. Singleton (Hull)	282
W. Moncrieff (Hampton)	526	(AM only)	
B. Macklin (Winchester)	524	Jain T. Patterson (Carstairs)	277
G. Bowdon (Crawley)	518	A. Farkasch (Benfleet)	276
A. G. Scott (Liverpool)	517	D. L. Hill (Edinburgh)	273
T. Wylie (Elderslie)	505	R. Young/P. Barrett	
N. A. Cayless (Exeter)	502	(Welwyn)	269
P. H. Hembrey		K. Southgate (Leigh-on-Sea)	265
(Northiam, Rye)	502	(AM only)	
P. Baxter (Winchester)	484	I. A. Lucking (Stanmore)	250
M. G. Allen (Heston)	482	D. Henry (North Berwick)	248
C. Claydon (Kingham)	466	J. F. Hobson	
D. H. Foster (Swansea)	465	(High Wycombe)	242
Mrs. M. Worbey (Dartford)	462	J. Carter (Balham)	218
G. Watson (Sheffield)	460	R. Hannis (Chester)	218
A. Jones (Newport, Mon.)	456	S. M. Phillips (Dukinfield)	215
D. Bailey (Dagenham)	452	S. E. Howell (Balham)	211
A. P. Legg (Sutton, Surrey)	443	R. Allisett (Guernsey)	210
J. Tring (Sutton, Surrey)	436		
E. Parker (Hove)	433	CW ONLY	
A. Hydes (Enfield)	430	R. de Buis (Felixstowe)	487
A. Niblock (Alsager)	422	R. Bacon (Thetford)	406
J. Dixon		B. A. Smith (Ruislip Manor)	400
(Barrow-in-Furness)	421	J. M. Dunnitt (Singapore)	397
A. P. Ashton (Stowmarket)	415	P. Cayless (Exeter)	360
H. M. Graham (Harefield)	408	T. Pinch (Plymouth)	354
B. Thomas (Castleford)	407	S. J. M. Blaber	
W. C. Torode		(Haywards Heath)	307
(London, W.C.1)	390	C. Harrington (Maidenhead)	309
D. C. White (Looe)	387	T. Wylie (Elderslie)	228

(NOTE: Listings only include recent claims. Failure to report for two consecutive issues of "SWL" will entail removal from the Table. Next list (September issue, for which the deadline will be July 28.)

of wire strung up around the room, fed *via* a matching unit, which fetched in quite a good haul in the SLP, and at other times has produced a lot of good DX.

A really sad state of affairs is revealed in the letter from *J. Inglis (Alloa)* who has been at the SWL game for some ten years and a reader of this piece for six of them. None the less, his job as a 'bus-driver means that the taking of an R.A.E. course is more than somewhat difficult, and in any case there do not seem to be many clubs in the area—however there are five amateurs at a quick check in the call-book actually resident in Alloa, and several fairly close at hand. Wonder if any of them have the know-how to help Jock get that ticket—which he must surely yearn for after so long as an SWL?

On a slightly different, but nevertheless similar tack, the line from *SAC C. J. Fox (Libya)* indicates his wish to join in the HPX Table, the rules of which were published on p.170 of our May issue. In addition C.J.F. and a friend are teaching each other Morse, and getting along famously at it by the sound of things. An interesting point here is that he intends to try for the R.A.E., and is wondering how effective self-tuition is, so those with experience had better step to the front and advise!

SSB receivers form the main interest of *R. Hannis (Chester)* who is working on a single-conversion job on the general lines laid on paper in G3RNL's April article in SHORT WAVE MAGAZINE. This sort of thing is also occupying *E. Parker (Hove)* who has completed a double conversion job with home-brew front-end; the latter is giving some considerable trouble with drift, which will no doubt be cured by the time this piece is in print.

### Getting Sorted Out

From *R. Gilchrist (Manchester)* we hear of a great deal of preparation for the station that he will set up if he passes the R.A.E.; already, wise fellow, Robert is studying Morse, and hopes—if the pass-slip arrives—to be on the air by the tail-end of the year.

Initials are the curse of modern times; the proliferation of these collections of letters in recent years is probably one of the most idiotic trends in the business of publicity. However, *S. Swain (Hayling Island)* wants to know about some of those that appear in our field. BERU stands for "British Empire Radio Union" and is not to be confused with the island of Beru! CHC, and FHC, are initials covering the Certificate Hunters' Club, an American ploy, and the initials HTH in this connection referred to their contest in which those who were not members were Hunting The Hunters! Oh, well . . .

Clearly *R. G. Preston (Norwich)* finds aerials a fascinating subject, as he has taken his Quad down in preparation for some experiments with a shortened ten-metre two-element beam; thus he is at the moment using only the end-fed wire at 18 feet, which seems to be doing its best if his list is anything to go by.

Odd callsigns seem to be all over the place at present and various people are querying them. Lots of people mention 5LA2 stations, which were in use in Liberia, for a recent Field Day, and *B. Thomas (Castleford)* mentions 1Z4, heard on Forty and claiming to be in the Indian Ocean. Now this is a little difficult, as it seems that the prefix 1 has never been allocated to any country by the



Neat station of David Gilham, 201 Hospital Bridge Road, Whittou, Twickenham, Middlesex—who is evidently a reader of "Short Wave Magazine"! Aged 20, and a radio/TV engineer, David has a hotted-up HE-30, a tape recorder, a signal generator, and a multi-test meter. His aerial is a 66ft. wire and his favourite SWL bands are 160m. and 10 metres. He was in for the R.A.E. on May 12 and is also learning Morse—so we can expect a new callsign on the air before long.

international authorities and so, in general, one should assume all of them to be phoney. On the other hand, with so many calls appearing these days it is wise to log them and endeavour to find out about their status afterwards.

### CR-100 Note

*B. Macklin (Winchester)* forgot to send in his SLP log until too late, probably caused by the interest in the things he has been doing to his old faithful CR-100. In the matter of BFO injection, which is usually not sufficient on these receivers, Barry has been doing a little research, coupling it in at various points with a 10  $\mu\text{F}$  capacitor, and finds the best connection is probably at the second IF stage grid, at the point where it comes out of the second IF can, although this leads to a loss of IF gain unless a careful realignment of the tuned circuits of the IF stage is carried out.

As we mentioned last time round, *A. Niblock (Farnham)* has moved his home from Ilkeston, and has suffered an additional change in that he has joined English Electric at Kidsgrove and is living for most of his time at the Company Hostel at Alsager, where his receiver is at the moment set up.

### Danger!

*Glyn Watson (Sheffield)* suffered a lightning strike on the home TV aerial; the socket outlet from the mains was adjacent to the point where the coax plug lay on the floor for safety. The result of the strike was ruination of the socket, a loud crack, and all the house fuses blown. At that they had a lucky escape. There is a moral—never neglect the precaution of earthing any aerials if there is any sign of heavy static about; there is not much

you can do about a direct hit, but the static charges on a floating aerial can build up plenty high enough to jump across a series condenser in the ATU, or, worse, from coil to Tx link, with disastrous results. Play safe and earth them down. With coax leads it is probably best to provide an earthed socket alongside the wall fitting and just plug the coax into a dead short to earth. This avoids the damage done by near misses.

The cyclic annual variation in conditions is a thing noticed by all who are observant users of the amateur bands, as is *A. W. Nielson (Glasgow)*, who has been long enough at it to notice and compare the seasonal variation in terms of the equivalent period at the last sunspot cycle. However, one can easily be confused in this sort of comparison by not having a call-book covering the periods that are being compared, so that it can be confirmed that "lack of activity" from a particular area, such as VP8, is not in fact due to the absence of stations in the area concerned.

Even shift-work has its advantages in terms of our hobby, as *M. A. Lount (Leicester)* observes, as it enables one to get on when others are working, and hence to hear DX which at weekends tends to be buried layers thick under QRM. The "lovely period" on most bands is between 0300 and 0500.

"Fantastic" is the term used by *R. Gape (Leigh-on-Sea)* to describe the voltage he measures on the AGC diode of his receiver—1.5 kV—which rather sounds as though he has created a miracle with the help of a 250 volt HT rail!

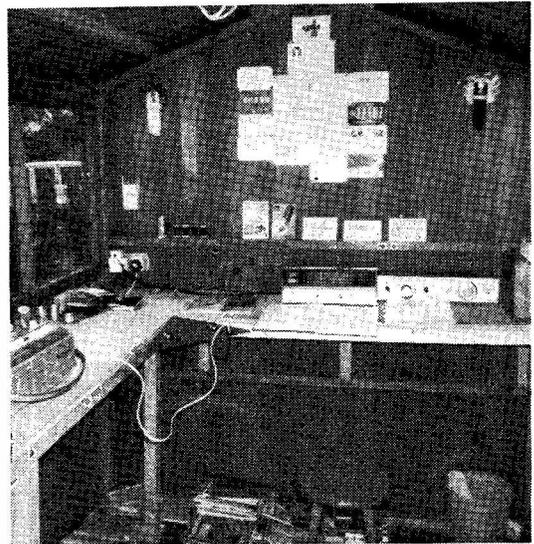
Electrical interference can be the very deuce to track down and rectify, and *S. Foster (Lincoln)* is at his wits' end with local noise which covers all the MW band and on down to 4 mc. However, he derives some consolation from the fact that it does not affect the HF bands. We can sympathise, nevertheless.

A first letter from a relative old-timer at the SWL game is from *J. Carter (Balham)* who has been at it for five years, working through TRF receivers and end-fed wires to the present 52 Set Rx and Joystick set-up. Jim would like to know how to remove the tuning scale from the 52 Set so that it may be retained against the day it is sold, being meantime modified to give more bandspread. Anyone with ideas on the subject?

R.A.E. last month, and meantime much 2-metre listening, is the gist of *A. Grove (Hayes)*'s letter; the converter seems to be "giving" OK as G3DAH at 50 miles was heard on an indoor dipole only six feet off the deck.

What a wealth of meaning there is in the simple phrase! *M. G. Allen (Heston)* comments that his Joystick has cut the commercial image signals down by as much as 10 dB—and a lot of them turned out *not* to be images at all! Another on the same lines but in a different context comes from *G. T. Theasby (Keighley)*, who comments that the remarks of G3VRX anent the local "twit with a carrier" on 1940 kc curled him up—but '3VRX was hopping mad, though!

The ranks of the Pessimists contain at least one SWL, *W. C. Torode (London, W.C.1)* who sat the R.A.E. in May. Wally says that if your scribe has any ammunition left after dealing with his own class—as mentioned in May "SWL"—then we are to turn it on him, because he is sure he has failed. Since there is no shotgun about



The receiving set-up operated by Alan Grove, 39 Baston Road, Hayes, Bromley, Kent, who has an Eagle RX-60N with a Codar PR-30 preselector and RQ-10 Q-multiplier. An ATU is used for aerial coupling.

that will be accurate from this QTH to W.C.1, there is only one thing left—try again next time round!

Here the space seems to have run out, and so once again we acknowledge letters from the following, and have taken scores into the Table: C. Squires (Saltash); M. Toms (Ilford); T. Pinch (Plymouth); J. Hodgson (Gainsborough); J. Tozer (Plymouth); A. Farkasch (Benfleet); R. T. Jackson (Leigh-on-Sea); K. Southgate (Leigh-on-Sea); Charles Harrington (Maidenhead); D. H. Foster (Swansea); W. Felton (Welton, Lincs); Chris Claydon (Larkhill); S. Howell (Balham); D. Rollitt (Navenby); S. Cusworth (Wakefield); Peter Smith (Linby, Notts); W. Moncrieff (Hampton); S. J. M. Blaber (Haywards Heath).

#### Deadline

And that's about it for this time; deadline for your letters and Table entries for the next "SWL" is first post **Friday, July 28**, addressed as usual: SWL, SHORT WAVE MAGAZINE, BUCKINGHAM. Your letters are, as always, very welcome, but please make sure they arrive by making certain the name "Buckingham" is as clear as it can be, so the GPO can read it easily, and yours does not get sorted to Beckenham, Birmingham or Buckenham! In the meantime, keep an eye on the bands.

#### AMATEUR RADIO EXHIBITION

The 1967 International Radio Communication Exhibition will be at the Horticultural New Hall, Vincent Square, Victoria, S.W.1 (behind the Army & Navy Stores, and not far from our London Office) during September 27-30. Our October issue, due out on Friday, September 29, will be on sale from our Stand.

## JOHN ROUSE, G2AHL

The untimely passing of John Rouse, G2AHL, in his 45th year, is deeply regretted by all who knew him. He died suddenly on May 26, of a heart attack—within only a few days of having been declared fit and fully recovered from a previous seizure.

Licensed pre-war in the AA category, after service in the Royal Armoured Corps and the Royal Corps of Signals, in Europe and in India till 1947 (where he was on the air as VU2AD), he had five years in insurance work and also had ideas about qualifying in medicine.

But his real passion was radio, and in particular Amateur Radio, in which he had become interested at the age of ten. He started work with the Radio Society of Great Britain in 1952, as editorial assistant, becoming Editor of the *RSGB Bulletin* in 1962, and General Manager and Secretary of the Society in 1964. He devoted himself to his job, working long hours and undertaking many thankless tasks

in the Society's interests—and even at home he was constantly engaged in radio activity of some kind. Apart from a mild leaning towards photography, Amateur Radio was his hobby and his work.

John Rouse was always respected as a good colleague in our world of Amateur Radio and did much to ensure rapprochement and understanding in those behind-the-scenes matters in which the RSGB and *SHORT WAVE MAGAZINE* must be jointly concerned. He will be particularly missed because—by his gathering experience and quiet authority as General Manager of the Society—he was beginning to exercise a significant personal influence on Amateur Radio in the U.K.

The funeral was at Guildford Crematorium on May 31, with a representative attendance of Amateur Radio organisations and interests. Mrs. Hazel Rouse and daughter Sarah will have the sympathy of radio amateurs everywhere in their lamented bereavement.

A.J.F.

## THE U.S. AMATEUR POPULATION

Attention has been drawn recently to what appeared to be a decline in the rate of growth of the U.S. Amateur Radio population. From a statement made officially by the FCC (Federal Communications Commission, the American licensing authority) it seems that this apparent decline has been due to (a) Much tighter control of licence applications, and (b) What can only be described as a more efficient way of counting them! In other words, like all organisations dealing with individuals by the tens of 1,000's it has been very difficult to state with certainty the actual numerical position at any given time. However, since July '66 a computer record system has been operating.

Looking at the facts, there are now six separate categories of U.S. amateur licences in force—the Novice, Technician, Conditional, General, Advanced and Extra classes. According to the FCC's best count as at April '67, the grand total of U.S. amateur licences in issue was 256,442—against 261,356 a year earlier. But the corrected (machine) count made it 257,836 as at July 1, '66. As figures have been kept by computer since July '66—and so presume the best obtainable accuracy—it means that there has actually been a net decrease of about 1,400 between July '66 and April '67—not really a significant figure

out of more than a quarter of a million.

The FCC's general conclusion is that while the net total remains more or less static, the percentage changes in the various categories do vary significantly, e.g., while the Novice class is losing at the rate of 15% per year, the General Class is gaining at about 2%—this being the category under which the great majority of American amateurs operate. But the Extra Class, demanding a high standard of technical ability and in which the numbers are anyway relatively small (4,804 as at April 3, '67), shows a growth rate of 9%. This latter statistic lends point to the FCC comment that "... while large numbers are impressive, the real value of the Amateur Radio service lies in its quality, not the quantity ..."

*Data extracted from "Auto-Call," May '67, with acknowledgements.*

## TO TELEPHONE LONDON OFFICE

Our STD number is 01-222-5341/2 but still ABBey 5341 for anyone not on Subscriber Trunk Dialling. The explanation of the Code is that 01 is London; 222 is the Abbey Exchange; and 5341/2 are the numbers we have always held. If you are *not* yet on STD, call ABBey 5341; if 5341 is engaged, as it often is, 5342 will reply. But remember that we cannot answer technical queries on the phone nor do we accept small advertisements by telephone.

## • • • The Mobile Scene • • •

FURTHER INCREASE IN MOBILE LICENCES—PICTURES. AND SOME NOTES ON FORTHCOMING EVENTS—CALENDAR FOR REST OF THE SEASON

ACCORDING to the last GPO count, the total of mobile licences in issue in the U.K. as at May 31 was 2,295—showing an increase of 125 in the nine months since the last check, on August 31. (In the same period the nett increase in fixed-station licences was 545.) The proportion of mobile to fixed stations continues to rise, being at present about 18% of the whole.

Looking now at the membership of the Amateur Radio Mobile Society, a puzzling fact is that their U.K. membership (400+) is a bare 20% of the total of British amateurs licensed for mobile—yet there can be no question that A.R.M.S. works hard in the /M interest . . .

\* \* \*

Though our Solo Mobile Expedition on June 11 had lovely Wx and the "fixed-mobile" activity was distinctly higher than for the first one—it only needed an hour's listening round on Top Band to prove that—very few reports have come in! Perhaps the deadline of June 16 was too tight. Anyway, of the reports to quote, G3GGG/M was up on the Berkshire Downs near Didcot and in 1½ hours worked four other static-mobiles and two fixed stations, and says "Enjoyed it very much, pse have another one soon." He uses the Contactor Switchgear CSE-2A10/2AR Tx/Rx equipment, in a Morris Traveller.

From the Mendips, G3SXY/M worked no less than five mobiles, as well as GW3VXP in Penarth, Glam.—all in a couple of hours. An SWL report from near the Silverstone Circuit, Northants., lists seven mobiles heard working from fixed sites nearby. An odd fact about conditions on Sunday afternoon, June 11, was that the 160m. band sounded pretty dead to distance till about 4.30 p.m. clock, when stations suddenly started to come in from 50 miles away and further.

While the paucity of hard reports suggests that these Solo Mobile events are not of any particular interest, the actual level of activity seems to belie that. So we will have one more, just to see—on **Sunday, July 23**, 3.0 p.m. to 6.30 p.m. clock. And if you go out, let us have your report by *August 7*.

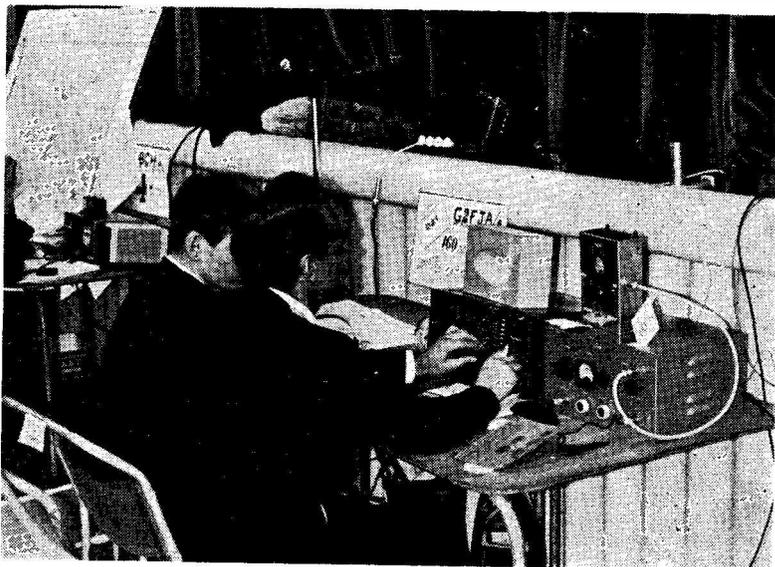
\* \* \*

Because of the way Rally dates fell in June, we are without detailed reports on the events of June 11/18/25 but hope to have something about them, and one or two others, for the next "Mobile Scene."

Following is the full calendar for the remainder of the season :

**July 8: (Saturday).** Gathering of mobiles, organised by Stamford Radio Society, at Casewick Park, near Stamford, Lincs., opening at 2.30 p.m. on the occasion of "A Grant Event" to raise money

The Top Band station signing G2FJA/A for the M.A.R.T.S. Mobile Rally on April 30, and reported in the June issue of "Short Wave Magazine." In this picture the operator is G3RQA, assisted by SWL Collins as logger.



G5LC/M at the operating position in his Rover 2000—in which he is mobile on all bands from Top to two metres, as described in detail on p.235 of the June issue of "Short Wave Magazine."



for the restoration of the three historic churches of Barholm, Tallington and Uffington. This is a lovely park, privately owned, and there will be numerous interesting side-shows. Talk-in will be on 1900 kc and 145.65 mc, and a DX-band station will also be set up in the area reserved for the radio amateur attendance. Further details from: J. H. Parrish, G2HOP, The Cottage, Uffington, near Stamford, Lincolnshire.

**July 9:** South Shields Amateur Radio Club Mobile Rally, in Bents Park, Coast Road, South Shields, near a beach, with G3DDI on Top Band and G3SFL on 145.8 mc for the talk-in. There will be various competitive events, starting at 2.0 p.m., and light refreshments will be available on site. For details: Derek Foster, G3KZZ, 41 Marlborough Street, South Shields, Co. Durham.

**July 9:** At Gilwell Park, Chingford, London, E.4, site of the International Scout Training Camp. Talk-in will be given on 2-4-160m. and 80m. SSB. Space for over-night camping and caravans. Trade exhibitions, instant raffle, competitions and tours of the Scout Camp. Information from: N. Miller, G3MVV, Avon, Gardiner's Lane, Crays Hill, Billericay, Essex.

**July 16:** Mobile Rally organised by the Worcester & District Amateur Radio Club, at Upton-on-Severn, Worcs., in the Hill County Secondary School, NGR SO.838399, one mile west of the Severn on the A.4104, Welland-Malvern. Talk-in will be on 2-4-160m., with junk and trade stalls; refreshments on site, with ample cover if wet. For further details: R. L. Avery, G3TQD, 24 Alexander Avenue, Droitwich Spa, Worcs.

**July 16:** Reading Amateur Radio Club Mobile Picnic at Childe Beale Trust Pavilion, Lower Basildon,

Pangbourne, Berks.

**July 16:** Colchester Group Mobile Rally, to be held at Colchester Zoo. Talk-in on 2-4-160m. by G3FIJ, G3SUV and G3OMB respectively. Attractions include the Zoo; one of the world's most extensive model railway layouts; a large picnic area; and enough to keep all the family amused and occupied. QSL's and secretarial: G3SJO, 17 Sutton Park Avenue, Colchester, Essex.

**July 23:** Cornish Radio Amateur Club Mobile Rally at Pentire Headland, Newquay, Cornwall.

**July 23:** Solo Mobile Expedition—to work /M's and home stations from fixed location, 3.0-6.30 p.m.

**July 26:** (Wednesday). Annual Mobile Evening arranged by Crawley Amateur Radio Club, on the Hog's Back, Guildford-Farnham road. No organisation, and all welcome. Contact: R. G. B. Vaughan, G3FRV, 5 Filbert Crescent, Gossops Green, Crawley, Sussex.

**July 30:** Informal picnic laid on by Northern Amateur Radio Mobile Society at Flamingo Park Zoo, Kirby Misperton, near Malton, Yorkshire, between Malton and Pickering. A good spot for a day out with the family. Reserved car park, refreshments. Small admission charge to Zoo. Details: Denis Binns, G3MGI, 80 Gipton Wood Road, Leeds, 8, Yorkshire.

**July 30:** Saltash & District Amateur Radio Club annual Mobile Rally, at Calstock, Cornwall, 1½m. south of the A.390, Tavistock-Callington, and sign posted to the Rally site on the River Tamar. Talk-in by GB3SAL on 2-4-160m. Free admission, refreshments obtainable, boat trips on the river, prize draw, miniature mobile competition (equipment capable of functioning on one band



General view of the setting for the recent very successful Northern Mobile Rally, at Harewood House, Leeds, an annual event put on by the Northern Amateur Radio Mobile Society, of which G3MGI is one of the moving spirits.

using simplest means *locomotion*, and currently licensed /M), and pedestrian D/F hunt. Details: D. Bowers, 95, Grenfell Avenue, Saltash, Cornwall.

**August 13:** Tenth Annual Mobile Rally organised by the Derby & District Amateur Radio Society, at Rykneld Schools, Derby (*details later*).

**September 3:** Swindon & District Amateur Radio Club Mobile Rally at Lydiard Park, Swindon, Wilts.

**September 10:** Annual RSGB Mobile Rally at Woburn Abbey, near Luton, Beds., with talk-in on 160-4-2m. and 80m. SSB. All the usual attractions for this popular event.

**September 15-17:** Third International Amateur Radio Convention and Rally at Knokke, Belgium. For programme details; local accommodation and camping arrangements; and information about temporary /M licensing in Belgium, write: Lucien Vervarcke, ON4LV, Lippenslaan 284, Knokke 1, Belgium.

**September 24:** Harlow & District Radio Society annual Mobile Rally.

*Organisers to Note:* Reports and rally arrangements to be covered in the August issue must reach us by July 10, *latest*, addressed: Editor, SHORT WAVE MAGAZINE, BUCKINGHAM, marked "Mobile Scene."

This photograph, taken at the Northern Mobile Rally on May 21, will interest many readers. Left to right: Jack Tweedy, G3ZY, Chesterfield; Bill Lowe, G3UBO, Matlock; and Messrs. James and Stephens (of Stephen-James, Ltd., Liverpool)—all in the business of Amateur Radio, and advertisers in "Short Wave Magazine."



## LOADER UNIT FOR ANY END-FED AERIAL

### SIMPLE TAPPED-INDUCTANCE ARRANGEMENT FOR ALL- BAND COVERAGE

F. G. RAYER, A.I.E.R.E. (G3OGR)

**T**HIS unit was built so that working on 160 and 80 metres would be possible with almost any length of wire used as an end-fed aerial, away from the home QTH and its permanent aeriels. It has also been tried successfully from time to time on 10, 15, 20 and 40 metres.

With a random length end-fed aerial, proper loading of the transmitter is sometimes impossible. Adjusting the *pi*-tank PA tuning and output capacitors may not load the stage to full input. Alternatively, DC input may be too high, and cannot be reduced sufficiently with the *pi*-tank condensers. In almost every case a series loading coil will overcome these troubles.

Fig. 1 is the circuit. The plan is to add inductance until the PA tank can be tuned and loaded correctly. Various "surplus" gear tapped coils can be used (such as from the T.1154). If one band or one aerial is generally to be worked, a shorting tap can be clipped on or soldered. For different bands and aerial lengths, switch selection of taps is preferred. The coil is best of quite large diameter, having spaced turns of heavy-gauge wire.

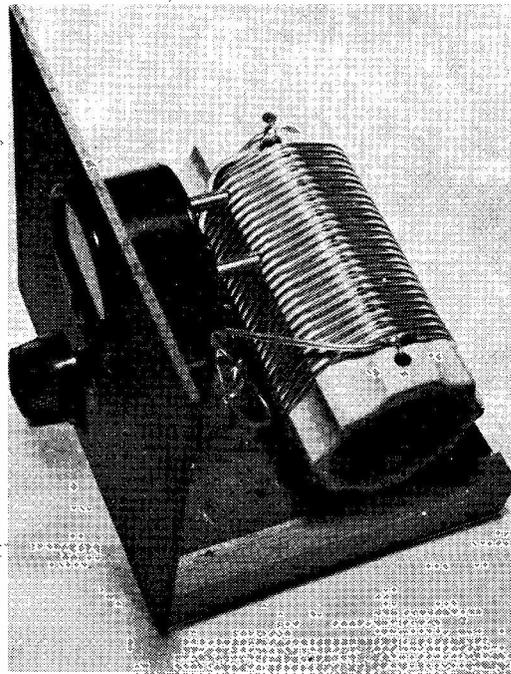
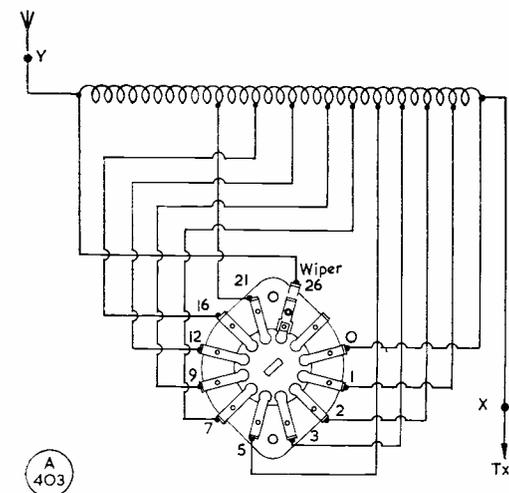
The loading coil used was wound on an Eddystone former, which takes 26 turns of 14 or 16 gauge, spaced over 3½ in., and 2½ in. in diameter. This is sufficient inductance for all bands from 10 to 80, and usually for 160 metres. Some rather short aeriels may need more turns for Top Band.

A 12-way rotary switch was fitted, with short stout flexible leads so that the following number of turns could be selected: 0 (whole coil shorted), 1, 2, 3, 5, 7, 9, 16, 21, 26. (The 12th position was not used because adjacent contacts sparked over if across the full coil, with 100 watts and aeriels shorter than about 15 feet.)

#### In Use

The unit is included in the lead between transmitter and aerial. The whole coil is initially out of circuit, then the switch is rotated to introduce 1, 2, 3, 5 or so-many turns as may prove necessary until the PA can be correctly tuned and loaded. Few turns may be needed for HF bands, but a fairly large number for the LF bands.

If an RF meter is available, it can be inserted at Y. This allows PA grid drive or tuning to be



Circuit of the end-fed Aerial Loader Unit, as described in the article by G3OGR. Essentially, what it does is to provide the required inductance to bring almost any short aerial to resonance on almost any band—obviously, there are extremes which the Loader could not accommodate.

Simple enough—the Loader Unit described by G3OGR can be used to operate almost any length of end-fed aerial on any band, within reasonable limits. There are some extremes that cannot be covered—something very long for 10 metres or exceptionally short for Top Band, for instance.

adjusted for maximum RF. The aerial current will change with changes in frequency, and especially when moving from one band to another. Briefly, aerial lengths near a  $\frac{1}{2}$ -wave or multiple of  $\frac{1}{2}$ -waves give relatively low readings, and aerials which are near a  $\frac{1}{4}$ -wave or odd number of  $\frac{1}{4}$ -waves give high readings. If the frequency and aerial current are noted, this provides a check that all is working as it should on some future occasion. But any alteration of the aerial or aerial/earth system will of course change readings.

If you put in a standing-wave indicator in coax at X, you will be fortunate if some particular number of turns shows little or no reflected power! But this has no bearing on the radiated signal strength in these circumstances, as will be shown by a

field strength test. Generally, the connection from Tx to loading unit will not be a coax lead but by a relatively short, well insulated connection—though a short piece of coax will make no practical difference, even with standing waves.

Even if the unit allows satisfactory loading with any reasonable length of wire, a long or high aerial will always give better signal strength than a short, low wire. From G3OGR, distances over 100 miles have been worked on 80m. with about 25ft. of wire formed into a spiral and suspended vertically from ceiling to loading unit! QSO's to over 250 miles have been obtained with 6 watts and about 30ft. of wire sloping to a tree only 15ft. high. As expected, a good earth helps, though no earth at all has been available in some A locations.

## TRANSISTOR OSCILLATOR CIRCUIT FOR DIFFICULT CRYSTALS

### GETTING THE LOW FREQUENCY TYPES TO GO

H. S. WOOD (G8SX)

**M**ANY modern crystals will oscillate readily in simple transistor circuits, but some of the older types—whether home-ground, or low frequency—are more difficult to get working, or, what is even worse, they stop oscillating after the equipment using them has been built, thus making it unreliable. The writer has had this experience and has tried many arrangements. The circuit to be described uses five resistors, four condensers, a transistor and a crystal, plus a 9-volt supply.

Fig. 1 shows the original circuit, basically a Colpitts oscillator with the crystal connected between base and earth (emitter). Examination of this circuit shows that the two bias resistors R1 and R2 are effectively in parallel, and also in parallel with the crystal. Here lies the difficulty, because the combined value of R1 and R2 is quite low and only very active crystals will oscillate when damped in this manner.

Fig. 2 shows the evolved circuit, which is similar to Fig. 1 but with the addition of R4 and C3, where C3 is a large capacity having negligible reactance at the frequency of operation; therefore, it effectively connects the parallel result of R1 and R2 across the emitter resistor R3. Because the emitter circuit of the transistor is low impedance, R1 and R2 have little effect on it and we need not consider them further.

The crystal now "sees" connected across it the equivalent circuit of Fig. 3, which most readers will recognise as an emitter follower. This, of course, is a high impedance circuit and the crystal is no longer heavily damped by the bias components. The values of

C1 and C2 are made roughly equal and for them silvered mica or polystyrene types are best; C3 should be ceramic, with all the circuit connections kept as short as possible.

For high frequency crystals, C1 and C2 can be 50 to 100  $\mu\mu\text{F}$ , while values of  $\cdot 001 \mu\text{F}$  will be required for LF crystals.

The frequency will not be exact because of the loading of the two condensers across the crystal, but it will be near enough to the stated frequency for all purposes except highly accurate standards. An accuracy of 0.1 per cent will be easily achieved—in fact, well within normally required tolerances.

#### Putting It Together

Construction can be on a piece of *Veroboard* or even on a tag strip, and the whole unit, complete with battery, will fit into the proverbial 2 oz. tobacco tin. Output can be taken from the emitter *via* a condenser, but care should be taken not to put too great a load here (coupling too tight) or oscillation will cease.

Fig. 4 shows how the current splits up and enables the impedance across the crystal to be calculated. Briefly the input voltage across the crystal ( $V_{in}$ ) is the sum of  $V_b$  and  $V_e$ .

$V_b = R_b \cdot I_b$ , where  $R_b$  is the internal base resistance of the transistor and  $I_b$  is the base current.

Value  $R$  is the external base resistance (equivalent to R4 in Figs. 1-3) and is in parallel with  $R_b$ . Therefore

$$I_R = \frac{R}{R + R_b}$$

The collector current  $I_c$  is equal (almost) to  $a \cdot I_b$ , where "a" is the current gain of the transistor.

The current through  $R_e$  is the sum of all the currents, *i.e.*:

$$I_b + I_R + I_c = I_b + \frac{I_b \cdot R_b}{R} + a \cdot I_b$$

The input voltage is therefore:—

$$I_b \cdot R_b + R_e \left( I_b + \frac{I_b \cdot R_b}{R} + a \cdot I_b \right)$$

The input impedance is

$$\frac{V.in}{I.in} = \frac{V_e + V_b}{I_b + I_r}$$

All this works out to:—

$$R.in = R_e + \frac{R}{R + R_b} \cdot (R_b + a \cdot R_e)$$

The term  $(R_b + a \cdot R_e)$  is very high because  $R_e = 1K$  and "a" is at least 50 with a good transistor, thus giving 50K.

The other term  $\frac{R}{R + R_b}$  is a ratio and if  $R_b = 1K$  (which is typical) and  $R = R_4 = 1K$ ,

$$\text{then } \frac{R}{R + R_b} = 0.5$$

and we get  $R.in = 1K + \frac{1}{2}(50K) = 26K$ ,

which is very good compared with less than 10K for the original circuit.

It is of course possible to make  $R_4$  higher in value

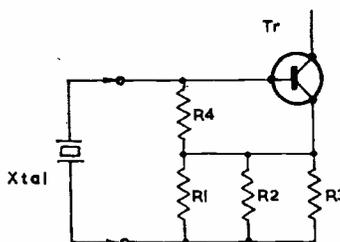


Fig. 3

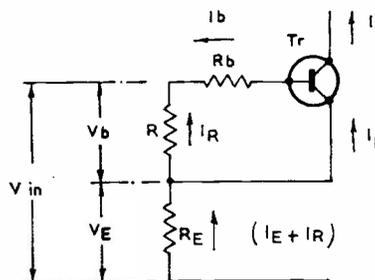


Fig. 4

D 239

Note: In these two circuits the emitter is the lower element.

Values for the circuit discussed in the article. C1, C2, see text; C3, 0.1 μF; C4, .01 μF; R1, 33K; R2, 10K; R3, R4, R5, 1K; transistor, OC170 or OC171. These values apply to Figs. 1-3.

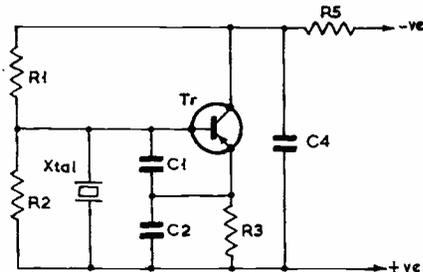


Fig. 1

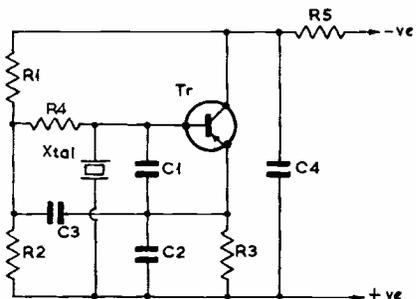


Fig. 2

D 239

than 1K, but if it is made too high it will upset the DC condition of the circuit. In any case, the writer has found that the improvement in crystal activity with the 1K for  $R_4$  is quite spectacular and no attempt has been made to increase it further.

Finally, it should be mentioned that some LF crystals have a high frequency oscillation mode in addition to their fundamental and a check should be made to ensure that the output frequency is in fact the one which is required.

### COMMENT WITHOUT COMMENT

Letter to The Editor: "I am enclosing my new callsign with all relevant details for the New QTH page. May I take this opportunity of expressing my appreciation of your excellent magazine which is eagerly watched for each month. Your articles and information have been of great help to me in obtaining my AT licence in just over 12 months. Previous to this I knew nothing about electronics at all. During the last few months I have also entered into Industrial Electronics, working for a large company dealing with computers. Previous to this I was employed as a sign-writer, so you can see that Amateur Radio has made a considerable change to my way of life." (Name, Callsign and Address given.)

For Small Advertisements in this issue, see pp.312-320

# THE MONTH WITH THE CLUBS

By "*Club Secretary*"

(Deadline for August Issue: July 7)

(Please address all reports for this feature to "*Club Secretary*," SHORT WAVE MAGAZINE, Buckingham.)

WHILE there can be no doubt at all that one of the friendliest places to be is inside one of the better Amateur Radio groups, this "closeness" has a few drawbacks, and one of the main ones is connected with the newsletter.

There is an increasing tendency on the part of the newsletter compilers up and down the country to omit such information as when and where the gang concerned are "in residence" each month or week, as the case may be; what the programme is; the secretary's address; and, probably most of all the address of the editor, to whom all his contributors are to send their respective opuses. After all, you can't expect them to send in contributions if they don't know where to send them! A recent newsletter to cross this desk, while quite good in itself, hadn't a single date or address on it, and only one callsign (which could not possibly have been at the QTH given in the *Call Book*!).

Surely it must be important for the Club to have the basic facts in the newsletter—so many new members are gained just by the fact of someone passing it on. As for the hon. sec., he is helped when he can mail a spare copy of the current issue to anyone enquiring by letter or telephone about the group and its activities, thus saving the writing of a letter. And, of course, by helping your Club you also help us to get your facts right for publication.

## ACTIVITY REPORTS

Our first port of call this time is **Southampton**, where they seem to be rather on the horns of a dilemma; should they remain a loosely-knit local group or change into a more formal Club, in order to ensure the continuance of the organisation on a sound, viable footing? A large question indeed, and one on which G3HKT wants *all* his members' views, before he and the committee make any attempt to progress the matter at a meeting. Club Night is the time to grab him, any Wednesday or Friday, 7.0-10.0 p.m. at 20 Carlton Road, Southampton.

One of the people who do not give their Club address away in their *Newsletter* is the hon. sec. of **Crystal Palace**; however, we gather that a change from the old place at Bromley Road, to a room "somewhere in Woodyates Road" has been very

much to the advantage of the group, as borne out by the attendance figures.

Although a full programme is being arranged, up to the time of writing it had not been finalised by the committee of the **South Birmingham** crowd—but doubtless the hon. sec. will be delighted to tell you, address as in the panel.

The third Tuesday in the month is the evening to set aside if you want to meet the **Midland** crowd, at their Hq., the Midland Institute, Margate Street, Birmingham, 3. Although the July session is not mentioned in the issue of the *MARS News Letter*, it should be of interest if the previous lectures are anything to go by.

**Norfolk** have managed to get "out of phase" with us in the last few months, but this time they make no mistake about it; July 3 sees them all getting lost, on a map-reading exercise, and on the 17th, those who were found again will foregather to enjoy a Quiz by G3IOR and G3LDI. G3IOR is also responsible for the entertainment on the 31st, when he is to give a talk on Aerials; all of these are to be held at Hq., Old Lakenham Hall, Lakenham, Norwich.

Normally **Swindon** are in session every other Wednesday at Headlands School, Cricklade, but there is no activity laid on for the months of July or August. On the other hand, **Saltash** have their main effort at the end of July, this being their Mobile Rally, which will be laid on at Calstock Playing Field, with the displays and talk-in stations in the Memorial Hall just alongside.

Business seems to be booming for the **Verulam** lads—so much so that anyone thinking of looking them up would be well advised to get in touch with the secretary, at the address in the Panel, for an up-to-date briefing.

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Back in with a report is the **Civil Service** Radio Society, who for the moment are in session on the third Tuesday of the month, albeit after August they change to two meetings each month, the additional one being slated for the first Tuesday. In the "forthcoming attractions" category, this group mention Colour TV, and also Dud Charman's famous talk on Aerials. All these are down to be given at the Science Museum, Exhibition Road, South

Kensington. The May event was also extremely interesting, being a lecture on "Space" by Major Hesse, of the USAF, illustrated by a colour film, with a commentary by the space-walker, the late Lt.-Col. Ed White.

July in **Coventry** sees three meetings; on the 7th, a night on the air; on the 21st, a display of home-constructed gear, for which entries are solicited from all the lads; and another night on the air on July 28. Incidentally, this crowd have a KW-2000, which is on loan to members at a reasonable charge for each week of the loan. This seems to be an idea which could well be taken up by other groups.

Outside activities, in the way of visits, seem to be popular with the members of **Medway**, who recently went to Chattendon Barracks, for a most enjoyable evening, which included lectures from senior officers, a chance to look at some of the Army's gear, a sight of the Morse training rooms, and the hospitality of the unit. July 3 is slated to be a Junk Sale and Natter Nite at Hq., while on the 17th they are off again, this time to the GPO station at Tolsford Hill, near Folkestone. This is followed up by the running of a station at the B.P. Family Day event, and to round off the month, another trip out mobile, on the 31st, when they hope to meet the chaps from the South London Mobile group.

Many groups run an annual dinner, but most of them are held during the winter months. Not so **Melton Mowbray**, who had theirs on June 22. However, for some folk, indisposition prevents them ever attending such a function, whatever the season, and to cater for these is the purpose of **RAIBC**. Obviously, then, RAIBC is composed partly of the invalid and bedfast types for whom the Club is intended, and partly of supporters; and the amount of help it can give to those in the first category is a direct function of the numbers in the second. One could also add that there is no more satisfying aspect to Amateur Radio than represented by being a "supporter" of RAIBC, in the active sense.

Usually the **Acton, Brentford and Chiswick** chaps are able to organise something of interest and this month is no exception, the discussion being around the question of solid-state Field Day gear, to which visitors are welcomed.

**Derby** have a lot of "meat" in their activities for July. As usual, the first meeting of the month, on the 5th, is a Surplus Sale. A lecture on Colour Television is split into two parts, given on the 12th and 26th, with the intervening session devoted to a Film Show. All these, at Hq., Room 4, 119 Green Lane, Derby, commencing at 7.30.

**Worthing** seem to be a very lively lot, what with the Club 4m. project, a GDO-building exercise, and other such things; they were very sorry to lose one of their members, G3KXF, who is going to become a VK.

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New reporters to this space are **Nailsworth**, who are holed up in the Boys' Club in Nailsworth, where



For the recent field day event, the Leicester Radio Society had their own outfit G3LRS on the air, the operators shown here being, left to right, G3MYI, G3WDA (xyl of G3MYI), and G3PBC. Running a transceiver designed and built by G3MYI, on the 40-80-160m. bands, they made 319 contacts for G3LRS, including some W/V/P9 stations. Note the nice bug key at lower right.

it is possible to find them any Tuesday evening. As the AGM is only just past, the committee have not yet had a chance to get to work on the autumn events, but they promise it will be good!

One wonders, on sight of the **Hull** card for July, whether there is a communal desire to try slimming! A start is made with a Problem Evening on the 7th. This is followed by a Walking D/F Event on the 14th. Next there is instruction in Artificial Respiration and First Aid in cases of Electric Shock on the 21st (a topic which does not figure in group activities as often as it should). The month is rounded off with more exercise, this time in the form of a tour round Sculcoates Power Station.

**Southport** have their place on the Esplanade, and so have more of a problem than most in the way of maintenance of the building and its surroundings; thus they are setting aside time on Sunday afternoons so that all will be well during

the winter. For the rest, G3OYK is to talk about Field Strength Tests on the 5th, while on the 12th the evening is given over to G3BLX to explain Capacity Measuring Equipment. The 19th sees G3OYK on to bowl again, with a Transistor Dip Oscillator, followed on the 26th with the secretary showing how to align Domestic Receivers. Finally, G3OYK comes back to explain the mechanics of Rectification, with the aid of an oscilloscope.

Toc H Hall, Addiscombe, is located at 158 Lower Addiscombe Road, and is the home of the **Addiscombe Amateur Radio Club**. They foregather here on the 2nd and 4th Tuesdays in each month, although they do not indicate the programme details, we are assured that something of interest will be going on.

One of the most interesting of the news-sheets to come our way this month is the **Cray Valley QUA**. The editorial compares the passive acceptance of Television with the active attitude of most amateurs, and draws a few instructive and thoughtful conclusions. The July evening is to be given by K.W. Electronics; the date is not mentioned but is probably the first Thursday in July, at Eltham Congregational Church Hall, 1 Court Road, Eltham.

One of the nicest gestures we have heard of for a long time was when the gear of G3NJL, the late Borough Engineer of Chingford, was given to the **Silverthorn** group, who are thus now possessed of probably one of the best-equipped Club stations in the country. To show their gratitude, they have decided to have a Trophy to the memory of G3NJL, to be competed for annually by the members.

**Chester** have a sizeable programme scheduled for July, starting with the Net Night on the 4th. On the 11th of the month a couple of the licensed members are to be coerced into talking about their shacks. A week later is the date for a session entitled "Denis's Nite," the Denis being G3EWZ. Finally, on the 25th, there is a Brains Trust. All these are at Hq., which is Chester YMCA.

One of the extra-territorial outfits in the field of Amateur Radio is **A.R.M.S.**, which caters for the mobile enthusiast, and publishes a monthly called *Mobile News*. The copy to hand this month is one of the best for a long time, with a very interesting reprint of the front page of the *Gambia News Bulletin*, which is almost entirely devoted to Amateur Radio activity in Gambia, and the formation of a Gambian national society.

Most of the lectures in the programme of the **Mid-Herts Club** are concentrated into the winter sessions, and the warmer days devoted to things like contests, outside activities and eating—this last being the form of entertainment on July 13th, a Sausage Supper and Raffle at Club Cottage in Burnham Green.

Nice to hear that the **Nuneaton ARS** has been reconstituted, and now has its home in the loft over the Anchor Inn at Hartshill, every fortnight commencing June 8, which gives us the 6th and 20th July. It is hoped to be able to arrange a programme to suit all tastes.

Overseas visitors are always welcome in a Club, and **Clifton** was no exception when LA7SG dropped in recently. On the other side of the coin, few things are more demoralising than to have one's entry for NFD made pointless by the absence of almost all the potential operators, at examinations of one sort or another; this is the sad fate that befell **Salop**, who have a large and active younger element among the licensed members.

Regular as clockwork is a good description of the way the **Shefford** notes come in each month; and this month we see from those notes that on July 6 a D/L hunt is to take place, followed a week later by a Club Quiz. On the 20th, they are to settle down to the business of Planning the Programme, and on the 27th G3ROL is to discuss Modulation Techniques.

\* \* \*

Having spent a lot of time recently on matters of business, the **Stourbridge** chaps are probably relieved to get back to things technical. This time it is Frank Bills, G3CLG, who is to talk about the A to Z of Tape Recorders. Venue for this one is Longlands School, Brook Street, and the date July 4.

Live Amateur Television is to be demonstrated at **West Kent's** meeting on June 30, followed by a Junk Sale on July 14. July 28 is set aside for a discussion on Ways and Means with regard to VHF field day. No meetings are laid on for August, although we understand there is to be a Radio Weekend arranged at Willingdon, near Eastbourne, of which we have no firm detail yet.

No programme at all is the current line at **Mansfield**, because the members prefer to ragchew; this they do at the New Inn, Westgate, on the first and third Fridays. Incidentally, they mention that it is possible for people to visit the Radio Observatory at Jodrell Bank, and details can be obtained from the Manager, The Concourse Building, Jodrell Bank, Macclesfield, Ches. At a rate of 3s. 6d. a head—no reduction for parties—it seems to be a first-class possibility for the groups within range who have a hole in the programme.

Visitors welcome is the statement made by the **Westmorland Radio Society's** hon. sec., and he goes on to say that they are to be found on the first and third Friday in each month at the annexe to the Allen Technical College, Sandes Avenue, Kendal.

The name with which the **Guildford** boys have christened their newsletter is *The Natter*. From it, we learn that they had a very full list of activities for June, but nothing is mentioned for July, so all we can do is refer you to the hon. sec. at the address in the Panel.

For the groups that are spread out, such as the **Ex-G Club**, a newsletter is an essential, but it is not often one comes across such a fine one as theirs. It is looked forward to every month by a surprisingly large number of people apart from the members.

No mention of the forward programme by the

**Lothians** this month, but there is no doubt something of interest going on, as a follow-up to the activities of recent months, so a call to the hon. sec. is indicated—see Panel.

**Farnborough** seem to have got nicely into the swing of things and are to be found regularly on the second and fourth Tuesday in each month, the venue being the Model Railway Club, 310 Farnborough Road, Farnborough. The July formal session on the 11th should be particularly interesting as they have G2DX, Kenneth Alford, talking about the History of Amateur Radio—and he has been at it since before the Kaiser's War!

Now to **Cheshunt**, where they are hoping for nice weather, particularly for July 15, when they are to hold a field day at Goff's Lane Playing Fields, Cheshunt, on all bands from 1.8 through to 144 mc, and possibly even 432 mc, the call being their GB3CRC.

Talking of calls, we are very pleased to hear that **Maidenhead** have taken out one, and by the time this is in print, if all goes well, G3WKX will have been "christened." Incidentally, your scribe must apologise to Maidenhead for having transposed one of their meetings to the third Thursday—it should have said first Monday, and third Tuesday

### Names and Addresses of Club Secretaries reporting in this issue:

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 ADDISCOMBE: S. E. Fuller, 116 Shirley Way, Croydon CRO-8PE. (01-777-1298).  
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 COVENTRY: R. Steptoe, 21 Wootton Street, Bedworth, Coventry.  
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 ECHELFORD: D. Walmsley, G3HZL, 153 Worpole Road, Isleworth, Middx. (POPesgrove 3239).  
 EDGWARE: G. S. Fitton, G3RAA, 18 Beverley Drive, Edgeware, Middx.  
 EX-G RADIO CLUB: F. W. Fletcher, G2FUX, 53 St. Ives Park, Ringwood, Hants.  
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 GUILDFORD: A. Wilkes, G3SLH, Schiehallion, Hookley Lane, Elstead, Godalming, Surrey.  
 HARROW: R. C. Ray, G2TA, Wintons End, Springfield, Bushey Heath (1762), Herts.  
 HULL: D. J. Peacock, G3NOP, 336 Cottingham Road, Hull.  
 LEICESTER: J. T. McAllister, 239 Sturdee Road, Eyres Monsell, Leicester (Wigston 6157).  
 LOTHIAN: A. J. Masson, GM3PSP, 20 Merchiston Park, Edinburgh, 10.  
 MAIDENHEAD: E. C. Palmer, G3FVC, 37 Headington Road, Maidenhead, Berks.  
 MANSFIELD: F. N. F. Bewley, G8HX, 116 Westfield Lane, Mansfield, Notts.  
 MEDWAY: P. Carey, G3UXH, 29 Miskin Road, Hoo, Rochester, Kent.  
 MELTON MOWBRAY: D. W. Lilley, G3FDF, 89 Sandy Lane, Melton Mowbray (3519), Leics.  
 MID-HERTS: H. R. Thornton, G3PKV, 43 Fordwich, Welwyn Garden City, Herts.  
 MIDLAND: C. J. Haycock, G3JDJ, 29A Wellington Road, Handsworth, Birmingham, 20.  
 MID-SUSSEX: E. J. Letts, G3RXJ, 87 Meadow Lane, Burgess Hill, Sussex.  
 MID-WARWICKSHIRE: M. Spencer, G3UOD, NBS 3rd Line, Royal Air Force, Gaydon, Warwickshire.  
 NAILSWORTH: J. Chandler, The Flat, Hurns Radio, Market Street, Nailsworth, Glos.  
 NORFOLK: W. Higgins, G3PNR, 13 Falcon Road East, Norwich, Norfolk, NOR.21L.  
 NORTHERN HEIGHTS: A. Robinson, G3MDW, The Candy Cabin, Ogden, Halifax (64329).  
 NORTH KENT: P. T. Baber, 64 Latham Road, Bexleyheath (8655), Kent.  
 NUNEATON: A. Broadway, 17 Nuneaton Road, Bulkington, Nuneaton.  
 PURLEY: A. Frost, G3FTQ, 62 Gonville Road, Thornton Heath, Surrey CR4-6DB.  
 R.A.I.B.C.: Mrs. F. Woolley, G3LWY, 331 Wigan Lane, Wigan.  
 REDBOURN: L. S. Duffy, G3TXP, 60 Snatchup, Redbourn, St. Albans, Herts.  
 REIGATE: D. Thom, G3NKS, 12 Willow Road, Redhill, Surrey (Reigate 45033).  
 SALOP: W. Lindsay-Smith, 22 Kingswood Crescent, Copthorne, Shrewsbury.  
 SALTASH: D. Bowers, 95 Grenfell Avenue, Saltash, Cornwall.  
 SHEFFORD: D. A. Pike, 11 Hazel Grove, Stotfold, Beds.  
 SILVERTHORN: P. Casemore, G3SGF, 11 Oakhurst Gardens, Chingford, London, E.4 (SILverthorn 8550).  
 SOUTHAMPTON: A. Partner, G3HKT, Tekhi, Hound Road, Netley.  
 SOUTH BIRMINGHAM: A. Bishop, 40 Cecil Road, Birmingham 29.  
 SOUTHGATE: A. Dutton, 77 South Lodge Drive, Southgate, London, N.14 (LABurnum 3390).  
 SOUTH MANCHESTER: W. M. Furness, G3SMM, 16 Coniston Avenue, Sale, Cheshire (061-973-6676).  
 SOUTHPORT: N. K. Waring, 33 Chestnut Street, Southport.  
 SSB SOCIETY: E. S. Ellis, 5 Wood Moss Lane, Bescar Lane, Scarisbrick, Ormskirk, Lancs.  
 STOKE-ON-TRENT: A. Bucknall, G6TES/T, 32 Haywood Street, Shelton, Stoke-on-Trent.  
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 SUTTON COLDFIELD: J. E. Symes, G3LNN, 20 Plantsbrook Road, Walmley, Sutton Coldfield, Warwickshire.  
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 W.A.M.R.A.C.: Rev. A. W. Shepherd, G3NGF, 1 North Street, Crewe (2558).  
 WEST KENT: R. Trevitt, G3SSE, 28 Delves Avenue, Tunbridge Wells, Kent.  
 WESTMORLAND: N. Stanley, G3UEC, 9 Castle View, Sedgwick, Kendal, Westmorland.  
 WIMBLEDON: K. Alexander, 23 Pepys Road, West Wimbledon, London, S.W.20.  
 WOLVERHAMPTON: J. P. H. Burden, 28 Coalway Road, Wolverhampton.  
 WORCESTER: R. L. Avery, G3TQD, 24 Alexander Avenue, Droitwich (3943), Worcs.  
 WORTHING: S. G. Williams, 79 South Street, Lancing (5371), Sussex.

each month, the latter being an informal. The formal meeting for July is to hear G3MEV on transistors and it should be noted that Hq. is at Victory Hall, Cox Green, Maidenhead.

At **Brighton Technical College** they get together fortnightly, on Tuesdays, the next being on the 4th and 18th, till the end of the Summer Term, and after that there is a plan afoot to keep going through the summer by meeting in a local ale-house; for more details, drop a line to the hon. sec., G3SKI.

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Closing till September seems to be popular among the northerly groups, and **Bradford** is no exception. They have a Ragchew on July 4; hear G3KEP talking about RTTY on the 14th; and then hibernate till September. To find them the place to look is Bradford Technical College, Great Horton Road, Bradford 7.

Over at the **Northern Heights**, G3MDW has some hard things to say about his members, but mentions that on July 5 they will go to Holme Moss TV station, and on the 19th will sit down and make plans for the future. On the 26th, a "special" is the visit to the Manchester Club, which had to be postponed from its earlier date.

A Natter Nite, slated for July 14th at the **Bromsgrove Co-op Hall**, seems to be about the only indoor item for July on the Bromsgrove Club programme. Visitors, of course, very welcome. **Harrow**, by contrast, are all indoors in July, two sessions, on the 7th and 21st respectively, are Practical, while the 14th is set aside for G3LWM to talk about RAEN, the 28th being a Junk Sale.

Up at **Sutton Coldfield** the lads are foregathering at the "Fox," Walmley, on July 10, when they hope to hear a lecture on Radio Interference. No meeting in August, and for September, provisionally, a talk on Static Electricity.

Your scribe was pleased to hear again from **WAMRAC**, after a long silence, and to know that they are going from strength to strength. Incidentally, G3NGF has now got them a smart Club badge, which has gone out already to all the members; there seems to be a possibility that a "callsign" version will be available, to order, from the hon. secretary.

The pattern of an "informal" meeting and then a lecture each month is one that seems to be very successful; it is certainly so at **Edgware**, who have their informal on July 10 and on the 24th are to hear the second part of a talk on Types of Radio Interference, by G3SJE. For further details, contact the hon. sec. at the address in the Panel.

A reshuffle of the officials of the **South Manchester** group has taken place, between the chairman and the hon. sec., so we have a new address in the Panel. As to the entertainment provided, on July 14 G3HZM gives a talk on Propagation as preparation to his second lecture on August 11 dealing with Aerials. In between these, on July 28, G3WFT is to talk on the large topic of "Receivers."

Change has also hit **Mid-Warwickshire**, who lost

their secretary a few months ago, and seemed to have sunk without trace—but like all good 'uns, they are still going strong. The Shack is being enlarged, a formal meeting is held every Monday and there is also an Activity Night each Thursday; thus on July 10, G3UOD talks about Radar; on the 17th they have a demonstration of the Warwick School's Computer; and on the 24th an interesting item in that they are billed to visit G3LZN's Shack.

In the same general area is **Worcester**, where the Club gets together each Saturday evening at 35 Ferdiswell Park, Droitwich Road, Worcester. In addition there is the Mobile Rally to be considered, this being due to come off on the 16th, at the Hill County Secondary School at Upton-on-Severn.

Still in the Midlands, **Wolverhampton** have two items on the July Agenda, namely a D/F exercise on the 1st, details of which can be obtained by reference to the hon. sec.—see Panel—followed by a meeting at Hq. on the 17th, when a discussion on VHF takes place. Hq., by the way, is Nechells Cottage, Stockwell Road, Tettenhall.

It is always a pleasure to hear of a problem being solved—so we are glad to know that **Dorking** are still able to use the ex-GPO van, as the parts appealed for last month have been located and they are hoping to be "all systems Go" in the very near future.

Next door to Dorking is **Reigate**, where a lecture on Colour Television by G3RIM should fill the George and Dragon, Redhill, to capacity. In addition some of the members intend to support the Crawley event on the Hog's Back on Wednesday, July 26—this latter is in the nature of an Informal Mobile Rally, and detailed information is obtainable from **Crawley's** honorary secretary.

A new Club with an out-of-the-ordinary name is the **Single Sideband Society**, which meets at 73 Avondale Road, Southport, every Tuesday evening at 8 p.m. On July 8, they are putting on an exhibition station at the Formby Horticultural Show using the callsign GB3FS. In addition, they say that VK7TR, who lost all his home and his gear in the Tasmanian fire disaster a few months ago, is in U.K., has the call G3WLF, and may be contacted *via* the hon. secretary.

Friday Night is **Grafton** night for most North London amateurs, in Room 35, Montem School, Hornsey Road, and in addition there is the Grafton net on Wednesday evenings on Top Band.

At 2 Racecourse Road is the "town residence" of the **Stoke-on-Trent** Club. In addition they now have a "Country retreat" at Hulme, 700 feet a.s.l., complete with a couple of 100 foot masts! They modestly say they will use these for the odd equipment test now and again! The Hq. in town is opened every Thursday evening at 7.30.

Last time out it seemed to be all AGM's; this month the picture is completely different and the only one mentioned so far is that for **Purley**, set down as having been held on June 16. As for July, the 7th is a natter-night, at which a 4m. rig will also be used, while on the 21st at the same place

Some of the members of the North-West VHF Group, who recently held their annual dinner and social evening, a most successful event. Seated, left to right: G3SMI, G3SNM, G3ULI, G3MAX (chairman) and G3FNM (hon. secretary). Of those standing at the back, eight hold call signs.



G3PAQ will talk about and demonstrate RTTY.

\* \* \*

Always able to say something controversial is G2HIF, editor of *Harwell's QAV*—all for the good of the group, of course! Perhaps it is because this crowd are possibly more closely-knit than most, that they seem to flourish under this regular self-examination.

The May copy of the *Sutton and Cheam Newsletter* indicates a certain degree of vagueness as to the forward programme; our particular interest, of course, is the July session, on the 18th, and here we are pretty certain the plans have gone awry, so if you want to know what's on before you get there you'll have to contact the hon. secretary.

The same advice is offered in the context of the *Surrey Club*, whose *Newsletter* seems to be a month out of phase with us—but to be fair it should be commented that they have recently had an AGM and so the new committee will no doubt be casting around for fresh attractions to bring to the "Blue Anchor" in South Croydon.

*Echelford* take us severely to task for our May mention—we gave them an address in the *wrong county*—so we must hope and pray no one took train down into Kent! However, July 27 is the date to reserve this time, for a Junk Sale, at St. Martin's Court, Kingston Crescent, Ashford, *Middlesex*.

It is nice to be able to record that the projector lens, lost by the *Straford-on-Avon* gang, has turned up, accidentally mixed up in one of the "lots" at a recent Junk Sale! As they have held the AGM during the last month, their future activities are not yet clearly defined; but nevertheless the impression that one gets from the correspondence is of a lively crowd who welcome visitors.

Can You Help Please, is the heart-rending appeal from *Southgate*, who for several months have been looking for a new place to meet in. In the interim, regular meetings are still held, on the second Thurs-

day, except in August, at Parkwood Girls' School, Wood Green, where in July the evening will be entitled "Knights of the Committee," which conjures up all sorts of visions!

On now to *Mid-Sussex*, who seem to have a pretty ambitious programme, but for all the information you will have to contact the hon. sec., as venue and dates seem to have been missed off the current issue of the *Newsletter*.

Just how much of a "draw" the meetings of a good outfit can be is evident from the attendances at the monthly *Cornish* meeting, which are anywhere from 40 to 70, from all over the County! For July, the meeting-place should be filled to capacity to hear one of the staff of Land's End Radio, GLD, talk about the station and its work. This one, of course, will be held on the first Thursday in July, at the *SWEB* Clubroom, Pool, Camborne. Incidentally, their late secretary, Martin Harvey, is now much improved, and has managed to attend a meeting, so all should soon be well. In addition, there is the Mobile Rally, at Pentire Head, coming off on Sunday, July 23rd, and an event which usually attracts a large attendance.

Sorry to hear that *North Kent* find themselves a little embarrassed by the increase in the attendance at meetings! But this seems to have come about as the result of the cost of hiring a larger room, and so a special evening has had to be devoted to the business of lifting the subscription rate. Nevertheless, it does show that they are doing very well. To meet them, July 13 is the date, at the Congregational Church Hall, adjacent to the Clock Tower in Bexleyheath, when K.W. Electronics are to demonstrate and show their range. There is another session on the 27th, devoted to members' current projects, at the same place.

There is one thing about the awful process of looking for a place in which to foregather, and that is the sense of relief when at last you succeed! This, most likely, is the emotion of the *Leicester* chaps

when faced with the mere problem of the decorating and re-equipping of the clubroom. In their case it is Gilroes Estate Cottage, Groby Road, Leicester, and of course, visitors are very welcome, either on Monday evenings or Sunday mornings at 10.30.

**Wimbledon** are in the process of getting the bits and pieces of a Club station together, so that they can air their nice new call sign, G3WIM; already, we gather, there is a receiver, thanks to the kindness of member G3PGA, and a power supply. There is to be a discussion as to the transmitter in the near future—indeed it may have already taken place by the time this is in print—and so, with so much to pass on, perhaps the compiler of *QRK-5* is justified in omitting the details of the July meetings, for which it will be necessary to contact the hon. secretary at the address in the Panel.

From **Ainsdale** (Lancs.) the report is that the membership has got a bit fed-up with Top Band (QRM?) and includes a disclaimer about the alleged interference during the Southport D/F event (p.242, June)—it seems that the “offender” was in fact one of the GPO Coast Stations, so the least said the better!! The Ainsdale chaps are very pleased with their Club all-transistor HF-band Rx, and are getting its VHF counterpart ready for summer portable events.

### SPECIALLY ON THE AIR

Amateur stations to be making a special appearance in the next month or so are as shown below. Any local group or organisation putting on a station to be operated in public can make use of this space—the closing date for the August issue will be *July 10*.

**G3AFT/P, July 2:** Operating throughout the day on 160m. from Tumulus Hill, Hampstead Heath, London, N.W.3, the Grafton Radio Society will also have G3THQ/P on 4m. and G3VUE on 2m. There may also be SSB operation on the HF bands. Visitors to the site will be most welcome. QSL address: E. A. Rudolph, G3SIL, 29 Pangbourne Drive, Stanmore, Middlesex.

**GB3FS, July 8:** Organised by the Single Sideband Society for the Horticultural Show, Duke Street Park, Formby, Lancs. (See Secretary's Panel for QTH, p.305.)

**GB2LS, July 13-15:** At the annual Liverpool Trade & Agricultural Show, operated by the Liverpool & District Amateur Radio Society on all bands 10-160m.. AM/CW/SSB. All contacts will be QSL'd by special card, via I. Barton, G3TYE, 23 Moss Side, Liverpool, 14.

**GB3HH, August 5-6:** From Hopehill, Meopham, Kent, the training and camping site for Gravesend & District Scouts, operating SSB on the 10-80m. bands. Enquiries and QSL's to: T. Biddlecombe, G3WAO, 39 Portland Avenue, Gravesend, Kent.

**G3OJE/A, July 30-August 11:** At Tolmers Scout Camp Site, Cuffley, Herts., running all bands 10 to 160 metres. Any Scouts or Scout Group unable

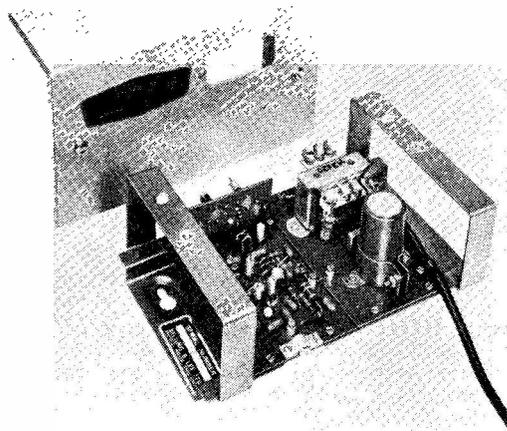
The **Redbourn** (Herts.) group report a very successful showing of their GB3RED at the local Fair on Spring Bank Holiday. They had the assistance of the Verulam and Luton Clubs (also the St. Albans Girl Guides!) and many interesting DX contacts were made by ops. G3LXP, G3TXP, G3UTW and G3VJO, assisted by a keen bunch of SWL's. Many mobiles were also worked and a large proportion of them eventually turned up at the Fair. The Redbourn boys plan to go even bigger next year—well done, and good luck to them!

As a finale this time, perhaps we should make mention of a scheme which is being put into operation by the Civil Service crowd, whose programme we have already discussed; it is that they are running a Hospitality arrangement, so that town members can take in, free of charge, any of the country members who may be in Town to attend functions of radio interest. This is one of the nicest ideas we have come across for a long time and is a credit to the group.

### Deadline

And that's about it for this month. Let's have your reports for next time, the deadline being **July 7, latest**, addressed as always, “Club Secretary,” *SHORT WAVE MAGAZINE*, BUCKINGHAM. Till then, *73 es bcnu*.

to find a local amateur to co-operate for the Jamboree-on-the-Air (August 5-6) may camp at the Site and participate with G3OJE/A. Enquiries to the Camp Warden, address as above. For radio correspondence: M. D. Bass, G3OJE, 42 Clevedon Road, London, S.E.20.



Although small components vary widely in size, shape and terminal arrangement, they can now be housed in cases of standard size and pin configuration, with obvious advantages as regards storage, handling and simplification of layout and mounting on circuit boards. Pictured here are some new standard encapsulations, designed by the Materials Division of STC, for wound components such as chokes and transformers.

# NEW QTH's

This space is available for the publication of the addresses of all holders of new U.K. call signs, as issued, or changes of address of transmitters already licensed. All addresses published here are reprinted in the U.K. section of the "RADIO AMATEUR CALL BOOK" in preparation. QTH's are inserted as they are received, up to the limit of the space allowance each month. Please write clearly and address on a separate slip to QTH Section.

- EI8BL**, C. E. Davies (G13HNM), c/o 150 Pembroke Road, Dublin 2.
- G3VSQ**, R. S. West, 216 Gretna Road, Coventry, Warks.
- G3VUM**, Amateur Radio Society, Manchester University Union, Oxford Road, Manchester, 13.
- G3VWD**, C. J. Bean, 83 Kenpas Highway, Coventry, Warks.
- G3WBE**, E. Tully, 11 Kylemore Road, London, N.W.6. (Tel. 01-328-2801.)
- G3WDS**, D. Spooner, Lady Wath, Park Road, Scotby, Carlisle, Cumberland.
- G3WDW**, J. T. Webster, 133 Argie Avenue, Kirkstall, Leeds, 4.
- G3WEP**, R. M. Dotchin (VE3CXG), 35 Milton Road, Old Fletton, Peterborough.
- G3WFB**, C. N. Howard, Copperas Reach, Harkstead, Ipswich, Suffolk.
- GM3WFJ**, R. Andrew, Nether Craig, Alyth, Perthshire.
- G3WFX**, J. A. Harper, 30 Brunel Road, Dawley, Shropshire.
- G3Wfy**, G. Moore, 6 Sandringham Avenue, Thornton-le-Fylde, Lancs.
- G3WGE**, E. K. Law, 89/91 High Street, Brownhills, Walsall, Staffs. (Tel. Brownhills 2155.)
- G3WGF**, G. S. Rose, 353 London Road, St. Leonards-on-Sea, Sussex.
- G3WGH**, M. E. Reeve, 234 Edwards Lane, Arnold, Nottingham.
- G3WGM**, J. D. Heck, Homefield, Hartsbourne Avenue, Bushey Heath, Herts. (Tel. Bushey Heath 1885.)
- G3WHF**, D. Richardson, 42 Berry-moor Road, Wellingborough, Northants.
- G3WHG**, M. D. Key, 110 Lincoln Street, Norwich, Norfolk, NOR. 51-F.
- G3WHK**, D. A. R. Poulter, 279 Aragon Road, Morden, Surrey.
- G3WHR**, R. Brocks, Strathearn Lodge, The Chase, Rose Valley, Brentwood, Essex.
- G3WIH**, Hemel Hempstead and District Amateur Radio Society, c/o A. J. Green, 178 Long Chaulden, Hemel Hempstead, Herts.
- G3WIW**, A. S. Leach, 76 Hastings Drive, Lyneham, Chippenham, Wilts.
- G3WIZ**, P. D. Long, 5 Fanshawe Road, Cambridge, Cambs.
- GM3WJF**, A. McEwan, 4 Teviot Road, Hawick, Roxburghshire.
- G3WJH**, W. Wilkinson, 4 Church Street, Workington, Cumberland.
- G3WJM**, B. E. Schoth, Colycot, Hampton Lane, Blackfield, Southampton, Hants. (Tel. Blackfield 3315.)
- GM3WJQ**, H. W. McConnel, Black-yett, Kirtlebridge, Lockerbie, Dumfries-shire.
- G3WJZ**, R. W. G. Green, 40 Meshaw Crescent, Abington Vale, Northampton, Northants.
- G3WKH**, R. G. Martin, 61 Bouncers Lane, Prestbury, Cheltenham, Glos. (Tel. Cheltenham 7471.)
- G3WKM**, K. G. Melton, 26 Brentingby Close, Melton Mowbray, Leics. (Tel. Melton Mowbray 4430.)
- G3WKQ**, A. M. Forster, 12 Mitchell Road, Palmers Green, London, N.13.
- G3WKR**, M. B. Goodwin, 16 Roe Close, Stotfold (Beds.), nr. Hitchin, Herts.
- G3WKX**, Maidenhead and District Amateur Radio Club, c/o E. C. Palmer, 37 Headington Road, Maidenhead, Berkshire.
- G3WKY**, B. D. Morris, 37 Brookfield Crescent, Kenton, Harrow, Middlesex.
- CHANGE OF ADDRESS**
- G3IES**, B. S. Sutherland, 336 Charlton Road, Westbury-on-Trym, Bristol. (Tel. Bristol 622544.)
- G3IEX**, D. J. Roper, Tree Tops, Bridgewater Road, Winscombe, Somerset.
- G3IQM**, R. I. Sills, 61 Walsingham Road, Woodthorpe, Nottingham. (Tel. ONO2-264988.)
- G3IVF**, H. E. Smith, Ashlea, Poles Road, Kirk Langley, Derbyshire. (Tel. Kirk Langley 325.)
- G3LGW**, D. G. Spencer, Escot, Watling Street, Hints, nr. Tamworth, Staffs. (Tel. Weeford 202.)
- G3LOL**, K. S. Livermore, c/o Sgts' Mess, R.A.F. Cranwell, Sleaford, Lincs.
- G3MBK**, D. W. Underdown, Flat "C," 11 Palace Road, Surbiton, Surrey.
- G3NRZ**, C. A. Hogg, 7 Elm Grove, Lesney Park, Erith, Kent. (Tel. Erith 34752.)
- G3NVA**, F. F. Dodson, The Rhodesia Hotel, The Leas, Folkestone, Kent.
- G3OHH**, R. A. Hargreaves, 44 Castle Road, Mow Cop, Staffs.
- G3RAV**, W. R. Walters, 26 Coltash Road, Furnace Green, Crawley, Sussex.
- G3RYV**, P. R. Cox, Half Timbers, Allenby Road, Maidenhead, Berks.
- GM3SUZ**, D. McLean, 41 Glen Crescent, Inverkip, Renfrewshire.
- G3SWC**, B. Tinton, 15 Park Brook Road, Macclesfield, Cheshire.
- G3TME**, M. Murphy, 16 Longford Way, Stanwell, Middlesex.
- G3TMQ**, R. J. Harrison, 22 Ralphs Ride, Bullbrook, Bracknell, Berks.
- G3TVU**, I. D. Brown, Chestnut House, Friar Gate, Derby.
- G3UAK**, R. A. de Verteuil (ex-GM3UAK), c/o Officers' Mess, R.A.F. Watton, Thetford, Norfolk.
- G3UAS**, T. D. Morgan, 21 Sherington Avenue, Hatch End, Pinner, Middlesex.
- G3UJB**, B. T. Davis, 17 Burne Avenue, Wickford, Essex.
- G3VVB**, C. G. James, 63 Halkingcroft, Langley, Slough, Bucks.
- G8AGZ**, H. G. Rance, 4 Westmere Crescent, Burnham-on-Sea, Somerset.
- G8ALQ**, A. J. Whitlock, 43 Ebbens Road, Hemel Hempstead, Herts. (Tel. Hemel Hempstead 57568.)



## THE OTHER MAN'S STATION

# ZE3JO

**T**HIS time our subject is Mal Geddes, ZE3JO, Box 2462, Salisbury, Rhodesia, who was very active at home in the U.K. under callsign G2SO until 1950, when he went out to Rhodesia for good. Starting from Leigh-on-Sea early in 1934 with the AA call 2AKA, he persuaded the GPO to make it open-aerial and passed the Morse Test (taken in the local Post Office wash-room—for privacy, one supposes!) to put G2SO on the 40-metre air in 1935, with a straight CO. From that he went on to a TPTG rig on 20m., “with a very distinctive note even for those days,” followed by tritets, CO-PA’s and the rest, the Rx being a two-valve TRF. With this gear much good CW/DX was worked, until September, 1939.

War service was with the Royal Air Force, in the Inter-Services Ionospheric Prediction Bureau, at that period very much an esoteric subject in the hands of the back-room boys, in the sense that anything that could be reliably predicted had to be kept from the enemy! On the resumption of amateur activity in March, 1946, G2SO immediately came on ten metres (the only band open to us at the time) and until 1949 kept up with the U.K. trends in Amateur Radio development, from Top Band to Ten.

Early in 1950, he went out to Rhodesia and soon after obtained the present call, ZE3JO, with which he has been consistently active ever since, on all bands

10-160m. The QTH is on a 5-acre plot more than 5,000ft. a.s.l., about 10 miles out of Salisbury—so he certainly has the location and site facilities.

Having progressed through various items of Tx and Rx gear, the present rig consists of an Eddystone 888 and a Viking Ranger II, with which he has a fairly extensive aerial system: A Mosley TA-33Jr., a 250ft. wire for Top Band and Eighty, a 20-metre ground-plane and a dipole for 40 metres—plus, of course, the famous tin-leg antenna! (Mal had the misfortune to lose a leg some little time ago, and was fitted with a metal replacement. He found this could actually be loaded up using proper matching devices and, with only this artificial limb as an aerial, has worked a lot of DX on the HF bands—s’fact!)

Main interests at ZE3JO are CW operating, only 10 per cent of the time being given to Phone working, and the mounting of DX-peditions, for which he holds, or has held, the following callsigns: VQ1JO, VQ3JO, VQ4JO, ZD6JO, ZS8JO, ZE3JO/ZD6, ZE3JO/ZS8, also ZE3JO/ZS9 and VQ5JO, though the latter two were never activated. (Mal says that at 54 years of age he’s getting a bit past expedition work, these days.) Several of these forays have, over the years, been reported in SHORT WAVE MAGAZINE. The DX score stands at 235 countries worked, with 191 confirmed, and several operating certificates are held. One of his outstanding

DX achievements was to make the first (and only) W/ZE contact on Top Band, with W1BB. Outside his operating activities, Mal is treasurer and QSL manager for the Radio Society of Rhodesia, both jobs that he has held for many years.

He says he is still very interested in the DX aspects of Amateur Radio, but does not allow the rare ones to put up his blood pressure—wise man! He also remarks that in case he is able to visit the U.K. again some day, he keeps his old call G2SO in the Post Office files—and he's been a reader of the *Magazine* since No. 1, which takes us right back to March, 1937.

**WE CAN ALL MAKE MISTAKES**

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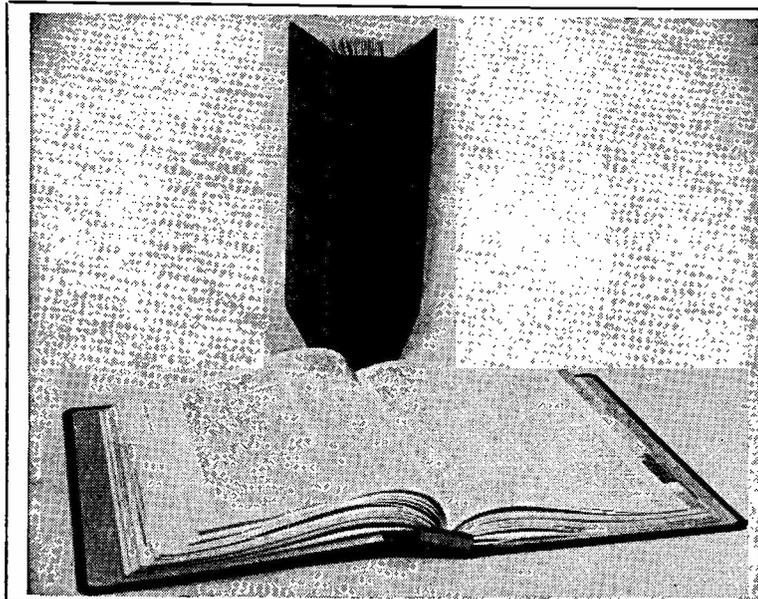
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**FOR SALE:** Three new, boxed 70 cm. 8-over-8 J-Beams, at 30s. each. Whip aerial, G3FIF, with 80/160m. loading coils, new, 40s. Two Command receivers, BC-454B, with spare coils and valves, 20s. each. Advance signal generator Type B3-C, coverage 100 kc to 30 mc, 60s. Lavoie wavemeter, 375 to 725 mc, with manual, 25s. PSU for 52 Set Rx, mains or 12v. battery, 10s. New 150-watt Olympic Z-Match kit, almost completely assembled, 40s. Battery PSU, 12-volt, for PCR, 10s.—Neale, G8AQT, Eastcote, 27 George Lane, Marlborough (843), Wilts.

**SALE:** Withers Twomobile all-transistor Rx, £14; TW-2 10-watt Tx, £11. Both perfect and as new.—Bishop, G3GGG, The Garage, East Hagbourne, Didcot (2308), Berks.

**SELLING:** Eddystone EC-10 in mint condition, £38. Neumann stereo cartridge, world measurement standard, price £14 (cost £48).—Box No. 4503, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

**FOR SALE:** Aircraft-band portable receiver, nine transistor, very sensitive, also full MW/BC coverage, complete with VHF telescopic aerial, ear-piece, batteries and leather case, new, price £11.—Wyse, G3IWE, 36 Wilmslow Crescent, Thelwall, Warrington (64178), Lancs.

**WANTED:** Faulty or incomplete Pye Ranger or Cambridge mobile transceiver; details, pse. **SALE:** T.W. Twomobile, £18. T.W. mini-halo, 40s. Ex-TCS 12 plate meter, 0-200 mA, 10s. PA condensers, 8s.—Perrin, G8ALY, 30 Franchise Street, Kidderminster, Worcs.

**SALE:** Eddystone 840C receiver, in perfect condition, price £26. (Gone SSB). Would prefer buyer to inspect and collect.—Davies, 16 Tydraw Street, Port Talbot, Glam., South Wales.

**WANTED:** Gelo amateur-band converter, N.2619, for 10 to 80 metres. Required for use in Cornwall. Please state condition and price.—23968214 Spr. Harvey, C.F., 1 Troop, 16 Field Sqn., BFPO 36.

**SELLING:** Collins 75A-2, 75A-4. Modifications include 2-4 kc mechanical filter and AGC. Complete with both manuals, speaker and auto-transformer, price £125.—Pilkington, 1 Deansgate Lane, Formby (2778), Lancs.

**EXCHANGE or Offers?** KW-2000 with AC/PSU, would part exchange for Top Band SSB transceiver, or sell.—Peake, GW3SRG, 70 Higher Lane, Mumbles, Swansea, Glam., South Wales.

**FOR SALE:** Morse practice and test records, 35s. Question papers for 1960-'65 R.A.E. (Subject No. 55) with model answers, 12-part R.A.E. lessons, "Radio Amateur Examination Manual," and "Guide to Amateur Radio," 35s. Codar CR-66 Rx, with BFO mod. and internal speaker, £10.—Idiens, 77 Amersham Road, High Wycombe (29317), Bucks.

**SALE:** Gelo R.207 amateur-bands only double superhet receiver, £20. Hallicrafters Sky Challenger Rx, £7 10s. Transmitter, rack-mounted on castors, running 150 watts AM/CW over 10 to 80 metres, with Gelo VFO and 4X150A PA, price £25.—Bensley, G3PTZ, 25 Wimborn Avenue, Grimsby (2344), Lincs.

**SALE:** KW-77 receiver, in excellent condition, with matching speaker and handbook. Only £75, and air carriage paid.—Dodd, GD3RFK, Somerset, Stanley Mount, Ramsey, Isle of Man.

**MUST Sell!** Owner going abroad, CR-100 receiver in very good condition, price £15 or near offer. Buyer to collect or arrange carriage.—Mallinson, 22 Portland Crescent, Mottingham, London, S.E.9.

**WANTED:** Olympic Z-Match, loaded, for 10-160m. and SWR indicator switched for 50/72 ohms.—Longworth, Ballaghau, Kirk Andreas, Isle of Man.

**WANTED:** R.1155 Rx, mains converted and in good condition. Price and full details, pse.—Sharp, 170 Walsingham Road, Childwall, Liverpool, 16.

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### SMALL ADVERTISEMENTS, READERS—continued

SALE: R.C.A. AR88LF receiver complete, realigned and working FB, price £25, delivered to 50 miles.—Rawle, Groesuchaf, Degar Road, Llanharry, Glam., South Wales.

WANTED: To purchase, or would pay for loan, manual for Minimitter MR.44/11 receiver.—Fallows, 91 The Northern Road, Liverpool, 23.

WANTED: R.216 receiver. For SALE: Gibson WO1995 driver (OC81 into 2/OC28) transformer, and WO1996/M2 modulation transformer (2/OC28 into 5000-ohm PA), with Mullard 40-watt circuit, price £3 the pair.—Jaques, G3PTD, 47 Newstead Road, Urmston, Manchester.

SELLING: New Valves, 3/7360, 25s.; 3/6BN6, 10s.; 4/6CL6, 5s.; 3/866A, 8s.; 5/3B28, 9s.; Transformers: 2.5v. 10 amp., 15s.; 10v. 5 amp., 15s.; Tx variable condensers, split-stator, 100mmF, 0-125-in. spacing, 20s.; similar single section 225 mmF, 20s. About a dozen others, and some high-power RF switches—what do you need?—Marshall, G2MA, 57 Godstone Road, Rotherham, Yorkshire.

WANTED: Circuit, assembly and alignment details for Hallicrafters Sky Champion.—Ault, 17 Hollyhedge Road, West Bromwich, Staffs.

SALE: Swan 350 (Jan. '66, with improved VFO), as new in condition and performance, basic only, with home-built calibrator. Price £195, no offers. Prefer buyer who can call to inspect and collect.—Finlay, GM3EUM, 2 Foulford Road, Cowdenbeath (3128), Fife, Scotland.

WANTED: S-meter for AR88, mint. Also copies "Short Wave Magazine" for April '53, Aug. '57 and Aug. '58. SALE: Four volumes Caxton "Radio and Television," as new, price £5, or would EXCHANGE for copies "QST" pre-1966, RSGB "Bulletin" pre-1967. W.H.Y.? All letters answered.—Allsop, 147 Sherwood Street, Mansfield Woodhouse, Notts.

OFFERS? K.W. Vanguard Tx, 10 to 160m. coverage, blocked-grid keying, in immaculate condition. RX-60 receiver, as new. BM-3 microphone with stand. K.W. low-pass filter. Carriage extra.—Waters, 1 Chantry Estate, Corbridge, Northumberland.

SELL or Exchange for Hi-Fi gear or what-have-you: 4/QV06-20, 1/QV03-20, 4/35T, 6/8025, 1/8019, 2/8016, 2/5894/A, 15/DM160, 1/1B24A, 1/1B24 (with part waveguide), Magnetron (ex-GCA), over 50 used valves, 60 diodes and 50 transistors. Also more than 100 good, used and 1,000 unused capacitors, resistors, potentiometers, transformers, printed circuit boards (12s. 6d., post/packing), logic modules, signal generator Type TS-155A, and numerous miscellaneous items. Prefer offers the lot, replies s.a.e. only. Possible delivery in London area.—Box No. 4504, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

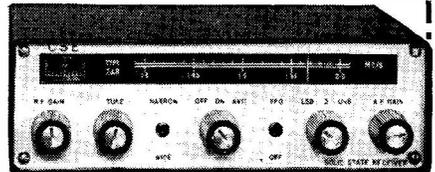
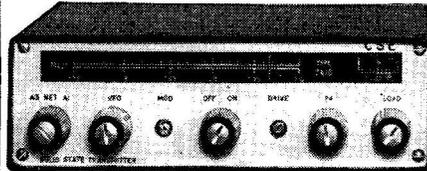
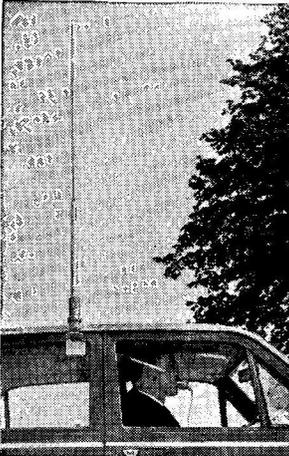
SALE: TA-12C Tx, with PSU and modulator, coverage 20-40-80-160m., in perfect working order, price £25, buyer to collect.—Allwright, G2AON, 333 Seaside, Eastbourne (27039), Sussex.

CLEARANCE! Everything must go and no fancy offers expected but would like potential buyers to visit and collect—why not give me a call! I have available a Minimitter transmitter; an AR88D receiver; a transmitter for 20/80 metres, and another for Top Band; also other equipment. Would suit a Club.—Howarth, 11 Bay View Road, Onchan, Isle of Man (Tel.: Douglas 21407).

OFFERS? All the parts for a G3HTA double-conversion superhet receiver, as described in December '64 "Short Wave Magazine," for sale.—Angerson, 35 Parkside Road, Leeds 6, Yorkshire.

SALE: Heathkit QPM-1 Q-Multiplier, with manual, £5. CR-100 spares: Twelve valves, resistors and condensers (including smoothing) and o/p transformer, 45s. Manual for CR-100, 20s. All including postage.—Lawrence, 44 Elizabeth Road, Leamington Spa, Warwickshire.

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## SMALL ADVERTISEMENTS, READERS—continued

**FOR SALE:** Hammarlund HQ-170 Rx, Joystick deluxe, Joymatch ATU and headphones, offered complete at £70.—Hodges, 214 Bishopsgate (3rd Floor), Bank Chambers, London, E.C.2 (or ring MANSion House 9768 during working hours).

**FOR £95 or nearest offer, a KW-201 receiver.—**Painter, 23 Crossway's, New Ferry, Wirral, Cheshire.

**WANTED:** K.W. Viceroy or similar SSB Tx, condition not important.—Cawthorne, G3TXF, Holt Cottage, Kingston Hill, Surrey. (Tel. KIN 0841).

**SALE:** Heathkit RA-1 receiver, complete with xtal calibrator and speaker, £30.—Rogers, G3SYZ, 143 Phillips, Garston (4577), Watford, Herts.

**SELLING:** Eddystone S.750 receiver, in good condition, with matching S-meter. Price £35, carriage extra.—Kellow, Glenvale, St. Dominic, Callington, Cornwall.

**FOR SALE:** CR-100 receiver, coverage 60 kc to 30 mc, in good working order and with noise-limiter, modified for 6J5M stabilised local oscillator and S-meter. Price £17, delivered South London area.—G3OLX, QTHR or ring 01-644-8458.

**WANTED:** Vanguard or similar Tx, will inspect and collect at reasonable distance.—Webster, G3WDW, 133 Argie Avenue, Leeds 4, Yorkshire.

**WANTED:** Marconi transceiver HP-112, in any condition. Also Heathkit Mohican receiver. Price and details, pse. (Beds. area).—Box No. 4507, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

**SALE:** Type 68 Set receiver, in good condition, with brand-new valves, headphones and circuit diagram, price 50s., or nearest offer.—Dunstan, 6 Lincoln Road, Tuxford, Notts.

**FOR SALE:** Heathkit HT-1G tower, galvanised finish, dismantled, price £28.—Rowlands, 37 Hampton Road, Oswestry (3764), Shropshire.

**SALE:** R.C.A. AR88D receiver, in good condition, with S-meter, price £37.—Alden, G3VUN, 30 Brook Road, Gidea Park, Romford (44480), Essex.

**FOR August issue, due out July 28, single-copy orders for mail delivery (4s. post free) should reach us by Wednesday 26th. — Circulation Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.**

**OFFERING** at £30, Heathkit RG-1 general coverage receiver, professionally built and in immaculate condition, delivered in London or Blackpool areas.—Tudor-Cole, G3WBD/A, 9 Harold Road, London, S.E.19.

**SWL Going Overseas** must sell equipment, including Class-D Wavemeter, Hallicrafters SX-24 receiver, BC-454B, BC-455B, power packs, etc., etc.—Write, or call evenings.—Prater, 24 Falmouth Road, Reading, Berks.

**SELLING:** Eddystone S.640 receiver, £20. R.1155, modified, £8. Power pack, £2.—Ring Oxford 59570.

**WANTED:** Cheap duplicator for use of a new Radio Club. Must be in working order.—Beggs, 9 Barward Road, Galston, Ayrshire, Scotland.

**WANTED:** Information on the Douglas 1200VA/350w. petrol-electric generating set, ex-R.A.F., Ref. 42Y/1000.—Wadsworth, G3NPF, 130 Ashingdon Road, Rochford, Essex.

**WANTED:** TA-33-Jr. Beam in good condition, and top bell-housing for CDR-AR22 rotor. Also interested in Sideband transceiver for 10 to 80m; would consider home-built gear if professional job. Details and price, including carriage.—Askew, G3PCG, Dagwood, Audmore Road, Gnosall, Staffs. (Ring Gnosall 553, evenings or week-ends).

**SALE:** SR-550 double-conversion communications receiver, coverage 1.8 to 54 mc (6 metres), amateur bands only, with crystal calibrator and only two months old, price £35.—Smith, 85 Hellvellyn Avenue, Ramsgate, Kent.

# S.S.B PRODUCTS

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**"SPHINX"** Transmitter Mk. II. Designed to give a quality signal on 160m., 80m., (40m.), 20m., S.S.B./A.M./C.W. Its modern appearance coupled with real solid construction gives the amateur value for money. Built-in power unit. 80W. P.E.P. Same size as matching Pyramid Linear. Available in all colours £84. Terms—Part exchanges.

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**"PYRAMID"** Linear. 80-10m. 800W. I/P. 400W. P.E.P. O/P all Bands. Uses 4-6HF5 tubes in class AB1. Three meters. Has built-in power unit. Size as matching Sphinx. 14½" x 6" x 11½" deep. Very solid construction. Best quality parts. Complete (including cabinet and all metalwork.) Set of parts, £49/15/-, carriage 25/- in stock!

**"HA350"** Receiver. 160-10m. xtal controlled front end. Covers bands in 500-600 Kc/s. steps. Very stable and easily the best buy for the amateur looking for a new receiver which is value for money! Has mech. filter, etc., etc. Write for details, 80 gns. (or 80-10m. 75 gns.). Terms and part exchanges.

**"SCARAB"** xtal filter kit inc. carrier xtal (436 kc/s.) I.F.'s. Mica's, etc., £6/19/6, 2/- p. & p. Ready made and aligned for excellent speech quality, etc., size: 3" x 2" x 1", £8/7/6, 2/- p. & p. Uses new miniature xtals. Undoubtedly the best buy in Filters. All details on circuitry around filter sent.

**"DELTA"** Co-ax Relay Unit. Controls Tx and Rx. Only one push switch used, instead of the usual 6! Robust and excellent value at £7/5/- (6/-).

**"NAPOLEON"** S.W.R. Bridge. Sens. control. For/Ref. SW. 800w. to 10w. 70-80Ω. Well made and most important of all "it is accurate." Price only £3/5/- (4/6).

**"CANNONBALL"** Tx. Smallest S.S.B./C.W. Available 1-8 to 2 Mc/s. Size: 8" x 6" x 6". Pi-tank O/P. Very well made. Good value. Also 12v. and 3-5-4 Mc/s. models, £38 (7/6).

**"SILPLUG"** Rect. Units. Still selling well. Replaces all 5v. rects. Reduce heat in your Tx. Rx! Quality product. 500v. ½ amp., 39/6. 750v. ½ amp., 49/6 (1/3).

**SPECIAL OFFER!!** Send your Class "D" wavemeter (xtal must be OK) for conversion to A.C. 240v. I/P, recalibration, re-simming, spray, etc. Only £5. (Our wavemeter stocks are sold out at present.) Please pack very well.

## OTHER NEW LINES IN STOCK

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**BUG KEYS, KY102, 85/-** and 4/6 p. & p.

**ELECTRONIC KEYERS, D.A.I., £16/10/-, 4/6 p. & p.**

**G.D.O. Lafayette, £12/10/-, 3/6 p. & p.**

**DYNAMIC MICS.** Selected for S.S.B. TX's. DM16. DM21 99/- each, 3/6 p. & p. BM3 xtal mic, only 37/6 (3/6).

**6HF5 valves, 31/6 each, 2/3 p. & p.** Brand new.

**6146 valves, 30/- each, 2/3 p. & p.** Brand new.

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**HA350 MECH. FILTERS, £9/10/- each, 2/- p. & p.**

**VALVE VOLTMETER.** 6" scale—30 range, £15 (6/-).

**RF45.** Field Strength Meter. Whip Ant. sens. control, 45/- (2/-).

**455 Kc/s.** Min. xtals, ½" spacing with sockets, 34/- each.

**Ditto.** 9 Mc/s., 29/- each.

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**PR30 Preselector, 65/- (4/6).**

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## SMALL ADVERTISEMENTS, READERS—continued

**FOR SALE:** CR-100 Rx, with 6SG7's at front end, voltage stabiliser, noise limiter, improved BFO injection and including speaker, £20. — Macklin, 5 Sheridan Close, Stanmore, Winchester, Hants.

**OFFERING:** Electronics components, including one HSO-460, two DIF/1/46 IFT's, one PP.DDU-460, all new; one new 6146; new QQVO3-10; four S10AR2 silicon rectifiers; one OCP71; one OC71. Grampian DP.4/1 microphone, as new, with table stand and two swivel adaptors. Trix P.A. amplifier, 25-watt, mixed inputs, well used but reliable. Two small column speakers for P.A. work. Audix 15-watt portable transistor P.A. amplifier, with microphone and speaker. Small PSU, 300v., 150v. stab. and 6.3v. outputs. Offers invited all items. Buyer to collect or carriage extra.—Fry, 57 Swann Lane, Cheadle-Hulme, Stockport, Cheshire.

**WANTED:** Morse records. **FOR SALE:** Lafayette HA-230 receiver, coverage 550 kc to 30 mc, with bandspread, Q-multiplier, and manual, as new in carton, price £20.—Smith, 19 Cambridge Road North, Chiswick, London, W.4.

**WANTED:** Collins ten-metre crystals, also factory mint condition Collins 312B-5 control console and PM-2 portable PSU—price and details. **SALE:** Collins 75S-3 receiver, with manual and carton, in factory mint condition, stand-by Rx so hardly used, price £225. (Worcs. area).—Box No. 4508, Short Wave Magazine, 55 Victoria Street, London, S.W.1. **SALE:** AR88D with matching speaker and phones, £25. Marconi CR-100, £10. PCR-3 Rx with internal PSU, £5. K.W. trap dipole, £4.—Ring Curtis, BYRON 8198.

**VHF Gear offered,** for two metres: 4-ele Yagi, 20s.; 10-ele Skybeam, £4; Withers TW-2 Tx, with PSU/Control Unit and Nuvistor converter, £35. For four metres: 4-ele Yagi, 40s.; Withers nuvistor converter, self-powered, £10.—Richardson, 50 Hayes Street, Hayes, Bromley, Kent.

**SELLING:** B.36 receiver, coverage 10 to 20 mc, with octal valves, price £8 10s., buyer arranges delivery.—Debenham, 33 Tennyson Avenue, New Malden, Surrey. (Tel.: 01-942-7241).

**FOR SALE:** Transmitter, 10 to 80m. AM/CW, with Geloso VFO and pi-tank, miniature 807 PA, 20 watts, £12. Auto-transformer, 230v. input, output 115v. 200 watts, 30s. One-valve 160m. converter, 465 kc IF, FB mobile, 15s. TR.1520 two-metre transceiver, 70s. Two 1616 EHT rectifiers and three PT15's, 5s. each. TU case and panel, 7s. 6d. Wide-spaced Tx variables: 25, 60, 65 and 100 mmF, 4s. each; also medium-spaced 160, 170 and 200+200 mmF, 2s. 6d. each. Generator, 12-volt, 270v. 100 mA, 10s. Three 2-in. ribbed ceramic formers, 5-ins. long, 2s. 6d. Six-way strong ceramic switch, 5s. Unit containing two 2½-in. diam. 20-turn roller inductors, 20s. Carriage extra. Details s.a.e.—Orchard, G3TTC, 25 Kenmore Drive, Yeovil, Somerset.

**SELLING:** Joystick VFA with Joymatch Type 3A tuner, as new, price £5, carriage inclusive.—Marsh, 324 Crescent House, Goswell Road, London, E.C.1.

**OFFERS invited for BCC Base Station receiver and QRO transmitter,** five channel, and BCC mobile working on 4 metres; also a BCC mobile on 2 metres, and Vibrator PSU. (Kent area). — Box No. 4509, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

**SELLING:** HE-30 communication Rx, in good condition, with spare valves, at £25, buyer to collect. —Ring LeConte, 01-959-6077.

**WHAT Offers?** For a Minimitter 150w. Tx, BC-348 receiver and No. 7 crystal calibrator, buyer to collect.—Millard, G3SBJ, 59 Climping Road, Ifield, Crawley, Sussex.

**FOR SALE:** KW-160 Top-Band. AM/CW Tx, £18. Latest Joystick and Type 4 ATU, £5 10s.—Richardson, 50 Hayes Street, Hayes, Bromley, Kent.

SMALL ADVERTISEMENTS, READERS—continued

**FOR SALE:** Motorola power transistors, rated up to 20 amps., equivalent to ADZ12 but goes to 250 kc, 10s. each or five for £2. BC-221T, with stabilised PSU, charts and manual, in as-new condition, £30 or near offer. Solartron 'scope Type CD-523S to 10 mc, laboratory instrument in excellent condition with all manuals and calibration charts—offers?—Morrison, G3OIS, Reed-End House, Therfield, Nr. Royston, Herts.

**WANTED:** G2DAF-type receiver, need not be completed or working, and in any condition; set of components considered.—Ring Jones, G3PSZ, Thurnby 2867, 6.0-8.0 p.m.

**SELLING:** Viceroy Mark II and PSU, previous owner the late G6QB, £90. Eddystone 888A, blocks, speaker, S-meter, £80. Cossor 339A DB scope, spare new CRT, manual, £15. Taylor 65C Sig. Genr. 100 kc to 160 mc, £5. Evershed 250v. Bridge Megger, £5. Hudson AM/250/F (base) less crystals, AM/350/M (mobile), with dynamotor, crystals for 70-26-mc, manuals and mikes; both stations suitable mod. for 4 metres, £8 pair. Deliver to 100 miles, beyond buyer to share carriage.—Thompson, G3MQT, 8 Coventry Road, St. Leonards-on-Sea, Sussex.

**SALE:** Withers Topmobile all-transistor 160m. Rx, as new and in perfect condition, price £11.—Bishop, G3GGG, The Garage, East Hagbourne, Didcot (2308), Berks.

**STUDENT** Short of money and working for re-sits must sell AR88LF receiver, good on all bands, with sensitive S-meter and manual, say £27 10s. Also home-built 40-watt Tx, well constructed, fully screened and filtered, built-in VFO, modr., PSU's, metered, coverage 10-80m. and two metres, requires slight servicing, say £10.—Bigam, GM3SBS, 7 Hillview Terrace, Corstorphine, Edinburgh, 12.

**OFFERING:** Screened coil formers, standard types as specified for many circuits; send for list.—Loveland, 22 Oaklands Park, Bishops Stortford, Herts.

**SALE:** Heterodyne Frequency Meter for VHF, Type TS-174/M, similar to BC-221 but coverage 20 to 280 mc, complete with all charts and in very good condition, £35 or offers?—Partridge, G3PRR, 104 Grange Drive, Stratton, Swindon, Wilts.

**EXCHANGE:** Royal Enfield Meteor Minor combination, 1961 model, worth £100, for Transceiver or Receiver such as 888A, EA-12, 940, etc.; even UHF considered.—Goulden, 96 Dragon Parade, Harrogate, Yorkshire.

**SELLING:** CR-100 receiver, fitted NL, in excellent condition, £18. Lafayette GDO, £8 10s. Transceiver for 80/160m., with AC/PSU and 6v.DC/PSU, £15. Linear amplifier, 500 watts, £12. Hallicrafters HT-7 Xtal Calibrator, mains, with manual, £5. TS-34AP Oscilloscope, with leads and spare CRT, in carrying case, with manual, £12. Command Rx, 80m. 12v. mobile, with BFO, NL, RF/AF gains and rack, £5 10s. TU9B Unit, 25s. Johnson Micromatch, with meter, £3. Lavoie UHF (70 cm.) wavemeter, £5. Base Tx and Rx for 70 mc, mains, needs attention, £12. PSU for 52 Set, new, 60s. RF Unit Type TN18/APR-4, 300 to 1000 mc, £8. Ten-watt power meter for 144 mc, 50s. B.28 (CR-100) receiver, HT fault, £7 10s. Beam compass indicator, 15s. K.W. Match, 52/75 ohms, £5 10s. Minimitter whip for 160m., 60s. New HRO S-meter, 40s. Wavemeter for 70 cm., £4. National HRO-M receiver, fitted NL, with 10-15-20-40-80m. BS and five GC coil packs, PSU, £30. VCR-193A CR tube, 17s. 6d. Joystick with ATU, 60s. Manual for BRT-432, 45s. **WANTED:** DC/PSU and control unit for Codar A.T.5. Telephone 01-950-3387.—Box No. 4505. Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

**FOR SALE:** Minimitter Top 2-7 Tx, in good working order, £17 or near offer?—Llewelyn, GW3RXD, 8 Maesilwyn, Amlwch, Anglesey.

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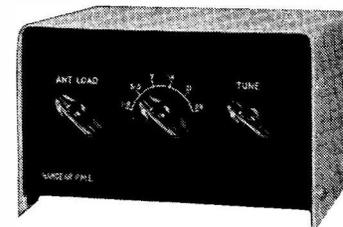
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### SMALL ADVERTISEMENTS. READERS—continued

**SALE:** Pye Ranger transceiver, frequency range 68-88 mc, easily converted to 4-metre band; all self-contained with 12-volt vibrator PSU and p-t microphone, price £5.—Jewson, 8 Johnsgate, Brewood, Stafford.

**SELLING:** Lafayette HA-230 receiver, in new condition, price £15. National HRO, in good clean condition and working order, with PSU and eight GC coils, £20. Both with manuals.—Roth, 4 Camden Road, Somerton, Somerset.

**FOR SALE:** Self-supporting steel lattice tower, 43ft. high, heavily galvanised, beautiful commercial job, price £45 or nearest offer.—GW3KYT, QTHR.

**WANTED:** A Linear Amplifier, prefer KW-500 or KW-600 but good home-built job considered; also Vibroplex bug key, and Japanese electronic keyer DAI. "QST" volume for 1966. Here due leave August, slight delay in reply is possible but all offers answered.—G3TJD, QTHR or Box No. 4506, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

**EXCHANGE** or Sell, CR-100 with S-meter mod. at £20, and BC-221 with calibration at £16, or Exchange Hi-Fi TV Camera.—King, 34 Bullfinch Close, Riverhead, Sevenoaks, Kent.

**SALE:** Thirty clean copies "Short Wave Magazine" for Jan. '65 to June '67, price 30s., or 27s. to callers.—Dutton, 24 Friars Close, Whitstable (4004), Kent.

**EXCHANGE:** Eddystone S.750 double-conversion receiver and cash for a good AR88.—Ring Downham, Gloucester 23432.

**FOR SALE:** Sommerkamp FL-200B SSB Tx, purchased new in March, in mint condition, price £100; will deliver to 50 miles from Maidstone.—Henman, 8 Woodlands Close, Maidstone (55297), Kent.

**WANTED:** Suit-case Transmitter-Receiver Type B.P.5(T.5), or Mark 122; good price offered. Also will pay 30s. for TCS Tx/Rx manual.—Gee, 11 Whitehorse Lane, Stepney, London, E.1.

**SELLING:** Two identical VHF receivers, 11-valve, S with tuning meter, etc., R.1481 covers 65 to 86 mc and R.1132 100-124 mc. Both in good working order, with circuits, plugs, spare valves, many new components, realigned, no mods., with matching mains PSU fitted two meters, and each unit with strong transit case, price £14 or near offer. Prefer buyer inspect's and collects, or carriage extra.—Ademson, Woodend, Victoria Road, Kingsdown (288), Deal, Kent.

**SALE:** LM-7 Frequency Meter, complete with charts and commercial PSU, £20. TCS Tx power supply, with lead and plugs, in professional cabinet, £6. **WANTED:** AR88 cabinet, will buy or exchange for rack-mounting version.—Bolton, G3UHE, Leamington Spa 25249, QTHR.

**WANTED:** Instruction manual for, and also professionally built stabilised PSU to fit inside, BC-221M. (London area).—Box No. 4512, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

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SMALL ADVERTISEMENTS, READERS—continued

**SELLING:** Heathkit RA-1 receiver, with handbook, in excellent condition, price £26. Prefer buyer collects.—Spencer, G3ILO, 1 Field Lane, Cam, Dursley, Glos.

**FOR SALE:** Vertical Aerials, Mk. I, 32ft. plus whip end, £3 3s. each. Also transformer, 240v. primary. 115v. secondary, rated 1.5 kW, £6. Carriage extra.—Tonks, G3JFL, 11 St. Edward's Road, Bournbrook, Birmingham, 29.

**WANTED:** R.C.A. AR77E receiver, with manual; generous price offered for one in really good and unmodified condition. (Manchester area.)—Box No. 4511, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

**SELLING:** BC-620F Transceiver, with PSU 6-12-24v., 70s. Ex-R.A.F. T.1154N Tx, less its 100 mA meter. 60s. Mains Rx, coverage LW/MW/SW, 35s. ATU, 25s. Variometer, 10s. New xtal, 11774 kc, for B.44 70 mc band, 20s. Vibrator unit, 12-volt, for 22 Set, 25s. Carriage extra.—Raybould, 16 Brookbank Road, Gornal Wood, Dudley, Worcs.

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**EXCHANGE or Sell:** Ex-Pye 4-metre Reporters; two-metre Tx (12v. DC); Type 78 receiver; BC-453, Q-multiplier; Pye depth sounder. All complete.—Brown, G3LPB, Marlborough Farm, Falmouth, Cornwall.

**EXCHANGE:** G2DAF Mk. II Tx with xtals, 10 to 80m., mechanical filter, USB/LSB, in cabinet, with single 6146 o/p and external solid-state PSU offered FOR a Heathkit RA-1 or Eddystone EC-10 receiver.—Harrison, 22 Ralphs Ride, Bracknell, Berks.

**SALE:** National NCX-3 with NCA PSU and 500-watt auto-transformer, in perfect condition, price £100.—Bennett, G3CYL, 39 Brookly Gardens, Fleet (1521), Hants.

**SELLING:** Marconi CR-100, rewired completely in p.v.c., all new capacitors, resistors, etc., in very good condition throughout, £17 or offer. Home-built receiver, double-conversion, Electroniques QP-166, amateur bands only front end, 85 kc second IF, with product detector, etc., in FB 19in. commercial cabinet, £25 or near offer. Buyer to view and collect both items.—Cleland, G3PWU, 5 Northcourt Avenue, Reading, Berks. (Tel. Reading 83523, evenings.)

**SELLING:** R.C.A. AR88LF, in very good condition, recently overhauled, with S-meter, headphones, speaker, rejector unit, fitted new valves, at £45 or offer. Must dispose, so will consider any sensible offer.—Church, 62 Windmill Street, Peterborough.

**FOR SALE:** R.206 Mk. II receiver, coverage 550 kc to 30 mc, bandwidths 700 c/s-2.5 kc-8 kc, with xtal filters, audio filter, noise limiter, BFO, AGC, etc., all as new, with PSU and handbook, will deliver at cost. What offers?—Hines, G8AEG, Home Farm, Rimpton, Yeovil, Somerset.

**SALE:** Jason Wobulator, 0-85 mc, price £7 10s. G2DAF-type receiver, £45. Lab. model Signal Generator, 8 to 330 mc. Perdio mains/battery transistorised TV receiver (ideal as monitor), £30. Remington electric typewriter, perfect, £25. Type 3BP1 CRT, 20s. W.H.Y.?—Broadbent, G3AAJ, QTHR. (Tel. 01-989-6741.)

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