

The SHORT WAVE Magazine

VOL. XXIII

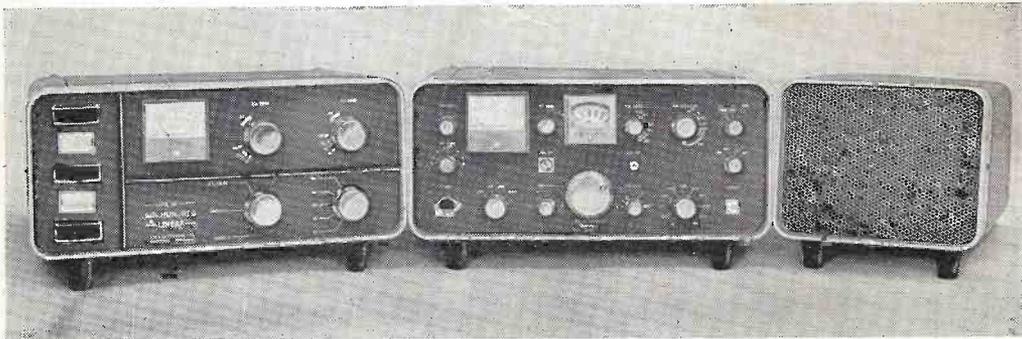
NOVEMBER, 1965

NUMBER 9

K. W. ELECTRONICS for all your Amateur Radio Requirements

The NEW "G" Line by K.W.

A new style cabinet with lift-up inspection lid, handsomely finished in two-tone grey stoved-enamel, fitted now to the KW2000, KW2000A and KW600.



The "G" Line—KW2000A Transceiver and KW600 Linear Amplifier.

NEW!

THE KW "VESPA" TRANSMITTER

10-160 metres SSB, CW & AM

Now in production Price £110. Power supply £25

CDR ROTORS and CONTROL UNITS

TR11A recommended for 2M ... £14. 0.0
 AR22 thousands in use ... £21. 0.0
 TR44 latest model ... £37.10.0
 HAM-M will handle a 'Big Bertha' ... £61. 0.0

Carriage included.

KW MODELS, 1965

KW2000. SSB Transceiver (90 watts) £173
 PSU extra.
 KW2000A. SSB Transceiver (180 watts) £195
 PSU extra.
 KW600. Linear Amp. Complete with PSU £105
 KW "Viceroy." SSB Transmitter. Complete with PSU. £156
 KW "Vanguard." AM/CW Transmitter 10-160m. £73/10/-
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KW stock includes: Adaptors, Aerials, Airdux Coils, Beams, Converters, Filters SSB, Mechanical and Crystal Filters, Microphones, Mobile Whips, Nuvistor Plugs, Pi-Coils, Plugs, Receivers, Relays, R.F. Chokes, Rotors, Signal Generators, Sockets, SWR indicators, Towers, Transmitters, VFO's, Walkie-Talkies, Collins 'S' Line Equipment, etc., etc. U.S.A. Equipment. Trade-in Receivers and Transmitters.

We accept trade-in equipment. Easy terms available.

HAMMARLUND RECEIVERS, HQ170A, HQ145X, HQ180A, HQ170A-VHF now in stock.

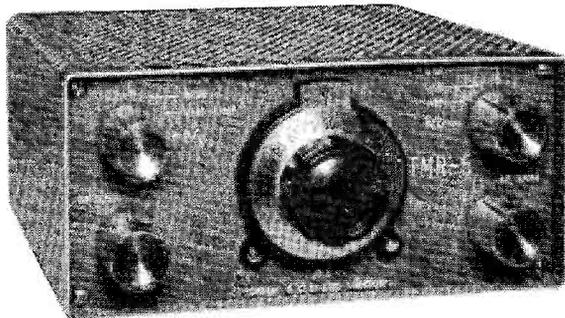
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SOLID STATE GREEN TMR-5 MOBILE RECEIVER



The TMR-5 Communication Receiver

THIS IS A FULL SPECIFICATION PROFESSIONAL COMMUNICATION RECEIVER. ITS REMARKABLY SMALL SIZE MAKES IT IDEAL FOR MOBILE USE. This is not to be confused with a number of modified broadcast receivers that are at present available as mobile receivers.

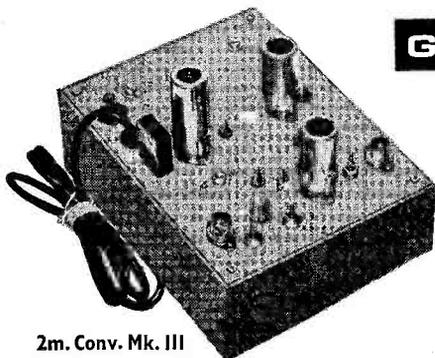
Undoubtedly the TMR-5 is the first receiver of its kind with the following specification :

- ★ 12 volt DC operation (direct from car battery)
- ★ Size only : 6" x 6" x 2 $\frac{3}{4}$ " high
- ★ 3 Bands, 3 functions, 160m., 80m., VHF/UHF ; AM—CW—SSB
- ★ Top Band (bandspread 1.8-2.0 mc.) 2 kc. per division dia accuracy.
- ★ Eighty metres (bandspread 3.5-3.8 mc.) 4 kc. per division dial accuracy
- ★★★ VHF/UHF. The new "MK-FIVE" 4m., 2m. and 70 cm., all-transistor Converters plug on TMR-5 rear directly
- ★ B.C. facility (simple mod. shifts bandspread to .6-1.6 mc.)
- ★ Controls : USB, LSB, CW, AM and Noise Limiter, AF and RF gains.
- ★ **PRICE £35.** Matching speaker and battery box £6

The **STABILITY** and **SENSITIVITY** of this receiver is better than many Communication Receivers costing up to **£120.0.0.**

Dial chosen for its functional stability making it ideal for mobile operation 100 divisions over 180°, calibration Cost the TMR-5 yourself against any alternative if there is one You will have to buy several separate Receivers to cover the same bands (cost £100 plus) and that's only half the specification met.

Companion 160m. ALL TRANSISTOR Transmitter, 12 volt Phone-CW 10 watt. "The K-160-X" shortly available.



2m. Conv. Mk. III

GREEN VHF-UHF

Our 2MI000 and 70CM1000, 150 watt, 2 metre TX and companion 90 watt, 70 cm. Trip-P.A. are proving very successful the high output [90w. (2m.) and 50w. (70 cm.)] stability compactness flexibility (AM—CW—QSY—PTT and 3 xtals) together with excellent modulation quality are features enjoyed by new owners of these Transmitters.

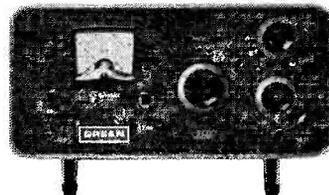
The 2m. and 4m. Converters Mk. III and Mk. IV are still available from stock with almost any I.F. These Converters include self-contained P.S.U. Mk. III, £8.19.6. Mk. IV, 14 gns.

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NCX-5	£255.10.1
HRO 500	£705.0.0
NCL 2000	£235.0.0

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GREEN LA-600



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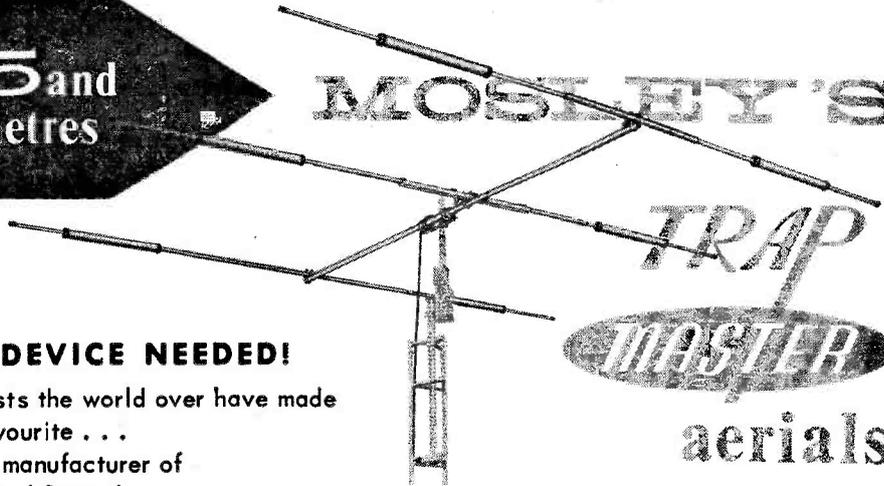
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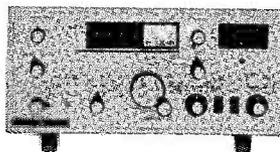
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metres, 200 watts
p.e.p.

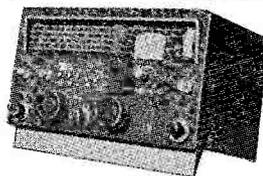
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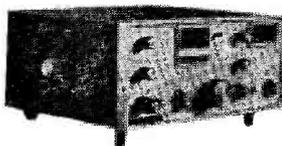
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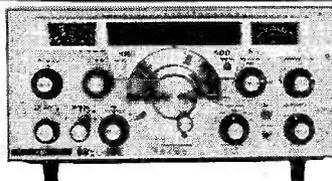
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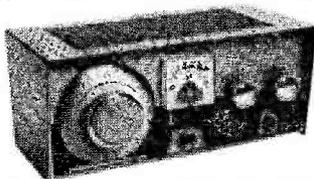
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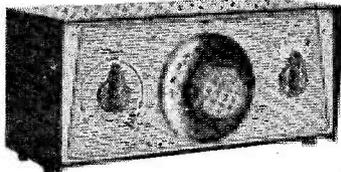
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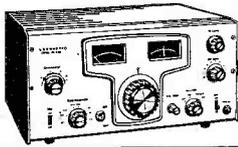
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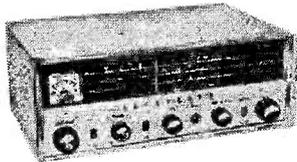
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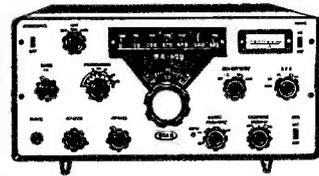


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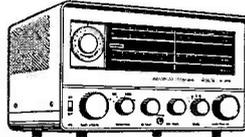
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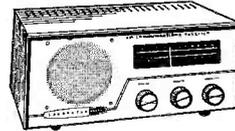
LAFAYETTE HA-63 COMMUNICATION RECEIVER

7 valves - Rectifier, 4 Bands 550 kc/s.-31 mc/s. "S" Meter-BFO-ANL-Bandspread Tuning 200/250v. AC. Brand New, 24 Gns., carr. paid.



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108-136 mc/s. High selectivity and sensitivity. Incorporates 2 RF stages including 6CW4 Nuvistor, 8 tubes for 11 tube performance, solid state power supply, adjustable squelch control, slide rule dial, built-in 4" speaker and front panel phone jack. 220/240v. AC. Supplied brand new and guaranteed. 19 gns., carriage 10/-.

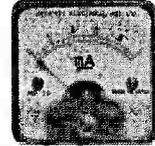


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High quality Portable American Oscilloscope. 3" c.r.t. T/B: 3 c/s-50 kc/s. X Amp: 0-500 kc/s. Y Amp: 0-2 mc/s. Power requirements 105-125v. AC. Supplied in "as new" condition, fully tested, £25, carr. 10/-.
Suitable 230/115v. Transformer, 15/6.

TYPE 13 DOUBLE BEAM OSCILLOSCOPES
Perfect order, £27/10/-, Carr. 20/-.

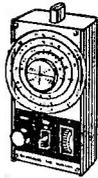
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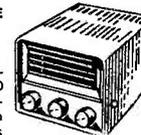


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50-0-50µA	29/6	10mA	22/6	750mA	22/6	100v DC	22/6	150v AC	22/6
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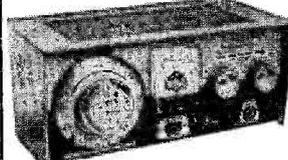
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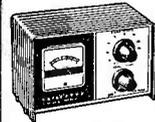
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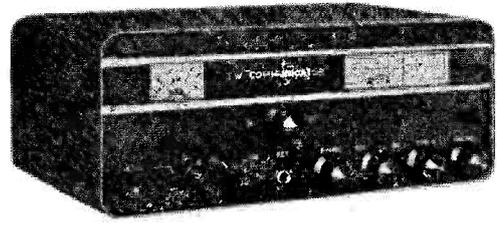
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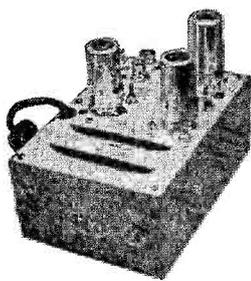
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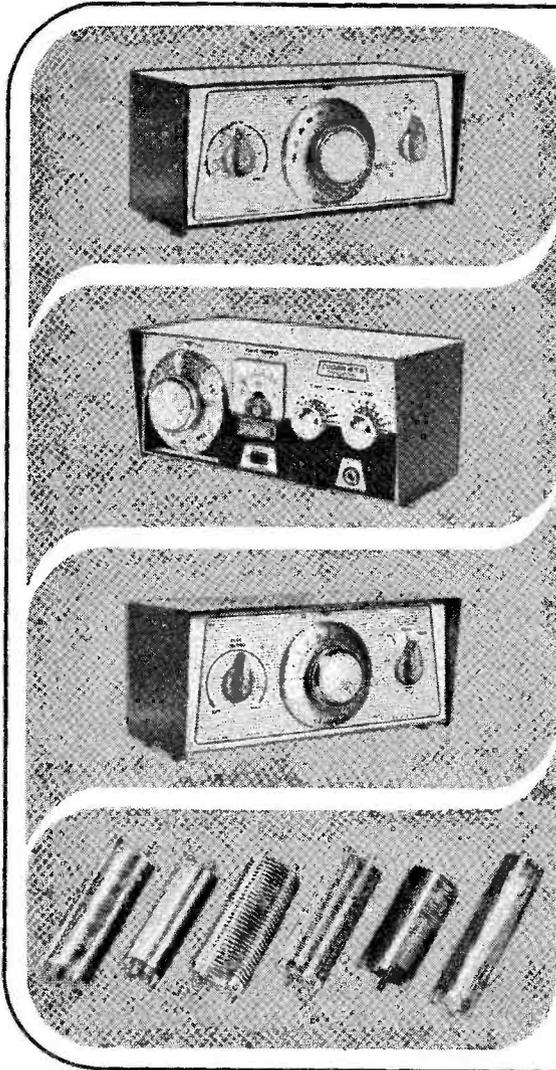
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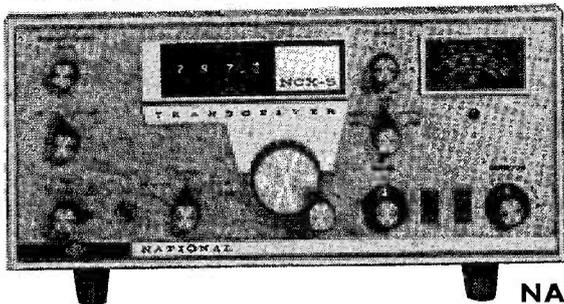
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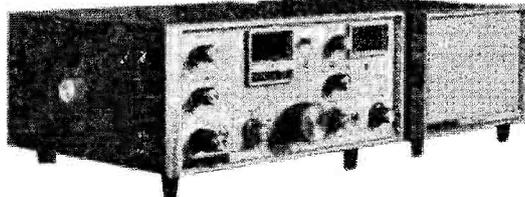
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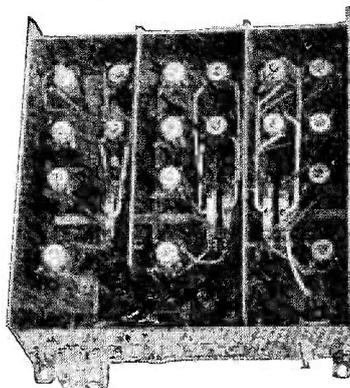
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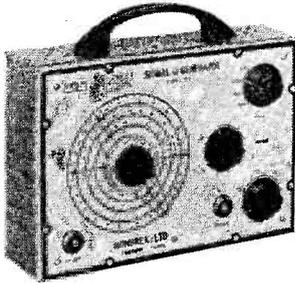
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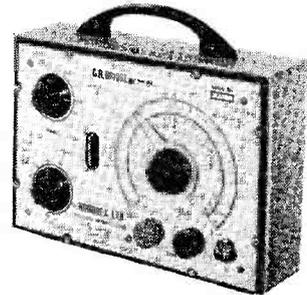
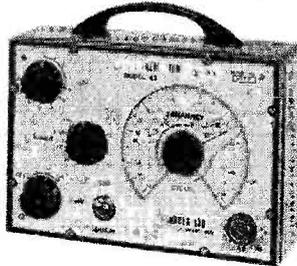
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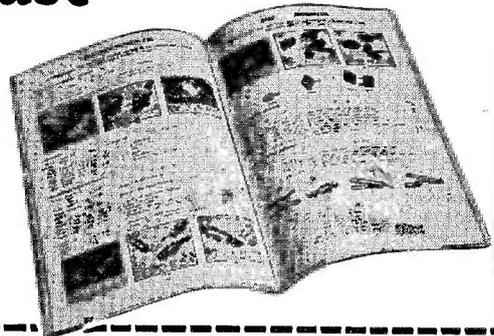
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SHORT WAVE MAGAZINE

(GB3SWM)

Vol. XXIII

NOVEMBER, 1965

No. 265

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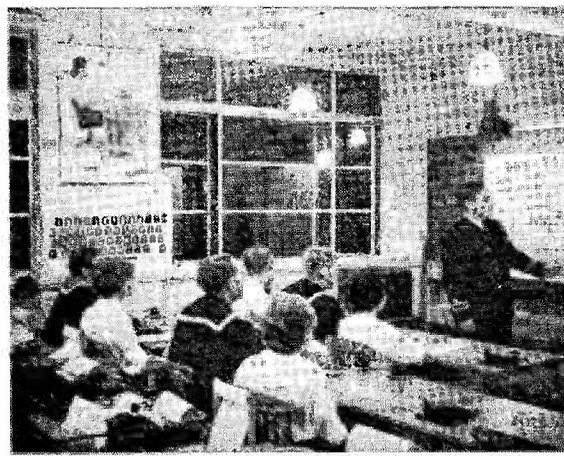
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The SHORT WAVE Magazine

EDITORIAL

Records *In reflecting on all the interests and channels of activity which can be followed in Amateur Radio, we have wondered whether AT station operators are as particular about keeping accurate records as were the amateurs of earlier days — and by “records” we do not mean simply the compiling of a neat and tidy log.*

It is true that the sight of a callsign entered some time in the past can evoke memories and for some that is probably enough. But there can be much more to it than that — notes on conditions and the level of activity during particular periods, equipment in use, the aerial system employed at different times and its changes, comments on different operators and the QSO's made, unusual contacts heard, notes on visitors to the station or calls made on others — are merely a few examples of the sort of thing which can be entered in the log together with the more usual details covering stations worked. None of this sort of information is likely to be of much use or interest to anyone except the operator concerned — but to him years later it can make the most absorbing reading, and may even disclose some useful fact or give the key to some problem.

Apart from this, the habit of keeping accurate records is worth cultivating for its own sake, because in a subject like radio, and in particular Amateur Radio, each generation tends to re-find, for its own interest, much of the data; this is a process which often results in old ideas and established facts being rediscovered as something new, or having the appearance of originality. No bad thing as a mental exercise, but something of which it is as well to be aware. In the old days most operators kept large notebooks in which they recorded all their experimental work. As the years went on, they compiled a great quantity of practical information and though much of it became useless as techniques advanced, such records are of great historical interest. We hope that many of our readers are keeping the same sort of records today.

*Austin Fox, Jr.,
G6FO.*

WORLD-WIDE COMMUNICATION

SERVICING THE AR88

IF ALIGNMENT—FRONT-END ATTENTION—CALIBRATION ADJUSTMENT

Part II

H. LEEMING (G3LLL)

The first part of this article appeared in our October issue and covered certain desirable modifications for improved performance, and general maintenance attention. This concluding part deals fully with the all-important matter of alignment.—Editor.

NEXT we come to alignment which is viewed by some AR88 owners as a marathon task to be performed by highly skilled personnel in a well-equipped laboratory, or at the other extreme, fair game for any dabbler. To be realistic, re-alignment of a communications receiver is not a task to be undertaken lightly, but provided the systematic and slow-but-sure approach is made no licensed amateur need fear that he is going to ruin his AR88 by aligning it. Due to the effective screening of this model actual adjustments can be easier to make than on a broadcast receiver, as the tuned circuits do not tend to pull each other as much—the only snag being that there are rather a lot of them to adjust!

Before commencing alignment all modifications should be completed and the set should be in good working order, as it would be very annoying if, after spending several hours on the receiver, it was found that the job had to be done again due to, say, replacement parts being required in the coil box. Normally, replacing valves will not upset the alignment greatly, as long as glass valves are not substituted for metal, or *vice versa*; but it is still worthwhile making sure that all the valves are up to standard, and have no loose electrodes before alignment is started.

Details of the necessary tuned circuit adjustments will be found in the manual, but it is as well to remember that originally the AR88 was intended to give good quality results from local broadcasting, as well as to receive distant stations. For amateur use, position 1 on the selectivity switch is superfluous, and hence the wobbulator and oscilloscope are not needed in the alignment. The following suggestions do not necessarily comply with the instructions in the manual, but are the result of experience in obtaining the best performance for amateur use. The equipment needed is not formidable, and will usually be to hand at most stations. The main requirement is patience, as it can not be too strongly emphasised that the difference between a "hot" and an indif-

ferent AR88 is more often than not just one of accurate alignment.

Procedure

In common with any superhet you will get nowhere until the IF's are accurately tuned. As the AR88 has a crystal filter, a signal generator is not usually needed to set these to the correct frequency. The proper IF adjustment can be established by tuning in a station with the filter switched in; the ideal signal source for this is a harmonic of a crystal oscillator at around 400-500 kc. A lower frequency than this should not be used on the "LF" model, as it is possible to be misled by false peaks due to the selectivity of the RF stages.

To proceed—connect a high resistance meter to the "hot" end of the noise limiter control, and with the controls set to "Rec Mod," "RF gain Max," "Selectivity 3," "Man NL," tune a signal on the nose of the crystal for maximum output on the meter. To avoid overloading, the voltage on the meter should not be allowed to go over, say, 10 volts by suitably reducing the input from the signal source. If by any chance the trimmers have been previously adjusted indiscriminately, it is possible that you will have difficulty in locating the crystal peak, in which case it may be necessary to use a signal generator to establish the correct intermediate frequency.

Having tuned in the signal on the crystal, go back to pos. 2 on the selectivity switch; make sure that C75 is at half capacity; and adjust the IF transformers to maximum, as listed under, "Steps I to 4," in the AR88D manual. Once again make sure you reduce the signal input as necessary to keep the reading reasonably low on the output meter. Having done this, once again switch in the crystal; check that the tuning has not drifted, and go through the adjustments again until you are certain that all circuits are peaked. All trimmers should peak quite sharply except the last IF coil secondary, which is rather flat. If the tuning is found to be very inselective on any other IF trimmer, the offending transformer should be removed and dismantled, the internal fixed condensers then being replaced with *Radiospares* high tolerance silver mica types.

Having now completed the IF alignment (apart from the crystal filter), check by tuning on pos. 2 that the response is reasonably symmetrical on both sides of the carrier. If it is not, further slight adjustments to the IF trimmers should be tried, but if this will not cure the trouble it is probably best to leave well alone as otherwise it may be necessary to replace all the fixed condensers in the IF transformers—or even the transformers themselves. If either of the latter courses is adopted it is advisable only to deal with one transformer at a time or it will be necessary to use a signal generator to complete the alignment.

Crystal Filter

Possibly the most difficult part of the receiver is to get the crystal filter on the nose, and in the

writer's own experience the instructions in the manual do not help very much (although these might work out satisfactorily if one had a receiver fitted with brand new IF transformers and exceptionally good wobblator equipment). To avoid confusion it must be understood that the following instructions apply to both the "D" and the "LF" models fitted with the normal crystal filter and not with the suggested modified version.

To commence the filter alignment the selectivity switch should be turned to pos. 3 and the test signal returned on the nose of the crystal filter, while the load coil L34 is adjusted for maximum output, again keeping the input as low as possible, and rocking the main tuning slightly. Now, first making sure that the phasing condenser C75 is at half capacity, tune the receiver to a broadcast station again keeping the signal input very low so that the output is just readable and measurable. It will be found that if L34 is again adjusted slightly the selectivity will vary appreciably without making much difference to the output on the DC meter. The aim is to set L34 so that the selectivity is higher than that obtained on pos. 2, but is not so high as to make speech reception too difficult. C75 and L33 also affect the results and should be set so that the response is symmetrical. (The time spent can be somewhat reduced if the spindle on C75 is extended, it then being considered as a variable phasing control, and it is only necessary to leave it at half capacity during alignment.) The final positions of L34 and L33 will be very near those giving maximum output but it is unlikely that just tuning these for maximum output will give anything like the best results.

Over the years it is possible that the crystal has lost some of its activity and if the measured output on pos. 3 of the selectivity switch is now less than on pos. 2, this should be suspected. A new crystal could be purchased but usually if the original one is stripped and cleaned with soap, water, and an old toothbrush, and the plates of the holder polished, all will be well, although it will, of course, be necessary to go through the filter alignment once again.

Having now obtained satisfactory results it is important to check the peak of the crystal response on pos. 3 comes near to the centre of the pass-band obtained on pos. 2 of the selectivity switch. If it does not . . . that's right, you guessed!—it will be necessary to do the whole IF alignment and touch up the filter alignment once again. Patience is required!

Having completed this work satisfactorily, the filter alignment is almost finished, and only requires selectivity pos. 4 and 5 to be set up. To do this the condensers C81 and C80 should be adjusted in the same way as was L34, either side of maximum output, until the required degree of selectivity, is obtained, whilst they are very near to their peak output setting. As a guide, when the adjustment of the filter is correct the selectivity should increase steadily as the selectivity switch is advanced, with maximum selectivity in pos. 5. There will be considerable insertion loss on pos. 5 with less on pos. 4 and either a

gain or at least no loss on pos. 3.

BFO Setting

There is only one more adjustment required in the IF amplifier and this is the BFO. The test signal should once again be tuned in for maximum output on the meter using the crystal filter, the BFO then being switched on. Zero beat should now occur with the vanes of the BFO condenser set at half capacity, and L22 should be adjusted until this is so.

The Front End

Now all that remains is to align the RF end of the receiver, which is not really too difficult if somewhat time consuming. Given patience, it is possible to get the scale of the AR88 to be over ten times as accurate as that of a good signal generator, so that for final adjustment a crystal calibrator or some other accurate standard is essential. If the harmonics of this cannot be heard on the highest frequency ranges a signal generator, or any other variable oscillator, can be accurately set against a lower order harmonic, and then the harmonics of this used, providing frequent checks are made to compensate for drift.

One great advantage of the AR88 over many receivers is that there is very little pulling between the various tuned circuits due to the effective screening, and hence it is not necessary to start alignment at the lowest frequency range; in fact the reverse has been found to be more satisfactory. Note that whilst mainly applicable in principle to the "D" model, the following instructions are written with the "LF" in mind. Apart from Range 6, which is dealt with in detail, there is not much point in giving a



" . . . Harry's always like this after he's had a session on the key . . . "

list of the various adjustments and as to which range they apply, for these are almost identical with those listed on pp. 12-13 of the AR88D manual—except for frequency. The only differences are in the aerial coils, which will be discussed, and also the RF and mixer coils and trimmers on Ranges 3 and 4, which are interchanged on the LF model, *i.e.*, note that L18/28 and C39/62 set Range 4, and C41/64 plus L19/29 are peaked on Range 3.

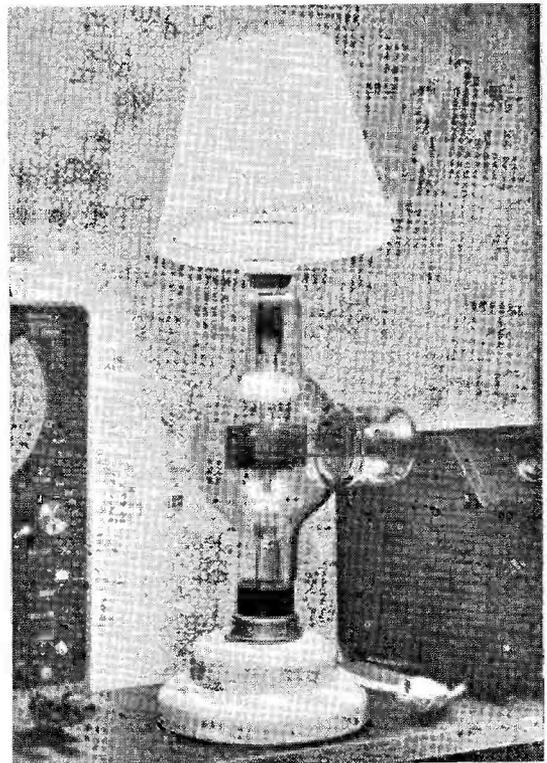
Range 6. This is the most difficult range to deal with as it covers two amateur bands (10 and 15 metres), and there is considerable interaction between the trimming and tracking adjustments. To align this range, first the oscillator coil L56 should be set to give correct calibration at around 21 mc and then C32 adjusted to correct the calibration on the 10-metre band. (It is important to note that the oscillator is designed to operate at a *higher* frequency than the signal, and hence, if these adjustments have been set at their correct peaks it should also be possible to tune the image of the test signal—at very much reduced strength—at twice the IF, *i.e.* 1.7 mc lower in frequency on the dial of the AR88LF than the correct position.) If it is found impossible to bring both amateur bands into line by carefully adjusting and re-adjusting the oscillator coil and trimmer, it may be necessary to slightly ease—not bend—the vanes of the bandspread section of the oscillator tuning condenser, (which only operates on Range 6 of the “LF” model), to correct the alignment. This must be done *very gently*, for even the smallest movement which can hardly be seen will have a great effect on the calibration. It is possible to set Range 6 so that the calibration is spot-on throughout, but this is very painstaking, and normally as long as the calibration is OK on the two amateur bands, it will be sufficient. Having corrected the calibration, the RF and mixer circuits should then be peaked by means of C45 and C68 at around 28.5 mc, and L21/31 at about 21.2 mc, repeating these adjustments several times. The aerial trimmer should peak, without being at the extremes of its range, on both bands, and if it does not it will be necessary to attend to the aerial coil. The markings on this will quite likely have become obliterated but it can easily be identified as being the coil with the least turns on it, positioned in the bank nearest the rear wafer of the range switch. The other aerial coils can similarly be identified by the respective sizes of their windings, but none need normally be touched if the aerial trimmer peaks satisfactorily over their respective ranges.

Ranges 5 to 3. These are dealt with in a similar manner, correcting the calibration at the HF end with the oscillator trimmer condenser and setting the oscillator core at the LF end until the amateur bands are spot-on, and the calibration over the rest of the dial is reasonable. There should be no need to adjust the spacing on the main section of the oscillator tuning condenser and this is to be *discouraged* unless there are obvious signs of previous tampering. The RF and mixer trimmer condensers should now be peaked up near the HF end of the

ranges and the coil cores once again set at the LF end, where possible on an amateur band. In the case of 40 metres, some gain will probably have to be sacrificed at the extreme LF end of Range 4 if, as is advisable for amateur use, the coil cores are peaked on this.

Ranges 1 and 2. Some readers will not be particularly interested in these on the “LF” model but while you are servicing the receiver it is also worthwhile aligning them. The trimmers carry the same number as on the “D” so that the oscillator adjustments are again set to give correct calibration near the ends of the ranges, and the mixer and RF trimmers peaked up at these points.

Having completed the alignment, now make sure that all the trimmers are locked—and relax, you’ve finished! You should find that your receiver now performs outstandingly, perhaps much better than many so called “brand new” models which have been in storage for many years. The point which may be below standard is appearance, but as the writer’s XYL (who kindly undertook to type this marathon), will confirm, this never did worry the author very much!



As pretty a lamp stand as any real radio man could ever wish for—made by G2FWA (Cheltenham) from an old 852, one of those hefty high-power triodes which gave both light and heat as well as plenty of RF! No longer in the current lists, the 852 was a popular type with the QRO boys of earlier days. We gather that this specimen was blown long before it was reduced to the service shown here. But what a lovely picture, and an appropriate demise!

SOME EQUIPMENTS BUILT

WE are always interested to hear from readers who build from SHORT WAVE MAGAZINE constructional articles, or have incorporated ideas from those articles in equipment of their own design.

For instance, G3TJA (Sutton Coldfield), referring to the illustration herewith, writes as follows:

"Built into a small plastic case, this is the simpler of the two circuits which were described by G3JAM in the August 1965 issue of SHORT WAVE MAGAZINE. It uses a single OC81 transistor with diode limiting, and produces a pure sine wave at about one kilocycle. The frequency can conveniently be lowered by switching extra capacity (say 0.25 μ F) in parallel with the first of the three 0.1 μ F condensers in the phase-shift network. A midget 5K variable in the battery lead provides a delicate control over the level of oscillation. This is very easy to set at just below the threshold, and if in this condition a signal is fed into the base of the transistor (through a 2 μ F

From "Short Wave Magazine" Articles

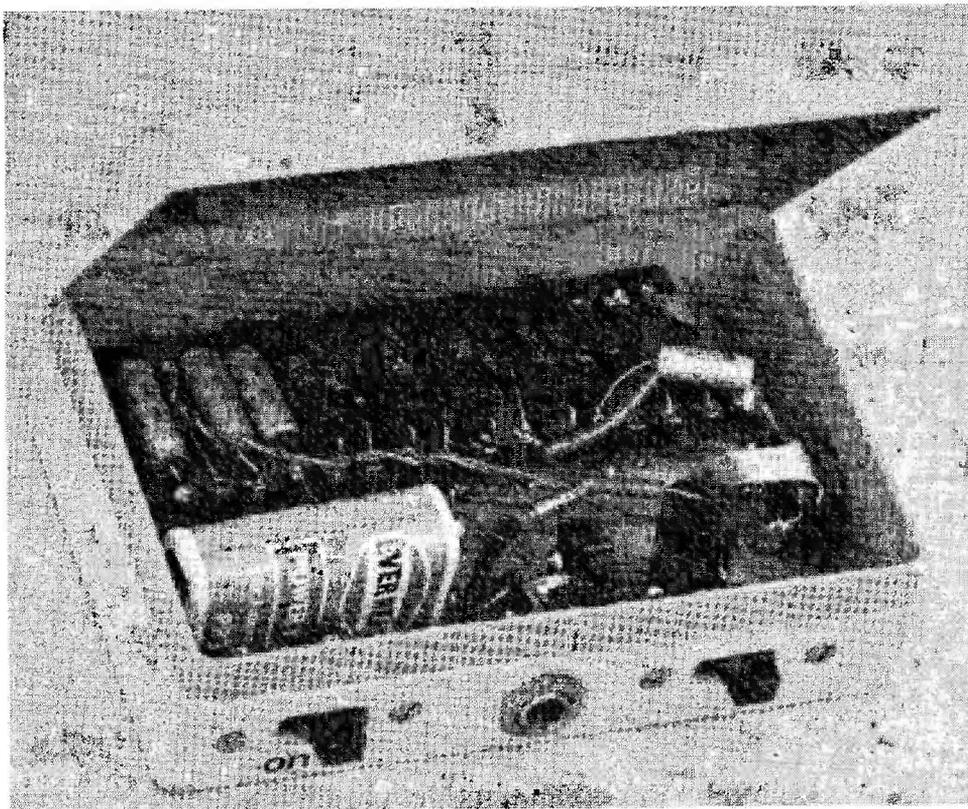
condenser) the circuit becomes an *audio* Q-multiplier of high stability. It is quite sharp enough to be used as a filter for CW reception; and with the supply voltage reduced still further it behaves as an amplifier with a substantially flat response over the audio range."

INTERESTING RECEIVER EVOLUTION

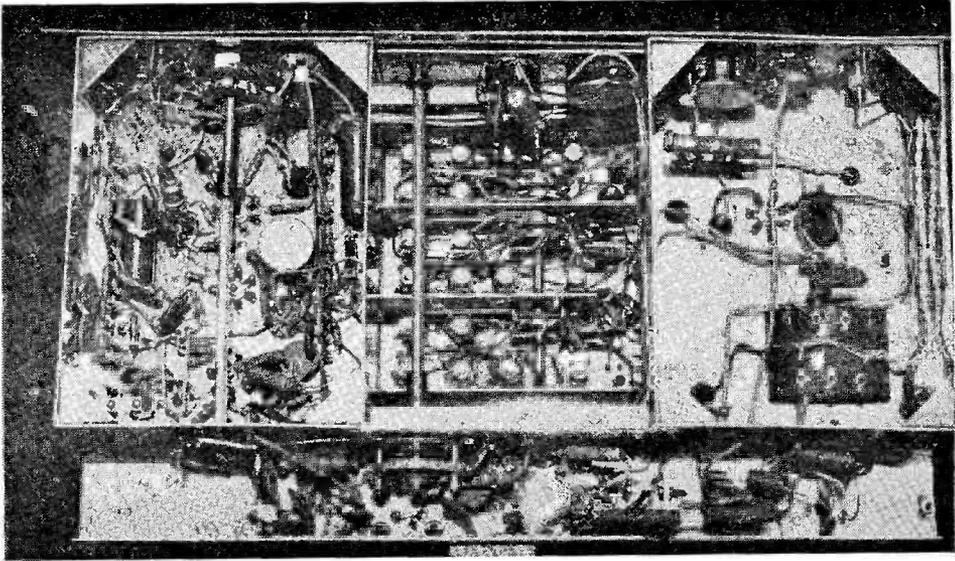
Then we have a letter from SWL P. V. Bamfield (30 Belfast Street, Hove 3, Sussex), with the two photographs shown overleaf.

He writes:

"I HAVE built this communications Rx using various circuits from the *Magazine*. It performs well, though I had the usual teething troubles. Look-



A version of the transistorised audio phase-shift oscillator — described by G3JAM in the August 1965 issue of "Short Wave Magazine" — as built up by G3TJA (Sutton Coldfield). He uses it as a sharp audio Q-multiplier for CW reception, as well as an audio amplifier.



Underneath the Rx constructed by reader P. V. Bamfield, incorporating ideas from some five different articles appearing in "Short Wave Magazine" over the last few years. The size overall of the completed job, which is working very well, is 10in. high on the panel, by 19in. panel width, on a chassis 10in. deep.

ing at the front-panel view, the main tuning drive and scale are home-constructed (commercial units are so expensive!) and the effective scale-length is $10\frac{1}{2}$ inches. The two meters reads signal level and HT voltage. The front end of the Rx consists of an *Electroniques* amateur-band coil pack, and the IF side is to the circuit for G3BDQ's receiver in your June 1962 issue; referring to his circuit diagram on p.181, three condensers are switched in place of C29, to give different AGC time constants, a fourth switch-position being for 'AGC off.' C36 and R23 are taken out, and the secondary of IFT.4 goes to earth. The detector stage is also from the G3BDQ circuit.

"I have also taken in a product detector, to the circuit by G3GKF on p.526 of your December 1962 issue. The BFO uses a *Denco* coil unit, as given in the instruction sheet supplied with it, the valve being one half of a 12AU7, the other side working as the product detector. The S-meter and noise limiter are from the G5NH receiver design in the February 1963 issue of *SHORT WAVE MAGAZINE*.

"For the PSU, the circuit was taken from the article by SWL J. R. Moore in April 1963, slightly modified in that the secondary of the mains transformer is wired through a panel switch to give a stand-by position; this switch is actually three-position, i.e. on/off, stand-by, and Rx on, thus protecting the valves during the warm-up period. The HT meter is connected to read the voltage output of this PSU.

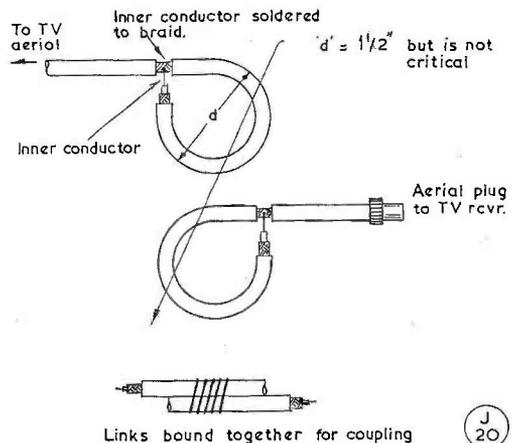
"When I saw the article by G3OHX in the December 1962 issue of the *Magazine*, I decided to put in a crystal calibrator, using his circuit, with a potential divider across the HT supply to get the

necessary 18 volts.

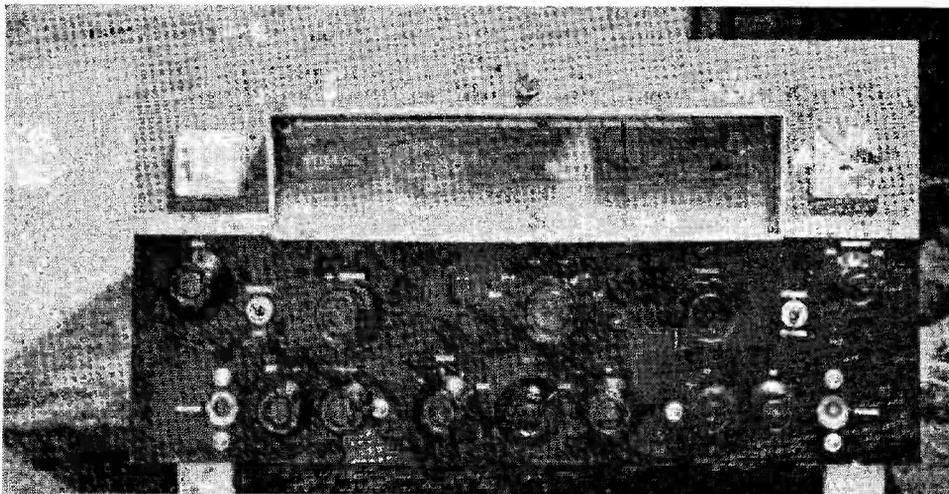
"The output stage of the receiver is to my own design, using an EL90 to economise on HT current, with a 6AT6 audio driver. Output is into either phones or a 3-ohm speaker.

"It took me about five weeks of evenings and weekends to finish the job of construction—and another week to sort out my mistakes and get the receiver aligned! It is now working very satisfactorily."

We congratulate SWL Bamfield on this lucid



Showing how the Faraday loops are constructed, both to the same diameter. They are then tied together for coupling. In districts where the local TV signal is high, this arrangement should work perfectly to eliminate time-base noise on Top Band, and TVI from the 160-metre Tx — see p.529.



The receiver built by P. V. Bamfield of Hove, Sussex, compounded of ideas taken from several "Short Wave Magazine" articles — notably the G3BDQ, G3GKF and G5NH receiver designs, as detailed in the accompanying text.

explanation of his very practical approach to amateur-band communications receiver construction. It shows what can be done if you read *Magazine* design and constructional articles carefully—and do a little thinking on your own account.

CURING TV RECEIVER INTERFERENCE ON TOP BAND

From Pontefract in Yorkshire, G3GWI writes in on quite a different theme. He was bothered by what he rightly describes as "TVI in Reverse," as explained below:

I FOUND that I had to go QRT on Top Band most evenings because the domestic TV/Rx was in full blast. The line-oscillator harmonics blanketed the band. Previous attempts to cure this had proved fruitless, but when I saw the note by G3SDE in the November 1964 issue of *SHORT WAVE MAGAZINE* I decided to have another go. He suggested a new line of approach, which for me has proved very successful. I made a Faraday link for the TV aerial downlead, with another similar one for connection into the TV receiver (see sketch). The two links are bound together, as indicated, and though their diameter (at G3GWI) is $1\frac{1}{2}$ -ins., this does not seem to be critical.

"With these links in circuit for the domestic TV/Rx, there is no trace of the rasping S8 line-oscillator noises on Top Band, which previously appeared at about every 10 kc point across the 160-metre range. There is no perceptible loss in picture quality, except perhaps on Ch.2 if you look very closely.

"I would also like to mention that this Faraday-link system (one of the oldest screening methods

known) can in the same way cure interference into a TV receiver. One of our locals reduced his TVI on 40 metres by about 90 per cent using this Faraday-link method of Tx/Rx protection. He became manifest as 'slight patterning only,' without other filters, having previously been a block-out signal on both sound and vision channels."

We hope that other readers will, similarly, give us their ideas and impressions—for which, of course, we pay on publication at space rates.—*Editor*.

"CHEAP BEAM FOR TWENTY METRES"

With reference to this article, in the August issue of *SHORT WAVE MAGAZINE*, according to its designer, G3SZC, the performance can be improved by using a coupling link consisting of 5 turns of 12g., spread over five inches. The SWR can be adjusted by using two 0.2 amp. RF thermo-ammeters, spaced about three feet apart in the feeder line, and the link turn-spacing and position are manipulated until both meters read as nearly as possible the same (they should, of course, be checked beforehand for compatible accuracy). At G3SZC, running 100 watts input on 14180 kc, the feeder current is 1.15 amps RF, and the gain of the beam has gone up about one S-point more with reference to the dipole—now being two S-points better with the average DX station.

FREE QSL CARDS—STOKE-ON-TRENT

We are asked to say that it is hoped the Publicity Department of the Stoke-on-Trent Corporation will supply free QSL cards to all licensed amateurs and SWL's living within the S-o-T postal area. This is being organised by G3COY, and anyone concerned not already on his list is asked to get in touch with him at 90 Princes Road, Hartshill, Stoke-on-Trent.

ADVICE TO A BEGINNER

(The Editorial in our September issue invited readers to submit their answers to a letter from a beginner, enquiring how to get started in Amateur Radio. Some of the advice offered is summarised and discussed here.)

ENTRIES for the "Beginner Query" competition were extraordinarily varied, and in general they were rather incomplete. A fine answer to the beginner's query could be compiled by taking the three or four best letters received, and combining their contents, but no one seemed able to provide *all* the answers.

One letter would offer sound advice concerning contacts with local amateurs and clubs, buying a receiver, and so on, but no details concerning the information available from the GPO's Radio Services Department; while another would give the latter while remaining silent on the former matters.

However, the entry picked by the judges is on the right lines and offers some valuable advice that seems to be missing from the others. In particular, it is considered that the *first* piece of advice to a would-be recruit should be on the lines that *short-wave listening* is the first step—without bothering about any paper-work at all.

Enthusiasm is the primary requirement, and if short-wave listening fosters this, then any SWL worth his salt can find out the other information for himself—or fellow-members of a local club will soon tell him how to do so.

Some of the letters went into too much detail about non-essential matters, *e.g.*, the kind of receiver to buy, the sort of aerial to put up, and so on. Others merely gave the bare bones (who to write to, what books to buy); while some failed to hit the target by being, in the judges' words, "too muddy," "too slangy," or "too vague."

Some failed to mention the importance of contacting a local club (if there is one), while others were too enthusiastic about paying a call on a local amateur. (How is the beginner, or would-be beginner, to know about a local amateur if he hasn't even got a receiver that will cover amateur bands?)

The winning entry shows the right outlook on these matters, and also makes the valuable suggestion that our novice should tackle some simple constructional work as early as possible.

Technical Colleges and Evening Institutes received their fair share of publicity, as did the various technical publications and handbooks. But one or two entries savoured more of sermons about the virtues of diligence and the necessity of sticking to a very difficult task without giving way to despair—hardly the way to encourage one who knows almost nothing about our hobby, but is prepared to find out!

Then there were a few entries who plunged straight into the *mystique* of Amateur Radio by using abbreviations and amateur slang—which might be in order for certain beginners who have acquired

a smattering of knowledge, but would be completely baffling to others. (As would advice to "go out and buy yourself a CR-100"). In offering advice on such a complex subject as Amateur Radio, it is always safest to assume complete ignorance.

Too much concern with books from the local library, examination syllabuses and the like struck the judges as undesirable in the early stages; as did some of the rather fanciful descriptions of the "unbelievable advantages" of the "finest hobby in the world," and so forth.

In short, too many of the entrants devoted time to "selling" Amateur Radio to our enquiring aspirant, who, presumably, is already well sold on it and merely wants to know how to get a foot in the door.

Not Helpful

Then there was the type of entry which merely duplicated the information available from the GPO, and, in some cases, made the requirements sound more fearsome than they really are—hardly an encouragement to a newcomer, any more than the statement that he could buy himself a good receiver for "about £25" and a transmitter to follow, for "not more than £30." There are still some keen youngsters, thank goodness, who are prepared to learn, and then to build themselves some simple gear which will not only enable them to get started, but to learn far more at the same time.

And the suggestion that the tyro's very *first* step should be to locate a nearby amateur and go and ask him what it was all about—well, one might be lucky, but this should hardly come first of all.

In short, we consider the most valuable advice to be "make yourself a short-wave listener, which doesn't involve any study or investigation, but puts you straight on the bottom rung of the ladder." Other steps will follow almost naturally, guided by a little further advice from others in a similar position, whom one is bound to meet sooner or later.

Hence the words in the winning entry—"this will put you in touch, and you will learn much about the game by just listening to amateurs talking to one another"—strike us as the most valuable single item of advice contained in the many thousands of words



G3COC

submitted by all our entrants.

The Editor wishes to thank all those who sent in entries, and to congratulate them on the good sense shown by all of them. But, by the nature of such a competition there can only be one winner. To him, special thanks and congratulations.

He was judged to be: R. C. Ray, G2TA (chairman, Radio Society of Harrow), Wintons End, Springfields, Bushey Heath, Herts., and his Letter appears below:

BEGINNER QUERY

"Dear OM,

Thank you for your enquiry. Here is my two-year plan for getting you on the air.

The first year should be spent acquiring some background knowledge of the hobby, and this can best be done by becoming a short wave listener. You should not at this stage attempt to build a receiver, but rather obtain either an old broadcast receiver with a short-wave band covering amateur wavelengths, or alternatively make a judicious purchase from among the many Government surplus receivers available. This will put you in touch and you will learn much about the game by just listening to amateurs talking to one another.

If you know a local amateur cultivate him; if there is a Club in your district, join it; if you have a friend who is also interested, so much the better. Failing all these you must rely on the written word, and here you would do well to read **SHORT WAVE**

MAGAZINE regularly and also you should purchase one or two books dealing with the subject, such as the *Guide to Amateur Radio*.

It is important that you get some experience in constructional work at this stage, and you should begin by building some simple test gear such as a multi-range meter and a grid dip oscillator. Follow this up as your technical abilities develop with a few receiving aids such as a crystal calibrator and a convertor to extend the coverage of your receiver. Eventually you should be able to build a simple receiver for "stand-by" purposes or perhaps for main station use.

Because it is necessary to pass an examination in radio theory and Morse code before you can have a licence, your second year must be devoted to getting your "ticket." If you can enrol at a local school for formal training so much the better, but it is quite possible to reach the necessary standard by private study. The Morse code need not prove a difficulty especially if you can find someone to help you with regular practice. I strongly recommend one of the advertised recorded courses which will permit regular practice over a range of speeds suitable for the beginner. During this year you must continue with your listening and your constructional work, the aim being to build up a simple transmitter to get you on the air when your licence arrives. By that time you will find that you can answer the questions you have put to me today far better than I can!"

G2TA

Do You Know That—

— Cheap flexible drives, capable of working through angles, can be contrived from discarded lengths of fractured speedometer cable. Just cut off the required piece, heat its ends, and force them into paxolin tube (or plastic-type insulant), to which the mechanical connections can be made. Old speedo. cable can often be had for the asking from repair garages, or at minimal cost from a car-breaker's yard. (*QRK-5, Wimbledon & D.R.S.*)

— Very effective equipment name-plates can be made from the self-adhesive labels obtainable through most photographic retailers. These name-plates come in various sizes, and numbers are also available. (*GM2CQI*.)

— Mis-alignment of the central element of a coax socket during soldering (caused by the insulation going soft under heat) can easily be prevented by putting a spare coax plug into the socket while the inner is being soldered. This will not only hold the middle pin rigidly in the correct position, but will also act as a partial heat-sink during the actual soldering operation. The work should be allowed to cool off to normal temperature before the plug is pulled out, when it will be found that the central insulator has set hard again, leaving the socket pin accurately centred. (*G3MWF*.)

— Any multi-meter type of test set having a DC range of about 0-10 mA can be adapted for comparative field-strength measurements by wiring a suitable RF choke in series with a diode, this network then being put across the meter terminals. The instrument is aperiodic and can be used on any amateur band if a short pick-up rod is fitted to the junction of the diode and the RF choke. (*G3TFM*.)

— Strong single nylon fishing line used as end insulation with 33g. nickel-plated piano wire, obtainable as model aircraft control line in 150ft. lengths, will make, together, a strong and almost invisible aerial for LF-band working at heights of 30-40ft. These ingredients are available at any of those shops combining sports goods and model supplies—and no reasonable neighbour could object to such an aerial passing over his garden. (*G3ORB*.)

— The resonance point of any mobile aerial can be altered by as much as 100 kc (on 160m.) by adjusting the angle from the vertical through up to 45°. This can avoid the necessity for capacity hats, adjustable top sections, tapped coils, or other impedimenta. (*G3IES*.)

— The few volts needed to power an odd piece of transistorised equipment, e.g. the microphone preamp. for a modulator unit, can easily be derived from a spare LT winding on any small transformer by using a cheap transistor as a diode half-wave rectifier.

working into a 100-ohm resistor as a surge limiter with 1000 μ F of smoothing. (G3SCD.)

— A quick RF choke for Rx purposes can be contrived by using a discarded 465 kc IF transformer with the parallel condensers removed. One such can will provide two chokes and the inductance will be in the order of 1-2 mH. (ZB2AG.)

— Recorded tape can be quickly erased (brought to the condition when it can be used again) by running it over a speaker magnet, which can be either PM or mains energised. (J. Brown, Llandaff, Cardiff.)

— If needing to play $7\frac{1}{2}$ i.p.m. tape on a $3\frac{1}{2}$ i.p.m. tape deck, the diameter of the capstan spindle can be doubled by overwinding it with insulating sleeving, or anything similar. A permanent adaptor can be made from a piece of plastic rod exactly double the diameter of the capstan, drilled to be a tight fit on the capstan spindle. The result will be found very satisfactory. (H. Moore, Ilkley, Yorks.)

— When loading a quarter-wave end-fed aerial—such as a wire of about 130ft. for Top Band working—a low-wattage bulb with a shorting switch, inserted in series with the aerial and as close as possible to the feed point from the Tx, will glow when maximum RF current is flowing in the aerial; thus, it is a very useful indicator for tune-up purposes. While actually transmitting, the bulb should be shorted out (using the switch) to prevent it absorbing power. In the test position, it will also serve as a rough guide to depth of modulation—the glow should increase about 25 per cent if the carrier is being fully modulated. (G3NUN.)

— Adaptors for plugging HC6U-type crystals into FT-243 holders can be made from HC6U sockets by soldering half-inch lengths of tinned copper wire on to the inside of the solder-tags. If wire of about 16g. is used, it will be necessary to do a little bending and shaping to ensure a snug fit. (G6RAX/T-G8AAZ.)

— A crystal or carbon microphone insert can be given a neat mounting by fitting it into a pair of ordinary (Woolworth's) metal tea-strainers soldered back-to-back. The assembly also lends itself to stand mounting, for which a metal support and a base can be contrived. (B. Wedzicha, Croydon, Surrey.)

— Guaranteed jam-proof nylon and fibre pulleys, impervious to weather and very suitable for aerial installations of all sorts, can be obtained from any shop supplying the needs of yachtsmen and small-boat enthusiasts. These shops also carry very useful lines in cordage and swivel fittings, adaptable to amateur aerial installations. (C. Marsden, Leeds.)

— In the case of a broken aerial, leaving the halyard stuck at the mast head, it can (fairly easily) be retrieved by the use of a set of drain-rods with a suitable hook at the end of the top one. Drain rods are usually of cane, in lengths with a screw fitting, and as each new length is put on, the assembly can be guided either up the mast or along one of its guys. To catch the end of the halyard with the hook involves a certain amount of manipulation, perhaps

with the aid of binoculars. And when you re-fit, remember to put a tail-rope or down-haul on the halyard itself! (G6CC.)

— A car headlight dip-switch makes an excellent foot-operated control for a relay-actuated Tx/Rx change-over system. New switches can be obtained from most garages doing repair work, while used switches can be found in any car-breaker's yard for a few coppers. The contacts should be carefully cleaned, and the switch solidly mounted, so that it will withstand constant foot control. (MP4TBR.)

We shall be glad to see more half-guinea ideas for possible use in future issues. Remember, no sketches or diagrams—just something that can be explained in a sentence or two, and that you know works. Payment is made immediately on publication, and your contribution should be addressed: Editor, SHORT WAVE MAGAZINE, BUCKINGHAM.

INTERESTING EXHIBIT AT THE SCIENCE MUSEUM

The Science Museum in South Kensington (London, S.W.7) is worth a visit at any time—particularly the Communications Section, under G5CS, where they also have a modern amateur station, signing GB2SM, with G3JUL of the Museum staff as chief operator. Of immediate interest (because it will only be there till the end of February) is the actual Mercury Space Capsule *Freedom 7*, in which Cdr. Alan Shepard of the U.S. Navy made the first manned flight in space for our side. Considerable detailed information is given about the Capsule, including its communications systems. This is altogether an extremely interesting exhibit, which should on no account be missed if you are visiting London during the next four months.

JAMBOREE-ON-THE-AIR

We know that there were a number of U.K. stations in operation for the Scout DX QSO Party held over the week-end October 16/17. Accordingly, we would be glad to have details from participating stations under the G prefixes, for a general write-up on the event in an early issue. The information required can be summarised as follows: Callsign, location, gear used, bands worked, the Scout stations worked on the various bands, and the total number of QSO's made (this figure to include non-Scout stations) over the week-end. It should also be made clear whether operation was from a home location, /A or /P, or under canvas, in "field-day conditions." Good photographs relevant to the event will also be most acceptable, to illustrate the article, and payment will be made for any used. Address to: Editor, SHORT WAVE MAGAZINE, Buckingham, by November 12, *latest*, heading the letter "Jamboree Report."

SWL • • • • •

LISTENING AND HEARING—NEWS and VIEWS—DX/TV—THE HPX LADDER—SET LISTENING PERIOD

AFTER staring fixedly at the third letter in the title of this article—L for Listening—it occurred to your scribe that some thoughts on the subject of *Listening* would not be amiss.

Have you ever pondered upon the difference between *listening* and *hearing*? Has it ever occurred to you that you can listen without hearing anything, but that it is unusual to hear something without listening? Generalising madly, one might say that hearing is a purely physical action of the ears, but that listening involves the use of the brain.

Something wakes you up in the night; on becoming conscious, you possibly don't hear a thing, but you start to *listen*. You may then *hear* something, or you may not—according to the kind of slippers the burglar is wearing, or other varying circumstances.

But (we said we were generalising) it really *is* possible to hear something, in a subconscious kind of way, and not to listen to it. (*Listening for* it and *listening to* it, by the way, are two different actions). You can hear a nonstop flow of words or music coming from your radio, or your TV, or a relative talking to another member of the family, and not be listening at all. In other words, you keep the brain switched off and simply let the sounds flow without bothering about them. On the other hand, though, if something is likely to be happening that you want to hear, then you have to *listen for* it, and will get nowhere by just waiting in a state of semi-coma until you happen to hear something.

All very obvious, maybe, but it's possible that you have never thought about it. And the connection with "SWL" is now very plain . . . some of us may hear something on the air, without bothering to *listen to* it, while others may listen intently *for* something—which they may or may not hear, according to the efficiency of the apparatus they use for doing it.

The All-Important Operator

There used to be a saying in motoring circles (it hasn't been heard lately, so probably it will come round again) to the effect that the most important component of a car was "the nut behind the wheel." One could usefully modify this, and say that the most important part of a receiver is "the nut between the headphones." And this is because a receiver can only *hear* things, but it takes an operator to *listen*.

This is why SWL "A" will take a sweep round the 14 mc band, and, in five minutes, will have on his log-pad such prefixes as KW6, KX6, VR2, 5W1, all in a matter of minutes, whereas SWL "B" will tell you later that he heard a couple of Russians

and a whole lot of weak stuff not worth bothering about.

One of the sad facts of life that we all have to acknowledge is that it is almost invariably the weak stuff that will turn out to be interesting. The SWL's at the head of the HPX Table must know all about this, or they wouldn't be there.

So (end of sermon coming up) it doesn't matter so very much what kind of a receiver or aerial system you have, provided that the "nut between the headphones" is capable of stirring up those little grey cells and really concentrating on what he hears, however weak it may be. Conscious effort is needed for success . . . casual twiddling of a dial, even on a receiver four times as good, will not necessarily produce results.

The Month's Mail

This month's arrival of SWL letters has broken all records, and so has the number of new entries for the HPX Table. If it had not been for the fact that quite a lot of former entrants have dropped out, we might even have had to raise the starting figure to 250!

Many of these letters being of the long and rambling variety, we have had to get down to them



Not perhaps an entirely suitable subject for "SWL"—because this shows young Robert Frost, of the Harlow & District Amateur Radio Society, operating the two-metre talk-in station at the club's recent Mobile Rally. But Robert Frost, though only 15 years old, is fully licensed as G3SZF, and knows the form.

and extract the real meat, so quotes must be brief except in the cases of exceptional interest in some department or other.

Many newcomers have said what gear they are using; others have passed on the good news that the "yellow slip" concerning R.A.E. has arrived. One of the latter is *G. Christie (Gainsborough)* who is now going ahead with his *CW. C. R. Cooper (West Garforth)* returned to SWL after twelve years, and is fixed up with a BC-348R, on which he would like to fit an S-meter; he also wants the circuit diagram. Perhaps anyone who can help him will get in touch (*QTH: 82 Ringway, West Garforth, Nr. Leeds, Yorkshire.*)

Stewart Foster (Lincoln) has been taking a four-weeks' holiday in Greece, and hopes to come back with tales of his meetings with some SV1's. *Gillies Wylie (Elderslie)*, likewise on holiday, visited Portpatrick Marine Radio Station and was very impressed with their gear; he is in for R.A.E. in December. (He sends some interesting quotations from Robert Burns referring to the subject of Amateur Radio, which might well appear in "Miscellany" at some future date!).

Richard Walker (Sheffield) writes in for the first time (and thanks for the nice remarks about "SWL" by the way). He asks the meaning of "55," as used by the DL's on the air and on their QSL cards. It's an unofficial bit of amateur jargon meaning, roughly "Good Luck"—not quite the same as 73, which means "Best Regards." (Incidentally,

note that the correct abbreviation there is just "73" and nothing else. The often-heard "Best 73's" would mean, literally, "Best best regards"!).

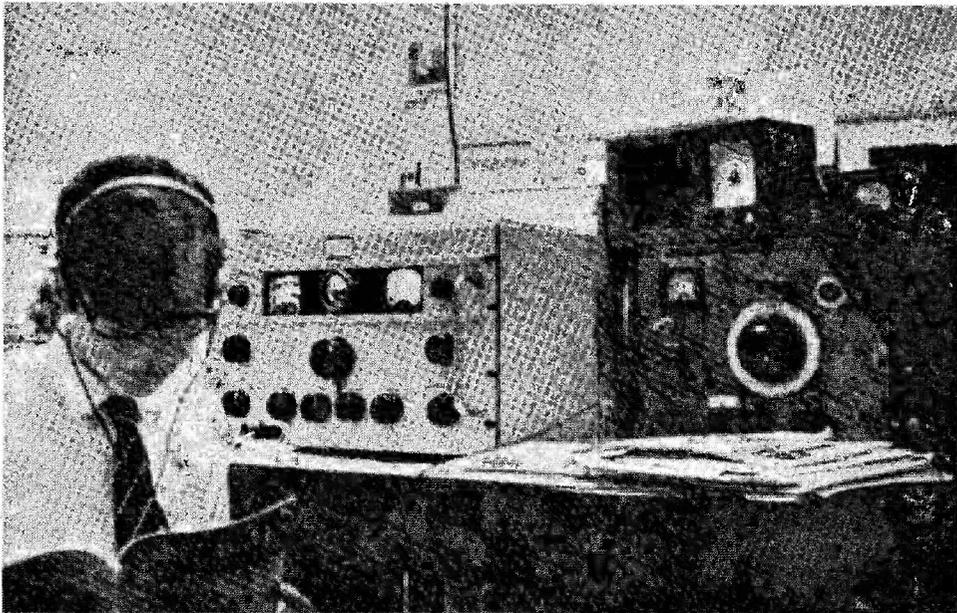
Glyn Watson (also Sheffield) is a 15-year-old reader who joined us in May and has promoted himself from SW broadcast to the 80-metre band, using a transistor portable on which he has logged about 250 G stations and many Europeans. He finds endless interest, irrespective of conditions, and recommends those who complain about conditions on the HF bands to take a spell on Eighty.

Frank Moore (Welling) is another 80-metre enthusiast, using a Command receiver, but a 10-transistor five-band job is on the way. He would like to meet local SWL's and discuss odd problems (*QTH: 5 Kelvin Road, Welling, Kent.*)

Old Timer

L. G. Rigden (Leighton Buzzard) says his listening dates from the era of home-made grid leaks (with stove polish!), home-wound basket coils, carborundum crystals and bright emitters with car batteries under the table—this goes back to about 1925! He now has a CR-100/7 plus a DB-20 pre-selector using EF183's, and is particularly interested in mobiles of all kinds. So far he has listed these categories: Portable, Car, Motor-Cycle, Maritime, Aeronautical, Glider and the various odd bods, signing "fixed mobile," whatever that may mean. He awaits the first Submarine/M with interest!

G3IDG (Basingstoke) replies to *James Brown*



A GM/SWL studies his "Short Wave Magazine"—17-year-old Paul Harris of Croeso, Hamilton Drive, Elgin, Scotland, who has been listening on the bands for two years. On the bench are a smartened-up AR88D and an ex-RAF R1224A, and outside is a 130ft. wire. A 10-watt rig for Top Band and Eighty is under construction, which shows in what direction SWL Harris is setting his sights. At present he prefers the LF bands and "fails to see any point in the HPX Ladder."

(Llandaff), who said in the September "SWL" that his HRO was "not as good as a modern 19 Set." G3IDG says that something must be seriously wrong with that HRO, and suggests to the owner that he should (a) check and replace all leaky paper and electrolytic condensers; (b) test all valves and replace those with low emission; (c) fit a stabiliser to feed the BFO and local oscillator; and (d) realign both RF and IF circuits.

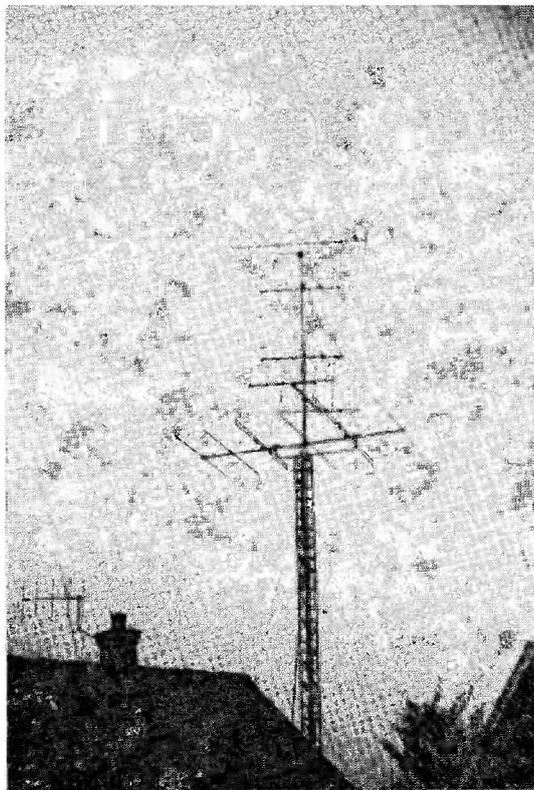
A. J. Batley (Chichester) has come back to SWL after 2½ years abroad, and finds his new HE-80 brings in an assortment of DX on all bands, all modes (including CW, since by profession he is a "key-swinger"). He promises regular reports.

Male Hobby?

Several correspondents have noticed the name of Miss Janet Martin on the HPX Ladder, and this prompts John Roze (Penrith) to ask why Amateur Radio seems to attract so few of the girls, young ladies and wives. As he says, quite a few YL operators may be heard on the bands, but the proportion is really very low. He suspects, too, that photographs of YL-operated stations would show a standard of neatness above the average, as most of them "can't stand untidy things" and many of the male SWL's admit to a pretty good mess! (Comment from any of your young lady readers would be welcome and interesting.)

C. G. H. Ivermee (Reading) logged 238 prefixes on the three LF bands, but then found the going getting pretty hard. So, using an RF-25B unit as the basis, he built a crystal-controlled converter (for which band he doesn't say) and logged 16 new ones in the first few hours . . . D. Edwards (Coalville) says he has been amused during the last two years to read about the rivalry between the Phone and CW enthusiasts, and would be interested to find out "how and why it all started." (Having just got married, he is "temporarily inactive"—so the question, and the answer, remain academic!)

Roy Patrick (Derby) reports that HC1JJ, 1MX, 1HG, 1CM, 1GE, 7DO and 1WR are all active (from Ecuador, of course), and they all work for HCJB, which is an international missionary station and pretty well known to SWL's interested in the SW/BC



Elaborate aerial system used for DX/TV by Roger Bunney of Trelawne, Cupernham Lane, Romsey, Hants. Working upwards, it consists of a 6-ele. horizontal, with dipoles for 50 mc and 60 mc (separate feeders); two wide-band arrays for Band III, vertical; two more for Band III (horizontal); and a 19-ele. J-Beam for UHF on Band IV. The tower is made from 6ft. lattice sections, and the mast, which revolves inside it, is rotated from inside the house.

bands . . . W. C. Torode (London, W.C.1), referring back to the remarks on SSB reception in September's "SWL," comments that most of the Eddystone receivers have an excellent BFO circuit and cope very well with Sideband. Most of his own SSB loggings have been on an S.750. He is studying for R.A.E. by correspondence course, and hopes to be ready by next May.

Andrew Niblock (Ilkeston) has just moved there from Chester, and finds receiving conditions much better. He had to scrap his previous HPX rating and start again, and duly logged 310 prefixes in 2½ weeks, which sounds like pretty good going. He now has all the gear in a garden shed (six by four!) and some crafty designing has been necessary to get it all in. A TA-32 beam awaits a suitable sky-hook, being at present mounted on a broom-handle stuck in the lawn!

Iain Mackay (Dingwall) has also moved QTH recently, and so far has not got going from the new QTH . . . Wilfred Smith (West Bromwich) says that his 387 prefixes have all been heard during 1965

SET LISTENING PERIOD

Saturday, November 20, 1965

14 mc Band, Telephony Only

1600-1800 GMT

Listen to everything you can hear on Phone during this period, and send in your list of stations heard with your next letter to "SWL." Do not log European stations, or W/K stations in Districts 1, 2, 3, 4 and 8. Log should include (a) Time GMT; (b) Station Heard; (c) RS report; (d) Station being called (or CQ).

Mark the logs plainly "First SLP" and address them to "SWL," SHORT WAVE MAGAZINE, Buckingham.

only, and feels that the ladder ought to be scrapped and re-started every two years. He uses an EC-10, Geloso converter, and preselector-cum-ATU, with a Q-multiplier on the way.

H. M. Graham (Harefield) writes "When I invested in my S.840 I was hoping to sit back and let the DX roll in on 15 metres, but they don't seem to be around when I'm switched on." But he confirms that the 840 does an excellent job on SSB, and has also brought him his first Trans-Atlantic phone on 80 metres—VO1FX, who is quite a regular.

C. R. Shaw (Kineton), an SWL for two years, started with a one-valver, then a 46 Set (walkie-talkie) and now has a CR-300/2, which, he says, is a real luxury, since he has been used to having no BFO and being confined to 80 metres (!). He would like to correspond with any other owner of a CR-300/2 (QTH: 2 Park Piece, Kineton, Warwicks).

D. E. Fitzgerald (Dublin), talking of his R.107, says "the old warhorse is acting up, and I'm thinking of having it shot." But when he remembers that he has nothing to replace it, he relents. (Just find the trouble and it will serve you faithfully once again.)

D. H. Foster (Rainham) now has an outdoor shack, and says that one advantage is that the aerial feeler doesn't have to be trailed all round the house. Also he is "further removed from ignition QRM." He has found Forty and Eighty in fine form, with "armchair copy" of the VK's and ZL's.

Sundry Queries

From P. Crust (Loughborough): "Can you tell me what /H stands for? On September 12 on 21 mc, I heard 4X4QG/H on SSB." Sorry, we have no idea . . . From A. G. Scott (Liverpool): "I have heard stations signing /FC and /SU, and have included them in my HPX list. What will the position be when I hear 'native' operators from these countries, with a numeral? Will this still count as only one prefix?" That depends upon the numeral that the stations with /FC and /SU as a suffix were using. If you heard F9XX/FC, he counts as an FC9 . . . so if you hear FC3XX and FC8XX at later dates, they are different. Likewise VE6XX/SU would count separately from, say, SU1MR. (SWL Scott also reports that about twelve VEØ calls have been issued for /MM working.)

From Stephen Shaw (Southport): "Can you please identify 7Z3 for me?" Yes, 7Z and 8Z are both prefixes for Saudi Arabia. The difference is between nationals and visiting operators from other countries, such as the U.S.A. . . . From Alan Jones (Chertsey): "Are WS6G and EA9AX genuine?" Well, "WS6G" sounds quite impossible, but EA9AX is probable enough—many EA9's have been heard from the various territories covered by that prefix.

Richard de Buis (Felixstowe), points out how easy it is to be misled, on the CW bands, by bad sending. He heard an "FT6" which roused his hopes but turned out to be a UA; and we know of countless loggings of YU's, optimistically taken to be KX6's (work it out for yourself).

SWL de Buis thinks the low scores on CW compared with Phone, are largely due to European QRM, and he sometimes feels that every station in the U.S.S.R. is bouncing its signals off his aerial, on the way to wherever they're going.

James Brown (Cardiff) was pleased to identify VS6AJ on Eighty at 2350z. (Actually he was just out of our band, on 3803 kc.) He makes some useful suggestions about future SLP's, and hope he will be pleased with the announcement of the first one, further on in these pages.

Graham Paterson (Lairg) has had a Codar Super-Clipper, then a CR-45, and now a Hallicrafters SC-101A which pleases him very much; he has a good friend in WA2VID (Clifton, N.J.), who swaps QST monthly for the Magazine, and he adds that Amateur Radio and SWL'ing has brought him many friends, all over the world.

DX-TV

This sub-branch of SWL doesn't seem to attract many followers, but the few are certainly keen! And they get results, too. This month Dennis Boniface (Ripon) says that he got in touch (through this

HPX LADDER

(Starting January 1, 1960)

Qualifying Score 200

SWL	PREFIXES	SWL	PREFIXES
<i>PHONE ONLY</i>			
T. R. Popham (Exeter)	885	H. M. Graham (Harefield)	301
P. A. Cayless (Exeter)	812	H. T. Mortimer (Gloucester)	291
D. Douglas (Dundee)	798	G. S. Taylor	
A. W. Nielson (Glasgow)	719	(Wolverhampton)	290
S. Foster (Lincoln)	643	A. Papworth (Over)	287
E. Etheridge (Hull)	601	G. Christie (Gainsborough)	287
R. G. Preston (Norwich)	525	J. Dixon	
A. Huggett (Lamberhurst)	517	(Barrow-in-Furness)	271
D. Poulter (Morden)	488	M. R. Warburton (Sale)	262
M. Woollin (Leeds)	485	W. J. Angerson (Leeds)	260
K. C. Staddon (Stroud)	478	A. J. Hayter (Plymouth)	254
E. R. Chilvers (Lydney)	470	D. Edwards (Coalville)	252
P. Baxter (Winchester)	456	C. Case (Widnes)	252
P. J. Lennard (Wartling)	454	C. G. H. Ivermece (Reading)	252
G. Wylie (Elderslie)	452	P. F. Elgar (Woking)	251
I. A. Mackay (Dingwall)	450	C. Freeman (Nuthall)	243
R. Turlington (Braunstone)	424	D. Nicholls (Bristol)	239
B. Dale (Congleton)	423	W. C. Torode	
J. P. Fitzgerald		(London, W.C.1)	230
(Great Missenden)	390	C. Dillon (Bath)	227
W. Smith (West Bromwich)	387	R. J. Basford (Nottingham)	226
W. Moncrieff (Hampton)	384	S. Hardisty (Accrington)	225
A. Parker (Chesham)	382	P. Edwards (Birmingham)	222
D. Rollitt (Navenby)	362	P. Freeman (Chessington)	221
A. G. Scott (Liverpool)	360	A. Hardwick	
W. Chaffer (Edgware)	360	(Burton-on-Trent)	220
S. W. Edwards (Warwick)	355	K. F. Ballinger (Worcester)	220
R. De Buis (Felixstowe)	355	R. T. Sutton (Birmingham)	219
M. J. Summers		J. N. Robson (Corbridge)	217
(Market Harborough)	352	Janet I. Martin (Stroud)	216
P. J. Williams (Doncaster)	342	G. Beesley (Worcester)	215
D. H. Foster (Rainham)	342	D. Thomson (Lanark)	215
J. Butler (Bargoed)	341	G. P. Mortimer	
D. C. Parker (Redditch)	335	(Stourbridge)	211
P. D. G. Milloy (Doncaster)	332	S. Shaw (Stockport)	207
A. D. Jones (Chertsey)	331		
S. Wilson (Ossett)	325	<i>CW ONLY</i>	
D. E. Fitzgerald (Dublin)	323	P. J. Lennard (Wartling)	534
D. G. Evans (Neath)	314	S. Wilson (Ossett)	350
A. Niblock (Ilkeston)	310	D. Douglas (Dundee)	349
P. Crust (Loughborough)	309	M. Woollin (Leeds)	329
B. J. Turner (Westcliff)	308	D. H. Foster (Rainham)	303
R. Hooper (London, N.16)	302	P. Etheridge (Hull)	303

(NOTE: Listings include only recent claims. Failure to report for two consecutive issues of "SWL" will entail removal from the table. Next list, January 1966 issue—deadline November 26.)

column) with *Frank Smales of Pontefract*—they are now “friends through DX-TV” and mutually interested in each other’s doings. Frank Smales himself reports a very successful August, with his 11-ele aerial up to 27ft. and low-loss cable installed. He has plans to push the array up to 35ft. with a much more elaborate aerial system which, after all, is the real key to success in this field. Band III has been most rewarding, with a score or more of European stations identified. His total is now 61 stations in 17 countries, and he advises beginners to concentrate on Band III, using horizontal aeri-als.

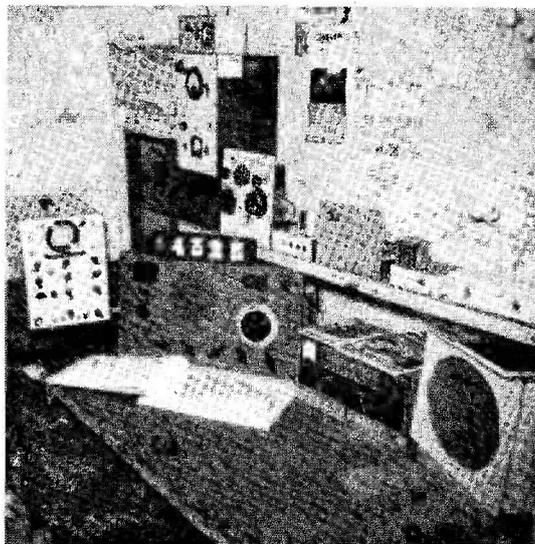
Roger Bunney (Romsey) sends a picture of his very elaborate aerial system, with which he is well equipped to receive almost anything that’s going, but he suffers from bad screening to the East and South. Three receivers are in use, with various preamps, for Bands I, III and UHF. He has received 112 stations, in 23 countries, thanks to recent tropo openings, as reported in “VHF Bands.” One of his best catches was Heidelberg (Channel 27.)

Quick Quotes

“I prefer the LF bands to the DX bands, and fail to see any point in the HPX Ladder” (*Paul Harris, Elgin*) . . . “Started on the HF bands, but thanks to my locals (especially GW3UCJ) my eyes have been opened to the wonders of Top Band; I have also started on some two-metre work using a 6-ele beam” (*D. G. Evans, Neath*) . . . “Twenty appears to be closing earlier now, so I suppose I shall have to spend more time on Eighty. I intend to get down to CW this winter, and this should help to fill the gap if the bands are dead” (*J. Dixon, Barrow-in-Furnace*).

“Listening gets pretty rough, especially on 20-metre DX with only a PCR-3. I’m sure all the DX has gone on to SSB, not leaving much for me on AM” (*M. R. Warburton, Sale*) . . . “I’ve received a little yellow slip with a ‘P’ for ‘that exam,’ so Morse comes next, but QRM from A-Levels rather hazardous (*P. D. G. Milloy, Doncaster*) . . . “Conditions are the best I have known since I started listening in May. I am now using a ground-plane, 18ft. up with four horizontal radials, as described in the June, 1964, issue of the *Magazine*” (*David Rollitt, Navenby*).

“May be in a minority, but I think ‘SWL’ should be kept exactly as it is. Perhaps people who think the same way don’t write about it. Looking forward with interest to your Set Listening Period idea.” (*D. J. Mortimer, Gloucester*) . . . “Am very impressed at the standard of reporting that your writers maintain. Could we not have a new HPX Ladder starting on January 1, 1966, and renewed yearly?” (*David Douglas, Dundee*) . . . “If there are any SWL’s locally who would like to pay me a visit, just drop



Neat layout for the SWL shack of John Briggs (109 Brooklands Road, Hall Green, Birmingham, 28). The R.208 covers the HF Bands and the HE-40 is used for LF-band listening. Power packs and ATU are on the upper shelf, along with a Morse practice oscillator which, we are told, is being put to good use.

a line so that I will know—*John Briggs, 109 Brooklands Road, Hall Green, Birmingham, 28.*”

Starting Again

Further comment on this demand for a new HPX Ladder . . . *Terry Popham (Exeter)*—The Man at the Top—writes as follows: “I tried to see how long it would take me to get the qualifying score of 200 if I started again. It took just one week, listening every day, every band, for about 1½ hours in the evenings. So it’s *not* very hard.” He thinks he may vacate the Hot Seat and start again, just for the fun of it! Alternatively, he might break into the CW section of the Ladder.

S. Wilson (Ossett) says he is transferring most of his activities to One-Sixty for the winter, and hopes to put up a 500-ft. long wire. He has already built a new receiver—single-conversion 12-valve superhet with BFO, AVC, Q-multiplier, bandspread, S-meter and AF noise limiter. For Top Band only . . . that shows you how enthusiastic they can get!

SET LISTENING PERIOD

Now, having dealt with the very heavy mail, to the subject you have all been waiting for—the first **Set Listening Period**. This issue is published on November 5, and your next deadline is November 26, so we have decided upon **Saturday, November 20**, as the date. The band—14 mc for the first one. The time, **1600-1800 GMT**, and we hope the band doesn’t start fading out too early. Phone only, this time, anywhere in the band.

Send in, with your next letter, on a separate sheet headed SLP, with name and QTH, your list of

Next appearance of this feature—January 1966. All correspondence and photographs (of SWL stations and equipment) by November 26, addressed to Editorial Department, SHORT WAVE MAGAZINE, Buckingham, England. Head the letter “S.W.L.”

SET LISTENING PERIOD
Saturday, November 20, 1965
14 mc Band, Telephony Only
1600-1800 GMT

Listen to everything you can hear on Phone during this period, and send in your list of stations heard with your next letter to "SWL." *Do not* log European stations, or W/K stations in Districts 1, 2, 3, 4 and 8. Log should include (a) Time GMT; (b) Station Heard; (c) RS report; (d) Station being called (or CQ).

Mark the logs plainly "First SLP" and address them to "SWL," SHORT WAVE MAGAZINE, Buckingham.

stations heard, in alphabetical order of prefixes and giving the *time*, your RS report and station (or CQ) being called, as shown in the panel. *No* Europeans, and *no* W's from Districts 1, 2, 3, 4 and 8. That should give you plenty of scope for two hours' listening, unless we happen to strike very unlucky with conditions.

So go ahead, log everything you can (*except*, we



Always on the look-out for the odd picture or the unusual fact, this object protruding from the verge of a North Hertfordshire lane caught the attention of G5UM. On looking closer, Jack found that the sign also carried the legend "H.R.—D.C.," meaning nothing more exciting than Hitchin Rural District Council. As for that word "Anode," it is to indicate part of a system for the electrolytic protection of pipelines against corrosion! (We rely on Jack to keep us right up-to-date on such phenomena!)

repeat, Europe and the nearer W's) and send in your list for comparison with the others. This is a *test* rather than a *contest* and we will summarise results in the fairest way we can devise. Please mention also the type of receiver and the aerial used.

Late Finals

We much regret to have to record that, after the compilation of this feature had been started and as it was due to go to press, reports and ladder claims were received from the following:

C. Pedder (Preston, Lancs.), D. Bonniface (Ripon, Yorks.), M. Wollin (Leeds), R. G. Preston (Norwich), D. A. R. Poulter (Morden, Surrey), J. P. Fitzgerald (Great Missenden, Bucks.), M. Silverstein (Mill Hill, London), M. J. Summers (Market Harborough, Leics.), D. Walsh (Carrick, Eire), A. Papworth (Over, Cambs.), G. S. Taylor (Wolverhampton) and W. Felton (Lincoln)—we are very sorry, but they were all too late for coverage this time (see note p.414, September issue).

The moral is: Don't leave posting till the last moment of the last day—give yourself at least two days in hand! We do our best to accommodate everyone, but the deadline is the deadline.

So to Conclude

Now, having run out of space, we will remind you that the deadline, both for news and SLP logs, is **Friday, November 26**. May all the bands be open all the time, until then, and Good Hunting.

CORRECTION NOTE—G2ANB

With reference to "The Other Man's Station" featured on p.495 of the October issue, G2ANB asks us to point out that he is *not* attempting the nearly-impossible task of modulating a 6146 using EL84's—they should, of course, have been written as EL34's in his modulator.

THE NEW DX ZONE MAP

This is now available, as shown on our Stand at the Amateur Radio Exhibition. It is a very nice job of print, on durable paper for wall mounting, and can truly be said to be an essential aid for anyone, either AT-station operator or SWL, with the remotest interest in working (or hearing) amateur stations outside the U.K. With the Zone prefix lists revised to October 1965, the *DX Zone Map* gives a mass of detailed information about the amateur DX world relative to the U.K.—for it is, basically, to a great-circle projection centred on London and, on the scale used, is sufficiently accurate for the whole of the U.K., in terms of distance (in miles or kilometres) or magnetic bearing (beam heading) for any point on the Earth's surface. A "How to Use" explanatory panel, inset on the Map, makes all this clear. The price is 14s. 9d., including postage and special packing in a postal tube to avoid damage in transit, and delivery is from stock. Orders, with remittance, to: Publications Dept., Short Wave Magazine, Ltd., 55 Victoria Street. London, S.W.1.

ABOUT THE HRO RECEIVER

CHECKING PERFORMANCE —ALIGNMENT, ADJUSTMENT, AND GENERAL SERVICING

Part I

E. P. ESSERY (G3KFE)

With many hundreds of HRO's of various marks still in amateur-station use, this article will be found very helpful by those who may feel that theirs might be needing some attention. In the second part of his article, our contributor will discuss possible modifications to modernise the HRO to the standard of present-day requirements.—Editor.

THE National HRO is a receiver about which little has been written in recent years, although a large number have appeared on the surplus market. In view of the absence of recently-published information, and the fact that, at its present low price, the HRO represents probably the best buy for the beginning (or experienced) licensed amateur or SWL (apart, of course, from the latest in post-war amateur-bands-only crystal-controlled receivers) it is proposed to cover, in fair detail, the receiver in its basic form, and also to discuss a series of modifications to make it more suitable for present-day use. It goes without saying that a copy of the HRO Manual would be extremely useful in following the discussion.

The Basic Circuit

This is shown as a block diagram in Figure 1. This arrangement is of the HRO-MX; it also goes for the HRO-5 with the exception that the valve types are different. The HRO Junior is basically the same, but lacks the crystal filter components and the S-meter circuit, and was not normally sold with bandspread coils.

Additional Requirements

In order to operate the HRO a loudspeaker with output transformer is required, the transformer being

of the 6V6-to-speaker variety available in all good junkboxes. It should be noted that in the absence of the primary of this transformer, wired across the "Speaker" sockets at the rear of the receiver, application of HT will result in the output stage having screen but no anode volts. This is bad for the valve! If it is intended to run on phones only, then the speaker sockets should be jumpered together at all times.

An external power supply is required. For 6.3 volt models, it should be of 230 volts DC at about 75 mA, with a centre-tapped heater winding at 6.3 volts 3.1 amps. If a receiver is met with using the old 2.5 volt valves on UX bases it is recommended that the change be made to the standard types (which it is understood are interchangeable) provided that all the valves in the receiver are changed at the same time to 6.3 volt heaters. If an HRO-B is encountered, it is a battery type; it takes the same heater current but needs 180 volts HT at 55 mA on the HT line. All bias requirements are provided for within the receiver. Any old power pack giving this sort of performance will do for the first tests, and will serve quite well on Top Band (or any other band where only the reception of AM phone is required) but, in getting the receiver right up to scratch, we will see that a fully stabilised supply is to be preferred.

Some sort of aerial, and some sort of earth, may be hung on the terminals at the side of the receiver on the left, and the GND terminal joined to earth by a short jumper.

Getting it Going

Having connected the power supplies and an aerial, throw the "B-plus" (HT) switch on and let the receiver warm up, then check operation on one or other of its ranges—the medium-wave to Top Band coil being probably the most convenient. A good idea of the liveness, or otherwise, of the receiver will soon be evident. If the receiver seems to be running reasonably well then remove the case and base-plate (the method of doing this depending on whether the receiver is of the rack or table model) and carry out the following checks: (1) Remove and test all valves, returning all good ones to their original sockets and replacing any that are doubtful by new ones. (2) Disconnect and measure the resistance of all the 0.1 μ F capacitors, using either a megger or a high voltage tester of the type

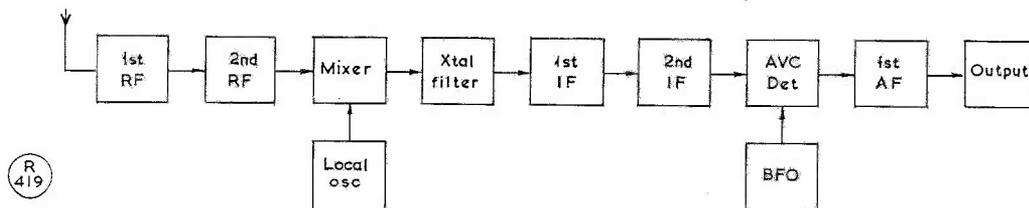


Fig. 1. Block diagram of the war-surplus type National HRO receiver. There are several variations, but the general arrangement is shown here. The main features of the HRO are its superlative tuner unit and the fact that it uses plug-in coil packs, for either BS (bandspread) or GC (general coverage). It requires a separate PSU and an external speaker.

shown in Fig. 2, it having been proven from painful experience that the usual test with the multi-range meter does not, for some reason, weed out all the bad ones. (3) Check the valve voltages to be approximately as in Table II, which were taken on the writer's HRO-5 before modification using the meter at the specified control settings of the receiver and on the specified meter ranges. The figures are quoted for a Caby Model B-20 and also for the Taylor 120A. The figures actually found should be noted down as they are taken and kept to provide a quantitative guide for any future fault-finding and as a check on running deterioration which affects all receivers in time and is so hard to assess without some reference.

An operational check should now be made. Set the controls as follows: RF Gain to maximum; Phasing to one end of its travel; CW Osc. to Off; AVC to Off; B-plus to On; Selectivity to the position of maximum noise output, and aerial and earth disconnected. If the alignment of the particular coil-set in use is all right then on spinning the dial from one end of the band to the other, the noise will stay at a constant level, or very nearly so. The coil-set may now be said to be in alignment or out of line, with the minor reservation that a faulty coil-set may also show constant noise level albeit at a lower level. Such a coil-set can be identified by noting the behaviour of each one of the coil sets available at the same session so that one which is not "perk-ing" is contrasted against the others which are all the same.

In a similar manner the IF alignment can be checked: Adjust the receiver as for the previous check but with the following alterations: Phasing set to about 5, i.e., switching in the crystal; Selectivity at maximum with the knob set to zero; CW Osc. turned away from Off. Under these conditions noise will be heard, the pitch varying when the CW Osc. control is turned. The noise will come to its lowest pitch at about 9 if the receiver is set up as its maker meant it to be, and if it has been in amateur hands it will more likely appear around 5; either way, note the exact setting at which the condition of lowest pitch of noise occurs. When this has been done repeat the test with the Phasing switched round to zero and Selectivity peaked for maximum noise output. The point of lowest pitch should appear at the same BFO setting if the IF is aligned correctly, and any difference in the two results indicates a need to realign. Note during this test a slight difference in the *timbre* of the sound when the crystal is in circuit; this is the crystal "ringing" to the noise.

Re-alignment of the HRO IF

It is assumed that although these checks have shown the need for re-alignment, the receiver is lively enough to find a few S9-plus carriers on one band or another. Let the receiver warm up for at least half an hour and preferably more. Commence with IF alignment as follows: Set the receiver to the condition of maximum selectivity as indicated in the

first IF check in the last paragraph. Tune to a CW carrier and note as you do so the pronounced "ringing" as you go through the signal; settle the tuning at the point where the ringing is most pronounced, and, without altering the controls in any other way adjust the CW Osc. for the favoured BFO pitch. Trim the IF trimmers Nos. 10, 11, 12, 13, 14 (see manual) for maximum response. It will be necessary to check that the receiver is tuned dead on in the "ringing" region, and as the IF shows signs of increased life, the work should be done on weaker and weaker signals, so that it is not necessary to reduce the RF Gain. The favoured signal for this is an unmodulated carrier at about S4 or less. Repeat and again repeat the work, and end up by repeating the IF check previously described. If the point of lowest pitch of noise does not now coincide whether the crystal is in or out—hard luck, and back to Square One. You *must* get the receiver alignment to pass this test, and repeating until you do is good practice anyway!

HRO Front-End Re-alignment

For the coils from 900 kc to 30 mc, we can notice that the MW coil has Top Band at one end and a stack of BBC stations at the other, while on the other coils an amateur band appears at each end of the range, so that in each case it can be established with some precision whether the coil-set in hand meets the calibration of the general coverage graph on the front to an accuracy of better than 3 per cent over the range. If it does, well and good, although it ought to be a lot better than this over the parts of the calibration occupied by the amateur band at each end. If it is not then the oscillator is out and needs re-aligning as follows: Set the signal to a frequency which should be at 490 on the HRO dial if tracking were OK, and check this signal frequency against the station wavemeter. Tune it in on the HRO, and then adjust trimmer No. 8 (*see* hand book) till the signal is where the HRO calibration chart says it ought to be. Then tune the receiver 912 kc *lower* in frequency, run up the RF again to max and see if you can find the signal as a weaker image. If you cannot locate the image the chances are that you have tuned the oscillator on the wrong side of the signal. This last check *must* be made or the receiver cannot track properly; the image rejection varies from band to band and it may be necessary to use maximum output from the generator before the image can be heard. Having set trimmer No. 8, remove the input and with the receiver set back to 490 on the dial tune trimmers 2, 4, 6, for maximum noise. Run the HRO dial from one end of the band to the other, when the noise output should remain fairly constant. If the volume varies markedly across the band poor *ganging* is indicated; with the HRO dial turned to about 20, use an insulated screwdriver handle to press the oscillator gang vanes gently towards the stator, noting whether the noise level rises or falls. If it rises, more oscillator inductance is required; if it falls, it is either tracking OK or it needs less induc-

tance. To prove which, repeat the test on the other gang sections and in particular the mixer grid section. If on trying this latter, the noise decreases, the inductance is correct; if it increases then the oscillator needs its inductance reduced.

Adjustment of oscillator inductance can be achieved in various ways. The literature says that for the two highest ranges (7.0-14.4, and 14-30 mc) a half-turn of the inductance is moved. Quote: "Bending this loop from right to left across the end of the coil form will increase the inductance." The writer has a 3.5-7.3 mc coil which is similar but the book says that these, and the 1.7-4.0 mc coils, are fitted with a brass disc which can be screwed into or out of the oscillator coil field, and this appears to be the normal arrangement for these ranges.

Some of the MW coils seen by the writer have a short-circuited turn of stout copper wire arranged to be adjustable as to its location relative to the winding, and this again appears to be usual—but the writer has also seen one where the adjustment was done in the same fashion as in the case of the 160/80 and 80/40 metre coils already mentioned. (It is suspected that the ones which are abnormal are coils which have been made to serve for other ranges by later conversion). On some of the low frequency coils trimmer No. 7 is used as a series padder and replaces the inductance adjustment but it should be noted that on the HF ranges trimmer No. 7 is used in connection with the bandspread facility, where fitted.

After each adjustment of inductance the process of setting trimmer No. 8 and then checking the noise across the band needs to be repeated; it will be found that the inductance adjustment is flat, in marked contrast to trimmer No. 8 which is very sharp, and is also pulled to some extent on the 14-30 mc coil by trimmer No. 6.

All this shows the need for great care in handling the 14-30 mc coil, and its trimmers. The correct position for trimmer No. 8 is when it is most anti-clockwise. But it is essential to apply the image signal check to be sure of the matter.

Adjusting the Bandspread Ranges

The first thing to be noted is that changes to the General Coverage adjustments will upset the Bandspread operation but the reverse does not hold true. In practical terms, this means that if you pick the wrong trimmer during adjustment of a Bandspread coil-setting you go back to the beginning and repeat the general coverage adjustment. Its just like Snakes and Ladders—pick the wrong one and Junior wins every time.

In practice, the first part of the exercise is to shift the screws from the left to the right-hand terminal block position as viewed from the front of the coil. From the calibration curve on the front, select the frequency corresponding to 450 on the dial, inject a signal at that frequency, and adjust trimmer No. 7 until the signal is tuned in. Slide down to 50 on the dial, and inject a frequency

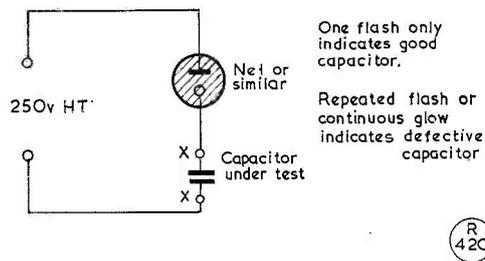


Fig. 2. A practical test circuit for estimating the goodness of fixed condensers, which should always be checked through in any surplus-type Rx, or in a receiver undergoing general overhaul. A straight DC continuity check on a test meter is not always a reliable guide.

at the LF band-edge which should appear at 50; if it does not then the series bandspread padder is called into play, by screwdriver adjustment through the rear of the coil box. A guide as to which way it should be is that if the band edge appears in the 0-50 region of the dial, the padder needs to be increased; if it is on the high side of 50, then it needs reduction. The setting is critical, and must be checked and repeated until the bandspread range follows the calibration curve to the desired accuracy.

The RF stage must now be set up. Inject a signal at 450 on the dial, and peak trimmers 1, 3, 5; this can as well be done on noise as signal if the input is disconnected from the generator. Turn the dial to 50, and again check these same trimmers; if the signal (or noise) goes up with further clockwise rotation of a trimmer, then the corresponding padder condenser must be increased and *vice versa*. These padders are adjusted, like the one in the oscillator box, through a hole in the rear of the relevant box. Padder adjustment upsets the trimmer setting, hence any coil set requires the whole procedure to be repeated several times so that the best possible setting is achieved.

The whole business sounds—and is!—tedious and longwinded, but it must be remembered that the full treatment is rarely necessary, unless the previous owner was a real "lid." The only HRO coil that this writer has ever met that was wildly out was a GC unit that was supposed to be u/s but turned out to be a good Bandspread coil after a complete re-alignment, and study of the book.

The S-Meter Circuit

Most HRO receivers seem to have the proper meter fitted except for the one in the writer's possession. The setting-up procedure is as follows: Disconnect the aerial, turn the AVC off and set the RF Gain to 9½, then adjust the potentiometer near the aerial terminals until the meter reads zero. This is marked as No. 17 on the manual front panel photograph. To make a measurement the AVC should be Off and the aerial disconnected momentarily, when the RF Gain may be rotated so that the meter reads zero; reconnection of the aerial and switching on the

AVC will cause the meter to read. If a suitable standard signal generator is to hand for accurate checking the approximations in Table I may be of use.

Table I

Input Volts	S-Meter reading	S-Meter current
1 μ V	S $\frac{1}{2}$	0.03mA
1.5 μ V	S1	0.07mA
2 μ V	S2	0.13mA
3.3 μ V	S3	0.17mA
5 μ V	S4	0.21mA
8 μ V	S5	0.25mA
10 μ V	S6	0.32mA
20 μ V	S7	0.38mA
35 μ V	S8	0.44mA
55 μ V	S9	0.5mA
170 μ V	S9 plus 10	0.6mA
500 μ V	S9 ,, 20	0.7mA
1.6mV	S9 ,, 30	0.8mA
5mV	S9 ,, 40	0.9mA

If the S-Meter is not within striking distance of these figures after setting up as indicated above then the two resistors R11 and R30 which are selected on test can be adjusted.

Table II

TABLE OF VALVE VOLTAGES

Valve Function	h-h	g ₁	g ₂	g ₃	a	k	d ₁	d ₂
1st RF	(a)	6.3	0	82	1.95	200	1.95	—
	(b)	6.3	0	77	1.9	200	1.9	—
2nd RF	(a)	6.3	0	82	2.0	200	2.0	—
	(b)	6.3	0	77	2.0	200	2.0	—
Mixer	(a)	6.3	0	62	2.45	200	2.45	—
	(b)	6.3	0	45	2.3	200	2.3	—
Local oscillator	(a)	6.3	0	82	0	200	0	—
	(b)	6.3	0	75	0	200	0	—
1st IF	(a)	6.3	0	78	2.2	180	2.2	—
	(b)	6.3	0	76	2.2	180	2.2	—
2nd IF	(a)	6.3	0	83	4.3	180	4.3	—
	(b)	6.3	0	80	4.5	178	4.3	—
Det/AF	(a)	6.3	0	143	0	0	0	0
	(b)	6.3	0	125	0	0	0	0
BFO	(a)	6.3	0	10	0	32	0	—
	(b)	6.3	0	10	0	25	0	—
Output	(a)	6.3	0	200	—	180	8.75	—
	(b)	6.3	0	200	—	180	8.75	—

Current drain of receiver HT varies between 38 and 57 mA at 200 volts, depending on setting of RF gain from min. to max.

NOTES:

(1) All voltages measured at the valve pins against chassis on 250v. DC range, except heater and cathode voltages measured on 10v. AC and 10v. DC ranges respectively,

(2) Ref (a) voltages are measured using 4000 o.p.v. meter, others using 1000 o.p.v. meter,

(3) All voltages measured with 6.35v. AC and 200v. DC, stabilised, connected to input,

(4) Test Conditions:—RF Gain Max.; AVC Off; BFO On; Selectivity peaked; Phasing at minimum; AF Gain at minimum; HT and S-meter On. Receiver dial set at 250 on the 0.9-2.05 mc range, and aerial terminals both disconnected.

NATIONAL HRO

Valve Pin Connections

Pin No.	6D6	6C6	6B7	42	6K7	6J7	6B8	6V6	
1	h	h	h	h	shell	shell	shell	shell	1
2	a	a	a	a	h	h	h	h	2
3	g ₂	g ₂	g ₂	g ₂	a	a	a	a	3
4	g ₃	g ₃	d ₂	g ₁	g ₂	g ₂	d ₂	g ₂	4
5	k	k	d ₁	k	g ₃	g ₃	d ₁	g ₁	5
6	h	h	k	h	—	—	g ₂	—	6
7	—	—	h	—	h	h	h	h	7
8	—	—	—	—	k	k	k	k	8
Top Cap	g ₁	g ₁	g ₁	—	g ₁	g ₁	g ₁	—	

The Crystal

If this is not very active and it is certain the alignment is true then the crystal may be removed and washed in carbon tetrachloride (Thaw-pit) before being reassembled in its holder, when it should have a clearance of 2.3 thou. in each direction. If the fibre packing pieces are still in place these can be removed as they were put in for transit only and serve no useful purpose.

Mechanical Matters

The HRO dial does not have back-lash! However, if back-lash does appear to develop, check the screws fixing the knob to the shaft. On the writer's HRO these slacken off on an average once a year, with nightmares for a couple of days till the penny drops. In fact the writer has never known one to give trouble apart from lubrication—but he has no lubrication or adjustment data. Any such information will be gratefully received.

Summary

It must be pointed out that all these suggestions are based on experience with the G3KFE receiver over a period of time, and from what bits and pieces of information the writer could pull from friends, and from various reprints which are believed to have originated from America. In Part II of this article it is proposed to discuss some modifications that can be undertaken to make the HRO more suitable for coping with 1965 conditions.

Editorial Note: To forestall enquiries, we regret to have to say that we cannot supply individual copies of the HRO Manual. However, there are plenty of them about, in the hands of readers, so that a loan-

or-buy notice in the Readers' Small Advertisement section of the *Magazine* should bring forth a response. While anyone experienced in receiver design, construction and alignment could carry out the work from the information given by G3KFE in his article, the fact remains that possession of the Manual would make it a good deal easier—and is practically essential for the inexperienced.

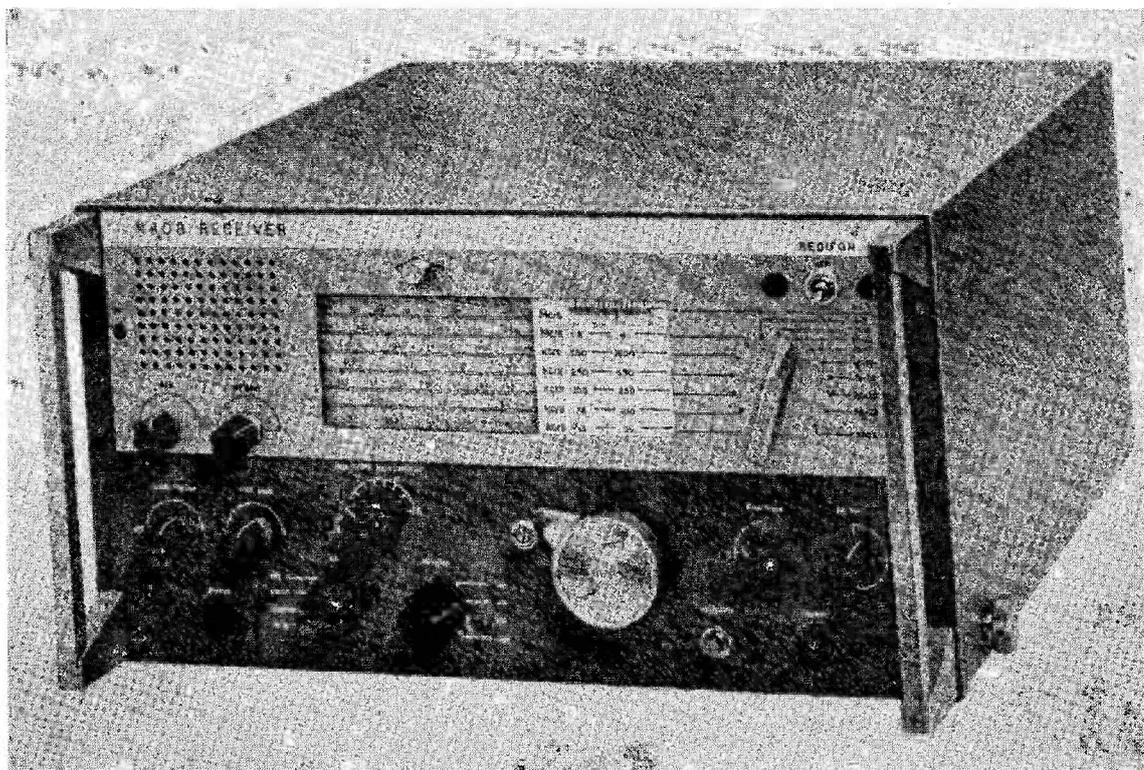
INVITATION TO TAKE PART

Operators interested in fast CW working on Top Band are invited to join in this year's "MCC" (the *Magazine* Club Contest) to help give the Club stations their vital single-point contacts. Rules appeared on pp.498-499 of the October issue of *SHORT WAVE MAGAZINE*, from which it will be seen that non-Club stations can be worked once only for a scoring QSO. It would be quite a feat for one operator, not entered in the Contest as a Club station but merely there for the fun of it, to work all the Clubs taking part—in fact, the Editor will be glad to give a small prize to the individual non-

Club operator who works the largest number of MCC stations during the week-end November 13-14. Those who would like to take part in this new aspect of MCC are invited to send in logs headed "Single-Operator Non-Club Entry." No other formality is necessary. Logs should be addressed MCC Non-Club Entry, *SHORT WAVE MAGAZINE*, Buckingham, and must be received by Friday, November 26, *latest*. No logs received after this date can qualify, either for Single-Operator entries or MCC itself.

GPO TOWER, LONDON

Officially opened by the Prime Minister on October 8, the new Post Office micro-wave relay installation in the Tower near Tottenham Court Road is now operational, as the centre of a telecommunications network linking the main cities of the country, with outlets *via* secondary relays to Europe and, by satellite, to the U.S.A. The whole project is a fine example of advanced and intelligent communications engineering, to the great credit of the Post Office Engineering Department and their contractors. The eventual capacity of the G.P.O. Tower installation will be 150,000 telephone circuits and 40 separate TV channels.



The new Redifon R.408 is a fully-transistorised communications receiver, designed for AM/SSB/CW and facsimile reception over a frequency range of 13 kc to 28 mc. It has been type-approved by the Post Office, and is suitable for fixed, mobile or marine use. The bandwidth is continuously variable, from 800 cycles to 8 kc, with a 160 c/s xtal filter for sharp CW reception. Either USB or LSB can be selected, and AGC is also selectable, giving "attack" or "delay" times to suit all operating requirements; this means that the receiver need not be paralysed by QRM or bursts of noise. The control layout has been carefully designed to accord with normal operating practices. An xtal calibrator provides pips at 100 kc intervals throughout the tuning scale, which is on 90-inch film to eliminate the need for a separate logging scale.

SHUNT STABILISER

USING SEMICONDUCTORS — CIRCUITRY AND DISCUSSION

B. J. P. HOWLETT (G3JAM)

A FEW years ago, if someone mentioned shunt stabilisers, one almost automatically thought of VR tubes; nowadays, a good many of us have the allied zener diode in mind. Both have their place and in many respects have become complementary to one another. In each case the device is connected in series with a resistor across a source of power of higher voltage than the breakdown voltage of the device, the current being determined by the resistor value and the difference potential between source voltage and "running" voltage. (In the zener diode the running voltage is the same as the breakdown voltage, but lower in the VR tube.) When an external load is connected across the regulator, some of it is drawn away into the load, and a corresponding drop occurs in the regulator device, providing always that there was enough current flowing to start with.

This is the rosy picture of perfect compensatory action—which, of course, does not happen in practice. However, the VR tube is very good and puts to shame some of the zener diodes, mostly the lower voltage ones we all find so useful, unfortunately. (Another thing, big zener diodes are expensive.) Mostly they are relegated to the task of providing reference voltages for the control of complicated series-stabilised power supplies, containing many transistors, with facilities far beyond what most experimenters need—facilities such as variable voltage control, source impedances of one hundredth of an ohm and better. How we long for a nine-volt VR tube!

Circuit Description

However, we can do quite a lot to help ourselves, and shown is the circuit of a unit which can be added to an ordinary 12-volt trickle charger to give a steady smoothed output stable over the design range to about $\frac{1}{4}$ -volt. It cannot be varied at will any more than can a VR tube, but it would be possible to add one or two other selected voltages switchable if desired.

Zd is a small zener diode of the chosen voltage; in this case the writer will stick to the values in the prototype since there is an Appendix for those who wish to change the values.

Nine volts, the writer's choice, is difficult, because one of this exact value does not seem to be listed, an amazing oversight on the part of the manufacturers! So two were used in series, 5.6v. and 3.9v., fairly near. The writer's battery charger, at 0.8 amps. load, with a 5,000 μ F reservoir capacitor added, C1, gave 17 volts. As 9 volts was desired, R1, the series resistor came out at a convenient 10 ohms. Ignoring R2 and R4 for the moment, any current in the zener

diode is arranged to be increased by progressive current amplification in two emitter followers, Tr1 and Tr2. As Tr2 is obviously to be the heavy-duty one, carrying the bulk of the 0.8 amp. (off-load condition), the choice lies among types such as OC26, OC35, AD140, and so on—there are dozens of them.

Its base drive current is supplied by Tr1, and will be less than this, being divided by the current gain of Tr2, say, 14 mA. Plenty of types will carry this, but a few types are preferred because of either high gain, temperature stability, or both. The writer chose *Mullard* AF118, having high gain as well as a low leakage current.

The zener diode current will be 14 mA divided by Tr1 stage gain, i.e. under one milliamp.

The action is best understood by imagining that Tr1 and Tr2 were not there, the zener diode being returned to earth in the usual way. Application of V_{in} would produce the full 17 volts across the R1 plus zener diode assembly, causing current to run until the potential difference across R1 was 8 volts, with 9 volts across the zener diode, unhappily passing (yes!) 0.8 amp.; but by leading the current into Tr1, we could force this to run most of the 0.8 amp. while the zener diode was passing only 50 mA or so. This still isn't quite right; too much current in both the transistor and the diode, though the latter's working conditions are improving!

So finally we add Tr2, bringing the values to those worked out in the appendix.

It is a good idea to explain it this way, because it is essential to realise exactly what will happen if a dry joint occurs in the circuit, disabling the current booster transistors. R3 and R5 are important, because they reduce the dissipation in Tr1 and Tr2 respectively, and R5 has a very respectable wattage to deal with when the unit is off-load. Having too high a resistance value for either R3 or R5 will cause "bottoming," and any extra current would then have to be drawn by the zener diode itself, with probably fatal results. In the appendix it is assumed that there will be 3 volts minimum on each of the transistors at normal input voltage and no load, to allow for a moderate rise in input voltage, using the lowest expected gain figure.

On the other hand, this type of regulator can be short circuited with impunity; if V_{out} disappears through a short circuit in the external load, then there is no work for the unit to do, since; to put it crudely, it is a holder-downer, not a keeper-upper!

Though R1, on the writer's unit, is expected to be an 8 watt resistor, under short-circuit conditions it would possibly have the full input volts across it at worst, nearly 30 watts: owing to a fall of input volts, the measured value is, in fact, 25.5 watts.

Performance

The main details of performance are predictable but one never quite knows what the hum level will be like. Actually, the hum was almost inaudible on a one-watt output type transistor receiver, and with everything screaming at maximum volume there was

APPENDIX

The phrase $\frac{I_2}{\beta_2}$ represents the base current of Tr2

which is the emitter current of Tr1

$$= \frac{786}{60} = 13.1 \text{ mA}$$

Similarly, $\frac{I_2}{\beta_2\beta_1}$ is the base current of Tr1, the

zener current

$$= \frac{786}{9000} = 0.87 \text{ mA}$$

As the above value, 0.87 mA, is too low, R2 and R4 are added to increase it to an arbitrary value to suit the individual zener diode used. Assumption is made that the impedance of the source of V_{in} is zero. The resistive component of this should be deducted from the calculated value of R1.

- Example: $V_{in} = 17$
- $\beta_1 = 150$
- $I_1 = 0.8A$
- $V_{out} = 9$
- $\beta_2 = 60$

from which we can deduce by Ohms Law that $R_1 = 10 \text{ ohms}$.

It is important to discover I_2 :—

$$I_2 = 0.8 - \frac{I_2}{60} - \frac{I_2}{9000}$$

$$I_2 + \left(\frac{150 I_2 + I_2}{9000} \right) = 0.8 \times 9000 \text{ Amperes}$$

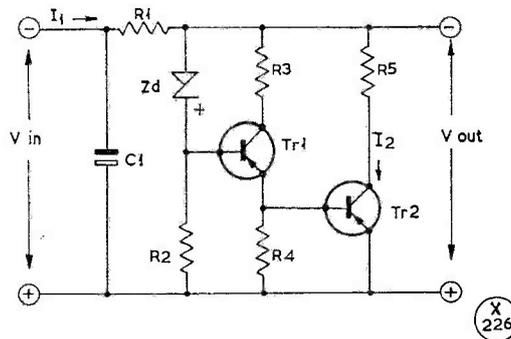
$$9000 I_2 + I_2 + 150 I_2 = 0.8 \times 9000 \text{ A}$$

$$9151 I_2 = 7200 \text{ A}$$

$$I_2 = 0.786 \text{ A}$$

i.e., I_2 is 14 mA or 1.6 per cent less than I_1 , approximately. The actual value of R3 will be lower than the calculated one (458 ohms) because of the presence of R4, which increases Tr1 current.

Ignoring R2 and R4—



Circuit discussed by G3JAM, for which values are as follows: R1, 10-ohm 30w. wirewound, though a 10w. rating should suffice if prolonged dead shorts are not likely to occur; in this case, the "Radiospares" power-resistor sections rated at 0.7 amp. will be satisfactory. R2,R4, are 100 ohms, quarter-watt; R3, 150 ohms, quarter-watt; R5, 6 ohms 5w. wirewound; C1, 5000 μ F, 25v., and Zd is discussed in the text.

$$R_5 = \frac{(V_{out} - 3)}{I_2}$$

$$R_3 = \frac{(V_{out} - 3)}{\left(\frac{I_2}{\beta_2} \right)}$$

$$R_1 = \frac{(V_{in} - V_{out})}{I_1}$$

$$I_2 = I_1 - \left(\frac{I_2}{\beta_2} \right) - \left(\frac{I_2}{\beta_2\beta_1} \right)$$

Where β_1 and β_2 are the current gain of Tr1 and Tr2, grounded emitter.

just the smallest flicker in voltage. Application of a 12-ohm resistor (0.75 amp.) caused a quarter-volt fall, which was considered very satisfactory for a simple circuit. The hum level does not change, of course, as the total drain from the charger increases only a little.

Construction

The unit most certainly cannot be miniaturised—not with all those watts to radiate away—and at least a square foot of metal is needed to cater for long periods off-load running, the worst condition. If R1, the biggest power dissipator, happens to be in the battery charger as a variable rheostat, more than half the heat is gone, and there is no problem to setting up the unit either. One only has to adjust this until the desired current shows on the meter, but with the actual values chosen (by the writer) this should not exceed one amp. to the unit, though it could act as ballast for variations of current in a

load, not exceeding an amp., though the load might be taking more than this. An interlocking switch would ensure against sudden removal of the load.

The writer believes that, just as he has found this unit useful, so others may also discover that, after all, the old trickle-charger may have a part to play in this modern world, if it is only running the set in the garage! It will run 'one, incidentally, even if there is an acc. on charge, and you don't even need a reservoir capacitor!

REMARKABLE STATISTIC

The GPO announces that there are now more than ten thousand licences in issue for the radio control of models. Costing 20s. these licences remain valid for five years, and confine radio transmission at low power, for model control only, to specified frequency bands. That mainly used is just LF of our 10-metre band. There is another band in the 70-centimetre range.

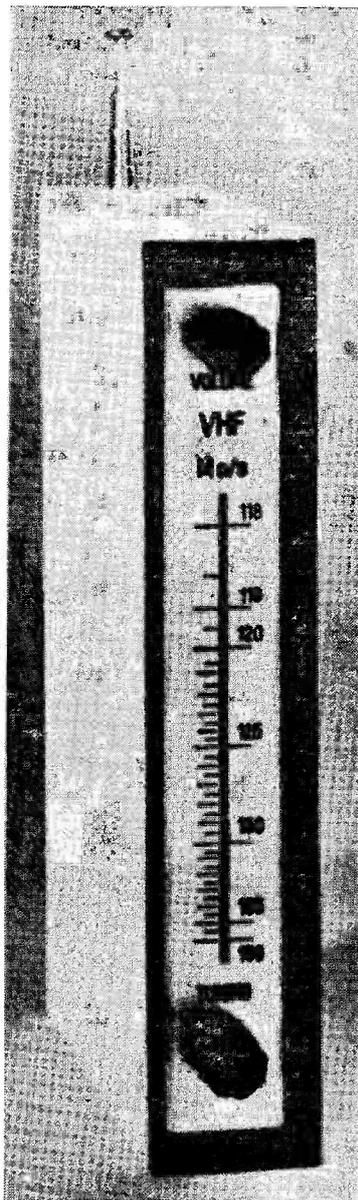
OPPOSITION SPEAKER ON RADIO MATTERS

It was announced on October 6 that the PMG's "shadow" on the Opposition side of the House of Commons is to be Mr. Paul Bryan, the Member for Howden, who will be responsible for all matters affecting Broadcasting, Communications and the Post Office. We are giving him a brief on the particular subject of Amateur Radio in the U.K., from the practical point of view.

AUTUMN "CALL BOOK" NOW AVAILABLE

Latest editions of the quarterly *Radio Amateur Call Book* cost 27s. for the "DX Listings" version, which covers the world outside the United States, and 45s. for the "U.S. Listings" issue—or the two, ordered together, can be supplied for 67s. 6d. post free, giving the callsigns, names and addresses of more than 394,000 licensed radio amateurs throughout the world.

The U.K. section is contained in the "DX Listings" edition, and to cover British AT-stations alone takes 37 pages of the 270-page make up. All QTH's and changes of address featured in our regular "New QTH" page up to and including the July '65 issue of *SHORT WAVE MAGAZINE* are taken in. The remainder of this edition covers the rest of the world (not including U.S. amateurs, as mentioned above) and shows that there are nearly 125,000 licensed amateurs outside the United States. Both editions of the *Call Book* give a great deal of useful DX data, such as prefix lists, time scales, the Zone area for each country, and its QSL Bureau address. Orders, with remittance, to: Publications Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1. And delivery is from stock—while it lasts.



Pocket VHF receiver offered by Britec, Ltd. is specially designed for the 118-136 mc band, which takes in aircraft channels. It is fully transistorised, has an RF stage, a sensitivity of $1 \mu\text{V}$, and a built-in telescopic aerial. Dimensions are approximately 8in. by 6in. by 2in. and the total weight less than 2 lbs.

Always mention "Short Wave Magazine" when writing to Advertisers — It helps you, helps them and helps us

COMMUNICATION and DX NEWS

L. H. Thomas (G6QB)

PERHAPS it's the good conditions, rather than the bad, that sort out the men from the boys. They certainly sort out those whose receivers are up to the job! And—would you believe it?—we have *already* heard a few disgruntled ones saying "If these are good conditions, I'd sooner have what we have had for the last five years."

Never satisfied, some people . . . six bands to choose from, five of them now bursting at the seams, and they ask for something they've been grumbling at for half a decade. This is hardly worth a serious comment, so we won't waste space on it.

What a month, though, with *Fifteen* really open day after day, to all parts, including the elusive West Coast U.S.A.; *Twenty* just as full as ever, with the added incentive of four or five DXpeditions; *Forty* and *Eighty* their usual cacophonous mess, which seems to have a fatal attraction for the devoted few (maybe not so few, at that); *One-Sixty* offering Transatlantic possibilities almost every night and morning; and (wait for it) *Ten* open to the extent of quite a few VK-G contacts in the early mornings, and also the odd QSO between the U.S.A. and Europe, although these have been rare.

We have the mental picture, sitting here chained to the typewriter, of a great throbbing, pulsating mass of stations—all modes, all types, all continents, all countries—just waiting for someone to pull that switch and let them in! (No, don't do that, Araback!; we must keep them out at all costs, or this will never get written. What? 1S9WNV? Oh, that's different—get off that chair!)

Something will have to be done about it, of course. When those parts of the bands that resembled quiet country lanes, only a year back, are now like the M4 on a Monday morning, some new techniques will be necessary.

Better receivers, in particular; better beams; and (dare we say it?) better operators. How wonderful it would be if this vast improvement in conditions were to be the signal for a general reduction in power all round . . . but of course there's not a hope of that. Quite the reverse, in fact, since some misguided ones can only think of beating the increased QRM by means of QRO, thereby creating more. We're a pretty mad lot, there's no doubt about that!

Reverting to *Fifteen*: after months and months of scratching round the band winking out S4 signals that might have been DX, one now has to turn down the gain for the sake of the eardrums. Every afternoon for nearly three weeks the band has been full of North Americans at colossal strength, more or less swamping out any other DX that might be there. Some of the CW signals, in particular, have been reaching strengths that one seldom hears on *Twenty* . . . and the main query is "How far behind is *Ten*?" There will be a lot more room there. Meanwhile, happy is the CW man with a 200-cycle filter.

Final comment: Lest you should think you detect a slightly hysterical note in all this, we should like to state that conditions have been pretty good.

Grouse of the Month

One can't go on being enthusiastic all the time, so down to more mundane levels with some serious complaints. One that we share with many of our correspondents concerns the number of prehistoric transmissions still on the bands. Listen to some of the AM phone on *Forty*, where it's strong enough for one to dissect it properly. Wobbles, FM, over-

modulation, ripple . . . one would think it was a band set aside for backward children. With a modern receiver (product detector, BFO permanently in and 2 kc bandwidth) it is almost impossible to resolve many of these things, and some of the CW signals from the Primitives are almost as bad.

On *Twenty* and *Fifteen* they are, mercifully, not so noticeable, but that's only because they are not always so strong—not because they aren't there. If only we had a sort of UNO of Amateur Radio, we could bring to their notice a few cases that would justify sending in the troops! Our own pet Walter Mitty fantasy concerns a neat little laser gadget with which one could burn holes in the equipment of selected stations . . . the real thrill would be to listen and actually *hear* them fall to pieces during a transmission. What bliss!

The other major complaint among our readers, these days, is about operating practices, which some of the primitive types have never learnt and, it seems, never will. Listen to them when an unusual piece of DX rears its head, and you will find them revealed in all their ghastly beauty. The very afternoon this is being written, up comes 1S9WNV from Spratly Island—very rare and only there for a day or so. A snappy CQ, followed by "5 kc up," and he makes three QSO's in little over a minute. At the end of that time a chirpy, raspy thing that has been calling him on his own frequency right through the three QSO's decides to sign. (Yes, you're right—he was one of those.)

A little later, on SSB, 1S9WNV appears on 14105 and is listening on 14250 kc or thereabouts, for W's. After a lot of bleeping and whooping on the frequency, some-

Reporting the HF Bands

one finally gets tuned up, clears his throat, says "Allo" about five times and starts calling "YS9WNV," going on for at least three minutes.

What is so sad about this sort of thing is that the perpetrator is not only blotting out the DX station for, possibly, hundreds who are trying to listen to him, but it's all of no avail, because he will never, never raise him. (Rare DX'ers just don't listen on their own frequency any more.)

And G2DC comes along with the ever-present complaint that he can occasionally hear a really exotic piece on 7 mc CW, but it's waste of time calling him, because that's the signal for half a dozen European Klub stations to come back and reply to *him*. An awful lot of people need educating, but how on earth can it be done? One just can't break through the barrier of ignorance and bad operating to tell them anything.

Seems a pity to go on like this when the bands are so good, but this sort of thing has to be said now and again, and it's better out than in. And we don't really sympathise with one or two readers who are always saying "Why not cut out the grouses—they aren't *news*?" The subjects with which these grouses are concerned affect our communication with each other in a serious way, and if they were to multiply we should find ourselves in a state of complete anarchy and chaos. Perhaps we're lucky to have kept them down to the present level? Do what you can, please, by at least *trying* to tell them how stupid they are.

We found out, only a week ago, that some of these high-powered advertising men have coined a term for the amount of kidding that the public will stand. They call it the "twit-factor." We had better initiate some research on the "clot-factor" . . . how stupid can one be, and still have the nerve to stay on the air?

News from Overseas

An interesting letter from LRO McPheat (HMS *Afrikander*) reports that in the region of Cape-town the W's start fairly pounding

in around 0200 GMT (we take it he means on Twenty, but he doesn't say which band). But, he asks, where are all the G's? He hasn't heard any since his last report, several months ago. This winter he intends to go all out, listening for the U.K. on Eighty CW.

G3OQK (s.s. *Tynemouth*) reports hearing several G's on Top Band while in the vicinity of Northumberland Strait, south of Prince Edward Is. Interesting to note that while GNI was only RS-48 on Phone, some of the amateurs were putting in 579 signals. He will be listening most nights, 2200-midnight and 0200-0300—on Top Band, of course.

G3PLQ (m.s. *Kumba*) has deserted his beloved Top Band and has been listening on Eighty quite a lot. He says that ZD8TV is going to St. Helena (ZD7) around Christmas time, and there is a good chance of some One-

Sixty operation by him. GW3SWQ is apparently on Tristan da Cunha (ZD9) already, and news is awaited of possible Top Band work from there, too. G3PYF is off to VP2 (St. Vincent) and G3PLQ managed to persuade him to take his Top Band gear there—he should be on for six weeks from October 24. Meanwhile, G3PLQ, who passed on all the above info, hopes to have his /MM very soon, even if only on 28 mc, but he has hopes of 21 and 14 mc as well, in due course.

Achievement!

G3TLJ (Harlow) passes on the news that G3ERN of the same town worked VO1HN and VO1FB on 160-metre CW at 0236 on September 19. What really makes this news is that G3ERN was using an experimental transistor transmitter running 10 watts to a 2N1907 in the PA. G3TLJ asks whether this is the first Trans-

FIVE-BAND DX TABLE

Station	14 mc	7 mc	3.5 mc	28 mc	21 mc	Countries Worked
GW3AHN	324	71	21	151	301	333
G3DO	316	86	83	183	223	322
G13IVJ	313	102	83	177	260	321
G2DC	309	167	112	170	285	323
G6QB	297	117	56	143	209	320
G3NOF	265	32	39	132	190	283
G3KMQ	208	95	54	3	90	233
G3IGW	153	115	67	123	129	189
VP8HJ	148	22	11	5	46	152
G3PEK	142	119	75	18	88	175
G3UML	132	17	4	2	35	141
G3FTQ	118	58	27	46	91	144
G3RJB	113	46	1	11	26	120
G3UDR	90	4	18	17	41	122
GM3RFR	74	30	10	6	52	95
G3UBI	67	8	23	10	18	89
G3TJD	65	51	30	15	40	109
G3IDG	54	27	17	60	70	101
G3MDW	51	8	8	43	46	82

Atlantic contact with a Ttx? We should say it probably is, on One-Sixty, but certainly not on the other bands (G6QB worked a W7 who was using 50 mW to a Ttx several years ago).

Good News

G3SDE (Woodlesford, near Leeds) was one of the sufferers from mains interference who wrote about it a few months back. Now he comes in to say "Sufferers, take heart! My source of QRM, 1½ miles away, has been silenced." What finally turned the trick was that someone closer to it complained of TVI. The GPO investigated and took the case up with the Electricity Board, who phoned G3SDE and asked *him* where and what the trouble was! (After eighteen months of phone calls, letters and personal visits... one telly-addict is instrumental in clearing up the whole thing.)

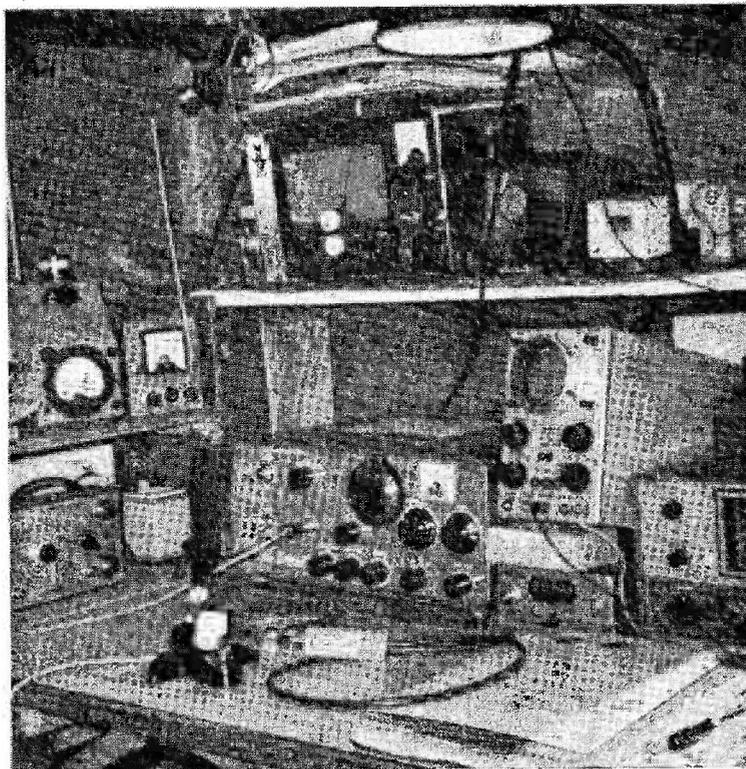
Of course, the moral is obvious. Don't complain about QRM on the amateur bands. Don't even mention them. Just say that "Coronation Street" is being blotted out and they'll be all over you within a couple of days. What a strange world...

Some Newcomers

Some of these young fellers with their G3U -- calls don't lose much time in stirring up the DX. We have heard them on Twenty and Fifteen, competing with the best.

G3UDR (Gomshall) joins the Five-Band Table with 122 countries worked already, mostly on Twenty, but with Fifteen coming along nicely. He wants to thank G3HCU for getting him on the air, and he started off on AM with a home-built rig and a double-conversion receiver using the Japanese 2.1 kc mechanical filter. He has "various dipoles strung up around the place," which is 450ft. a.s.l., and his long list of DX worked contains some really nice ones (at random we quote XW8AZ, KX6's, HM5BF, 9M6AP and CR3GF). By the way, he has now graduated to SSB with a Viceroy Mk. III.

GM3UIA (Leven) reports on the sudden blossoming of 21 mc up in those parts, with stronger



The outfit at G8BI, operated by R. A. Butterworth at 20, Ravenfield Road, Welwyn Garden City; Herts., who has contributed some useful articles to "Short Wave Magazine." He started with an experimental licence in 1921 (which gave authority to transmit!), later becoming 2AYB under the old AA ruling, then getting G8BI in 1936. Immediately after Hitler's War he was ZB2A, Gibraltar, operating on the old 5-metre band and working Europe. As shown here, his shack at Welwyn G.C. is only about 6ft. in each dimension — but it houses gear for all bands, and feeds out into aerials for them all.

and stronger signals all the time. He doesn't report any DX himself, having only written in to notify "New QTH's"—but we'll be hearing from him, no doubt.

GW3UOO (Wrexham) writes to tell us that he has graduated from our "SWL" feature and now joins the ranks of Communication and DX men. At the moment, only on Top Band, but Eighty and Two are on the way.

Enthusiasm?

After having noted, and commented on, the very small U.K. representation in most of the major contests, including the ARRL DX, CQ Worldwide, and VK/ZL Contest, we recently received the results of the Tops CW Club's 1964 80-metre event.

"Here," we thought, "is a

contest, and on an LF band, in which the G's will shine at last. A British-born club, a strong tradition of CW operating... what a relief!" But what do we find? A total of 178 stations sent in their logs for the event (apart from several check logs), and there were just two U.K. stations in the whole lot—G3HZL and G13SKH—who finished 22nd and 31st, respectively.

Just to give an indication of the situation, the Top Ten for this contest included five OK's, two SM's, one each from OH, OZ and UR2. OK1MG was the winner, with 38,976 points, and the scores have tapered off to 10,000 by the time you reach OK1BB in 24th position. But just think of it... the U.K.'s share in a European contest is two entries out of 178!

[over

This is not written in any carp-ing spirit—rather a mood of wonder. No one could hate contests more than your conductor, but that's a purely personal point of view, assisted by our ancient enemy Anno Domini. It seems that any U.K. amateur who is keen on contests is the exception rather than the rule.

Intruders

G3UCM (Coulsdon) says he took G3FPK's advice (p.473, October SHORT WAVE MAGAZINE) and tuned up his transmitter on an RTTY station on 14 mc. It promptly moved! But now he says "It makes one wonder how many amateur teletypes are QRM'd in this way, being mistaken for commercials." (Horrid thought occurs to us: "If it moves, it's an amateur; if it doesn't, it's a commercial!") But G3UCM adds

that the LF end of the band is often ruined over a wide frequency range by ionospheric sounders—sometimes sweeping, sometimes stationary. And, to our ears, there's no more horrible noise.

Nostalgia

By a strange coincidence we have three letters this month, all referring to pre-war issues of SHORT WAVE MAGAZINE. G6GH (Boston) writes: "I'm enjoying a bit of 'vintage' reading, having been lucky enough to find my complete pre-war set of S.W. Mags. in the attic recently. Had always thought they went for salvage when the incendiaries started!"

G3CTM (Southampton) also says that he has the complete set of pre-war issues, to say nothing of the first volumes of *Popular Wireless* and other journals, call-books of the twenties, and similar "wireless" literature. He started radio when at school in 1921 and has been at it continuously for 44 years, although his ticket did not arrive until 1947. (The pay-off line is this: "I have never had any connection with electronics otherwise, as I am a fruit-grower. I have often prayed for a wet day when the DX bands have been open.")

G3IDG (Basingstoke) "discovered" Amateur Radio at the age of 10—you know the story—amateurs on One-Sixty on the family BC receiver and all that. Ignorance was bliss, he says, with a succession of one and 2-valve battery receivers. He, too, has a copy of our No. 1, and several other pre-war copies. Catterick, during the war, finally clinched the matter, and the licence came in 1951.

To all our younger friends and readers, this nostalgia over the pre-war days must seem a lot of nonsense, but the fact remains that DX feats were attempted and achieved then, which would be pronounced quite impossible nowadays with the same gear. Ah, well—back to the present.

The HF Bands

No need to waste space on generalities concerning the bands

—it's sufficient to say that Twenty and Fifteen have been wide open at all the times one would expect, and Ten has remained in a more or less dormant state except for the surprising openings to VK in the mornings. However, there is also a spot of news to the effect that WA6SBO ran a sked on Ten with DL7AA and heard him, but couldn't make a two-way out of it (they've probably done it by the time you read this!)

G3NOF (Yeovil) heard little on Ten except 9J2DT and ZS1JA—the old reliables. On Fifteen he has found VK, DU and Far Eastern countries good in the mornings, but he misses a lot of DX on this band because of TVI troubles. Twenty gave him QSO's with CR3GF and 4AJ, DU1AN, HL9TH, FR7ZD, HS1S, K7LMU /HS, VK's, VK9XI (Christmas Is.), W6FHM/DU, XW8AZ, XT2TZ and YA3TNC, to mention a few.

GI1VJ (Belfast) managed to find two new ones on Twenty—KG6IF (Marcus) and W9WNV /8F3 (Indonesia), both on SSB. Of Fifteen, he simply says "it has jumped back into the picture as a first-class DX band with big sigs from all over."

G3RNX (Chesterfield) sends a report on DX worked exclusively from his *mobile* . . . a KW-2000 in a Ford Cortina with a loaded ¼-wave whip mounted on the boot. He is most interested in making mobile-to-mobile skeds with DX, as he hasn't yet managed this, but says "it is most satisfying to hear someone like a KR6, with a large pile-up on him, come back and say 'There's a mobile in there—who's the mobile?—go ahead.' I feel more satisfied than I would have done with a beam and a linear." DX worked this way, June-September, includes CE, CX, KV4, 9L1, 9Q5, 9U5, ZD8, KH6, YA, 5Z4, 9M8, CR4, 7Q7, KR6, W7, 9G1, 9M4 and a few others . . . yes, we did say *mobile*!

G2DC (Ringwood) thinks that the greatly improved conditions on Fifteen are the real pointer to the expected autumn DX season—especially the almost daily openings to VK, ZL, the Far East and the Pacific. Ten has provided some good days, but Jack has missed most of them. Twenty

TOP BAND COUNTRIES LADDER

Station	Confirmed	Worked
<i>Phone and CW</i>		
G2CUZ	98	98
G2NJ	98	98
GM3IKD	98	98
GM3KLA	98	98
G3PLQ	92	95
G3SED	82	92
G3SWH	70	80
G3PPE	67	80
GW3PMR	63	73
G3SVW	55	75
G3IDG	54	59
G3SHY	53	70
GW3TLW	53	65
G3UBW	42	71
G3TJD	42	53
G3TSS	36	53
G3KPT	17	66
<i>Phone only</i>		
G2NJ	60	60
G3PLQ	55	58
G3MDW	44	64
G3RTU	35	37

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

found several days with the VK and ZL boys swapping S9 reports with OH and SM, but not too good here. Best contacts on this band were with HMØHQ, KC6SZ, KG6AA, KX6BU, VK9GC, XZ2TZ, ZD9BC and 7G1A; on Fifteen, KC6SZ, PZ1CK, PY2BZD/Ø, VK6SM and 6QL, ZD8HL and ZL1AJU.

GM3JDR (Golspie) sends lists which show that conditions up North have been just about as good as in the South. Selecting the best from his long lists, both for Twenty, we arrive at FL8RA, KG4AA, PY2BZD/Ø, 7Z3AB, FP8's and JA on CW; EP2AX, WA5GTI/KG6 and W5YBF/KG6, KL7 and VK on SSB.

G3NMH (Swindon) was one of the early ones on Ten—he worked VK2NN and VK2AVA at 0850; earlier in the month, ZD8HL, ZS1AB and LU2DED . . . all on SSB. The same mode on Fifteen fetched in several VK's around 0900. On Twenty, much varied DX including VP8IE (South Georgia) for his first G contact, VP8HJ, XE's, XZ2TZ, OA4EE, YN1LH, TI3AA, FG7XL, ZD8HL, ZL3BG (1925) and VQ9HB. Incidentally, the 10-metre contacts with the two VK's were their first with the U.K. this sunspot cycle, so G3NMH was well repaid for his watchfulness.

G3UDR's report on Fifteen shows what a "round-the-clock" (well, half of it!) band it has



The Hong-Kong Amateur Radio Transmitting Society recently ran a local D/F contest using (you would hardly believe it, Top Band) with a half-watt transmitter as the target. The chaps left to right in this picture are VS6BJ, BS6FF, VS6FJ and VS6FO. They used transistor receivers for tracking the transmitter.

become, with VK's at 1045, ZD8HL at 1145, 6O6BW and KV4CX at 1325 and 1355, W's all through the afternoon, HC1SM at 1700, 9U5ID/P at 1715, 7Q7PBD at 1720 and ZS's until 1900.

Forty and Eighty

As one might well expect, the excellent conditions on the HF bands have de-populated the LF bands of real DX-chasers (though not of the usual hordes of CQ-calling Europeans). So we have very few reports of goings-on thereabouts. On Forty, G2DC managed XE1OK at 0720, ZL4BO and VK2GW at 1700, and JA9AAV at 1740. GM3KLA (Shetland) tore himself away from Top Band and returned to Forty for a while, working CW with FP8's, W's, ZD7IP, TI2PZ, KL7PI, PY's, PX1F, CR4AB, UA9 and UL7.

GM3IAA (Inverness) was very amused to note that when G6YJ called "CQ USSR" on Forty, not a soul came back. But if you call CQ DX or some exotic piece, they come back at you in droves.

As for Eighty . . . the post-bag brings dead silence, which is a pleasant change from the racket one invariably finds on the band. It will soon be pretty difficult to

work Europeans thereon, let alone the real DX.

Top Band Doings

And so to One-Sixty, humming with activity except during daylight (and even then it's surprising how many stations one can find on a weekday morning or afternoon). Several 'chasers write in to assure us that OE1FLW was (and is) perfectly genuine; he has a permit for the band and he does QSL. Thanks to the many who supplied this info. G3HB (Pinner) is one of them, and he asks whether we can state definitely which European countries are allowed to use the band. He quotes the six U.K. prefixes plus EI, OK, PAØ, DL, HB (and 4U) and OE. Others we know of which have popped up at various times and proved to be genuine have included OH, OHØ, SP, OY, UB5, YU, ZB2, 3A2, PX and (if you go back to 1947) II. There are probably others, and if so we have no doubt we'll soon be told of them!

G3SED (Portsmouth) says the DX is easily workable most Sunday mornings, but there's a great lack of anything other than W and VE. He tells us, though, that 9M6BM has managed to get a permit for the band, valid until February 28 next; he will run 75

TEN-METRE ACTIVITY TABLE			
(Starting Date, June 1, 1964)			
Station	U.K. Counties Worked	Countries Worked	Total
9J2DT	44	114	158
G3OHP	9	57	66
G2CDI	21	45	66
G3HCU	17	38	55
G3OAD	17	27	44
GM3SKX	27	16	43
G2DC	9	27	36
G3IDG	5	23	28
G3EHL	8	9	17
G3SQX	2	2	4

watts to a small rhombic, and his listening frequencies are 1800-1806 kc.

G3TTK (Coalville) remarks that at least seven OE's use the band, and their licensed frequencies are 1823-28, 1854-73 and 1879-1900 kc, with a ten-watt limit.

6Y5FH (Kingston, Jamaica) says he will definitely take part in the Trans-Atlantic tests this season, having built a 50-watter specially for the job. He's now laying down a massive earthing system and will soon be ready to go, if the present "fantastic" level of QRN dies down. All reception reports will be welcome and duly QSL'd (Dr. F. W. Hattemore, c/o 1½ Duke Street, Kingston). And that one-and-a-quarter is *not* a misprint!

Trans-Atlantics, 1965-66

Here is the full schedule for the Trans-Atlantic tests this season, and we are asked by W1BB to mention specially the "First-Timers" weekends, when, it is hoped, the "Big Boys" will stay in bed and let some of the "little-uns" have a chance of making their first contact.

December 5: Normal Test.

December 19: First-Timers only, Europe and Africa.

January 2: Normal Test.

January 9: First-Timers only, W, VE and North America.

January 16: Normal Test.

February 6: First-Timers only, Europe and Africa.

February 20: Normal Test.

March 7: First-Timers only, W, VE and North America.

Mark your calendars or your diaries now; let the new boys have a clear field on the mornings allotted to them; and enjoy yourselves on the other days.

And W1BB reminds us that he is always pleased to arrange special skeds with anyone wishing

to try out unusual paths or conditions . . . also with anyone who has not yet crossed the Pond on this band.

The Browning Effect

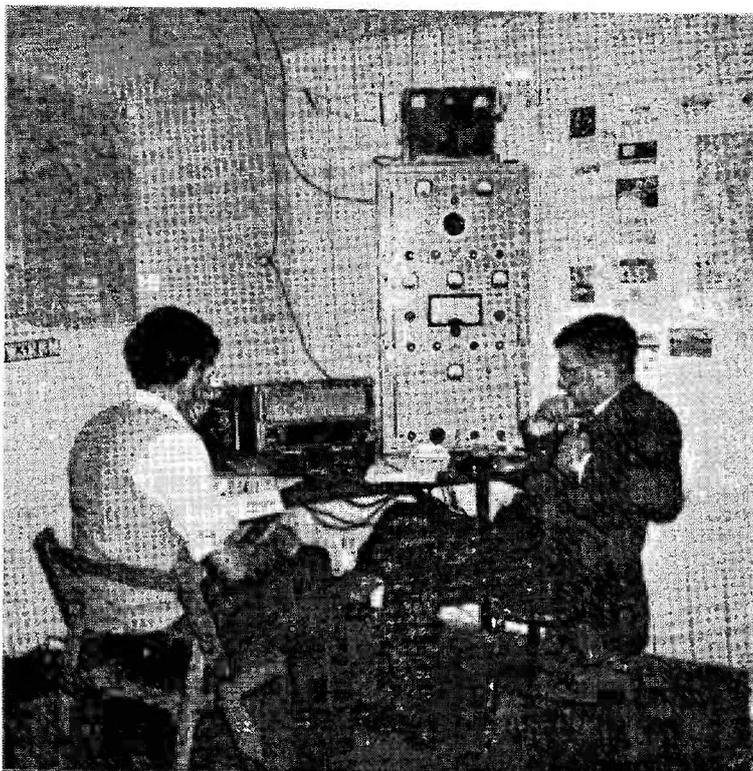
Gus, W4BPD, has been traveling around so much during the month that nothing short of a heading on his own will do. At the start of the period he was signing JY74 from Jordan; then, with a pause just about long enough to enable him to get there, he turned up as OY2GHK from the Faeroes (the call indicates a tie-up with the Hammarlund "DX of the Month" set-up).

After some days of operation thence, he next popped up on the band signing W4BPD/LX from Luxembourg, and then, a few days later, as DJØOR/P from Germany, where he was "relaxing" while passing through, by making, it seemed, only about 400 contacts a day. He was just remarking "Nice to operate without a pile-up" when the W6 path opened, and a

monster built up! (He *might* be somewhere exotic with that call-sign . . . you could read their thoughts . . . so better not miss him, even if he turns out to be an ordinary DJ.)

Other DXpeditions

Lloyd, W6KG, after a spell as KG6SZ, turned up in the Western Carolines as KC6SZ with wonderful signals. At the time of writing he is supposed to appear from the Eastern Carolines, this time as KG6SZ/KC6 . . . Don and Chuck, W9WMV and K7LMU, have been all over the place, ranging from W9WNV/8F3 (Indonesia) and XZ2TZ, through K7LMU/HS to the biggest panic of all . . . that brand-new DXCC place called Spratly Island, in the South China Sea. 1S9WNV, operating thence, made the 3000-or-so QSO's that have now become customary for a weekend's work. (Incidentally, this is one of the expeditions financed *only* by amateurs—no other funds available—and they



GW3TMP/A, exhibition station for the recent Caergwrle Fete and Carnival, near Mold, Denbighshire. Their gear consisted of a Tiger HF-200 as Tx, an Eddystone 888A receiver, and the aerial was a 20m. doublet. Operators seen here are GW3TMP and GW3RBM (microphone), who were assisted by GW3UGI and SWL D. Rogers, who took the picture. The log included CR6CZ as best DX.

seem to have run into trouble over the business of "large contributors first," on different frequencies in the milling herd. We won't comment—but it's a hot subject.)

After this, another DXpedition to an unknown spot which, it is said, will add yet another to the country total. But we can't give sufficient warning to alert all the DX-hungry customers . . . monthly publications can't keep up with these boys.

Stray Comments

G8AHG (Enfield) suggests that all the amateurs in the world should sit on Radio Peking (14335 kc) and hold a DX Contest for the Peking Trophy. This would not only give practice in working through QRM, but might squeeze out the intruder . . . G3SVW (Manchester) says he has heard that the Venezuela prefix has been changed to 4M5, but we think that was only for a "special-activity" station—there are plenty of YV's still to be heard . . . G3RFS (East Barnet) has recently spent six months in Jamaica, and says that the only band of real interest there was Twenty, with G's and Europeans rolling in from about 2000 onwards. One-Sixty yielded nothing except the American Loran.

G3NOF writes of activity in the Marshall Is.—KX6BQ, 6DQ, 6BU and 6NK are all active. KX6BQ is now operated by Martin (WA6MFY and VR30) who is a member of the Ex-G Club . . . G3IDG suggests that jaded DX men might amuse themselves by working the U.S.A. Novices between 21100 and 21250 kc, for some of whom a DX contact is a real thrill and may well turn out to be their first with G or Europe.

SWL R. de Buis (Felixstowe) counters our earlier remarks on the 80-metre band by saying that he has recently heard W2, VE3, KZ5 and OHØ, all on SSB around the 3800 kc mark . . . G3UMH (Leeds) sends a long and amusing letter about the trials of the newly-licensed. He started calling CQ on Eighty about 40 seconds after his licence had arrived! Almost at once he was whisked off to Guernsey for a holiday, and managed to do some operating from GC3KAV; and now he is in digs at Sheffield University. So, he says, after seven weeks with a licence the novelty has worn off (but not the enthusiasm), and he has never forgotten the first few days. He promises regular reports and we have no doubt that some good DX will figure in them before long.

Late Flashes

W2GHK (Hammarlund) notifies us that ZD8HL will be returning to the Caribbean in late November or early December (not late October as previously reported). Gus, W4BPD, is expected to be on from Monaco, late October-early November.

Ten metres has been the scene of many VK contacts with the U.S.A., with JA and KR6. Quite a few more G's have made it, including G6QB, who was using only 60 watts p.e.p. and a long wire pointing in the wrong direction—a very scratchy set-up. If *this* will do it, it must be really easy, and we expect VK/G on Ten to be quite commonplace by next month.

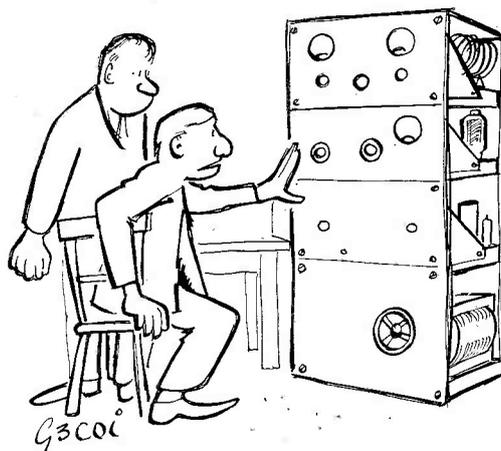
Sign-Off

So that's it, and we must leave you, right in the middle of all this DX. Let us have all the news for next month by the deadline, **first post on November 15**, and address everything, as always, to Editorial Dept., SHORT WAVE MAGAZINE, Buckingham, England, marking your letter "Communication and DX News." Make the best of this wonderful spell of conditions (and we hope it's still with us!). Good Hunting, 73 and —BCNU.

"MCC"—MAGAZINE CLUB CONTEST

This annual and very hard-fought event takes place this year over the weekend November 13-14, on the field of Top Band, using CW only. Rules and full details appeared on pp.498-499 of the October issue of SHORT WAVE MAGAZINE, together with a List of Club Identification Letters. Any Club *not* included in the List on p.499, October, or p.565 in this issue, and wishing to take part in the Contest, should apply immediately—to MCC, SHORT WAVE MAGAZINE, Buckingham—with the Club's full title and the hon. secretary's address. The supplementary list of identifications appears in this issue (p.565) and will be in good time for the Contest. (Requests for Identifications received as a result of this notice cannot, of course, now be published.)

All interested are reminded that planning should be put in hand right away—in too many cases, some essential detail (like the putting up of the aerial, or the provision of a Tx—*yes!*) is left to Joe, at the last moment.



“. . . It may be a bit old-fashioned, but it gives off a lovely heat . . .”

VHF BANDS

A. J. DEVON

HAD we had the space at the end of this piece last time out, it would have been possible to run a "stop press" note to the effect that the conditions prognosticated *did* in fact materialise, but that the transponder balloon did *not* go up that weekend.

But it hardly mattered, because the tropospheric openings we have been having during the period—affecting all VHF bands—produced not only GDX but also EDX covering practically all Europe, from EA round to SP and into Scandinavia. Once again, it has been a marvellous demonstration of the mechanics of tropospheric propagation, when a large anti-cyclone settles in the Northern European area, and the Wx pattern gradually locks into a stable condition lasting for days—in fact, almost for weeks!

And it is not only the EDX and GDX that have been good—there has also been some exciting VDX. G3LTF worked WA6LET by E-M-E on September 25, and the Californian signal was heard by G3CCH—this, of course, was on the 70-centimetre band, using CW, with reports like 549 and 339. Both Peter Blair and Johnny Stace are once again to be congratulated on a remarkable performance, using entirely home-built gear. Peter, G3LTF, has a 1.5 dB parametric amplifier working with his 15ft. dish, with plenty of power in the Tx, and the Rx side narrowed down to 500 c/s on the IF, with a 100-cycle audio filter. Johnny, G3CCH, says he has a lot of work yet to do before he can possibly receive his own echo! Anyway, he has the consolation of having worked EA1AB in Santander on two metres, from Scunthorpe, Lincs.

In fact, EA1AB did extremely well on 2m. during the openings. From a fine site overlooking the Bay of Biscay, and using only a 100-watt PA, he worked seven countries and well over 100 stations, of which more than 60

were in the U.K.! This is quite something, in anyone's DX language—and EA1AB was working CW and Phone, with equal dexterity. It means, of course, that we have had a large influx of claims for Two-Metre Countries Worked—indeed, for all the Tables, amounting to more than fifty for those shown here this time.

And though it would probably be agreed that in the tabular matter we are already covering all that is practical, the fact is we could still sub-divide to Seventycems, to show countries, counties and stations worked! For instance, G3LTF now has 15 countries confirmed on the 430 mc band, G2XV has 11C and G2CIW worked or heard five countries during the September opening alone, when he worked 38 different stations on 70 centimetres.

For a great many years, PAØFB has been a well-known two-metre operator, and he turns in an astonishing summary of results obtained on two metres during the recent openings: Three new countries (EA, EI and OE); what is unquestionably the first GM/PA two-way contact on VHF radio teleprinter, with GM3NZI — and probably the first-ever RTTY contact between Scotland and the Netherlands on any band, this QSO being perfect and solid copy on the page both ways—as well as several other GI and GM stations worked on straight CW or Phone. Jan says: "My rig at present is all-commercial, with Hallicrafters Tx/Rx and 2-by-8 element J-Beam, very FB."

HB9MY (Zurich), another old friend who for years has been keeping in touch with this column, writes in listing no less than 25 G's heard, of whom he worked seven; this was during the late-September break, and G2DQ, G3ADS, G3CDK, G3CXM, G3IMV and G3UDT might like to know that they are among those listed by HB9MY.

Looking to the North, a comprehensive report from GM3FYB (Dunfermline) who worked five countries on two metres, including LX1SI for the GM/LX "First"

—and similarly on 70 centimetres F9NJ and ON4ZK, two more "Firsts" for GM. Results like this show how the openings went in terms of EDX. On the GDX side, Harry knocked off 18 different G's, mostly in the London area, on two metres.

When it comes to quantity of EDX worked, the report from EI2W (Dublin) is surely remarkable: Harry booked into his log 41 Dutch stations, eleven in German territories, four ON4's and F9NJ, with HB and OK heard. It is not till you look at a map and remember that we are talking about two metres that the significance of such results becomes apparent.

To get them is not a matter of power used or commercial gear installed, but operating know-how and an eye for the weather charts, which anyone can see on TV or in the more intelligent newspapers. And if you have access to neither of these aids, it is still possible to make up your own mind about how conditions should be shaping by looking at the barometer (rising to high) the evening sky

TWO METRES COUNTIES WORKED SINCE SEPTEMBER 1, 1965 Starting Figure, 14 From Home QTH only

Worked	Station
50	G3DY (170)
44	G3HRH
37	G3UFA
36	G3TQZ (82)
33	G3FNM (65)
32	G3FIJ (80)
31	G3AHB
29	G3IOE
19	G2CDX
17	G3BNL, G3KQF

This annual Counties Worked Table will run till August 31, 1966. All two-metre operators who work 14 or more Counties on the band are eligible for entry. QSL cards or other proofs are not required. After the first 14 worked, simply claim from time to time with counties as they accrue, giving callsign and date for the county worked. Total of stations worked in excess of 50S may also be claimed and will be shown in brackets after callsign. To keep the Table up-to-date, claims should be made at frequent intervals. Operators new to VHF are particularly invited to join Annual Counties.

(clear, with perhaps a little thin cloud), and the thermometer falling during the late afternoon; even if you haven't got a thermometer in the shack, you should still be able to judge which way the temperature is drifting!

If the Wx condition is evening fog after a warm day, you can take it that the VHF bands will be wide open, with GDX propagation even better in the early mornings than it is the late evening. The Met. boys can explain why VHF propagation is controlled by such factors (and so could A.J.D. if we gave him sufficient space.—Ed.) but the essential thing is to be able to recognise and interpret the Wx situation. For this, all you need is a barometer, a thermometer, an eye for the evening sky, and a converter capable of giving you a signal from a distant beacon under average conditions—remembering that “average conditions” are what exist for about 95 per cent of the time!

Last time out, we talked about the GW/YU “First,” when it was sporadic-E (another extraordinary propagation phenomenon) that was

producing the EDX. It now seems that GW4LU/P must have made the first QSO, with YU1CW/P, at 0910z on July 4, pipping both GW3CBY and GW3KYT, who worked YU3OV at 1033z. It is sad to have to record that GW3KYT makes his claim from the War Memorial Hospital, Rhyl, Flintshire, to which he was taken after a very serious motor accident (within yards of his own QTH in Colwyn Bay) when returning from the Manchester VHF Convention.

The report from the GB2GC boys (Alderney, Channel Islands, Aug. 17 to Sept. 7), lists the operators as G3HBW, G3OUF, G3PIJ, G3POI, G3PSH, G3SHK, G3SHZ, G3SIT, G3TUX G8AJU and G8AKO—as goodly a body of keen VHF types as you could expect to work. During the period they were on the Island, conditions were indifferent, and the final tally, on generally flat bands, amounted to 154 contacts on four metres, 413 QSO's on two metres, and 31 stations worked on 70 centimetres. Attempts on 23 cm. were abortive. Though this

THREE-BAND ANNUAL VHF TABLE
September 1965 to August 1966

Station	FOUR METRES		TWO METRES		70 CENTIMETRES		TOTAL pts.
	Countries	Counties	Countries	Counties	Countries	Counties	
G3HRH	15	2	44	12	8	2	83
G3FIJ	14	2	32	11	18	3	80
G3TLB	6	1	48	13	—	—	68
G3AHB	—	—	31	10	14	2	57
EI6AS	8	5	29	7	4	3	56
G2CIW	—	—	13	6	29	4	52
G3FNM	2	1	33	8	—	—	44
G5UM	7	1	19	5	8	2	42
G2AXI	10	2	22	4	3	1	42
G3UCS	—	—	34	5	—	—	39
G5FK	13	2	6	1	7	1	30
G3UFA	—	—	22	4	—	—	26
G3EKP	2	2	6	3	5	2	20
G3HWR	7	1	7	1	3	1	20

Scores are since September 1st, 1965, and will accrue until August 31st next year. 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. From time to time, multipliers will be announced (with at least one month's notice) to give a loading in favour of some particular band. Points so earned will be taken into the aggregate and carried right through till the end of the VHF year. Claims should be sent in as often as possible to keep the Table up-to-date.

TWO METRES

COUNTRIES WORKED

Starting Figure, 8

- 28 G5YV (DL, EA, EI, F, G, GC, GD, GI, GM, GW, HB, HG, I, LA, LX, OE, OH, OK, ON, OZ, PA, SM, SP, UA, UP, UQ, UR, YU)
- 26 ON4FG (DL, EA, EI, F, G, GC, GI, GM, GW, HB, HG, LA, LX, LZ, OE, OH, OK, ON, OZ, PA, SM, SP, UA, UP, UR, YU)
- 26 G3LTF (DL, EA, EI, F, G, GC, GD, GI, GM, GW, HB, HG, LA, LX, LZ, OE, OH, OK, ON, OZ, PA, SM, SP, UA, UP, UR)
- 26 UA1DZ (DL, DM, G, HB, HG, LA, LX, LZ, OE, OH, OH0, OK, ON, OZ, PA, SM, SP, UA, UB, UC, UO, UP, UQ, UR, YO, YU)
- 24 UP2ON
- 23 G3CCH
- 22 G3LAS, OK2WCG
- 21 G3HBW
- 20 OK1VR
- 19 G3BLP, G3EDD, G6RH, PA0FB
- 18 G2JF, G5MA, G6NB, OKIDE, ON4BZ
- 17 G2XV, G3HRH
- 16 G2CIW, G3AYC, G3BA, G3CO, G3GHO, G3KEQ, G6XM
- 15 G3DKF, G3FZL, G3KQF, G3PTM, G3RMB, G4MW, GM3EGW, UR2CQ
- 14 G2FJR, G2HDZ, G3AOX, G3FAN, G3FIJ, G3HAZ, G3IOO, G3JAM, G3JWQ, G3KPT, G3NUE, G3PBV, G3SAR, G3WS, G4LU, G5BD, G5DS, G6LI, G8OU
- 13 EI2W, G2CDX, G2HIF, G2HOP, G3AOS, G3DMU, G3DVK, G3EHY, G3GPT, G3GWL, G3IIT, G3LHA, G3NNG, G3OHD, G3PSL, G6XX, G8VZ, GC2FZC
- 12 EI2A, F8MX, G2BJY, G3AHB, G3BNC, G3BOC, G3FNM, G3GFD, G3GHI, G3GSO, G3JLA, G3JXN, G3OBD, G3WW, G5CP, G5JU, G5ML, G8DR, GW2HIY, GW3MFY
- 11 G2AJ, G2AXI, G2CZS, G3ABA, G3BDQ, G3IUD, G3JHM/A, G3JYP, G3JZN, G3KU/H, G4RO, G4SA, G5UD, G5UM, G6XA, PA0VDZ
- 10 G2AHP, G2DHV, G2FQP, G3BK, G3DLU, G3GSE, G3LAR, G3LRP, G3LTN, G3MED, G3OSA, G3RTF, G3XD/A, G5MR, G5TN, G8IC, GW3ATM, GW5MQ
- 9 G2BHN, G2DVB, G2FCL, G3BYV, G3FUR, G3OJY, G3OWA, G3SXX, G4LX, G8GP, GC3EBK, G13ONF, GM3DIQ, GM3LDU
- 8 G2BDX, G2DDD, G2XC, G3AEP, G3AGS, G3CCA, G3EKX, G3CBO, G3HCU, G3HJW, G3KHA, G3PKT, G3MPS, G3VM, G5BM, G5BY, G8SB, GM3JFG

year's GB2GC expedition had a hard time, the boys have come up smiling and the feeling is "Yes, of course we will do it again next year, particularly to try 23 centimetres." They feel they have found a very good site, and, says G3TUX, "some success is guaranteed."

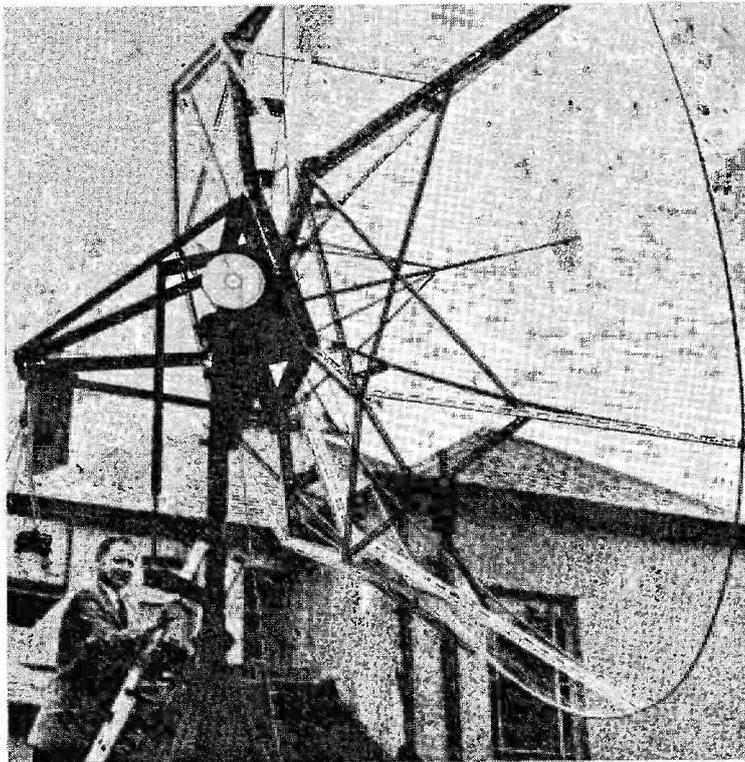
Last month, we talked a bit about G8/3's, and this time we have a report from G8AKY (Shrewsbury), using a G2DD-type converter (SHORT WAVE MAGAZINE, March, 1953) feeding into a home-cooked Rx which, he says, took him two years to build! On the Tx side he has tripler to 435 mc., running about 6 watts, into a 10-ele Yagi.

G8ADS (Dunstable, Beds.) comes into 70-centimetre Counties with 17C, and G8ADC has no less than 30C worked in five countries—and of these contacts, nine have been with other G8/3's.

On this theme of G8/3's active on 70 centimetres, G5UM (Knebworth, Herts.) says that the band has been rejuvenated since they have come on; Jack's own contacts have increased three-fold, comparing this year with last; he has about 20 different G8/3's in his register, many of whom are worked two or three times a week. The result is that the fully-licensed types tend to use the band more than they might otherwise do—which, as G5UM says, cannot be anything but a very good thing. Our own records suggest that most G8/3's aim to qualify for a full licence as soon as they can.

Coming now to some individual reports on two-metre results, we were glad to hear again from G6RH (Bexley, Kent), who draws attention to the new VHF/VFO menace, whereby some big-boy from the HF bands, using full power+, steers himself on to your freq. and drowns you out with the DX. There are not many G/VHF's capable of doing this—and they are exceedingly unpopular.

G3XC (St. Columb) discusses the inadequacies of the Band Plan from the point of view of those far away at the HF end.



The 15ft. dish now in use at GM3FYB, Dunfermline — with Harry on the ladder. It has a focal length of 4ft. and can show a gain of about 25 dB on 70 centimetres. The main structure is built up from Dexion, with 1/4 in. wire mesh netting to form the reflecting surface. Feed into the dish is by slot with (now) a solid reflecting surface, not the mesh disc as shown here. Though no two-way contact was made with KP4BPZ, he was consistently heard at signal levels up to RS-57, and likewise he reported the reception, and tape recording, of the GM3FYB signal. So it is a great pity that time did not permit of a QSO being made — but there will be another opportunity. To build this dish, GM3FYB had the assistance of several GM's.

Picture by courtesy "Dunfermline Press"

Of course, it can be argued that any band plan will lose its significance when the big EDX is about, only workable from the LF end. We all know this, and it has been a practical problem for years. But the fact still remains that the only sensible way to divide up to the two-metre band is so that all the U.K. effort is spread over the whole range 144-146 mc. Looking at the London and Home Counties area as the most populous and active VHF region, always in touch with the Continent when there is an EDX opening, it would seem that this L. & H.C. area should be zoned right at the HF end of two metres. Then, the EDX will be tuning HF down instead of LF up—because it will be forced to do so to get the QSO's. You might say that all this would do would be to reverse the present order of

things — but isn't that what we want? And wouldn't putting London and the Home Counties at the HF end solve a number of occupancy problems? Think it over.

Once again, very regretfully, it is not possible to cover many other reports, though all claims have been taken in. It is hoped to have more space for VHF matters and "VHF Bands" during the coming months, when a number of loose ends will be gathered up. Your A.J.D. is too often beaten by the time factor, these days. . . .

All the gen, for next time, following an opening which has lasted, on and off, for nearly a month (!), to: VHF, SHORT WAVE MAGAZINE, Buckingham, by Friday, November 19, for the December issue. CU then, and—73 de A.J.D.

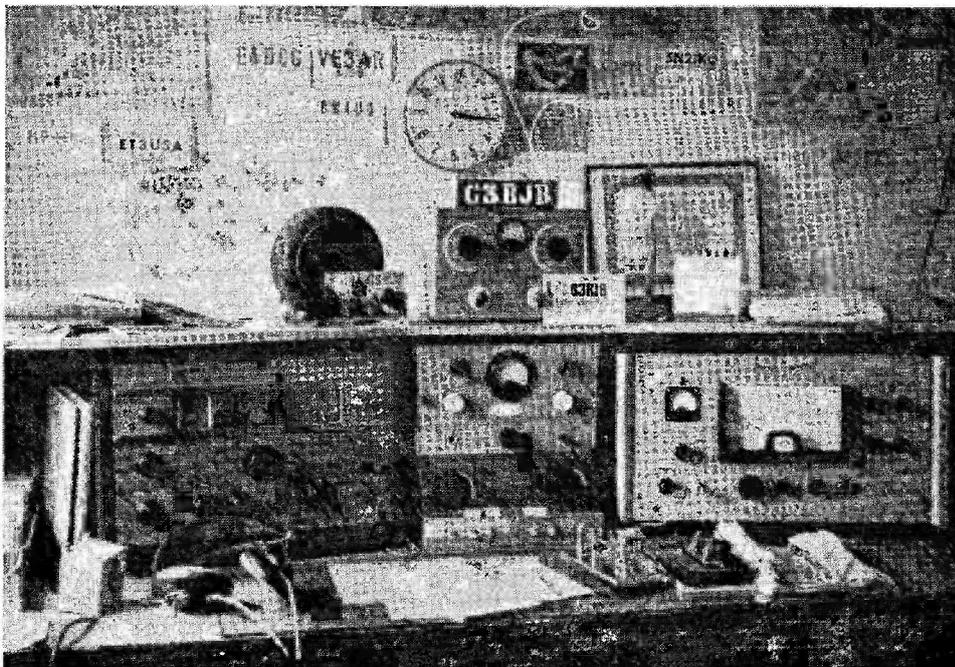
NEW QTH's

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.

- GM2FLQ**, W. D. Oliphant, 39 St. Baldred's Road, North Berwick, East Lothian. (*Re-issue.*)
- G3TTG**, V. Batchelor, Grean Meads, Ure Bank Terrace, Ripon, Yorkshire.
- G3TXG**, V. A. W. Eggleton, 30 Mincinglake Road, Exeter, Devon.
- G3TXS**, E. J. D. Banner, 5 Frinsted Close, Rainham, Gillingham, Kent.
- GW3UBH**, J. M. Pugh, 7 New Tan-y-Manod, Blaenau Ffestiniog, Merionethshire.
- G3UCX**, G. N. Hislop, 91 Onslow Parade, Belfast, 6.
- G3UGX**, R. B. Heaton, Worston House, Worston, Clitheroe, Lancs.
- GW3UIY**, W. J. R. Williams, 36 Dolau-Fawr, New Dock, Llanelly, Carmarthen. (*Tel. Llanelly 3470.*)
- G3UJO**, P. Bradley, 114 Nether-ton Road, Appleton, Abingdon, Berkshire.
- G3UJV**, R. Heath, 26 Lancaster Avenue, Hadley Wood, Barnet, Herts.
- G3UKA**, Mrs. H. Pearce, Bath-ava, Great Barton, Bury St. Edmunds, Suffolk. (*Tel. Gt. Barton 336.*)
- GM3UKG**, G. M. Grant, Cairnfield Lodge, Buckie, Banffshire.
- G3UKH**, P. A. Hopwood, 58 Bolbec Road, Fenham, Newcastle-on-Tyne, 4.
- G3ULT**, Reading Amateur Radio Club, St. Pauls Hall, Whitley Wood Lane, Reading, Berks.
- G3UMH**, A. Dailey, 3 Hansby Bank, Leeds 14, Yorkshire.
- G3UMJ**, R. M. Attfield, 17 Wood-side Crescent, Hadston, Morpeth, Northumberland.
- GC3UMX**, D. J. Ozanne, Rose-hurst, Brock Road, St. Peter Port, Guernsey.
- G3UMY**, T. E. Hill, 17 Wood-bank Road, Whitby, Ellesmere Port, Wirral, Cheshire.
- G3UNE**, D. I. Richards, 3B Landaras, Royston Grove, Hatch End, Middlesex.
- G3UNG**, M. J. Rutter, Nether-field House, Seghill, Northum-berland.
- G3UNM**, A. J. Matthews, 203 Wolverhampton Road, Pelsall, Walsall, Staffs.
- G3UNN**, M. O. Lawal, 5 Tweed Avenue, R.A.F. Station, Ack-lington, Northumberland.
- G3UNT**, B. J. Henman, 8 Wood-lands Close, Penenden Heath, Maidstone, Kent. (*Tel. Maid-stone 55297.*)
- G3UNU**, Nottingham University Radio Society (*Ex-G3DBP*), Students Union, The University, Nottingham.
- G3UNV**, M. Clift, 45A Ford-bridge Road, Ashford, Middle-sex.
- G3UNW**, F. R. Stoodley, La Corbiere, High Road, Fobbing, Stanford-le-Hope, Essex. (*Tel. Stanford-le-Hope 3741.*)
- G3UNY**, D. E. Moreman, 5 Vernon Avenue, Woodingdean, Brighton, Sussex.
- G3UOD**, M. C. Spencer, 24 Rising Brook, Stafford.
- G3UOF**, M. R. Wadsworth, 48 Estoril Avenue, Wigston Magna, Leicester, Leics.
- G3UOF/A**, M. R. Wadsworth, c/o 8 Peaks Avenue, New Waltham, Grimsby, Lincs.
- G3UOI**, J. C. Firby, 140 Jesmond Avenue, Toller Lane, Bradford 9, Yorkshire.
- G3UOK**, Radio Society, c/o V. J. Reynolds, Department of Com-munication, University of Keele, Keele, Staffs. (*Tel. Keele Park 371.*)
- G3UOL**, W. F. M. Hahn, 11 St. Patrick's Road, Coventry, Warks.
- G3UON**, D. H. Geere, B.Sc(Eng.), 20 Brunswick Square, Hove, Sussex. (*Tel. Hove 39589.*)
- G3UPA**, M. C. Foden, Haugh-fields Farm, Nether Whitacre, Coleshill, Birmingham.
- G3UPC**, N. Curtis, 46 Hollybank Road, Hythe, Southampton, Hants.
- G8AKX**, M. R. Perry, 216 Marl-pool Lane, Kidderminster, Worcs.

CHANGE OF ADDRESS

- G2CGL**, E. C. Grafton, 12 Dales-way, Kirkella, E. Yorkshire.
- G3EJT**, C. A. Hogley, L'Anresse, Oldfield Road, Honley, Hud-dersfield, Yorkshire.
- GM3HAM**, Lothians Radio Soci-ety, c/o J. Gorrie, 32 Allan Park Road, Edinburgh, 11.
- G3KJW**, P. E. W. Allely, 62A Ackers Road, Stockton Heath, Warrington, Cheshire.
- G3KSS**, F. J. Davies, 21 Cuttys Lane, Stevenage, Herts.
- GM3LCP**, J. Hughes, 59 Bal-muildy Road, Bishopbriggs, Glasgow.
- G3LCV**, N. J. Gregory, 193 Vicar-age Road, Mickleover, Derby.
- G3MBK**, D. W. Underdown, 143 Moor Lane, Chessington, Surrey.
- G3NGV**, S. Swindell, 42 Stenson Road, Cavendish, Derby.
- G3OAA**, P. S. T. Welch, 48 Wit-ton Street, Stourbridge, Worcs.
- G3ODF**, J. E. Clarges, 116 Ford-bridge Road, Ashford, Surrey.
- GM3ORX**, A. G. Rumbold, 1 Duncan Road, Helensburgh, Dunbartonshire.
- G3RDC**, A. F. H. Wood, 71 M.U. Detachment, R.A.F. Station, Little Rissington, Cheltenham, Glos.
- G3RHI**, B. J. Arnold, 2 Summer-field Drive, Prestwich, Man-chester.
- G3RNL**, B. A. Watling, 137 Bar-berry Avenue, Chatham, Kent.
- G3RSV**, R. H. Dowsett, 41 Valon Road, Arborfield, Reading, Berks.
- G3RVC**, P. Cochrane, Ladbrooke, The Avenue, Sutton-in-Ashfield, Notts.
- GW3RVG**, C. D. Sedgebeer, West House, Bryn Garn, Pen-coed, Glam.
- G3SQH**, A. D. Reffold, 59 Sum-mergangs Drive, Thorngumbald, Hull, Yorkshire.



THE OTHER MAN'S STATION

G3RJB

A KEEN SWL from about 1954 until 1962, Brian Edwards of 5 Powys Walk, Hereford, had his interest first aroused when, as a member of the local A.T.C. Squadron, G3MPB was their signals instructor. This started him off on amateur-band listening, using at first an R.1224, before graduating eventually to the present AR88D.

Taking the May '62 R.A.E., and passing at the first shot, his station now consists of a K.W. "Vanguard" as transmitter, the AR88D as main Rx, and a small Top Band rig built by G3LGG (a well-known contributor to *SHORT WAVE MAGAZINE*); this Tx is entirely self-contained, and is for 160 metres only. An FL8A audio filter is used with the AR88D—this filter being an extremely effective device for CW working and, at one time, easy to find on the surplus market. (Alas, it has now disappeared.)

Aerials are a bit of a problem at G3RJB, as not much space is available outside. However, he is able to run a dipole for 20 metres, a Mosley TA-31 vertical, and a form of long-wire coupled through a Z-Match unit. All these give good results.

The main interest is CW on 20 metres, looking for DX and "doing a bit of sheepskin hunting"—indeed, G3RJB now holds some 22 awards of various kinds, including DXCC. But the other HF and LF bands are also used regularly, he "dabbles in the various contests," and any type of QSO, at whatever distance, is welcomed.

Like G3SCW, the subject of "The Other Man's Station" in the April '65 issue of *SHORT WAVE MAGAZINE*, G3RJB is employed by British Rail, and is hoping that a BR Section of the "Federation Internationale des Radio Amateurs Cheminots" can be formed, to consist of British Rail employees who are either licensed amateurs or keen SWL's in the United Kingdom.

REFER TO YOUR LIBRARY

While we do not supply to libraries except by order through the usual channels, the reference section of your local public library may already be taking *SHORT WAVE MAGAZINE* on subscription, and holding loan copies of books and manuals such as the *ARRL Handbook*, the *Call Book* in either or both versions, and others of the titles regularly advertised on the book pages in *SHORT WAVE MAGAZINE*—see p.576 in this issue. Should this not be so, and a reasonable local demand can be assured, the Librarian may be agreeable to putting through an order if you quote us as the source of supply. The address is: Publications Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1. We already meet the requirements of a number of Public Libraries who have radio amateurs among their ticket holders.

THE MONTH WITH THE CLUBS

By "Club Secretary"

(Deadline for December Issue: November 12)

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

ACTIVITY reports this month have broken all records, and as there are more than 70 of them to be fitted in the available space, these remarks must be short.

Just a reminder, in fact, that the Twentieth MCC takes place next weekend (November 13-14). **Do please** read the rules, which appeared on p.498 of the October issue, and especially Rule 7.

Since the first list of Identification Letters was published (p.499, same issue) a large number of applications for identifications have been received. Those who enclosed s.a.e.s have been notified direct; those who did not will find their Identification Letters set out in the supplementary list, on p.565.

We have no doubt whatever that there will be a bumper entry this year, so we wish every participant a good Contest and an interesting weekend. As usual, the full results will appear in the January issue of **SHORT WAVE MAGAZINE**—and, *special note*, all logs to qualify must be received by the due date, Friday, November 26, addressed: "Club Secretary," **SHORT WAVE MAGAZINE, BUCKINGHAM.**

Blackpool & Fylde, on November 8, will hear about an unusual but very important subject from G8GG, who will talk on the legal Town Planning and Municipal attitude to masts and towers. On the 15th, G3MCE will discuss Multivibrators, and on the 22nd the Constructors' Competition will be held. Tape Recording (by G2BCX) is the subject for the 29th, and December 6 is an Open Night.

Durham City have moved their Hq. to the Vane Tempest Community Centre in Gilesgate, where they have their own clubroom and meet on alternate Thursdays (November 18 is the next date). Coming events include tape-recorded lectures, Construction of an SSB Tx, a Junk Sale and a Dinner (the latter in December). The clubroom can be used every evening—and note QTH of new secretary.

East Worcestershire will meet on November 11 for a talk by G2RO (a much-travelled amateur) on "Pacific DX." Meetings are at the Old People's Centre, Park Road, Redditch, 8 p.m. **Acton, Brentford & Chiswick** will hold a discussion on November 16, when members will discuss their own individual approach to Amateur Radio. Visitors welcome, and invited to join in, at 66 High Road, Chiswick, 7.30 p.m.

Northern Heights had a visit from the Manchester club for their Pea-and-Pie Supper recently, and also had talks on SSB and Propagation (the latter in

conjunction with Spen Valley). Tape Recorders will be discussed on November 10, and on the 24th (with members from Bradford) Electronic Logic will be the subject. December 8 is the date for the Annual Dinner.

Peterborough will be holding their monthly lectures in the Technical College on the first Friday of each month during the winter; 16 are enrolled, including several keen 14-year-olds; other meetings will be at their clubroom in the Old Mill, on the London Road, 7.15 p.m. **Worthing** (*Ragchew*, October) now meet on the second and fourth Mondays of each month, the coming subjects being Business Radio (G3IWL) on November 8 and a *Ragchew* on the 22nd. New members welcome.

University of Keele now have their own call sign G3UOK, but at present there is a scarcity of licensed operators. Many freshmen, however, are training for R.A.E. The nearest MCC rivals (Burslem) are being invited to come and operate from the University's excellent site.

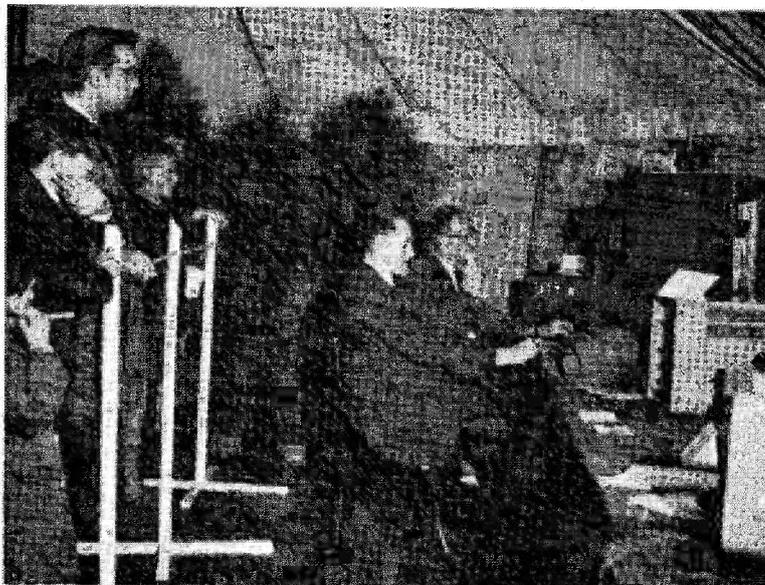
Spen Valley will have a talk on Commercial Equipment by Mr. Green, from London, on November 11, and on the 25th the subject will be Model Control, by the Leeds Model Boat Club. **Slade** are having a Film Show, presented by Don Wilson, on November 12, and holding their AGM on the 26th. Their closed-circuit TV show, on October 2, was a great success, from which they gained much experience in this field.

Scarborough are preparing an ambitious programme for next season, including the summer months. They are thinking of introducing a Youth Section, for beginners and R.A.E. candidates, and report three new calls among their members. The November programme includes a Junk Sale, a talk on a Home-Brew Tx, by G3NRI, a Constructors' Night, and a modern science talk by G5VO—all meetings are on Thursday nights.

Guildford have a talk on Tape Recording on November 12, and a general meeting on the 24th; several new members have been welcomed to the club. **Loughborough** have arranged their season's programme well in advance, and the November timetable shows a Free Night on the 5th, a Night on the Air on the 12th, a Junk Sale on the 19th and a Film Show on the 26th. On December 3 there will be an illustrated tape lecture on Basic Valve Circuits.

Liverpool have also filled the month up, with a Junk Sale on the 9th, a Film Show on the 16th, and Open Night on the 23rd and another Film Show on

The station set-up for GB3FRC, of the Fylingdale Radio Club, on the occasion of their recent very successful exhibition at Whitby, Yorkshire. In this picture, G2ABR is working DL2BB (who happens to be his son!), and seated with him is G3NTA. Bands used were 20-40-80m., and a large number of the general public passed through Fylingdale Club's tent during the three days the exhibition was open — the first such event attempted in the district.



the 30th. **Ipswich** have moved to new premises—the Red Cross Headquarters, Gippeswyk Hall, where they will meet on the last Wednesday of each month. The committee have lined up an interesting programme for the winter, and the new Hq. will make possible the welcome cup of tea and ragchew at half-time.

Cornish, at their October meeting, had a talk by G3OFN on Control Circuitry for Rx and Tx; the subject for November is Receiver Alignment and Noise Measurement, by G3XC. They now have a group devoted entirely to VHF matters, which meets on the third Thursday at the Coach and Horses, Truro.

Cork, reporting for the first time, are taking part in a scientific exhibition held in the City Hall, November 2-6, and will be using the call EI0CSE—unfortunately this information reached us too late for the last issue and only one day's operation now remains.

Basildon report that the R.A.E. classes sponsored by them are going well, with no less than 24 students enrolled. A Morse class will be starting in November, also at the Fryerns Evening Institute. There will be a Junk Sale on November 23, at the Mayflower Restaurant, Paycocke Road, and a construction project is under way for transmitters on 160 and Two.

Basingstoke will meet in the Emmanuel Hall, Wote Street, on November 13, but have cancelled the scheduled talk in favour of participation in MCC. The club are keen to attract recruits (both novices and seasoned campaigners) and visitors will be welcomed. **Bristol** held their AGM recently, electing G3SJJN chairman and G3TTZ vice-chairman. Secretary and treasurer (G3SXY and G4UZ) remain in their former posts.

Cheshunt recently had a talk on The Old Days of Amateur Radio, from G4GA and G8SK, from which they learned that they are not the first radio club

in Cheshunt—there was one as far back as 1923, but chiefly concerned with the construction of broadcast receivers! Meetings are on the first Friday, at the Methodist Church Hall, Crossbrook Street, and the subject for November is Lasers.

Yeovil are starting a constructional project on a linear amplifier to be used in conjunction with their Mark I Viceroy. **University College of North Wales** will be visiting the G.P.O. Network Switching Centre, and the studios of Granada TV on November 10, and on the 18th there will be a Film Evening. All normal meetings are held in the Dept. of Engineering Science, 5.30 p.m., and local amateurs are always welcome.

Southgate, after an October full of interest, including G3LTF's Moonbounce talk, hold their Annual Constructional Contest for the G6QM Trophy on November 11. December 9 is the date for the AGM, and meetings are now held at the Parkwood Girls' School, Wood Green, 7.30 p.m.

Chester will have a visit and talk by G2AMV on November 9; a report on "The Show," by those who visited it, on the 16th; a Junk Sale on the 23rd and a "Surprise Night" on the 30th. All meetings in the YMCA, Chester, 8 p.m. **Clifton** report that their Club Net has re-formed, and meets on Top Band every Sunday at 11 a.m. The workshop is now equipped for receiver alignment, and the club's own 358X is being given "a birthday."

Ealing is a new club, meeting at the Northfields Community Centre, 71a Northcroft Road, Ealing, on Tuesday evenings. Two rooms are available, one for the station and gear (lockable!) and the other large enough for the meetings. The founder membership is 14, but they hope this figure will rise rapidly. Lectures and other events are being arranged, the committee is formed and the rules drawn up, and the club acknowledge the help of the Ealing Education

Committee in making their formation possible. **Crawley** have been very busy preparing for the Exhibition and are looking forward to hearing G3LTF on Moonbounce at their November meeting.

East Kent suddenly found that their premises were to be demolished to make way for new development, and for this reason their meetings will in future be held monthly, time and place to be notified by the secretary. **Loughton** have started their new season with a lecture and a show of cine films. November 5 will be an informal meeting, and on the 19th a representative of Associated Rediffusion will follow up his very popular talk of last year, on TV and Sound, with demonstration. The 13th is set aside for a Ladies' Night at the Rainbow and Dove, Hastingwood, with a buffet and distribution of gifts. Normal meetings are at Loughton Hall, Rectory Lane, on alternate Fridays.

Magnus Grammar School co-operated in setting up GB3RH for the Ollerton Symposium and found it instructive and enjoyable. They were looking forward to joining with the Thieves Wood School for physically-handicapped children, which has an active SWL club as well as a Scout troop, for JOTA. **Melton Mowbray** will be hearing about SSB Receivers, from G3DFE, on November 18, and their December meeting will be devoted to Stereo Reproduction. Their Top Band Net meets on 1910 kc at 2000 on Wednesdays and 1115 on Sundays; all meetings are held in the St. John Ambulance Hall, Asfordby Hill, at 7.30 p.m.

Radio Club of Scotland (*GM Magazine*, September) report a very healthy state of affairs north of the Border; their publication covers a surprisingly wide range of interests. **Cray Valley** (*QUA*, October) seem to be going strong at the VHF end of the spectrum; and they are preparing for their Dinner-Dance on November 19, at the Bull's Head, Chislehurst.

Crystal Palace (*Newsletter* No. 119) will meet on November 20 for a talk on VHF DX-peditions, by G3POL. They held their annual Hi-Fi Night in October, with VIP guests and a large attendance. **South Birmingham** (*QSP*, October) have a Film Show on November 18, and their Christmas Junk and Surplus Sale on December 12.

Reigate (*Feedback*, September) had a talk by a representative of the G.P.O. at their October meeting, and on November 20 G6QB will present a "Mixed Bag." **Purley** (*News Sheet*, October) have an informal meeting on November 5 (should go with a bang, they say), and a talk on Receiver Construction on the 19th—both 8 p.m. in the Railwaymen's Hall, Whytecliffe Road.

Plymouth (*QUA*, October) now have no fewer than 30 members with call signs, and report quite a few SWL's enrolled for the R.A.E. course. Nevertheless, they say that attendances at the weekly meetings are poor. **Surrey** (Croydon) had a lecture in October on VHF and UHF Aerials (J-Beams, Ltd.). In December they are planning a Technical Evening devoted to "shortish talks" by club members, and the answering of technical queries sent in by members.

Wolverhampton (*Newsletter*, September) held their

AGM in October, and deferred planning their coming season until after that meeting, at which, it was hoped, members would indicate what kind of talks they wanted. **Wimbledon** (*QRK-5*, Vol. 2, No. 1) report good attendances for the recent Junk Sale and the talk by Mr. Green. They meet on November 12 (no subject announced) and on December 3 for their AGM—and they propose to start a CW Net, both to popularise CW and to give the SWL's some practice; this is to be on Fridays at 1900 GMT, 1845 kc, with G3PVA assuming net control.

Wakefield recently toured the Wharfedale works at Bradford, where they saw and heard some of the latest loudspeakers. They also visited the Spen Valley club. Meetings are held fortnightly, 7 p.m. at Ligs Road School, and the next is on November 9. On the 30th they will be going over the Wakefield Police Hq.

South London Mobile Club will hear a lecture (by Texas Instruments, Ltd.) on Transistors at their November 6 meeting; on the 20th there will be a BBC talk on Eurovision; and on December 4 their member G3SRY will give a demonstration on Printed Circuit etching. **Saltash** (*Tamar Pegasus*, October) have their AGM on November 5 at 8 p.m. On December 3 there will be a lecture on Tape Recorders, and on the 17th a Film Night.

Leeds will be visiting Baird TV (Bradford) on November 10; on the 17th they have a talk (Part II) on Constructing a Top-Band Transmitter; and on the 24th they are looking forward to a visit from the Otley club. On December 1 the subject will be Mobile Equipment (G3TXW).

Grafton (North London) meet every Friday at 7.30 p.m. in Room 35, Montem School, Hornsey Road, N.7, and ask us to make it clear that visitors and prospective members will always be welcome. R.A.E. classes are held in the same room on Mondays and Wednesdays at 7 p.m., followed by Morse instruction at 9 p.m.

Cardiff Radio Contest Club has just been formed, to attract the DX-minded and Contest-minded



"... Well, by the last bearing, he must be around here somewhere ..."

amateurs in the area. Contact GW3OAY (see panel) for further details; informal meetings on the first Monday at the Griffin Inn, Lisvane, near Cardiff.

Chesham have had some interesting visits and meetings, and held their first Annual Get-Together on October 1, when many old members, honorary members and friends of the club turned up. Friday evening CW and R.A.E. lectures continue, and November 19 is booked for W1BB's Tape Lecture, and the 21st for the AGM, to be held at 1100 hrs. at the Hq.

Bromsgrove are running R.A.E. classes on Wednesday nights at the local college. Next meeting is on November 12, when they will be discussing Field Day plans for 1966! This is at 8 p.m., preceded by Morse at 7.30 p.m.

Echelford (Newsletter August-September) have had visiting lecturers from the Metropolitan Police Radio System, and also from the GPO. Their November meeting, on the 24th, will welcome Mr. K. L. Padley, of E.M.I. Electronics Ltd., who will talk on Servicing and Fault-Finding.

City of Belfast recently held their AGM, at which the officers were elected (see panel for new secretary). Their clubroom has been re-decorated, and the season opened with talks on Transistors (Brian Jones) and Top-Band Operation (GI6TK). Details of the club may be obtained either from the secretary or from the YMCA General Office in the City.

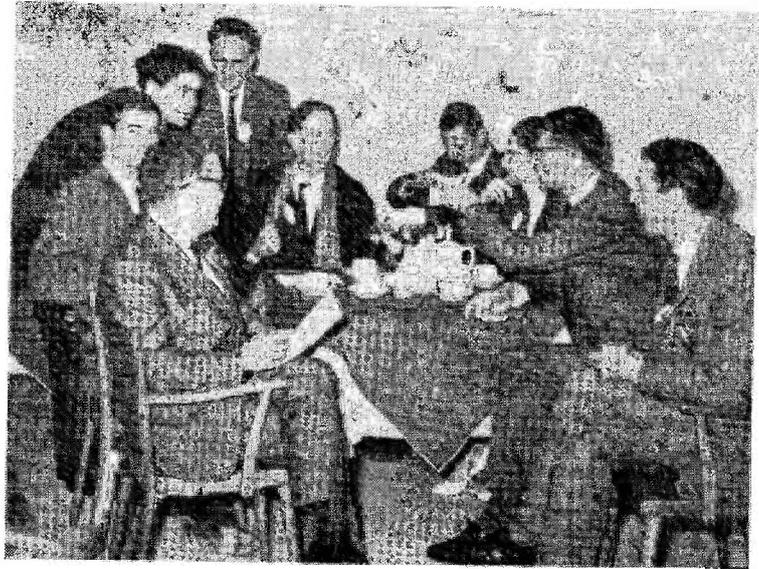
Wessex now meet on the first Friday of the month, and also on the Monday which falls 17 days later, at the Cricketers Arms, Windham Road,

Names and Addresses of Club Secretaries reporting in this issue :

ACTON, BRENTFORD & CHISWICK: W. G. Dyer, G3GEH, 188 Gunnersbury Avenue, London, W.3.
 AERE (HARWELL): V. J. Galpin, Building 347.3, AERE, Harwell, Didcot.
 ARMS: N. A. S. Fitch, G3FPK, 79 Murchison Road, London, E.10.
 BARNSELY: J. A. Ward, G4JJ, 44 Northgate, Barnsley.
 BASILDON: C. Roberson, G8AAO, Milestone Cottage, London Road, Wickford, Essex.
 BASINGSTOKE: P. Jackson, G3ADV, 11 Oaklands Way, Basingstoke.
 BLACKPOOL & FYLDE: J. Boulter, G3OCX, 175 West Drive, Cleveleys, Blackpool.
 BRISTOL: E. J. Davis, G3SXY, 72 North View, Westbury Park, Bristol 6.
 BROMSGROVE: J. K. Harvey, 22 Elm Grove, Bromsgrove, Worcs.
 BURY & ROSSENDALE: K. Drinkwater, G3RHR, 75 Woodville Drive, Marple, Cheshire.
 CARDIFF RCC: N. Graham, GW3OAY, 23 The Rise, Llanishen, Cardiff.
 CHELTENHAM: A. B. Fletcher, G3LDA, 40 Chelmsford Avenue, Warden Hill, Cheltenham.
 CHESHAM: D. Kind, 19 Hollybush Road, Chesham.
 CHESHUNT: B. B. Charge, 16 The Green, Church Lane, Cheshunt.
 CHESTER: R. Trickey, G3DRB, 31 Penzby Avenue, Chester.
 CITY OF BELFAST: C. J. Rourke, G13IVJ, 63 Kirkliston Park, Belfast 5.
 CLIFTON: J. Rose, G3OGE, 63 Broomfield Road, Beckenham.
 CORNISH: M. J. Harvey, Oak Farm, Carnon Downs, Truro.
 COVENTRY: W. F. M. Hahn, G3UOL, 11 St. Patricks Road, Coventry.
 CRAWLEY: R. G. B. Vaughan, G3FRV, 5 Filbert Crescent, Gossops Green, Crawley.
 CRAY VALLEY: S. W. H. Harrison, G3KYV, 30 Plaistow Grove, Bromley.
 CRYSTAL PALACE: G. M. C. Stone, G3FZL, 10 Liphook Crescent, London, S.E.23.
 DUDLEY: R. W. Fisher, G3PWJ, 63 Swan Crescent, Langley, Oldbury, Worcs.
 DURHAM CITY: D. Hampton, G3UHU, 4 Ferens Close, Gilesgate, Durham.
 EALING: A. P. Teale, G3SGT, 16 Whitestile Road, Brentford.
 EAST KENT: D. N. T. Williams, G3MDO, Llandogo, Bridge, Canterbury.
 EAST WORCS.: M. J. Nicholas, G3TOI, 12 Crabtree Close, Lodge Park Estate, Redditch.
 ECHELDFORD: A. G. Wheeler, G3RHF, 88 Village Way, Ashford, Middx.
 GRAFTON: A. W. H. Wennell, G2CJN, 145 Uxendon Hill, Wembley Park (Acting).
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 MELTON MOWBRAY: D. W. Lilley, G3FDF, 23 Melton Road, Asfordby Hill, Melton Mowbray.
 MIDLAND: C. J. Haycock, G3JDJ, 29a Wellington Road, Birmingham 20.
 MID-WARWICKSHIRE: H. C. Loxley, 51 Guy Street, Warwick.
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 WOLVERHAMPTON: J. Rickwood, G3JJR, 852 Stafford Road, Fordhouses, Wolverhampton.
 WORCESTER: G. W. Tibbets, G3NUE, 25 Greenford Gardens, Martley Road, Worcester.
 WORTHING: R. J. Tarr, G3PUR, 245 South Farm Road, Worthing.
 YEovil: D. L. McLean, G3NOF, 9 Cedar Grove, Yeovil.

A keen group discussing some controversial point at the Knokke radio amateur meeting on September 18—though most unfortunately it clashed with the International Amateur Radio Club's convention at Geneva over the same weekend. Inevitably, this divided the potential European attendance, but U.K. amateurs were present at both.



Bournemouth. They have close co-operation with the **Salisbury** club, from which both clubs hope to benefit. They have their own call G3FVU, a lot of gear, and four members studying for R.A.E. as well as four who have passed it and are now awaiting the Morse test.

Cheltenham held their AGM in September, returning G3MOE as chairman, G3LDA secretary. They meet every Wednesday, 7.30 p.m. at St. Mark's and Hesters Way Community Centre.

Barnsley will get-together on November 12 to hear G3AMH talk on Constructional Techniques, and on the 26th G3GNK will give a demonstration of Top-Band mobile equipment. **Newark** have purchased a receiver and are now hard at work building the Club Tx to go with it; CW lessons are in full swing on Thursday evenings, and a full set of tools has been acquired for the constructional section. Membership now totals 45—visitors and new members still most welcome.

Dudley held their Fourth AGM and returned most of their officers, including chairman and secretary. Their Annual Dinner will be held on November 20 at the Stewpony, Stourton. Anyone interested in the club may now obtain full details by enquiring at the Central Library, Dudley. Meetings are on alternate Fridays at the Art Gallery.

The **Interallied Radio Club** (Allied Air Forces, Central Europe) has been formed at Fontainebleu, and holds the callsign F7IRC. Its main object is to enable N.A.T.O. personnel to qualify for licences under the French regulations, and has some 20 members, among which are USAF, RCAF, RAF and FAF personnel. The club station (complete Collins "S-line") is at the disposal of all members.

Stratford-on-Avon (Autumn Newsletter) held their AGM and had several well-attended meetings, including their "lecture of the year"—Bob Palmer (G5PP) on Mobile Operation. November 5 and 19

are club nights, and the 12th a visit to Leamington Telephone Exchange (limited to 15 members). On the 26th they have an ICI Film Show covering various topics, from Paint to Rosebudding. **Huddersfield** are now in full swing, with 40 members turning up for the first meeting of the season; they gather on alternate Thursday evenings at the Lockwood Liberal Club, Swan Lane, and will be pleased to receive newcomers there. Their new syllabus is being prepared.

Luton will have G3SVJ on the air for an Open Evening, on November 9; on the 16th, a Mullard Film Show; on the 23rd, a demonstration of a preselector, by G3HVA; and on the 30th, a Constructional Evening. Recent meetings, including WIBB's Tape Lecture and a Junk Sale, have been very successful.

Maidenhead is a club just in process of being formed, and permission has been obtained for them to meet at the East Berks. College in Maidenhead. On November 9 a meeting of all interested people will be held, 7.30 p.m. in The Hall, East Berks. College, Boyn Hill Avenue; and those who cannot attend are asked to get in touch with G3FVC (see panel for his QTH). We wish them every success.

Mid-Warwickshire will be continuing their series of tape-recorded lectures covering the R.A.E., each lecture being given twice—first on a Tuesday and then, nine days later, on the Thursday. **Spalding** will hold their first winter junk sale on November 12—7 p.m. in the White Lion Inn. They are looking round for permanent premises, but hold their weekly meetings (at which attendances are increasing) in the Senior Physics Lab., Spalding Grammar School.

Bury and Rossendale will meet on November 9 at the Old Boar's Head Hotel, The Rock, Bury (in a private room) at 8 p.m. G3NXX (Solartron) will lecture on Commercial Measuring Instruments. **Hull** report a successful DF event, and a visit to a nearby cement works, which was rather poorly attended.

Their fortnightly meetings are now held at the British Railways Institute, Anlaby Road, every Friday.

Welwyn Garden City met for G3HBW's lecture on 23-cm. work, and no fewer than seven G8-plus-three's were in the audience of 33. **Worcester** will have a Photographic Exhibition on November 27, and a series of short talks on December 11.

CLUB PUBLICATIONS

Apart from those mentioned in the text, we acknowledge the receipt of Club publications and newsletters from the following: **Coventry** (*CARS Newsletter*); **Midland** (*MARS News Letter*); **Aeronautical Center, Oklahoma** (*Collector and Emitter*, October); **RAIBC** (*Radial*, September); **Norfolk** (*NARC Challenge*, Autumn); **RAFARS** (*Newsletter* No. 16); **Echelford** (*EARS Newsletter*, August/September); **Royal Sigs ARS** (*Mercury*, October); **AERE, Harwell** (*QAV*, October); **Foundation for Amateur Radio**, Washington, D.C. (*Auto Call*, September); **NZART** (*Break-In*, August); **Cornish** (*Cornish Link*, October); **North Kent** (*Newsletter* No. 93); **ARMS** (*Mobile News*, September).

**IDENTIFICATION LETTERS FOR CLUBS
IN "MCC"**

Supplementary List

<i>AB</i> Aberdeen	<i>KY</i> Kirkcaldy
<i>BA</i> Basingstoke	<i>LR</i> Lymington "B"
<i>BE</i> BBC, Evesham	<i>LU</i> Liverpool University
<i>BP</i> Blackpool & Fylde	<i>MF</i> Moray Firth "A"
<i>BR</i> Barnsley	<i>MQ</i> Moray Firth "B"
<i>BU</i> Bury St. Edmunds	<i>MR</i> Moray Firth "C"
"A"	<i>NO</i> North Kent
<i>BY</i> Bury St. Edmunds	<i>NS</i> Newark (Short Wave Club)
"B"	<i>NW</i> U.C. of North Wales
<i>BZ</i> Bury & Rossendale	<i>PE</i> Peterborough
<i>CD</i> Cardiff RCC	<i>RW</i> Racal, Wokingham
<i>CF</i> Cray Valley	<i>SB</i> South Birmingham
<i>CH</i> Chesham	<i>SP</i> Spen Valley
<i>EK</i> East Kent	<i>ST</i> Stroud
<i>FO</i> Forfar	<i>WK</i> Wakefield
<i>GC</i> Govt. Comms. ARC, Cheltenham	<i>WR</i> Worthing
<i>GE</i> Research, GEC	<i>WX</i> Wessex
<i>HL</i> Hull	<i>ZA</i> 235 Sqdn. ARS, Stoke-on-Trent
<i>HN</i> Henley-in-Arden	
<i>HV</i> Haverhill, Suffolk	

NOTE: The First Alphabetical List of MCC Identifications appeared on p.499 of the October issue. With that and the List above, all Clubs likely to be entering for the Contest are now identified. While letters can be issued to any other Club wishing to enter, they cannot be published.

TELEVISION SOCIETY LECTURES

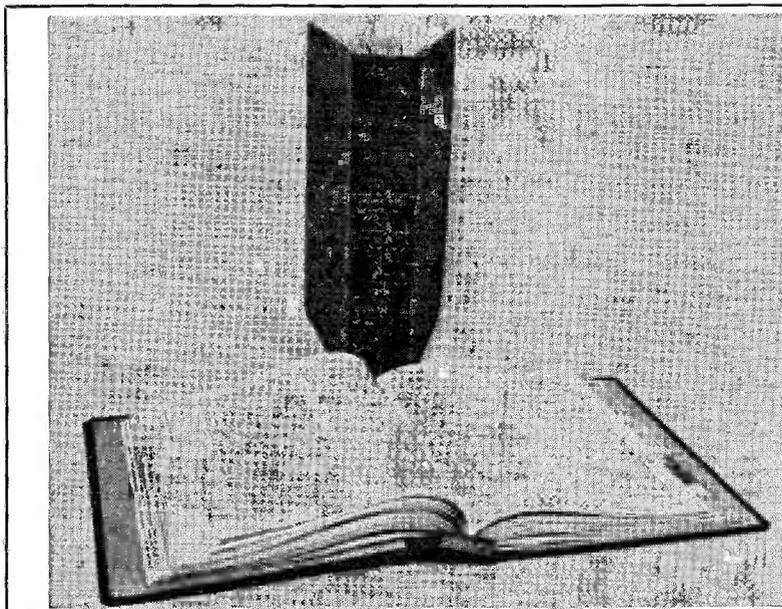
The Television Society is a membership association for those interested in any aspect of TV, whether technically or on the production and entertainment sides. The Society holds regular lecture-meetings, open to anyone who cares to attend. On November 26, the lecture will be on Television Audience Measurement—the mysterious TAM rating—and on December 3, it will be on Television Receiver Development, surveying the history of British TV Rx design. The speakers are authorities in their fields,

and the lectures are followed by a discussion session. Both meetings scheduled here will be in the Conference Suite, I.T.A. Building, 70 Brompton Road, London, S.W.3, commencing at 7.0 p.m. Non-members of the Television Society can obtain free tickets (and information about the Society itself) on application to: The Administrative Secretary, The Television Society, 166 Shaftesbury Avenue, London, W.C.2.

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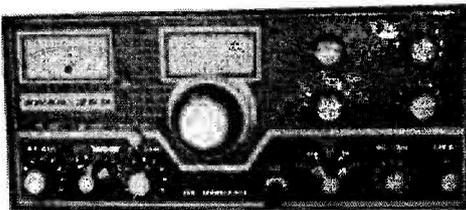
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R206. 550 kc/s. to 30 mc/s., bandwidth switched 0.7, 2.5, 8 kc/s. B.F.O., etc. 230 A.C. power unit, £25, carriage £1.

CANADIAN MARCONI 52. 1.75 to 16 mc/s., new condition, £10/15/-, carriage paid complete with reprinted handbook. Without outer case 10/- less.

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COSSOR 339 DOUBLE BEAM OSCILLOSCOPES, £10, carriage £1.

WAVEMETER/SIGNAL GENERATOR G73, 100 kc/s. to 25 mc/s. 1,000 kc/s. crystal standard. 230 volts A.C. or dry batteries. Complete with charts, £5, carriage paid. Less charts, £3/10/-, carriage paid.

WAVEMETER CLASS "D" 6 volts D.C. supply, 55/-, post 5/-.

230 VOLTS A.C. POWER UNITS FOR H.R.O. RECEIVER, 45/-, post 5/-. Speakers, 10" 3 ohm in wood case (slightly soiled) with 600 ohm line transformer, 25/-, carriage paid. 10 watt modulation Transformers suit pair 6V6 5000 ohms to 2500 ohms, 12/6, post paid. Ceramic insulated 3 gang Variables, 56 x 56 x 35 PF. 3/6, post 1/6. 19 or 22 set head and mike sets, 10/-, post paid.

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MECHANICAL FILTERS. 455 Mc/s., please state approximate bandwidth required at 6 dB points, £9/5/-, post paid.

POWER SUPPLY UNIT, 9 1/2" x 5" x 2" deep chassis with 300.0-300V. 150 m.A. 6.3V. 3A., 5V. 3A. Mains primary tapped, LF choke, 10H. Electrolytic smoothing, 6-pin Min. Jones output. Requires 5U4 or 5R4 valve at 27/6 p.p.

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H.R.O. spares and power supplies in stock, S.A.E. for list.

Morse Keys, American Type J37, lead and jack plug, 5/-, p.p. 1/6.

Set of 4 valves for W1191 Wavemeter, 10/-, plus 2/6 p.p.

807 moulded valve holders, 6/- per doz., post paid.

0.002 and 0.01 µF metalite 1,000 volt, 6/- doz., post paid.

AF116 and 117 Mullard transistors, 4/- each, post paid.

Mullard BY100 800 P.I.V. .5A, 5/-, p.p. 6d.

Westinghouse 10SGR2 1,000 P.I.V. 1A, 7/-, post paid.

Low resistance phones, 7/6. High resistance, 15/-, p.p. 2/-.

Noise Limiter Kit for TCS receiver, store soiled, 5/- post paid.

AR8B Mains standby and AVC/N.L. switches, 4/- each, post paid.

TCS B.F.O. can trimmer, 455 with Kc/s., 3/6, post paid.

HALSON 3F1F MOBILE AERIALS, £6/10/-.

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EDDYSTONE RECEIVERS AND COMPONENTS, CODAR, DENCO, REPANCO, etc. We welcome all enquiries however small.

Stamped addressed envelope please.

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SMALL ADVERTISEMENTS, READERS—continued

FOR SALE: Panda "Explorer" 150-watt table-top Tx, £35. Eddystone receivers: 888, £50; S.640, £10. Codar PR-30 Preselector, £4.—G3PVB, 27 Barclay Road, London, S.W.10.

WANTED: Amateur-Band Receiver, in EXCHANGE for Rolliflex 4X4 twin-lens reflex camera, one year old.—8 Colin Court, Ravensbourne Park Crescent, Cufford, London, S.E.6.

SALE: ZC.1 Mk. II, with speaker output and xtal mike input, £5 o.n.o.? Tower, 15ft., angle iron, 8in. by 8in., £2 o.n.o.?—Ginder, 222 Whetstone Lane, Aldridge, Staffs.

FOR SALE: Heathkit Mohican Receiver, factory built, as new and just realigned, £35.—P. Hiron, 1 Crispin Way, Farnham Common, Bucks. (Phone Farnham Common 2758 after 6.0 p.m., or weekends.)

SELLING: Cathodeon 10-7 mc crystal filter Type BP50, 25 kc bandwidth, £10 o.n.o.? Cleveite ceramic 455 kc filter Type TL4D9A, 4 kc, £6 o.n.o.? Valves: 6146, 6080, TT15, 5B/252M, 5B/255M, 5B/257M, 20s. each; OC201, 7s. 6d.—Box No. 4184, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SALE: Hallicrafters S-38E receiver, with PSU, and in good condition; cost new £28, offers?—D. Thomson, 18 High Patrick Street, Hamilton (21301), Lanarkshire, Scotland.

WANTED: For a CR150 Receiver, the 2nd oscillator unit, also original FB case and front panel, unmodified, for table and not rack-mounting type.—R. S. Pace, G3SOI, 22 The Drive, Shotley Bridge, Consett, Co. Durham.

SALE: T.W. Twomobile Rx, £22 10s. Aveley transistorised PSU, 12v. DC to 300v. at 60 watts, £7 10s. T.W. two-metre Halo, with 3ft. chromed mast, 30s.—G5DW, Hill Bungalow, Ashcott, Bridgwater, Somerset.

OFFERING: Creed 7A Printer, mains PSU, perfect, £20. Type 3X, as new, £7 o.n.o.? G2DAF phasing-type SSB exciter, separate VFO, with 400-watt passive-grid Linear Amplifier, very compact with all power supplies built in, perfect, £75. An AR88LF receiver, with manual, £32 10s. All items plus carriage.—Hobbs, 256 Daws Heath Road, Thundersley, Essex. (Tel. Southend-on-Sea 557422.)

FOR SALE: Brand-new unmodified B.44 Mk. II, price £5 10s. Pye 2-metre mobile transceiver, unmodified, £8. RF25 unit, mint, offers? Geloso coil pack, brand new, less valves, offers?—G3UGF, 14 Holdsworth Terrace, Shaw Hill, Halifax, Yorkshire.

SALE: An Eddystone S.640 Rx, in excellent condition, with matching S-meter and speaker; also an ATU. The Lot, £30.—Ring Leeds 664362 (after 7.0 p.m.).

ON OFFER: An Eddystone S.750 (double superhet), with matching S-meter, speaker, tilt-feet and handbook; full works overhaul this year. Selling to expand equipment.—Ring, day: White, Wilmslow 2261, Cheshire.

SALE: Rx Type R.107T, in excellent condition; re-valved and realigned, BFO, calibrated LSB/USB, S-meter fitted, cabinet repainted black. Bargain at £10 o.n.o.?—Keeping, 11 Falcon Close, Langley Green, Crawley, Sussex.

SELLING: Several as-new "Advance" Voltage Stabilisers (Voltstats), 190-260v. in, 220v. out, rated 100 watts, £4 each. Also, at 2s. each, 5000 mF 25v. electrolytics. Plus postage and packing.—Smith, 15 Woodlands Close, Sands, High Wycombe, Bucks.

SALE: Minimitter MR44/II Rx, £35. Heathkit DX-40U Tx and VF-1U VFO, £25. Cossor Oscilloscope, Model 3339, £10. Minimitter Mobile Tx, with control box and transistorised PSU, £20.—G3SFV, Wyngarth, Meriton Road, Lutterworth, Rugby, Warwickshire. (Ring Lutterworth 2469 after 4.0 p.m. Will deliver reasonable distance.)

SMALL ADVERTISEMENTS, READERS—*continued*

WANTED: KW-2000 with PSU's.—Letters: H. James, 54 Rivington Crescent, Kingstanding, Birmingham, 22C.

WANTED: Original type of Panda ATU, complete. Please state condition and price, inclusive packing and carriage paid.—G3HID, 26 Manor Road, Burnham-on-Sea (2511), Somerset.

SELLING: Heathkit DX-100U Tx, £55, and the RA-1 Receiver, £25—both together for £75. In mint condition. Letters only, please.—Acton, 20 St. Blaise Road, Sutton Coldfield, Warwickshire.

WANTED: Collins Receiver 75A or 51J, or similar; also SSB Transmitter or Transceiver.—G3NNT, 23 Southport Road, Ormskirk (3209), Lancs.

WANTED: In good condition, R.A.F. type Box Kite capable of lifting aerial. **SALE:** R.S.G.B. "Bulletins," 1961 to date, offers?—G3RDU, QTHR 1965 C.B.

WANTED: Collins 75A Rx or similar type, also DX-100U or similar Tx. **SALE:** National NC-140 Rx, as new, completed with matching speaker and suitable auto-transformer, £55. Eddystone 680X Rx, with matching speaker, in excellent condition, £60. Heathkit GD-IU Grid Dip Meter, complete with all coils. £8. Taylor Type 88A Multi-Range Test Meter, in as-new condition, £10. Codar Type PR-30X Pre-selector, £4. Heathkit MGP1 PSU, £3 10s. QY3-125 valve, brand new and with socket, £3. Offers or exchanges considered; s.a.e. for list of other items for sale.—Beaumont, G5YV, 8 Ashfield Avenue, Morley, Leeds, Yorkshire.

URGENT: Your price paid for the pi-tank switch for a Panda "Explorer" Tx. Assistance in helping me to obtain this item will be greatly appreciated.—Bartlett, GW8WQ (ex-GW2BBF), 19 King Edward Street, Whitland, Carmarthenshire, West Wales.

WANTED: Genuine AR88D, S-meter. Also Pre-selector PR-30X.—111 Cobden Road, Southport, Lancs.

WANTED: Amateur Bands Transmitter and Receiver. Unfinished projects or components considered. Must be cheap.—Sinclair, 9 Weoley Court, Birmingham, 29.

G3FWD has for **SALE:** Brand new, unused RCA mains transformers, heavy duty, 0-240v. AC in, 300-0-300v. 120 mA twice, 6-3v. twice, 5v. twice, potted, oil filled, flange mounting, compact in size, 5in. x 4in. x 3½in., conservative ratings. Also Hallcrafters mains transformer 110/230v. AC in, 350-0-350v. out at 200 mA, 5v. and 6-3v., very heavy duty, drop-through fitting, £3 10s. each, carriage paid. Also a large amount of AR88 spares, all brand new; thousands of resistors of all types; dozens of other items, all brand new; list available, please send s.a.e.—126 Renton Road, Oxley, Wolverhampton. (Tel. Fordhouses 2404.)

FOR SALE: 12v. to 300v. 60-watt transformers, for DC-DC Converters, with full data. 35s. W6DPU electronic keyer, complete with paddle, £10. Small 2-metre Tx RF section, 18-watt input, £6. Genuine HRO S-meter, brand new, boxed, 35s. Send s.a.e. for list of items.—B. M. Sandall, 21 Dale View, Ilkeston, Derbyshire.

EDDYSTONE 840A Receiver, little used, cost £55; £30 or very near offer?—Beeton, Roslin Hall Hotel, Belgrave Road, Torquay, Devon.

SALE: HF/VHF Signal Generator CT.53, £9, or **EXCHANGE** for LF/HF Generator R.107 as new, £9. **WANTED:** Low-power Marine Radiotelephone; complete TCS-12.—Cain, 18 Oaky Balks, Alnwick (2487), Northumberland.

TREASURE HUNT! Help me to find certain types of relays and contacts to earn spare cash; send s.a.e. for details.—112 Groby Road, Glenfield, Leicester.

AR88LF—factory respayed, rewired and realigned 1963, £30. Prefer buyer tests and collects.—27 Sandringham Road, Swindon (6885) Wilts.

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The above are all brand new surplus. Nothing but the finest quality cheap junk !!!

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I have a fair stock of resistors (½W colour coded) at 2d. and all kinds of miniature capacitors from 2d. If anyone is building the G3SRV transistor rig for 160 I can supply quite a few of the bits and pieces cheaply.

Meters. Clear plastic panel meters 1 21/32" square front from 1 ma to 1A at 22/6, 2 3/8" 1 ma to 1A at 35/-.

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Power Supplies. Brand new Marconi for 52 set—12.6 and about 170v. out. Input either 250v. a.c. or 12v. d.c. Beautiful job for £2/10/-.

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Receivers. Lafayette HE80 with AUTOMATIC TUNING. Set on 14 mc/s, switch on, and it will automatically tune over the 20m. band. No kidding. However it is as new and not as bad as I make out. Worth £35 anyway. Eddystone 840C with magnificent dial and precious little else. Again as new £45. Eddystone EC10 indistinguishable from new £38. AR88LF £35, AR88D £40, BC348 £15, BC639A (R5032A) £25. U.S. Heathkit Cheyenne/Comarache combination with 12v. transistor p.s.u. An excellent 90 watt 80 to 10 rig with a good Rx for £65. Very compact and a real bargain. Others either too horrible or too expensive to mention.

Test Gear. Jason Wobulator £10, Dartronic's scope £25.

New Lafayette HA350 in stock—I may have said some pretty harsh things about Japanese equipment, but the HA350 has shaken me, it's really first class. Write for gen and honest appraisal—at 75 gns. there is just isn't anything on the market to touch it. Also new National NC190, NCX3, NCX5.

My stock of Rx's and Tx's turns over fast, but I may have what you want at the right price—or if it's new equipment I can get it for you, and furthermore I think I can give you the best trade-in deal in the business. Worth a stamp to find out and get my lists of good buys; a s.a.e. would be a gentlemanly gesture!

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SMALL ADVERTISEMENTS, READERS—continued

HRO-MX, mint condition (trapped TVI 14 mc), 9 coils, PSU, new Wharfedale speaker in cabinet, 2 prs. phones; delivered 50 miles, £30 o.n.o.—G3PAO, 6 Leggatts Wood Avenue, Watford (25526), Herts.

AR88, p.v.c. wired, recently serviced and aligned (see my article), £25, less cabinet.—G3LLL, Brandy House Brow, Blackburn, Lancs. (Tel. 58594, evenings, not Sundays, please.)

FOR SALE: Lafayette HE-40 Rx, £17 o.n.o.—Andrew, Craigard, 42 Lower Barvas, Isle of Lewis, Scotland.
SALE: RX-80, 550 kc-30 mc, amateur bandsread 80m.-10m., 9 valves, Q-Multiplier, still under guarantee £52 10s. new, accept £37 10s. o.n.o.? Infra-red lamp, good condition, £5. 19 Set PSU, offers?—Papworth, 25 Station Road, Over, Cambridge, (Phone Swavesley 339.)

EX-SWL, now silent key, 807A Rx bought March 1965. Offers to:—G3LFQ, 15 Widey View, Hartley, Plymouth, Devon.

WANTED: Transmitter model TR-50XM for spares or otherwise. Manufactured by The Technical Radio Company, U.S.A.—Phone: Pound Hill 2390 (Sussex) after 7 p.m.

WANTED: Mark 10 Crystal Calibrator in good condition. Price and details to:—G3TZN, Cedar Oak, The Hill, Almondsbury, Bristol.

SALE: AR88LF, £35 o.n.o.? Class-D Wavemeter. £2 5s. plus carriage. WANTED: Good BC-221. Command 80m. MW Rx's.—437 Helmsore Road, Helmsore, Rossendale (4620), Lancs.

JOHNSON U.S.A. transmitting roller-coaster coil, new, 25s. Command ARC-5 Aerial Coupler, new, 25s. Pye "Ranger" Transceiver (4 metres) with control box and noise-cancelling microphone, £11. Command Receiver, 234 mc, 25s. Command 12-volt Dynamotor, 30s. Mobile 160m. and 80m. Command Receivers, 12-volt, on twin rack with remote control unit and transistor PSU, £16. PSU for Type 30 Signal Generator, new, 30s. 1E/19A Test Equipment Manual for SCR-522, 37s. 6d. Beam Rotator. 12/24-volt, new with Selsyn, £6. Coax relay, 12-volt, with 3 plugs, 25s. Labgear press-to-talk microphone, 25s. G3HSC Morse Record, 30s. Whip Base and/spike, 15s. Remote Control Unit for Command Receivers, 20s. Eddystone 358X coil 20-31 mc, 10s. Modulation Transformer, 15s. B44 Mk. II with xtal and modification instructions, £8. Send s.a.e. for other items or ring Bushey 3387. WANTED: Topmobile; AN/PRM-10 Manual; Battery box for RBZ equipment; 430 mc equipment.—Box No. 4185, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

HAMMARLUND HQ-180E, fitted 24-hour clock timer, also Hammarlund noise silencer, realigned by K.W. Electronics, spare valves, £125. Buyer collects.—Hall, 95 Walnot Street, London, E.2. (Tel. SHoreditch 5658.)

DX-100U, excellent condition, £50. CR-100, no mods., very good condition, £14. Either delivered 50 miles. WANTED: Candler advanced Morse Course.—G3TSL, 90 Warren Wood Road, Rochester, Kent.

SALE: Eddystone EC-10, brand new condition, little used, £35. Prefer buyer collects.—Cooper, G3PGS, 5 Edgwood Road, Kimberley, Notts.

VERY CHEAP to make room for SSB: Complete 160-80 metre Station; compact K.W. mobile/base all-band station; many other things, s.a.e. for details. WANTED: Multi-band Transceiver and PSU's.—G3TJY, Jolly, 30 York Road, Broadstone (521), Dorset.

SELLING: Complete two-metre fixed/mobile station comprising: TW2 Tx, Twomobile Rx, TW Halo, Chinese-copies of mains and mobile PSU's, connecting cables, xtal and microphone. Best offer over £55 by November 15 (Essex).—Box No. 4188, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SMALL ADVERTISEMENTS, READERS—continued

RTTY: A.P.66862 TU, with A.P.66863 PSU, £10. 7B Printer, as new, with 24v. and 80-0-80v. PSU's, £17. 7TR Reperferator, with PSU, £8. Prefer buyer collects, but delivery or carriage arranged.—G3MEW, 17 Testcombe Road, Gosport, Hants.

WANTED: APR-4, with tuning unit. SALE: 24-centimetre cavity wavemeter, 850-1310 mc, high order accuracy, brand new, £7 o.n.o.—G3IUD, QTHR.

FOR SALE: ART.13, with calibration book, £15; one without, £10. S.27 VHF Rx, £5. Marconi AD.114, Rx 2-18 mc, tunable IF ± 5 kc, £3. DC-733 Rx with 9 xtals, 108-110 mc, £110. Turret tuners, ex ARC-5 VHF Tx, 15s. Woden UM2 multi-ratio mod. transformer, £1 10s.; also driver transformer DTI, 12s. 6d. RA1B Rx, £2. Wilcox-Gay VFO, £2.—Torry, 10 Godwin Way, Bromham, Beds. (Tel. Oakley 2709.)

SALE: Heathkit RG-1, with 100 kc crystal calibrator; professionally built and aligned, new and unused, £38.—Box No. 4181, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED: ATE Regen. Repeater Type TRR2 or TRR1A. Also circuit for MCR-1 Receiver. —149 Merlin Crescent, Townhill, Swansea, Glam., South Wales.

OFFERING: K.W. Viceroy Mk. IIIA, fitted extra half-lattice filter, £105. KW-500 Linear Amplifier, mint, £55. Tequipment double-beam scope, as new, £50.—Box No. 4189, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED: Xtal Calibrator in first-class condition, preferably in EXCHANGE for my commercial Trap Dipole for 20-40-80m., which is as-new and valued at about £5.—R. Hurst, 7 The Laurels, Burnside, Fleet, Hants.

FOR SALE: K.W. Vanguard Tx, £35. Heathkit RA-1 Rx, £33. New Sanyo 625-line TV receiver, £40. Ten-watt Telefunken stereo amplifier, 5 watts each channel, £7.—G3KEV, 12 Avon Vale Road, Loughborough, Leics.

MISSING: Will anyone who is offered or knows the whereabouts of an American Harvey-Wells Tx Type T9X and matching receiver R9A, please contact G3AME, QTHR.

SELLING: Heathkit DX-40U, excellent condition, £23, free carriage. Also for SALE, a large quantity of valves, transformers and miscellaneous units; s.a.e. for lists.—G3PRI, 142 Belle Vue Road, Cowes, Isle of Wight.

SALE: Almost new X-Band parts: English Electric K.324 klystron, £5; matching PSU, made by E.E., £10. Saunder's W.G.16 parts: Grade I glass-vane attenuator, less calibration chart, £7; 15 dB variable card attenuator, £3; 10, 15 dB three-port directional couplers, £5 each; Grade II wavemeter, £5. 22in. spun-aluminium dish, £2. Various E and H bends at £2 each. Coupling rings supplied and other Saunder's bits I may not need!—Box No. 4190, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: Hallicrafters S.108 Rx, 1964, with amateur bandsread, noise limiter, etc., bargain at £38, or Part EXCHANGE for Eddystone EC-10 Rx, or 35mm. reflex camera.—Habesch, 19 High Street, Rhyl, Flintshire.

WANTED: Recent model K.W. Viceroy. SALE: Minimitter 20-metre X-Array, new and unused; also CDR AR22 rotator with control unit, unused, £20. Buyer collects.—G2UZ, 2 Cliff Road Gardens, Leeds, 6.

FOR SALE: Nordmende "Globe Trotter" 15-wave-band transistor portable, mains or battery, £75. Eddystone S.950 Rx, mint, £75. Heathkit RG-1, mint, £35. Lafayette HA-55 receiver, aircraft band only, new, £18. "Air-o-Ear" mains Rx, MW/LW, 80/160m. and aircraft bands, £36. 1964 Shorrock Transistor Portable, MW/LW and aircraft bands, £24.—Sutcliffe, 103 City Road, Bradford. 8 (24144), Yorkshire.



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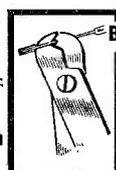
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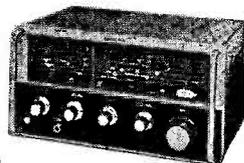
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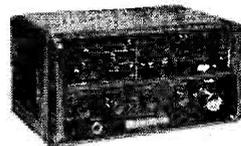
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SMALL ADVERTISEMENTS, READERS—continued

SELLING: HRO-MX, octal series valves, electrically good, mains PSU, with special 21 and 28 mc bandspread coils, also 1.7-4.0 mc, 3.5-7.0 mc, 7.0-14.0 mc, and 14.0-30.0 mc standard coils, all bandspread, £16. HRO Coils: 0.9-2.05 mc, 30s.; 1.7-4.0 mc, 3/3-5-7-3, 7.0-14.0 mc, 25s. each; 175-400 kc and 100-200 kc, 20s. each. Masteradio 6-volt vibrator PSU for HRO, 20s. CT.53 Signal Generator, 8.9-15.5 mc and 20-300 mc, with calibration charts, £12. Advance B3C Signal Generator, 100 kc to 30 mc, with calibration charts, £5. AM-912/TRC tunable PA unit, 100-225 mc, less 4X150A valve but includes suitable blower, good two-metre PA, £10. Hundred-yard coil, still wrapped, of 300-ohm Telcon K35B cable, 1.4 dB per 100ft. at 100 mc, £3. About 30 yards of the same, unused, 20s. Valves: Two 100TH, 25s. each; three 8012, 10s. each; two 1625, 3s. each; three CV53, 2s. each; two QY3-65, 15s. each; two QV04-20 (815), 10s. each. All items plus carriage.—G3BLP, QTHR. (Woldingham 3323.)

SALE: An FB AR88D, for £30. Also two-metre Tx T.1540, £5; Selsyn beam-position indicator, £3; brand new 813, 30s. Two hundred Rx valves, £5. And PSU's, etc.; s.a.e. for list.—G3FMZ, 40 Coatham Road, Redcar, Yorkshire.

FOR SALE: American Heathkit HW-30 two-metre Transceiver, 5 watts, with built-in PSU, size 10in. x 5in. x 7in., in mint condition, £20. Command equipment for 160m.; Tx and strap-on modulator, £6; Rx and dynamotor, £8; extra heavy-duty 12v. battery, 250 amp/hrs., £5 (callers only—it weighs 120 lbs.!).—G3KNB, QTHR.

BY THE WAY, having got thus far in reading through the Small Ads., you should also read all those odd headed paragraph items, appearing on most pages. Each will give you some useful information, and altogether they take many hours of hard work and research to compile! If you want to keep up-to-date with what is going on in the world of Amateur Radio, either place a firm order with your local newsgent for "Short Wave Magazine," or buy yourself a Christmas present (42s. post free for a year of 12 issues, by subscription direct with us), or send us a 4s. postal order for a copy of any next issue you want—if this is received three days before publication date (the first Friday of any month) you will get your copy by post flat in an envelope on that Friday, almost anywhere in the U.K. (Adv. inserted free of charge by Circulation Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.)

WANTED: AR88D, must be in mint condition, and preferably complete with manual and trimming tools. Details and price to.—Box No. 4191, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SALE: Hartley 13A Oscilloscope, with manual, leads and graticule, good condition; £20 if buyer collects.—G3FPQ, Markham Oak Cottage, Bucks Horn Oak, Farnham, Surrey. (Tel. Bentley 3168.)

SELLING: Two AR88's, one "D" one "LF," £35 each, plus carriage or buyer collects. One Wilcox-Gay VFO, excellent for parts, offers?—R. Britton, G2AVW, Stakeford, Choppington, Northumberland.

OFFERING: SBE-33 SSB Transceiver, £125. Geloso G.209R receiver, with Top Band mod., £40. G. & D. two-metre converter, Mk. III, £6. Two-metre Tx, £5. New Kokusai filter, £7 15s. 60ft. telescopic tower, £50.—G3IDW, Orchard Cottage, Hook, Swindon, Wilts.

SALE: A 13-valve BC-348N, modifications include a 6SH7 RF stage, infinite-impedance detector, var. NL, with separate PSU, speaker, manual and spare valves, £15 o.n.o.? Buyer collects (evenings or week-ends).—Newman, 74 Wardown Crescent, Luton (23412), Beds.

WANTED: A Heathkit DX-100U, in good working order. Details of price, year of construction, etc., to.—G3TWS, 32 Bibury Road, Benhall, Cheltenham (22366), Glos.

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SMALL ADVERTISEMENTS, READERS—continued

INFORMATION regarding the whereabouts of a Mr. Christopher Beyfus, formerly of Flat 3, 8 Lancaster Road, South Norwood, London, S.E.25, is sought by: G3AME, Grange House, Reigate Hill, Reigate, Surrey. (Tel. Reigate 46007, after 7.0 p.m.)

SALE: The latest R.C.A. receiver, AR8516L, triple superhet, covering 100 kc to 30 mc, brand new, £140. Also a U.S. Navy type Oscilloscope, USM-38, brand new, with manual and accessories, £50. And a Type PRM-10 G.D.O., covering 2-400 mc, new, at £20. All this is highest-grade equipment.—Box No. 4192, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: Vertical Aerials, 32ft., Mk. I type (see "Short Wave Magazine," June 1964), 3 guineas carriage paid. Transmitter cabinet, 30s. Transmitter PSU: 700v., 375v., 150v., 12v., 6v. 8A, etc., £5. G8KW trap dipole, £4 10s.—G3JFL, 11 St. Edward's Road, Birmingham, 29.

SALE: Heathkit DX-40U and VF-1U, both factory built, only 6 months old, very little used, absolutely perfect, with manuals, etc., cost over £60, selling for £50 o.n.o.? (Going VHF).—G3TQY, Ashar, Cross Road, Tadworth, Surrey. (Ring Tadworth 3247 after 7.0 p.m. weekdays.)

SALE: Labgear E.5051 Topbander, little used owing to lack of suitable aerial, as new, with manual, £19 10s., carriage 10s. (Below)

GREEN & DAVIS Falcon two-metre transmitter, complete with battery and mains packs fitting into rear, slightly modified for vastly superior efficiency, excellent value at £30 complete, carriage 10s. (Below)

WITHERS Twomobile receiver, 144-146 mc, perfect working order, AM working 160m. mobile only, £20. (Below)

WITHERS two-metre converter, complete with valves and crystal, IF tuning 28-30 mc, £5. (Below)

HALLICRAFTERS S.36 receiver, immaculate, covers 28 to 140 mc in three bands, AM/FM; this includes all aircraft frequencies, and BBC FM, etc.; complete with manual, £29 10s., carriage £1. (Below)

AM.913/TRC American Signal Corps converter, feeds into 30 mc and covers approximately 80-200 mc, fitted stabiliser neon, and requires 150v./6-3v. supply, £12 10s. (Below)

TWO-METRE and 70-centimetre converter, mains powered, IF 28-30 mc, excellent noise-factor, £9 10s., carriage 10s. (Below)

R.1132 VHF receiver, covering aircraft frequencies, built-in mains pack, working order, £8 10s. carriage 10s. (Below)

GBC Jap xtal microphones, two, at 30s. each; also one de luxe piezo BM-3 Jap mike, 50s. (Below)

PAIR of new 813's, £6. Pair new 83 rectifiers, 20s. Offers for following valves: Pair new 1622's; new 6L6; one each—76, 77, 6A7, 6J5, 6SJ7, 6H6, 6AB7, 6SA7, 6SK7, 6AC7W, 6V6GT. All letters answered.—G3DUV, 28 Kempson Avenue, Sutton Coldfield, Warwickshire.

FOR SALE: AR88D, less case, £25. Power unit for R.216, £12 10s. R.216 film-strip dial, 21s. AVO signal Generator, 80 kc to 80 mc, £11. BC-453, £5. BC-455 (less outer case), £2 15s. Wooden case for BC-221, £2. Wooden operating cabinet to house AR88 receiver, speaker, vibrator pack and spares, brand new in carton, £5. Triple rack for Command receivers, 25s. R.C.A. VoltOhmyst, £5. Modulation xformer for BC-625, 25s. AP.66862 T.U., £7 10s. RF-26B, 35s. Manual for AR88D, 25s.; for HRO-MX/5T, 25s. HRO coil. 180-430 kc. 10s.—A. J. Reynolds, 139 Waller Road, New Cross, London, S.E.14. (Tel. New Cross 1443, after 7.30 p.m.)

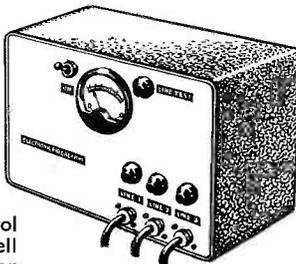
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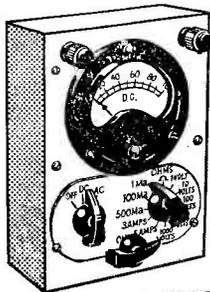
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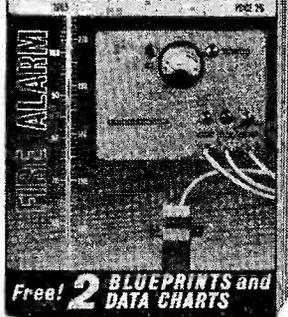
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SHORT WAVE MAGAZINE

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SMALL ADVERTISEMENTS, READERS—continued

WANTED: Tri-Band Beam, TA-32, TA-33, TH-4 or similar. Details and price to.—G3OVQ, 58 Burns Road, Coventry (52664), Warwickshire.

SALE: MR.44/2 receiver, perfect condition, working FB, £28. Also R.209 Rx, 1.5-20 mc, £12. Carriage extra.—G3RWF, 45 Weetwood Lane, Leeds, 16, Yorkshire.

SALE: A set of seven HRO coils, 50 kc to 30 mc, 15s. each. Transformer, 240v., 0-480v. 200 mA, 275-0-275v. 500 mA, 6.3v. 2A, 6.3v. 1A, 2.5v. 10A, 20s. Valves, all new: 6J6, 6AL5, 6AS6, three for 5s.; 2C42, 2s. 6d.; 3B24, 3s. 6d., carriage extra.—Box No. 4194, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: Hammarlund HQ-170 receiver, with two-metre converter powered by Rx, with handbook, £90 o.n.o.?—G3PJB, 8A Chalsey Road, Brockley, London, S.E.4.

EXCHANGE: T.W. two-metre nuvistor converter, little used, IF 24.26 mc tunable, for complete and unmodified LM frequency meter. (North-West area).—Box No. 4193, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED: K.W. Vanguard, late model, factory wired, must be immaculate and include 160-metre modification. Condition, price, etc., to.—G2BNF, 23 Cecilia Road, Blackburn, Lancs.

WANTED: R.C.A. AR-8516L receiver. **SALE:** R.216 with matching power unit, as new, £50; also AR88D, overhauled and realigned, immaculate, £47 10s. (London area).—Box No. 4195, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: Minimitter MR/II receiver, £45 o.n.o.?—G. Bance, 126 White Hart Lane, Tottenham (3951), London, N.17.

SELLING: AR88D receiver, with 10in. speaker and manual, £42. R.1392 receiver, tunable 100-150 mc, with matching power unit, £6.—Reveley, 51 Townson Avenue, Northolt, Greenford, Middlesex.

WANTED: KW-77 receiver; would consider HA-350.

SALE: Valve voltmeter, Model V7A, practically unused, £9 10s. Books: "Transistor Inverters and Converters" (Hiffe), cost 42s., unmarked, 20s.; "Trouble-Shooting with The Oscilloscope," new, 10s. 6d.—Thompson, 134 Royal Oak Road, Manchester, 23. (Tel. Wythenshawe 2897.)

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SALE: Marconi CR-300 receiver, covering 15 kc to 25 mc, with PSU; front resprayed; needs slight realignment; £16, carriage paid.—G3RJV, 18 Abbey Drive West, Grimsby, Lincs.

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WANTED: Battery or Transistor portable, with shipping band. Zenith preferred.—Box No. 4196, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SELLING: Sphinx Transmitter, £57 10s. Heathkit RG-1 receiver, mint, factory built, £30.—43 Mount Road, Penn, Wolverhampton, Staffs. (Tel. Wolverhampton 36063, not after 7.30 p.m.)

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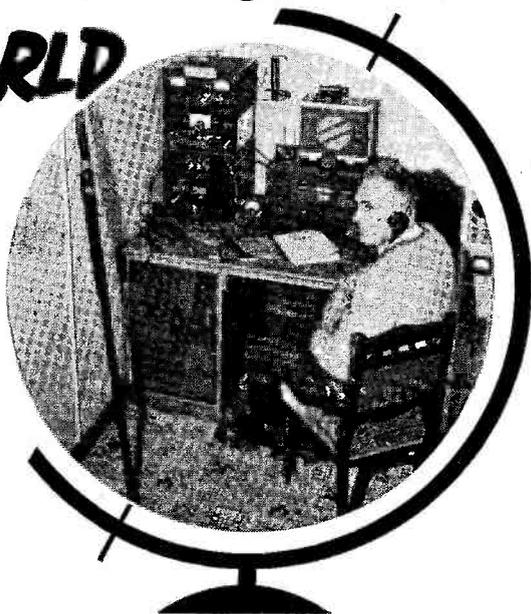
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