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COMMUNICATION RECEIVER


LAFAYETTE MODEL HA-500 SSB/AM/CW

COMMUNICATION RECEIVER

J. B. LOWE
51 Wellington Street, Matlock, Derbyshire
Tel.: Matlock 2817 (2430 after 6)

HAPPY NEW YEAR

Sorry, lads, no pretty pictures this month as I've got to make room for a whole load of stuff I want to flog.

First of all, a word on devaluation—I'm afraid it is bound to increase prices on the vast majority of the stuff I flog. Sorry and all that, but it can't be helped. As anyone with a slide rule can tell you, a devaluation of 14% does not mean that the import price goes up 14%. No sirree! It goes up darn nearly 17%! If you don't believe me, figure it out!!

Still, there's one good thing about devaluation—it gives British industry a better chance. Let's hope to goodness they take it and stop messing about. Damnit, after all I am reasonably patriotic—I don't like having my shelves full of imported gear—I'd much rather sell British. If Management smarten up and Labour does a little work, the whole world would be selling British. Then you'd all be stinking rich like Bill Lowe!

Who does this Bill Lowe think he is? Of course, if he'd be on their way.

By the time you read this I should have deliveries of the Rx (probably sold 'em all, too!) and the Tx and transceiver should be on their way. I'm going to go hog wild on advertising—

NEW STUFF:
You known darn' well that I have a very wide selection of new stuff. Rx's, Tx's, test gear and bits and bobs, so I won't waste space pushing it. I would, however, mention the new Somerkamp equipment:

FR-500: A new Rx similar in design to the FR-100-B, but with the following additional features: (1) Top band. (2) 500 cycle mechanical

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- Tapped 110, 120, 200, 250—325-0-325 200mA 5v. at 3A, 30/-
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- 105-250—250-0-250 120mA, 0-4-5 at 2.5A, 0-4-6.3 at 5A, 30/-
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- 240—250-0-250, 5v. 6.3v., 20/-
- 220—0-1860 at 4mA (5Kv. insulation), 20/-
- 105-250—325-0-325 at 10mA, 6-3 at 6A, 6.3 at 3A, 15/-
- 200-250 5Kv.-0-5Kv. at 120mA, £10
- 220-250—400-0-400 at 400mA, 80-0-80 at 10mA, 63-0-63 at 6A, 6.6 10s.

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- NEW: Tubular trimmers either 1-3pF or 2-15pF, 1/- each, 10/- a doz.; Feedthroughs—1000pF new type, 1/- each, 10/- a doz.; Disc ceramics—0.001, 0.004 a doz.; 0.01, 0.05 a doz.; Standard coax sockets, 1/- each; Standard coax plugs, 1/- each; PL-259 plugs, 5/- each; Alligator clips, 6d. each; Plugs (Octal, B76, B94), 2/6 each; 2p and 3pF ceramics, 3d. each, 2/6 a doz.; Electrolytics—brand new, 100mF from 2d. each. Again I can make up a very useful lot of 200 for 25/-. Mica trimmers 1000pF, 1/-; 2.800pF solid dielectric variables—ideal top band loadings. I'll, Oil filled 8mF at 750v. D.C., 2/-. Pots—50ohms to 1meg. 6d. each. I can make up a useful bunch of 25 for 10/-.
- 150mF from 2ad. each. Again I can make up a very useful lot of 200 for 25/-. Mica trimmers 1000pF, 1/-; 2.800pF solid dielectric variables—ideal top band loadings. I'll, Oil filled 8mF at 750v. D.C., 2/-. Pots—50ohms to 1meg. 6d. each. I can make up a useful bunch of 25 for 10/-. The guts of the 19 set variometer, 5/- post free.

- SPECIAL OFFER:
- In order to clear up stocks of stuff which I can't advertise (because I haven't many of each and if I did advertise, they'd soon go and I'd spend the rest of the month returning cheques, P.O.'s, etc., with a letter of apology!) I can send you a very sound junk box if you'll send me £1. A mixed bunch of resistors, capacitors, trimmers, pots, etc., carriage paid, which I guarantee to be good value. I can promise that they won't be the usual horrible surplus. Usually these bargain offers involve chucking 90% of it away but in this case you'll only chuck 89% away! Seriously—a good buy.

- Service Department: Sorry, lads, we're full up for the present.

- Postage: Expenses where items are marked "carriage paid," postage is extra. Please remember the days of the penny black are over and something weighing 2lbs. 1 oz. costs 4/6. Don't be frightened of too much, I'll return any excess.

- A s.a.e. will get you my latest blurb.

H.P. certainly. The Credit Co., have such long faces as they count their devalued millions. 'Tis heart-breaking, Jim lad!

Jan., 1968

The Bandit.
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AUTHORS’ MSS

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NOW AVAILABLE FOR THE FIRST TIME IN GREAT BRITAIN

TWO NEW TRIO COMMUNICATIONS RECEIVERS

These receivers offer the Ham enthusiast high quality and the latest design developments at a realistic price.

MODEL JR-500SE

This high performance receiver is made especially to cover the amateur bands and utilises a crystal controlled double heterodyne circuit for extra sensitivity and stability. Brief spec.: Covers all the amateur bands in 7 separate ranges between 3.5 and 29.7 Mc/s. Circuit uses 7 valves, 2 transistors and 5 diodes plus B crystals ; output 8 and 500 ohm and 500 ohm phone jack. Special features: Crystal controlled oscillator, Variable BFO, VFO, AWC, ANL, 5 meter, 55B-CW, Stand-by switch, special double gear dial drive with direct reading down to 1 kHz. Remote control socket for connection to a transmitter. Audio output 1 watt. For use on 115/250 V A.C. Mains. Superb modern styling and control layout—finished in dark grey. Cabinet size 7 x 13 x 10 in. Weight 18 lbs. Fully guaranteed, comp. with instruction manual and service data.


MODEL 9R-59DE

Brief spec.: 4 band receiver covering 550 Kc/s to 30 Mc/s. continuous and electrical band spread on 10, 15, 20, 40 and 80 metres. 8 valve plus 7 diode circuit. 4/8 ohm output and phone jack. Special features: SS8-CW, ANL, VFO, 5 meter, Sep, band spread dial, IF frequency 455 Kc/s, audio output 1-5 W. Variable RF and AF gain controls. For use on 115/250 V A.C. Mains. Beautifully designed control layout finished in light grey with dark grey case, size : 7 x 15 x 10 in. Variable RF and AF gain controls. For use on 115/250 V A.C. Mains. Beautifully designed control layout finished in light grey with dark grey case, size : 7 x 15 x 10 in. Weight 19 lbs. Fully guaranteed, comp. with instruction manual and service data.


FAMOUS ARMY SHORT-WAVE TRANSRECEIVER MK.III

This set is made up of three separate units (1) a two valve amplifier using a 6V6 output valve; (2) (some only, but built in the very latest models) a V.H.F. transceiver covering 225-245 Mc/s, using 4 valves; (3) the main shortwave transmitter/receiver covering, in two switched bands, 20 Mc/s-40 Mc/s., and 40 Mc/s-80 Mc/s. (approx. 600-900 metres) using 9 valves. For R.T., C.W. and M.C.W. The receiver is superheterodyne having 1 R.F., stage, frequency changer, 2 I.F. (465 Kc/s.) signal detectors, A.V.C. and output stage. A B.F.O. included for C.W. or single side-band reception. T.X. output valve 807 other valves octal bases. Many extras, e.g. nesting switch, quick flick dial settings, squelch, etc. Power requirements L.T. 12 volts, H.T. receiver 275 volts D.C., H.T. transmitter 500 volts D.C., size approx. 71 x 7 x 11 ins. Every set supplied in new or as new condition in carton with book including circuits, only £4 10s. Od., or Grade 2 slightly used £3.50, carriage both 15s.

A KIT of brand new attachments for this set including all connectors, control box, head-phones and mike, co-axial lead, etc. at only 40s., carriage £1 20 VOLT D.C. power unit with all connectors to set and battery, 30s., carriage 5s. WE MAKE A MAINS 200/250 VOLT POWER UNIT IN louvered metal case to plug direct into set power socket to run (1) receiver, 70s., post 8s.; (2) TX and RX, £6 10s. Od., post 7s. Od. A charge of 10s. to unpack and test the receiver of these sets is made only if requested.

JOHN'S RADIO

(V.H.F. TRANSRECEIVER MK.1/1

This is a modern self contained tunable V.H.F. low powered frequency modulated transceiver for R.T. communication up to 8-10 miles. Made for the Ministry of Supply at an extremely high cost by well known British makers, using 15 midget B.G. 7 valves, receiver incorporating R.F. amplifier, Double superhet and A.F.C. Slow motion tuning with the dial calibrated in 41 channels each 200 Kc/s. apart. The frequency covered is 39 Mc/s-48 Mc/s. Also has built-in crystal calibrator which gives inputs to coincide with marks on the tuning dial. Power required L.T. 4 volts, H.T. 150 volts, tapped at 50 volts for receiver. Every set supplied complete with valves and crystals. New in carton, complete with adjustable whip aerial and circuits. Price £4 10s. Od., carriage 10s. Headset or hand telephone 30s.

JOHN'S RADIO

(Dept. F)

OLD CO-OP, WOODHALL ROAD,

DRIGHINGTON, BRADFORD

Telephone: DRIGHINGTON 722

FEW ONLY LEFT

WALKIE-TALKIE MK III and CRYSTAL CALIBRATOR No. 9

This set is housed in a waterproof duraluminium case made by Murphy Radio for the Govt. having only reliability and quality in mind. Range 7-3-9 Mc/s, also on side of set is crystal calibrator No. 9 which gives plus on marks provided on the tuning dial. Set uses a total of 5 valves ; power required L.T. 4 volts D.C., H.T. 100-175 volts D.C. Sets supplied in NEW or as new condition, boxed, only 37/6, carriage 7/6.
To All Our Readers, a Very Happy New Year, with Prosperity and Good Health in 1968

It is again the season for Sound Advice and Good Resolutions—and it hardly needs saying here that in our world of Amateur Radio much useful advice could be given and a long list of excellent resolutions could be catalogued.

It is widely held that nowadays radio amateurs use more commercial equipment than gear they design and build themselves. Certainly, whereas 30 years ago it was essential to home-construct much of one’s apparatus, today there is no need to build anything at all—it can all be bought off the shelf, ready to go on the air. There is nothing wrong with this; indeed in many ways it is a very good thing that such an approach to Amateur Radio is possible.

But as always, amateurs will remain individualists who pursue a great hobby as the spirit moves them—they are not really much concerned about what others may be doing, thinking or building.

So instead of offering advice for the New Year to those who may glance over this page, we would simply say that we wish all our readers, all over the world, the best of luck, happiness and good fortune for the coming year, and success in whatever direction their amateur activities may lead them.

WORLD-WIDE COMMUNICATION
AN HF BAND TRANSVERTER

CIRCUIT DESIGN—
AND A PRACTICAL EXAMPLE

B. A. WATLING (G3RLN)

Our well-known contributor now offers a solution to the familiar problem of working SSB on other bands when an existing Sideband transmitter or transceiver only gives restricted coverage. The principle of signal mixing at the proper frequencies to get SSB output on some different band or bands is well enough known—but there can be design difficulties if the amateur constructor is starting from scratch. All these are ironed out in the G3RNL HF-Band Transverter described and illustrated here.

—Editor.

STATIONS running commercial or even home-built rigs with only limited band coverage soon get to the stage of wondering how best to get going on the other bands. With improving conditions on the HF bands, 10-15 metres appear as a very attractive proposition. The PA valve in the transverter is the same as that in the transceiver. When switched to “Thro,” the transceiver can be left permanently connected to the aerial. If the oscillator injection were to be to the cathode of this mixer, then a positive feedback loop would occur on “transmit.”

Circuit Details

The transverter to be described was built specifically for use with the transceiver at G3LAT, which gives three bands—160, 80 and 20 metres. The other three bands, 10-15-40m., are provided by the transverter. The size of the unit was designed to fit the available components, but with a little careful shopping round for certain items and lowering the PA valve through the chassis, the height could be reduced and made compatible in appearance with an existing transceiver. The PA valve in the transverter is the same as that in the transceiver, a 6146 in this case. This enabled the existing PSU, which had some capacity in hand, to be used. If the power supply is already running at or near its limit then, of course, a separate power supply for the transverter will have to be provided. The power requirements, using a 6146 in the PA, are: +750v. at 120 mA peak, +250v. at 40 mA, +210v. stabilised at 15mA, -100v. at 15 mA and 6.3v. AC at 3 amps.

Circuit Plan

Fig. 1 is a block diagram of the transverter. V1, a 12AT7, operates as the conversion unit on the “transmit” side and is a simple balanced mixer. The transverter to be described was built specifically for use with the transceiver at G3LAT, which gives three bands—160, 80 and 20 metres. The other three bands, 10-15-40m., are provided by the transverter. The size of the unit was designed to fit the available components, but with a little careful shopping round for certain items and lowering the PA valve through the chassis, the height could be reduced and made compatible in appearance with an existing transceiver. The PA valve in the transverter is the same as that in the transceiver, a 6146 in this case. This enabled the existing PSU, which had some capacity in hand, to be used. If the power supply is already running at or near its limit then, of course, a separate power supply for the transverter will have to be provided. The power requirements, using a 6146 in the PA, are: +750v. at 120 mA peak, +250v. at 40 mA, +210v. stabilised at 15mA, -100v. at 15 mA and 6.3v. AC at 3 amps.

The first alternative is a problem because of the cost, while the second of an all-band rig, or constructing a small transmitter or receiver mixer. This will not only mix the transmitter output to the other bands, but also act as a crystal controlled front-end converter only gives restricted coverage. The principle of signal mixing at the proper frequencies to get SSB output on some different band or bands is well enough known—but there can be design difficulties if the amateur constructor is starting from scratch. All these are ironed out in the G3RNL HF-Band Transverter described and illustrated here.

General Considerations

The transmitter mixer, VI of Fig. 2, is a simple balanced mixer that requires no adjustment. The incoming signal appears on the cathode of the first half of the triode and is coupled via C2 to the grid of the second triode. The two anodes are strapped together so that the components of the incoming 80-metre signal appearing at these anodes cancel (due to the fact that they are in phase opposition). The incoming signal is mixed with the output of the conversion oscillator (V4). This signal appears on the grid of the first triode of V1. The incoming 80m. drive must be of low level to prevent overloading of the mixer and is, therefore, coupled to the cathode of the mixer via C1, while R1 is selected to match the output impedance of the transceiver (50-ohm or 75-ohm). The drive requirement is only a matter of 2-3 watts maximum. Any more will drive the mixer towards cut-off and, therefore, reduce the output and would, of course, produce a very distorted output. If any difficulty is experienced in reducing the output of the transceiver to a suitably low level then C1 can be cut down to just a few pico-farads. This means, however, that the resistor R1 will need to have an increased power rating to soak up the unwanted output of the transceiver. In the prototype, however (using an M. & G. transceiver) the drive could be reduced to manageable proportions. If, on other types, it is found that the only way the drive can be reduced is by turning down the transmitted audio gain, then this will not be very satisfactory—because if only the audio is reduced...
the "suppressed" carrier stays at the same level; this means that the ratio of carrier to peak output will be such that the output from the transverter will be approaching AM! If there is no gain control in one of the RF stages of the transceiver the only answer is to use a small coupling capacitor for C1 so that the audio gain on the transceiver can be kept at a reasonable level.

The driver stage is conventional Class-A with the cathode switched on change-over to the relevant potentiometer. These provide "Transmit" and "Receive" gain facilities. The PA, in Class-ABI has pi-tank output coupling and is neutralised by NC. In the prototype NC needed only to be a matter of a few pico-farads. It can be made up by two pieces of substantial insulated wire, about 2 inches long, twisted together. If this does not provide enough capacity for neutralising then the driver tuned circuit decoupling capacitor (C14) can be reduced to as little as 300 µF.

Coil Points

In order to simplify the switching the anode coils of the transmitter mixer (VI) are arranged such that the 40-metre coil is in circuit all the time and the other coils are switched to be in parallel. This allows the aerial input to be permanently wired to the link on the 40-metre coil with no switching required.

In the prototype, switched coils were used as the conversion oscillator anode load. This was found most convenient due to the large frequency differences involved. If only 15 and 10 metres be required (as would be the case if used with an NCX-3) then only one coil would be needed as the anode load, with condensers switched across to change its resonant frequency. New wire-ended crystals were used in the prototype. However, surplus FT-243 crystal should prove satisfactory. For 40-metre operation a 3.3 mc fundamental crystal was used, while for 10-15 metres the second harmonic of a
12.5 mc crystal and the fourth harmonic of crystals around 8 mc respectively were selected.

Layout

Construction of the prototype was on a four-sided chassis measuring 10in. by 7in. by 3in. deep. The front panel is 10in. by 7/4in. Each stage in the prototype was screened, but this amount of screening probably was not necessary. The valve layout, as seen in the illustrations is, from the front panel, crystal oscillator V4, driver V2, transmitter mixer V1. To right of these is the receiver mixer V5 and to the left is the PA compartment including V3 and the pi-tank coil and PA tuning capacitor. The change-over relay is mounted under the chassis near the receiver mixer V5 and the Mix/Thro switch.

Operation

With the Mix/Thro switch set to "Mix," the "Peak" control should first be peaked up on a received signal. This will set it near enough for transmission. On "transmit" a small amount of carrier can be inserted to give a slight rise in cathode current above the no-signal level (25 mA). The peak control can now be set for maximum reading on the cathode current meter. With about 50 mA indicated, the PA tune should be adjusted for maximum output (or dip if the PA is neutralised correctly). The carrier can now be increased until the point is reached where further carrier does not increase the cathode current. The PA should then be loaded for a maximum cathode current of 135 mA. The tune-up procedure must be done fairly quickly to prevent

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<tr>
<td>C24, C29</td>
<td>-</td>
</tr>
<tr>
<td>C26, C29</td>
<td>47 µµF</td>
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<tr>
<td>C5, C10</td>
<td>300 µµF</td>
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<tr>
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<tr>
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</tr>
<tr>
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Table of Coil Data

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<td>L1, L4</td>
<td>Denco Range 4 &quot;blue&quot;</td>
</tr>
<tr>
<td>L2, L3, L5, L6, L10, L11, L12, L13</td>
<td>Denco Range 5 &quot;blue&quot;</td>
</tr>
<tr>
<td>L7</td>
<td>Six turns 20g. wound on R12</td>
</tr>
<tr>
<td>L8</td>
<td>21 turns 18g., one-inch diam., tapped at 5t. and 7t. from VC2 end.</td>
</tr>
<tr>
<td>L9, L14</td>
<td>Denco Range 3 &quot;blue&quot;</td>
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Fig. 2A. "TRANSMIT" path circuit diagram—and see below.

Fig. 2(B). The "receive" path and CO circuit for the G3RNL transverter. Points (a), (b), (c), etc. inter-connect with Fig. 2(A). Note that the unmarked resistor between C28 and R21 is R17.
exceeding the anode dissipation of the PA for too long. It is advised that full input only be used for about 2-3 seconds at a time. On voice modulation the cathode current should peak up to only half that indicated with full carrier.

**Alternative Arrangements**

In the case where a separate transmitter and receiver are used this same transverter can be employed. The 80-metre band on the receiver then becomes a tunable IF. No modifications are required to the unit for this form of operation. The aerial input to the transmitter, having its own aerial change-over facilities, should be connected to the input socket of the transverter. If only a transmitter-converter is required then V5 can be left out of the circuit altogether and the aerial change-over switching altered so that the aerial is switched to the transverter input socket on "receive."

If different bands are required, e.g. 20 metres, as may be the case if an HW-12 transceiver were used, then the conversion oscillator frequency must be 18 mc. This can be accommodated using a 9 mc crystal and doubling.

The conversion oscillator frequencies chosen for the transverter give full band coverage only if the original rig covers the full 500 kc of 3.5 mc to 4.0 mc. The dial readings relative to the 80-metre calibrations will then be as shown in Fig. 3.

**Alignment**

The following alignment procedure is intended as a guide to getting the transverter into a working state following its construction. The transceiver should first be set up on 80 metres and the PA tuned and loaded into a dummy load (or the aerial) before commencing the transverter alignment. The initial alignment can be done on any of the bands covered by the transmitter and screen supplies disconnected. Ensure that the crystal oscillator (V4) is oscillating and then peak the anode load coils to resonate at the desired harmonic frequency. Resonate V1 and V2 and V5 (if used) anode loads on "receive" with the peak control set to mid position.

Adjust PA bias control for -50v. on the wiper with the equipment in the "transmit" position. Turn Tx gain fully up and insert carrier on the transceiver to a few watts driving the transverter. Monitor the output of the transverter and tune PA (with no HT on screen or anode) for maximum output. Adjust NC for minimum ensuring that PA is tuned for maximum output each time NC is adjusted. When complete connect PA supplies and equipment is ready to operate. Slight adjustment of the coils may be found necessary on transmit to ensure maximum drive.

**Conclusions**

One final thought on the subject of transverters is that the arrangement shown could be utilised to provide 160-metre operation, preferably mixing from 7 mc. This may be of interest to owners of transceivers covering 80 metres to 10 metres only. Conversion from 7 mc requires a conversion oscillator frequency of 5.2 mc. Another possibility is a transverter for 2-metre operation, mixing from either 20 metres or 10 metres. This would necessitate a slightly different arrangement than that used in the G3RNL HF band transverter, but it can be done. One does hear, on the air, several views on the dissipating or wasting of power into a dummy load when using a transverter. The author’s view on this is that if it is necessary—as in the case of rigs with only an audio gain control—it can still be more convenient, and cheaper, than building a separate SSB rig for the required bands!
USEFUL DOUBLE-HT PSU CIRCUIT

GIVING TWO DC VOLTAGES FROM ONE TRANSFORMER

There is a sufficiency of cheap rectifier valves and multi-wound HT transformers still available to make the circuit shown here an attractive proposition for an HT/PSU giving two output voltages.

The arrangement shown in Fig. 1 is somewhat unusual in that one set of rectifier valves and one HT transformer are connected to provide two DC voltages, one of which is twice the value of the other.

It is evident that this circuit offers certain advantages over the conventional HT power pack arrangement, as regards both initial cost and component space required. The rectifiers are not equally loaded, but by using U19’s this is no disadvantage, since the maximum rating for four U19’s, in this type of circuit, is 500 mA at 4000v. DC.

Operation of the circuit is shown more clearly in Fig. 2. Two of the U19’s and the components dotted in take no part in supplying the low voltage HT so that the arrangement resolves itself into a two-valve full-wave connection with the rectifiers inverted. The HV side utilises the four U19’s but Ch. 2, Ch. 3, C5-C6 and C7-C8 (which are series connected condensers) take no part in the operation of supplying the high-voltage HT.

For C1, C2, C3 and C5-C6 with C7-C8, series-connected electrolytic condensers are recommended. With proper choice of values, the necessary working capacities are easily achieved. On the LV side, the input choke Ch. 2 must not be omitted.

Operating Notes

In a Sideband amplifier, for which this particular power pack was designed, a very large variation of anode current is called for as the drive (input) signal changes. The swing may be anything from 50 to 300 mA.

Since the internal impedance of the power unit produces some interaction between the 1000v. and 500v. supplies (in the circuit of Fig. 1) a sudden demand for maximum current would cause a reaction on the 500v. output if conventional condenser capacities were used for C1, C2, C3. The solution is to use three 450v. working 160 µF condensers in series, to give an effective 50-60 µF at 1350v. working. Resistors R1, R2, R3

Table of Values

Circuits of Fig. 1, Fig. 2 and Fig. 3

<table>
<thead>
<tr>
<th>Component</th>
<th>Value</th>
<th>Notes</th>
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<tr>
<td>C1, C2, C3, C5, C7, C8</td>
<td>160 µF, 450v. working</td>
<td>electrolytic condensers recommended</td>
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<tr>
<td>C4 = 0.1 µF, 1500v.</td>
<td>working, paper</td>
<td>rated for voltage used</td>
</tr>
<tr>
<td>C9 = 0.1 µF, rated for voltage used</td>
<td>100,000 ohms, 1-watt</td>
<td>Condenser capacities used for C1, C2, C3, C5-C6, C7-C8</td>
</tr>
</tbody>
</table>

Note: Chokes Ch.1-Ch.6 can be 5-20 Hy swinging type, rated for maximum required current.

Fig. 1. HT supply circuit for two-voltage output.
Fig. 2. Showing how the two circuits operate, as explained in the text.

Fig. 3. Using three full-wave rectifiers to give two voltage outputs at different loadings.

across these condensers equalise the applied voltage. C5-C6 and C7-C8 are similar condensers.

Another circuit developed from the arrangement of Fig. 1 is shown in Fig. 3. In this, three bi-phase rectifiers are used. If the HV and LV DC outputs are similar, each valve is equally loaded. In this circuit, three U52's would provide 250 mA at the two voltages given by the single HT transformer, the rating of which must be equal to the total current load at the maximum required voltage.

GOING SIDEBAND ON VHF

HOW TO DO IT USING AN HF SSB RIG — CHOOSING THE CONVERSION FREQUENCY — ADAPTING EXISTING VHF EQUIPMENT — SUITABLE LINEAR AMPLIFIER FOR FINAL OUTPUT

T. P. DOUGLAS (G3BA)

Our contributor is already well enough known on VHF to make this an authoritative discussion on how to set about going SSB on the megacycle bands. What it comes to is that anyone already possessing an HF Sideband transmitter and equipment for VHF can marry them up to appear as a potent SSB signal on two metres. In explaining the basic theory—and the operating advantages of SSB on the VHF bands—he gives the necessary practical information for conversion to Sideband using the transverter technique.

—Editor.

When we look at the VHF spectrum, however, almost the reverse situation prevails and over 90 per cent of Phone QSO's in this country are still conducted on AM. This mode, and NBFM, may be quite satisfactory on bands which are megacycles wide and where interference is relatively uncommon, but many a contact is never achieved due to the archaic operating methods which are still practiced on VHF generally. The technique of crystal-controlled fixed frequency operation and the inevitable "tuning the whole band for a call" is universally the method employed, though old timers will recall that on the lower frequencies this sort of thing went out way back in the thirties. It is quite amazing that VHF operators persist with these old methods and are apparently quite prepared to lose QSO's through the eternal searching over what amounts to some 200 channels on four metres, 660 channels on two metres and Heaven how many on 70 cm! However, quite a few VHF men have seen the light and are no longer prepared to put up with the methods of bygone days and who wish to conduct their contacts with the modes now usual on the HF bands and with the same facilities and methods of listening and calling as on, say, 80 or 20 metres. On the Continent the swing over to SSB on two metres is particularly marked, but in this country we are still dragging our feet and jogging along.

A SCAN over the Amateur Bands from 160 to 10 metres shows quite clearly that for Phone operation SSB has now many more adherents than AM and it must be a foregone conclusion that this mode will eventually oust all AM whether we like it or not. The advantages of SSB are now too well known to require repeating here. The plain truth of the situation is that it is almost a necessity to work SSB in order to make Phone QSO's in sufficient numbers. It is also evident that most DX expeditions use SSB for much of their working, with CW only as a second best for the really weak and difficult stuff.
with cries of "there is no activity" or "only some of these SSBO types quacking away."

VHF at the best of times is an area of endeavour where a "piece of string" and a couple of watts never really bring in dozens of QSO's. Beam aerials and quite good equipment are required to beat poor signal-to-noise over the longer distances. How often have we had to struggle to identify some weak carrier with low mod. whereas had the station been using CW or SSB it would have been quite easy. The long-distance skeds operated on both 4m. and 2m. have shown the difference when using SSB compared with AM. Recent Continental openings have been a give-away for the SSB group over here as they only had to tunes over a few channels at the most and immediate contacts were gained by net-frequency operation, Vox or p-t-t control, and all with much less QRM than had the stations been on AM. True, the AM people had their fun, but it was so much harder having to wait your turn whilst the DX started at one end of the band and worked its way up to your crystal frequency! What was really startling about the November opening, however, was the number of EU stations which were now using Sideband. The SSB channels were just full of stations, many of them G, but mostly DL's or PA0's. Comments on the air afterwards were generally to the effect that "you SSB boys certainly had a ball" or "it was all right for you SSB chaps, we had to wait our turn." The old adage of "if you cannot beat them, join them" seems to fit here, and it was with this in mind that set out here are one or two practical ideas, to show that VHF SSB is really very easy—and in many cases can be achieved by just a simple modification to existing gear which is perhaps not being used to its fullest capabilities.

For the doubters or those who imagine that going on VHF SSB is a "difficult thing" and requires lots of wasted time spent on building equipment, let it be said that it is quite simple. Apart from the fact that there are one or two excellent Transverters on the market which will give instant results without pain or strain, this article is really aimed at the man who wants to do something on his own.

Transverter Principles

Most amateurs are aware of the fact that in a multiband SSB transmitter the sideband is developed at a relatively low frequency and this is then mixed with some crystal controlled RF source to produce the required. To extend this to VHF is, in essence, exactly the same. So we can see that a transverter is not some complicated thing, but just another mixer stage with a few variations.

If we take for example a frequency of 117 mc and mix it with 28 mc in a frequency converter, we can obtain 145 mc by just adding the two frequencies. (Fig. 1.) To be more specific, if the 28 mc is actually 28.41 mc and the drive is exactly 117 mc, we get 145.41 mc at the converter output.

If the 28.41 mc is a USB signal then this will produce a small SSB drive, also on upper sideband, on 145.41 mc.

Now, the internationally agreed Sideband frequency sector on two metres is centred on 145.41 mc—so that in principle getting on 2-metre SSB is fundamentally straightforward. Obviously, there is much more to it than just getting a 117 mc crystal and beating it up with some 28 mc SSB, but let's not get frustrated with complications, and see how we can expand on the principle.
Producing the Conversion Frequency

An actual crystal of 117 mc is not easy to obtain at present and in any case it is most unlikely that it would be capable of providing much power output with any real degree of stability. HC6/U crystals of 39 mc are available and these could be tripled to 117 mc, but this is not to be recommended as the HC6/U types, while being ideal in transistor circuits, abhor having a lot of power taken out of them or having their working state disturbed in any way by switching surges or the like. The FT-243 crystal of 6,500 kc operated in third overtone is hard to beat for ruggedness and will function very well indeed provided it is clean and undamaged. This then means that we have to generate 19.5 mc first of all and this can best be done in the triode section of a 6U8/ECF82—See Fig. 2. The pentode can then double the 19.5 mc to 39 mc or triple it to 58.5 mc; it is preferable to do the latter except possibly in Ch. 4 TV areas of very low field strength when the doubler would be advisable for obvious reasons. Next, to get the 117 mc out—this can probably be achieved by using an E180F as a frequency doubler (or tripler) and there will be ample drive for what we want. Two valves total for the Conversion Frequency stage and that is all there is for this section. (Fig. 2, p.685.)

After the Mixer

Having got our 2-metre SSB drive in the right sense, i.e., USB, the power at this stage is not more than about a watt or two p.e.p. output, thus amplification is called for in the usual way to boost it up to whatever power is desired. It is good practice to follow a mixer with a buffer in Class-A and a suitable valve for this is the QQV03-10 which, incidentally, is the type recommended for use as the balanced mixer. The final output stage could well be a QQV06/40A or similar, and this will take a good 120 watts input to produce 70 watts p.e.p. output, RF.

The circuit diagrams herewith should be fairly self-explanatory and need not be gone over in detail. If we take a look at the block diagram Fig. 1 of what stages we have in the transverter and compare them with those in any low-power transmitter used with crystal control on either 2 or 4 metres, it will be seen that both are well-nigh identical in arrangement. What this really means is that if you already have a QRP transmitter available, here you have the transverter all made up and ready to go after only a few minutes’ work with a soldering iron and some resistors and condensers! The reasoning is layout because the 117 mc could be so well attenuated that it could not possibly appear at the mixer anode. True enough, but it is not very difficult to use selective circuits to do this if need be, so let us look a little closer at the mixer circuit before making the final decision. If we have the grids and anodes in push-pull, then any frequency presented to the grids at any reasonable power level will become multiplied in the anode and passed on to subsequent stages. With a comparatively low frequency, such as 28-30 mc, as the SSB source it is not difficult to see that the 5th harmonic of 28 mc is 140 mc and of 30 mc is 150 mc—so that whichever frequency we use as SSB drive will come out either in or near the band as a horrid-sounding spurious of enormous proportions! But if we do things the other way round then all of the output frequencies from the SSB exciter will be suppressed in the mixer and the aforementioned tuned circuits will take more than adequate care of the 117 mc component as it goes through the subsequent stages. So recapping again: The 117 mc is push-pull connected on the balanced mixer grids, the 28.41 mc SSB drive is applied to the grid (or cathode) in parallel and the sum product is taken from the anode in push-pull. (Fig. 3.)
thus: The usual VHF transmitter has a crystal oscillator/multiplier chain which is adequate to drive its power amplifier into enough grid current for Class-C operation. Compare it with the conversion frequency chain on the Transverter—surprise! It's the same (give or take small changes in circuit arrangement) so cunningly we throw away the 8 mc xtal for two metres and pop in the 6-5 mc FT-243 crystal already mentioned and tune it all up on 117 mc instead of 145 mc. This should be easy enough, as this frequency is lower than before, so circuits only need a bit more C to resonate.

Now look at the input of the QQQV03-10 or 832 or what-have-you in your old first amplifier—yes, it's in push-pull too! It only needs to be peaked on 117 mc and we are nearly on the band! Where's the SSB fed in? Well, that is where the soldering iron comes in. You will most likely find that the cathode circuit of what was your buffer or PA was grounded to earth by a strap or wire. Unsolder this lead and pop in a bias resistor (1K, 2w.) with a .005 μF by-pass capacitor across it and then connect the earthy ends of these two components down to ground via an unby-passed 50 to 70 ohm non-inductive resistor of 2w. rating. Put about one watt p.e.p. RF at 28-41 mc across this small resistor and you can take off about 2 watts or so p.e.p. from the anode to the mixer input. If you have a following amplifier stage this is sheer bliss, as all you have to do is to fix its potentials for Class-AB1 operation and you are ready to go on the air. If you have not got an RF amplifier, you will have to make one up to the circuit in the sketch for this stage. (Fig. 6, p.688.)

What has been said for two metres goes also for four metres. There is as yet no fixed SSB channel on the 70 mc band but most SSB adherents are on 70-35 mc or slightly lower. Crystal frequencies for the 4-metre band can be worked out, taking 14 mc from the SSB exciter.

Some operators will be asking whether 14 mc could be used likewise for the 2-metre rig. Though the answer is Yes, there is a warning to be heeded—take the two-metre SSB output from the mixer into a buffer first of all and then via a tuned circuit inductively coupled to the linear grids to give sufficient tuning selectivity to ensure that the 131 mc component is eliminated from the transmitter output. In fact, it is good practice to put this simple tuned filter circuit into any SSB rig, as it deals very effectively with out-of-band spurious radiations, without complication.

**SSB Driving Requirements**

It may have been noted that only one watt of SSB excitation is needed for the mixer circuit described. But most SSB exciter have power outputs of 50 or 100 watts RF peak and this has to be attenuated in some way. You could take off a low-power drive from an early stage of the HF transmitter, but this may be inconvenient. By far the easiest way is to feed the HF Sideband Tx into its dummy load and run it as it was designed to work in the first place. This ensures that the signal out to suppressed carrier ratio is correct and that all transmitter noise is in the right proportion to the SSB output. Attenuate the voltage developed across the load down to the 7 volts peak or so required by a simple series capacitor variable from 5-100 μF connected from the hot end of the load to the inner conductor of the coaxial cable which terminates on the 75- or 50-ohm unby-passed resistor in the mixer cathode.

**Setting up the Mixer**

It is necessary to set up the mixer in order to get it working cleanly and well within its capabilities. To do this we must measure the anode current of the mixer valve. If the crystal oscillator drive on 117 mc is cut and no SSB signal is being fed to the cathode, then the mixer valve will be running static. In this condition, with a 1K resistor in the cathode, the anode current with a 30v. supply rail will be about 15 mA or so. Switch on the 117 mc and drive the anode current up as high as it will go with all oscillator circuits and the mixer input tuned “on the nose.” Now slack back the coupling from the last doubler to the mixer input until the anode current drops to about 30 mA. This is the right drive condition for the conversion frequency and no further adjustment is required. Put in SSB tone to drive the cathode with one-watt SSB RF when the anode current may rise ever so slightly. Reduce the 28 mc RF a little on the attenuator control until it just tips linear, adjust for maximum drive all the way through. If the PA goes into grid current then reduce the SSB linear, adjust for maximum drive all the way through. If the PA goes into grid current then reduce the SSB drive on the attenuator control only until it just tips grid current on voice peaks. Load up the PA for a shallow anode current dip for best linearity. The text books give all the appropriate information on how linear stages are adjusted—See 1967 ARRL Handbook, or Single Sideband (ARRL.)

**Operating Conditions on VHF**

To someone who has only operated on the HF bands the conditions which prevail on VHF may be a little bewildering. Those who find VHF operation the most rewarding will be operators who are situated well
Fig. 6. Basic circuitry for typical buffer and linear amplifier stages, showing essential values.

It is only necessary to be able to call CQ over the 145.4 to 145.5 mc spectrum for SSB, as normally there will be no Sideband stations on any other channel. If four metres is the interest, then Monday evenings same time around 70-35 mc will be where to look for QSOs, although current activity is somewhat less on this band than on two metres.

Reception of SSB on VHF

Nothing has been mentioned so far about receiving SSB on VHF. Any normal 2-metre or 4-metre converter can obtain its crystal drive from a little RF taken off the transmitter converter frequency chain instead of from its local oscillator chain, and then the IF can be modified to 28 or 14 mc as required. Transceivers will use the receiver side for their "receive" input and it will then be just like working on any of the bands for which the set was originally designed.

For those who have no converter and do not wish to build one, JXK Converters offer a unit which will function with any normal transverter crystal drive, either for transceive or split-unit working.

When you get on VHF/SSB you will find the natives are really very friendly and all are keen to help any newcomer. Sideband communication is the future method for most VHF voice work and it behoves us as amateurs to be in the forefront of such progress and to demonstrate this by our operating skills and equipment.

TO BE FAIR . . .

With reference to that picture of the Racal RA.1218 on p.617 of the December issue, we ought to make it clear that the sensitivity should have been given as "one microvolt for 15 dB S/N on CW/SSB"—and the stability as "50 cycles over 8 hours." It was just in the printing the symbol \( \mu \) got misplaced.

"MOBILE FOR TOP BAND"

For his article in the December issue, G3SFV now informs us that in the legend for Fig. 2 (p.626), C1, C7 should have been shown as 220 \( \mu \)F (C6 remains as 0.01 \( \mu \)F), and the Denco coils are "blue, 3T," while in Fig. 3 terminal 8 the transformer T1 is left floating. The transistor IF strips mentioned are obtainable as advertised by A.J.H. Electronics (G8AQN), on p.591 of the November issue.

". . . Hope you can still follow—know I've got a mike somewhere . . ."
“THE BREAK-THROUGH PROBLEM”

Further to this article in the December issue of SHORT WAVE MAGAZINE, it is suggested by G5IC (Shrewsbury) that the circuit shown above would give an even better result as regards rejection of an unwanted break-through signal at the receiver IF. The aerial is tapped down the parallel tuned circuit P, and S is series tuned. By making sure that P and S are well screened (in an earthed box, as indicated), and keeping the coax lead short, it should be possible to deal with almost any interfering signal by adjustment of P, S and the Ae. tapping point, without affecting the general tuning of the receiver. What it comes to is that this is a useful and interesting experimental approach, which ought to give better results than that shown on p.641, December.

CHANGE-OVER SYSTEM FOR TWO TRANSMITTERS

At right is an arrangement suggested by G3OHK (Seaton, Cumbs.) where more than one transmitter is in use but only one aerial. The switching works very well, two wafers being used, each a single-pole three-way, with the central connection left open. The switch assembly itself should be of good quality (preferably ceramic), especially if full-power Tx's are being used. The rod through the switch wafers is made of Tufnol, or some other hard insulating material, and is carefully filed with two flats to engage with the wafers. For a tidy job, the switch-box (which need not be screened) could have coax sockets mounted on it, for the various leads.

MAST FOR VHF PORTABLE

GI8AYZ (Ballymena, Co. Antrim) describes a mast he uses for his 70-cm. beam when out /P. Three 7ft. lengths of 2in. dia. aluminium tube (sold as rain-water piping) are joined by using 15in. sleeves made by slitting pieces of the same material length-wise, opening the sleeve out a little along the slit and making a force fit of the joint, which is then secured by tightening up with Jubilee clips (the sort of screw-up clips used for car water-hose connections, and many similar purposes, obtainable in various sizes at most repair garages). The butt of the mast fits over a ground-spire driven in close beside the car, with another support at the top of the door pillar, nylon guys being taken out from the second joint. The result is a cheap, light mast, easily and quickly erected, which knocks down to short sections convenient for transport. In GI8AYZ’s case, the aerial for 70 cm. is a J-Beam “Parabeam,” which goes up to 21ft. when operating portable with the mast described.

“VHF BANDS”

For those who have written about “VHF Bands”—and made kind enquiries about A.J.D.—we had hoped before now to have been able to make an announcement regarding the re-appearance of the feature. Though it has not yet been possible to finalise arrangements we expect to be able to resume the feature very shortly.
COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

January, 1968

JANUARY is traditionally the time for the making of Good Resolutions—and of breaking them as soon as possible! However this New Year pans out—and from this point in time it looks as though it will be one stage worse than 1940—there are quite a few things where the effect of a New Year resolution, carried out over the whole year, can improve our lot in the Amateur Radio context. Improvements in equipment performance; the installation of break-in facilities; a determined attempt to ensure that the outgoing signal is above reproach; adequate split-frequency facilities for those chasing DX with a transceiver—all these can be of great for those chasing DX with a transceiver. Thus, it is particularly asked that those who have already "done the trick" will hold off and let the first-timers have a clear run, the only exception being the case where something rare and juicy which has not yet been booked in appears. In the latter case, the ploy is to get in, work him, and get off again with as little disruption of the first-timers' activities as may be.

The CQ WW Top Band Contest occurs over the weekend January 27/28, from 0001 Saturday to 1500 GMT on the Sunday—the extra three hours being to give the West Coast W's a chance. CW only is the rule, with no cross-mode or cross-band contacts allowed. Score 2 points for each station in one's own country, five points for QSO's with other countries, and 10 points for every W/VE/VO contact. A multiplier of one for every country (outside one's own) W state, or Canadian Province, is allowed, and the total score is the QSO points times the multiplier. The Contest exchange will be the usual RST plus serial number, starting at 001, and followed, for the W's, by their State or Province. Incidentally, Hawaii and Alaska will count as separate countries; and there are three Provinces prefixed VE1, and two VE8. Disqualification may be imposed for breaking the rules of the Contest, unsporting conduct, or taking credit for duplicate contacts in excess of 3 per cent. A whisper from a little bird says that there are going to be all sorts of interesting things going on—so get the logs off in good time. Mailing deadline is February 29, and they go to: CQ 160 Contest, 14 Vander- venter Avenue, Port Washington, L. I., N.Y., 11050, U.S.A.

From Cyprus, another letter from ZC4GM (R.A.F., Episkopi), who indicates that already the weather has done its worst to his aerial; however, at the time of writing, Gordon was moving into different quarters, and had hopes of the necessary copper wire to erect a 360-footer emerging from the bottom of his kit. Gordon has hard things to say about the EU QRM—haven't we all!—and their strange S9 babblings of "First QSO" and "QSL certain," while ZC4GM is working someone else. An operating point, that is rather against the usual run, is that owing to the malign intelligence of the local thunderscrambles, even an S9 signal needs to repeat each of the essential parameters of the contact—RST, name, QTH, and so on, several times if the contact is to be R5. Gordon's own opinion is that at least five times is none too many. All the operational stations in ZC4 have extremely good receivers, but the constant static, regardless of the season, is the problem.

On now to G3BDQ (St. Leonards-on-Sea), who came on with his KW2000 and AR-8516L receiver between 2300 and midnight on the evening of November 25, staying on a frequency of 1820 kc, and worked OE5XXL, HB9NL, OF2KH, DL5YZ, E191, and ZC4RB—not bad for one hour of operation!

Another one to ring the bell quite hard on 160m. was G3VPS (Hailsham), who hooked 9H1AG on his second CQ with the Panda Cub which now decorates the shack, using a 175-foot end-fed wire hooked straight in to the Tx.

G3VMW writes to bring his table entry up to date, and mentions that he has been a participant in most of the Contests; Steve moves
up to 95 Counties/19 Countries, and worked a hatful of interesting stuff in the process, including VO1FE, OF6UW, OE3PWW, HB9QA, HB9TT, HB9NL, OE5XXL, OF2KH, OE1KU, OE5KE, OE2IG, DJ6TR, DL1CF, DL0KF, DJ9U, DJ2TI, PA0PN, PA0GMU, EI9J, EISAJ and of course many OK/OF stations.

Quite a long time since last we heard from G3UJS (Snettisham) who seems to be firing on all cylinders again after his back injury. Dave has put in a good deal of time elsewhere, but his main news is that he has a thousand cards to dispose of before he leaves U.K. for Australia; so anyone wanting one for Norfolk should work G3UJS if they have not already done so, and he will QSL 100 per cent by way of the bureau. The same applies to anyone who wants a card for a contact already made.

After a period of relative inactivity due to work pressures, G3SED is back on the band from Portsmouth. GW8CW was raised, but Mike understands that although many stations called him, Jan had considerable difficulty with the QRN, and just did not hear many of the callers. During the month of December, Mike prognosticates activity from 5Z4, VQ9 and EP2, and so will be about on the band, but in the New Year he intends to give the other allocations a whirl.

G3TNO (Horsham) used a home-built transmitter based on the 2DAF design, albeit with many modifications, and also a home-spun receiver to operate all bands from 160 to two metres. As far as the 1.8 mc activities are concerned, the aerial is the weak link, being a much-bent halfwave at a maximum height of 35 feet; it has produced OK, PA, DL, and ZB2BC whose card arrived via Bureau after Malcolm had mentally written him off as a pirate because the incoming signal was so strong.

Mike of G3VYF (N. London) bewails his "contact" with the supposed "VP8JD" which we discussed in this column last time; after replaying to himself the tape he made of the signal, G3VYF has to remark that it had all the right attributes of a DX signal, even if it was a phoney—but of course it may indeed have come from DX somewhere or other.

More news of piracy, this time from G2HKU, who remarks on a character heard at 339 working OE2IG, and giving callsign as ZL1AJU, name Brian, and QTH Auckland, on 1824 kc. This one has to be a dud for various reasons—in the first place the North Island ZL's have 1875-2000 kc as their allocation, secondly the real owner of the call lives over 40 miles from Auckland—so be warned! Ted has been activating the Isle of Sheppey pretty hard to judge by his list of QSO's, out of which we must mention a rather comic one: Seems G13NPP was hooked for Tyrone, but lost after exchanging reports; fifteen minutes later Ted was telling the sad story to G13OQR, who came back with "Yes, Ron is my brother and sitting here with me—we share the same shack!"

The delights of the new transmitter have been somewhat curtailed for G3WVC (Bishops Stortford) partly through the need for revision and preparation for examinations, and partly because of time spent assisting with a local production of "Tom Jones"; three more counties were booked in, though, in G3NTI (Cheshire), G4LV for Northumberland and G3EKW, Notts.

Studies for A-level have also restricted things for GW3VPL (Porthcawl), who also mentions a rise of three counties; however, Steve has hopes that the pressure will be a little easier after Christmas and hence the score will rise.

A third one to suffer a lack of activity from the home station is G3WIT (Newport, I.o.W.) who spent more of his time contest-operating with the local group and also has a nice shiny new job on the go. He was at home for the recent 1.8 mc Contest, and heard lots of
the Northern stations on just before the "off"— alas, the most Northerly station worked was G3RPJ in Warwickshire.

ZB2AP came back to a CQ from G3TLX (Edgware), which must have shaken Ron to the core. However, he recovered from the shock enough to book in OF2KH, OK/OL's, DL/DJ's, and a PAO.

Contact with 6W8CW was missed by G3UBW, who is now at Cambridge, although we gather that his operating is done from home when he is on vacation—and so a wrong date meant that he went home on the wrong weekend. Meantime, thoughts are being turned to the key to all DX success on Top Band, namely improvements to the earthing system.

Since last writing, G2DC (Ringwood) has been sniffing around Top Band as well as his more usual stamping-grounds higher in the spectrum. Jack is firmly convinced that most of the elite on the band must either live on the tops of mountains or have dud PA meters, judging by the way in which juicy DX pops up, work these chaps, and then disappear. During the period under review, with a genuine 10 watts and no mountain in sight, G2DC traded reports with thirteen countries.

G3PQF (Farnborough) is another call not often heard among the Top Band lists, but Dave tuned up forty-metre vertical with another leading coil which made it resonate on the band, and proceeded to work GM3SVK, G16TK, and DJ4SS for his first contact with the Continent on 160 metres—all this using SS8.

A new reporter is G13WSS (Hollywood, Co. Down) who had been a medium-wave BC/DX addict for years before deciding to join the technical class locally and ending up by passing the R.A.E. and getting on the air. Cyril started off on Top Band, and his second QSO was GM3SVK, which must have pleased him no end. Eight watts to a bent hundred-footer wound into the garden has so far secured contacts with 56 counties and 7 countries—of which only three are GI, and one of those not regularly operational on Top Band. What it boils down to is that just about every QSO that Cyril has is at DX.

Eighty Metres

Quite a crop of reports this time on the band; the first on the heap being that from G3YMW, who ran his standby rig at 60 watts to a 6146. This raised 5A1TP, 4X4CA, VE1ART on Prince Edward Island, W8GKX, K1JHK and an assortment of EU's.

The Royal Naval Amateur Radio Society wish it to be known that their code-practice runs, curtailed since 1965, are back in operation again; the first Tuesday in each month, and a start being made at 0000z on 3520 kc. Speeds will be 15, 20, 25, 30, and 35 w.p.m. and 100 per cent copy is required to qualify for one of the certificates they issue. Entries, with five threepenny stamps, should go to: QRQ Manager, RNARS, 27 Oxted Rise, Oadby, Leicester.

Talking about CW, G3TNO has an axe to grind. Malcolm is firmly of the opinion that every operator should be able to take the stuff down at 12's at least. The G3TNO aerial for 3-5 mc is the "SRV" type which had to be wangled over the top of the house carefully to get the length in; it has paid off with W, VE, all the usual EU calls and some of the rarer varieties of Under-derivation.

Conditions on the LF bands have shown an improvement in the last month, and have helped G3TLX to work all W call areas apart from the sixes and sevens, VE, VO, CT, I, EA, ZL's and PY's, UL7GW, UA9's assorted, 5A1TP, UD6DF and CX8CZ. Point taken!

G3PQF has been playing around with "one of the old faithfuls" in the G3KFE thing on aerials, and finds it gets the current node up in the air OK, but it is not as good as the loaded vertical—oh well! On the other hand, G2DC has been driving his existing skywire to no mean effect during the few hours he spent on 80 metres, the reward being 31 counties in six Zones.

Fifty-Metre News

Still with G2DC, we find that Jack has been running a sked with VO9JW, which had not, at the time of writing, succeeded, although the G2DC signals had been heard. Up to around midnight 40m. seemed pretty hopeless, but through the night, after the rude noises have retired, all continents were workable. The best of the crop were EA8BF, EP2BK, KZ5TW, PY5BLR, PY7VON, TA2BK, UF6QB, U18AI, VK7SM, W6HTJ, W6IBD and ZL4IE.

The band still has great potential in the view of G3UJS, who has allowed it to monopolise his time, although Dave does not say in detail exactly what he found; however, your scribe would agree

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that even during the evening period it is far from impossible to find a way through the crannies to the DX. On one evening the G3KFE receiver lighted upon a 4Z4 and a KP4, the former weakish but the latter a good signal, calling CQ—and little or no interest being shown in either of them.

G3TLX is the only other correspondent to make serious mention of 40 metres, and he winkled out all W call areas, VE's, VE5VD, VE7BOF, KL7KI, LX, TF5TP, KP4UW, 9H1's, UM8BA, UL7, UI8, CX3BH, VK's and ZL's, ZB2, ZD3G, FP8DJ, HK4EX, PY 'LU, 4S7FJ, YV5BPJ, TA2BK and OX3ZO. In the intervals he "cleaned up" on the other bands and built a Heathkit DX-40U transmitter!

Using the mast for the aerials at G3TNO, as he has only permission for one pole—so he has devised a rapid system whereby, when he wants to change bands, he changes aerials over in about ten minutes; also he uses the stick as a GP aerial, in addition to the dipole, with the aid of pre-tuned ATU's for each, which also makes for speed. The ground-plane has not been properly tried out over a period as yet, but so far every evening session when it has been used has yielded at least one U.S. contact. One of the droppable aerials, as has already been mentioned elsewhere, is a "5RV," and Malcolm finds this inferior to the dipole, the latter yielding much better reports.

The HF Bands

For this time, with winter conditions well and truly upon us—and not just in the Amateur Radio context—it may be interesting to lump together the reports on the three HF bands and see how folk compare them.

Taking the letter from G2DC first, Jack seems to have been fairly active on all three; in terms of countries and Zones, Twenty has yielded 52/19, Fifteen 40/17, and Ten 67/32. On Twenty, good all-round DX under the QRM and the intruders, with the morning period probably the best, with CE2DI, PJ3CC, VQ9JW, KZ5TW and TA1AV outstanding. The 21 mc band has been doing its stuff from around 0700 until 2000, with annoying fluctuations in the MUF at about the latter time, causing a station to disappear, and then suddenly return at good strength. On both these bands the JA's have been numerous during the morning period, so that DX is buried under them, but at least, as Jack says, they are possessed of good clean signals and do not smear the whole band. Turning to Ten, G2DC found it opening as early as 0700 to the South, with the West coming in around 1100, so that by noon it is possible to work all continents. CE3ZK, CX8CZ, ET3FMA, HP1IE, HP1HKG, OA4PF, PJ3CC, PZ1AH, several VK6's, VK8UG, VQ9JW and ZD8J add up to a good month at the CW ends of the bands.

G8DI (Liverpool) details the nature of the QRM from which he suffers—School rebuilding, rehearsals for a nativity play, and carol concerts—which resulted in only two contacts of note. VP8JDS (Orkney) was followed by a QSL direct from G2RF, which enabled Bert to apply for a "squiggle" certificate which he has wanted to achieve for a long time; pity he was so excited your old scribe cannot decipher the squiggle! The other one, also found on 14 mc, was HZ1AB.

Apart from the Top Band activity discussed elsewhere, G3WIT preferred Ten and Fifteen, partly due to the loan to him of an AR88D. CW/SSB was used for a contact with VE3IT, who gave him 579 for his first VE on Ten, this one lasting for half-an-hour or more till the band started to fold up. Another one on Ten was LZ1CW, also for a new country, at 599 both ways. Fifteen also stumped up with a new country in the guise of EA7MG who came back to a CQ.

The Sphinx on the operating table and the sphinx behind the controls at G3VWC seem to be settling down happily together, and in the very limited time at their joint disposal another new one has been collected in the form of ZB2AP.

G2HKU worked only VK7RX and his regular sked with ZL2KP on Twenty SSB, but heard in addition KG6AAY, OA4UZ KC4USD, and WA6YMT/MM bound for
Paul Smith, recently Licensed as G3WPB at 76 Southfield Road, Hinckley, Leicestershire, has a very fine composite aerial array. Operation is on all bands 10 to 160 metres, as well as on VHF, and the lower assembly seen here is a 3-ele Yagi for 15 metres.

Christchurch and then on to McMurdo Sound, where he is to remain as KC4USG. CW on Twenty—listening only—gave F8TT/FC, VP8JG, XE1WS, FB8YY, PY7AHO, PY2DEH, YJ8BW (the latter being G3JWW, QSL via W4NJF). Turning to the CW end of 21 mc, Ted heard UJ8AH, UL7KAA, ET3FMA, PY7NJ, JA6ELV, JA2JGC and EA8FJ.

Part of a note from ZB2BG mentions the activities in Gibraltar at the time of writing; the R.A.F. boys are still at it, mainly on Fifteen and Twenty. ZB2W is in the throes of building a Tx for Twenty Phone only, with an SSB rig for the same band to follow; as he is located at the Europa lighthouse he gets out quite well. ZB2BG himself is nicely shielded by about 600 feet of Rock to the Eastwards and surrounded by high flats to boot, so that he can only expect his dipole on the roof to stump up in the Westward direction and has to take pot luck elsewhere. Also connected with Gib., although not there at the time of writing, G3RFH writes in to say that all the cards for his ZB2BA doings have now been sent. Ken has occupied the time during his two-year tour on his present ship by building a receiver, and a wobbulator with which to align it, so that now he is angling for a chance to get into one of the ship's receivers with the wobbulator "just for a practice!"

After a three month's trial of his new QTH in a stone cottage 300 years old, set in a valley with 500-foot hills all around, G5CP (Ashover) finds his signals are really getting out to some effect. A dual-band 10/15 metre Quad two-element beam and a doublet of 300-ohm ribbon have been put up, and so far VK/ZL, most W districts, KL and ZS have all been worked, together with UV3BC/MM in the Antarctic—Twenty CW—and DI2LE/MM on his forty-foot catamaran World Cat by the same method.

Snapshooting is the best description of G3VDL (Chalfont St. Giles) during the last month, due to a shortage of time and heavy commitments. These short, snappy sessions resulted in QSO's—all on CW with 60 watts to dipoles—with YV, JA, TF2WKS, and KZ5TW on 14 mc. Then 21 mc yielded OY6FRA, VK, PJ3CC, 4L3A(?), JS1, S74KX, ET3FMA, HZ1AB, 5R8BA and 9Q1HM, while the ten-metre stints gave SV9WEE, KZ5GN, 4L3A, PJ3CC, ZS, 5R8BA, 9J2, 7Q7LZ, TJ1QQ and TA1AB. Since OY, PJ3, 5R8, and TJ1 were all new ones to give a lift to the score, it was quite effective shooting!

It seems quite strange to be compiling a column without the aid of a letter from GM3SVK, who by the time this is in print, will once more be just plain G3SVK—but our Far North still has a representative in the shape of GM3JDR (Golspie) who once again stuck to 14 and 21 mc, mainly the latter. Twenty CW accounted for PJ3CC, TY2KG, YV5BUA, 9H1AG and 9J2MX. On Fifteen, both CW and SSB were brought to bear, the former producing contacts with EA8, EL2D, ET3FMA, JA0AUF, KP4, PJ3CC, PY7ABY, TA's, TG0AA, TY2KG, assorted rarer U-varieties, VK/ZL, 4L3A, 5R8BA, 5H3KJ, 5VIKG and 6W8DW, while the talking-type stuff gave F9UC/FC, HP1AD, lots of JA's, MP4BBA, UA9KDL, UA0SK and ZC4AK. This, mark you in a month when the man complains that the band is closed for him by 1700! Whatever would he do if the band were open through...
the 24 hours?

Enfield College of Technology have well and truly fired up G3VZN, and G3LAS, who is the chief driver, finds all very exciting after those boring VHF bands where he has been holidaying these ten years past. However, the DX touch has not entirely deserted him, and on 14 mc HL9KR, KL7AHB, KR6CR, PZ1CE, TF2WKT, VE8ML and VE8RCS (both on Ellesmere Island) UAO9NM, 3C1ASJ, together with hordes of VK's and ZL's, gave them a good start. On 21 mc, a gotaway was TJ1AR, but contacts were completed with CR4, DU1FH, KG6's, KV4, KZ5, V56DO, VU2DKZ, YAI1DN, ZD7KH, 9G1FL, VK/ZL and all W call areas. As for 28 mc, the openings at times when G3VZN was on were mostly to Africa and U.S.A., so the log highlights the following: CE6EZ, CR6, EL8J, KV4, VE, VP2VM, XE's, ZD7DI, ZP3B, 7Q7LZ, VK's, ZL's and all W call areas including K7ZFX/M in the streets of Phoenix, Arizona. An interesting contact was one with GB5QM/MM, the Queen Mary, the first indeed that has come to the notice of either this column or that of the SWL's, this occurring when she was west of Mexico.

Among the one-band merchants is G3SML (Earl Shilton) who spent his time on 21 mc. Roy mentions a round dozen VK/ZL contacts, plus KO1L/P/KG6, VU2DKZ, JA's by the canful, 5H3KJ and 9N1MM. Roy reckons that one of the most consistent signals is ZL2ANF, who works regularly on a sked contact. As for 14/21 mc, as he is in a Ch.1 superfringe area, although by running QRP and paying extreme care to matching and feeder balancing it is possible to get on Twenty; as for Ten, Malcolm has had the idea of using a "ZL Special" firing at right-angles to the two-metre beam supported on the structure of the Skybeam. By making the ZL Special a bit "inverted-Vee-ish" it fits nicely across the ten-element VHF array.

The Tabular Matter

This is the time of year when we make the changes to bring things up to date. Next month will be the first time out for G3V-- and G3W-- calls to go into competition, and for the G3U-- calls to drop out of this particular table. Thus this month is the last time for the Table to be shown in its present form. The other Top Band ladder will remain as at present, for the time being, anyway.

Turning to the HF Bands, the "New Cycle" Five-Bander will be replaced by a similar, but "All-Time Post-War," one, the order of precedence being varied from month to month against a score on a specified band, or total countries worked. As far as the Zones Table is concerned, it is proposed to run a ladder showing total number of prefixes worked and number of Zones scored, starting from January 1, 1968, over all six HF bands. Just total up the prefixes for all bands—each one counting only once, of course (no matter how many bands it is worked on) and do the same with the Zones, so that your entry next month would just read, for instance, "G3ZZZ 100 prefixes, 10 Zones." and keep it topped up each month. This one will be of additional interest to the readers of the "SWL" feature in their own HPX Table.

Here and There

By way of G3SRZ, we are advised that the address for QSL cards for KG6FAE or WA0KKR/KG6 is either: CMR Box 53, APO San Francisco, California, 96334, U.S.A., or D. L. Hasager, RFD No. 3, Beresford, South Dakota, 57004, U.S.A.

G3PLQ/MM writes in to quote his new address, which will appear in due course in the "New QTH" column; here it is of interest to notice that G3PLQ/MM has now been allocated to John personally, rather than to the combination of John-plus-ship, which was the earlier procedure. This means that G3PLQ/MM does not have to go through the whole rigmarole each time he has a change of ship, providing the GPO inspector passes the station each time a change of ship occurs.

Still on the tack of addresses, but in a slightly different context, we hear from G16TK that all claims for the W.A.G.I. award should be forwarded to Frank Robb, G16TK, 125 Downshire Road, Holywood, Co. Down, Northern Ireland.

Reverting back to that preamble last month, when the question of shack heating was touched upon, G3VLX takes up the whole question on the argument that turning the heat off when the place is not in use lets the condensation bug loose in the place; but, although this is a fair comment, what your scribe was in a slightly different context, we in a slightly different context, we forwarding to Frank Robb, G16TK, 125 Downshire Road, Holywood, Co. Down, Northern Ireland.

Reverting back to that preamble last month, when the question of shack heating was touched upon, G3VLX takes up the whole question on the argument that turning the heat off when the place is not in use lets the condensation bug loose in the place; but, although this is a fair comment, what your scribe was driving at when he mentioned G3JLA's method was merely the preservation of the gear itself. Deryck attacks things—probably better—by lining his shack with a layer, 1/2 inches thick, of expanded polystyrene, insulating it to such a degree that a mere 100 watts left permanently on would be sufficient to keep the temperature as high as 50°F. It will be interesting indeed to see how the G3VLX plot, which should be working by the time this is in print, makes out.

G3MOJ, G8AFH, and G3VPS bestowed themselves to the Welsh Mountains for the CQ WW Contest (Brrrr!), and had a whale of a time.
We understand from G3VPS that all three survived the weather, but on his return he was so cold that he forgot to tell us how they got on!

All being well, March 1968, should see G3RFH posted from his present ship, which at the moment is in a far sunnier clime than the U.K., and he hopes that his new location will not be too far from Sunny Somerset so that he will be able to fire up the Viceroy (and let the local TV owners know he is back!).

G3WET (Sutton Coldfield), the chap who, not so long ago, worked W2DRY, recently had successive QSO’s with HB0LL and HV3SJ at 59’s. The point of interest here is in the fact that these two prefixes muster a total of—we believe—four amateurs, and, more to the point possibly, they were worked, using the KW2000A, on a trap dipole just nine feet in the air. As a result, G3WET is now thinking of coiling up the 8KW aerial and burying it. However, in order to work the same sort of DX, it would seem likely he would have to go over to CW!

The Late Mail

Thanks to the vagaries of the mail at this time of the year, generating a bonanza for the Christmas-card printers while slowing down everything else, several letters came in too late to be embodied in the text, and so we just mention them here.

A catastrophe in the power department resulted from G3UXP (Birmingham) trying to tune for maximum smoke—he got it! However, it is to be hoped that a repair can be effected to get Ron back on by the time this is printed.

The other late bird was GM3SVK (Unst), who wrote on December 4 with a long and most interesting final report from Shetland before packing up traps and returning to the South. Anyone still lacking a card for his Shetland QSO with Fred may write direct to G3SVK, 144 Chandos Road, London, E.15.

He ended up with a score of 207 All-Time from Unst, and 201 in 1967, which indicates how much the interest in Amateur Radio helped in keeping him amused during his tour in Unst. As a final note GM3SVK would wish his thanks to be passed on to all the SWL’s who sent him reports, to the stations he worked and made friends with, and particularly to GM3KLA, who not only spurred him on but also helped in keeping him on the air when the gales demolished his aerial farm.

Contests—Pro and Cons

In his letter this month, G3IDG (Basingstoke) points out that while Contests may be regarded by some as a nuisance there is no doubt that, given that one has a reasonable interest in the odd new country, one can find them more easily in the contests. Allan cites the CQ WW affair, in which he was on for only a short period, but came out with three new prefixes, a new country and two new stations towards the fourth sticker on his “Tops Century Certificate.” On the other side of the coin, Allan is surprised at the number of stations on in contests who seem always to give reports of 599—is it true, or is it just easier to send 5NN? Skimming round the band during these battles it is very noticeable that it is usually the weaker brethren who go to the trouble of sending varied reports. Certain it is that the report of “four and one” mentioned in last month’s piece is more credible than 59 from a DX station, even if it is perhaps going too far in the opposite direction!

Sign-Out

And there you have the story for this month. Before we give the deadline for next time, it is for your E.P.E. to thank all the many correspondents for their support in the past twelve months, and also specially to thank all those, too many to answer individually, who have sent their Christmas and New Year Greetings. Let us hope the New Year brings more fun, more DX, and, from us, all you wish yourselves in the Coming Year.

The deadline for the next issue is first post on Monday, January 8, addressed “CDXN,” SHORT WAVE MAGAZINE, BUCKINGHAM. Till then, 73 es bcnu.

To ensure a regular copy, become a Direct Subscriber — 42s. post free, year of twelve issues, starting any month.
THOSE first paragraphs about the R.A.E. in the last "SWL" raised the odd comment in the mail this time; and in particular from A. P. Ashton (Stowmarket). Writing a farewell letter, now that he has become G3XAP—what a wonderful way to start the New Year—Phil says that it has all been hard work. The reason for it being hard work is fairly obvious—to judge from his handwriting, Phil is, as our American friends would have it, no chicken—and he has had to do the lot, both R.A.E. and Morse, unaided, which has made the call all the more valued now he has got it. As he says, it is hardly an unfair requirement to be asked to prove one's interest by passing a stipulated test. In any case, the question of fairness hardly comes into it, as the rules and regulations are laid down and one has the choice of either obeying them or not getting a ticket.

The other side of the coin comes, by implication if not directly, from W. L. Rees (Llandudno), who regards himself as a non-practical type, and, indeed, has been struggling unsuccessfully with the recipe for the "Justin Cooper Five-Minute ATU" for some time now, just to prove the truth of his statement—fair enough, but that does not mean, as Bill believes, that he cannot pass the R.A.E. Far from it, as a glance inside the Development Lab, where your J.C. does his daily stint will show any time that there are many ideas that come to nought for each one that is good. Indeed, in the case of an SWL, who has little or no connection with the practical side, it is mainly from one's failures that theory is wedded eventually to practice.

A certain licensed amateur of the writer's acquaintance who took up Amateur Radio in his late fifties had all his life been connected with the business of bricks and mortar; after passing the R.A.E. and Morse (at no small sacrifice of midnight oil) during the following year set to work to build his first Tx. Mark One was a birdsnest to end 'em all, but with help, it was persuaded to put out a decent signal—and then, but not before, George set-to and made Mark Two to the same circuit, which went almost at the first puff. Mark Three was a "Princess" which was duly modified in the course of time to the SSB version; and Mark Four was the linear to end all linears, which he designed himself and built from scratch with enough confidence to order the front panel cut and engraved to his requirements. Each one has provided more wisdom, and each one has proved the wisdom of his thinking out and understanding why things went wrong and what had to be done to put them right.

The New Year's resolution that ends the sermon is quite simple: Even if you don't think you have a chance, have a go—and if you fail first time, sit back and think a bit at each stage in the next course, to see where understanding was lost the previous time—it'll be twice as much fun when you do get on the air!

Technical Topics

Again a hark-back to the November "SWL" in which we discussed the use of an ordinary transformer with centre-tapped secondary, say 250-0-250 volts, in conjunction with a bridge rectifier to obtain 500 volts. P. T. A. Watson (Horley) points out that the fact of the peak voltage between either end of the winding and frame being able to rise as high as 706 volts (or twice the value when used normally) may mean that the transformer insulation, on a cheap-and-cheerful specimen, could give up even though from the VA point of view the thing is able to do the job. A fair comment, and one that was not emphasised enough last month. One can go further, and point out that the peak-inverse-voltage rating of the rectifier in this application is not unimportant; the figure of 1:57 times the DC volts quoted "in the book" does not make adequate allowance for variations of mains voltage at times, and the use of a pair in series in each leg of the bridge, each rated at 800 volts p.i.v. is far from pointless, to allow for the occasional surge. All this indicates that Peter is quite a knowledgeable type—and so he is, as he is putting off taking the R.A.E. until he has made his way through his IEE exams. When he has done so, he will be that rare bird in the Electronics industry—the chap who knows how to do it in practice and why it can't work in theory! Strange how these two attributes so rarely appear in the same individual, and how much it costs the industry each year—but that is another story on which we could expound for too long!

Arising from the recent activities with the value of the pound—cash, not weight—G. T. Theasby (Keighley) asks why so many amateurs buy a rig of American origin when there are perfectly good equipments of British origin on the market. This is a difficult one to answer, but probably stems from...
two things: In the first place, it has to be realised that there is an enormous home market for American gear, and so there is a very wide choice; and it is fair to say that most tastes can be accommodated from the range of one maker or another. The second, and probably more important point, is that there is a large minority in this country who will fall down and worship anything American, with no regard whatever for its fitness for the task in hand. Some of the U.S. "precision instruments" which repose in the Test Gear racks of the industry are delightful creations to look upon, albeit the innards are enough to make a strong man weep. Most people spending the sort of money involved in setting up a decent station certainly look at the British gear first, and the majority probably do buy U.K. products—but for some the specifications do not quite suit their needs, and so, if they are to avoid value-reducing modifications, go to a foreign maker who can meet their special requirements most closely.

On a different tack, T. Pinch (Plymouth) with tongue in cheek one suspects, asks whether one should let the aerial stay down when the gales fell it, rather than freeze to re-erect it during the winter. One would feel the answer here is to do a few sums and make sure the thing goes up and stays up whatever the weather. Trevor should talk to some of the shark-fishing types—the line they use is ideal for keeping aerials erect. And, of course, there is always the thought that there is nothing pleasanter on a warm summer's day than to shin up the tower and make sure the thing goes up and stays up whatever the weather. Trevor should talk to some of the shark-fishing types—the line they use is ideal for keeping aerials erect.

Here and There

R. G. Preston (Norwich) has managed to move into an indoor shack, which has no doubt added to his enthusiasm considerably, and in addition has just acquired a KW-77 receiver. For 21 mc, a "Swiss Quad" aerial is in the brewing stage, which should be quite useful in the way of finding further prefixes on the band.

Still about receivers, we notice that H. Symonds (Altrincham) is keeping to the same receiver, although, since last wrote, it has been modified to give Top Band coverage. Hugh has also made a start at compiling a CW HPX list to augment the meagre Table—good for him!

Several people mention the OF prefixes, and their origin: H. M. Graham (Harefield) found some, and recognised the voice of OHSSM when the station was signing OFSSM—true enough, for these OF calls were allocated to all the Finnish stations during the period to December 6, Independence Day. An oddity heard on Eighty, was a thing signing MTD54/2 calling MTD54/1 late on the evening of November 26; nothing in the way of a reply was heard and there was no conversation. Obviously some sort of non-amateur transmission, but whether due to one of the folk with whom the band is shared, or a pirate trying to sound grown-up is not known.

Another query is the UV prefix in use in Russia, and apparently this one puzzled M. G. Toms (Harrow); these are all-same UA calls, so that UV/DX for instance is one from Moscow. Mick is a little puzzled by the fact that his HPX entry 394 appeared in print as 393—this was due to his logging of an "impossible" call from a not very

**HPX Ladder**

(Starting January 1, 1960)

Qualifying Score: 200

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(Note: Listings only include recent claims. Failure to report for two consecutive issues of "SWL" will entail removal from the Top. Next list, March issue, for which the deadline will be January 19.)
Gordon Allis, of 117 Chessington Road, West Ewell, Surrey, is by calling a TV service engineer. He has been interested in Amateur Radio for the last three years, during which he has steadily built up a very nice Rx station. He now has an AR88D, a Geloso 209R and various home-built items. His antennas consist of a multi-band vertical dipole and a Quad. With a Countries score of 227 in 39 Zones confirmed, Gordon is now setting about getting his ticket.

unusual area—rather like logging a G9, in fact!

Since his last entry, J. Edwards (Penge) has managed to acquire an SX-24 receiver. This one was one of the line of communications receivers made by Hallicrafters in prewar years which culminated in the SX-28. The “X” in the model number indicated the presence of a crystal gate, Reader Edwards is also compiling a list for the CW table, which he hopes to enter next time out.

D. Sapsworth (East Ham) is quite elated at having found all forty Zones, the last one to be booked in being in the form of a VS6 in Hong Kong. This, and 24 other prefixes added to his total, mainly arose from the activity on 28 mc.

HPX is having to take a back seat at the QTH of I. Cooper (Alnwick) who is dividing his time between examination studies and R.A.E. with a little Morse thrown in.

GB5QM/MM has been somewhat elusive, to say the least; in fact at the time of writing no hard news of either hearings or contacts have come to hand, in spite of band openings in the desired directions. D. Rollitt (Navenby) has been trying hard in other directions, and the TA33 beam has helped in these also, the prefix total taking a large upward leap by 54 to 850.

First entry for the HPX table from R. Geary (Leicester) who uses a R.1475 receiver with sundry outboard bits, to a long-wire fed through a 19 Set variometer; however, he is handicapped by the presence nearby of a mains sub-station, which generates a fair amount of noise. SWL Geary queries the status of 4L7A, which was a special callsign from Russia; 4MSA (on for their contest from YV-land), and finally a “SK4RCA,” which your conductor suspects to be a misreading of something else.

TV/DX News

On this front, we have a long letter from F. Smales (Pontefract) who while laid up has been putting some good work in on the test cards, particularly during that admirable opening over the middle of November. UHF was “forthcoming” on November 18, which started off with a colour test card from Lille and for the next five hours several French and Dutch stations were solid copy. After going with Bruce Thomas to Ripon, where they met Denis Boniface, Frank came home and was able to resolve Tele-Luxembourg on 819 lines, always a difficult one due to QRM from the 625-line transmission from Markelo on the same E7 channel. Frank seems to be home-bound for quite a spell yet, and is planning to use the time to get his Bush TV receivers up to scratch, and also to modify one of them to give a complete 625 vision-plus-FM sound strip with tuners switched for all bands. Incidentally, on that evening of November 18, Frank logged signals from no less than nineteen different stations (other than the local channels) all but five being UHF outlets.

Bruce Thomas (Castleford), in addition to meeting Frank and Dennis, has been pushing away at the HPX, although at a slower rate than previously, due to the interfering influences of work and TV/DX; his total has gone up to sixteen countries seen on TV channels, and it is hoped to put it higher still when a new mast goes up chez Thomas in a few months’ time.

A good reason for being off the air for anyone is being Hon. Sec. of a Club—this fate has befallen J. A. Ennis (Saltash), who is probably finding the seat hotter even than his worst fears. Your old scribe knows—he’s had some!

Quite a long band report from D. Henry (North
Eventually both got a contact, but nothing remotely readable CW signals on his Eddystone 888. They could ever be on Forty, and certainly 100 per finding no takers—both as near in 579 and a 559 signal from 4Z4 calling CQ and at 579 and a 559 signal from 4Z4 calling CQ and listening round the DX. A few evenings ago, J.C. tucked his beard inside his jacket, put on the cans, and listened round the European bands, which he claims to have a range of a few yards. Seems only a few weeks ago that various people were reporting 589 signals from OL4AFI all over the U.K. when Jarda was running a similar power level on the same band—and it’s not so many years since your aged J.C. had ears capable of making a one-watt WAC on Forty, admittedly as a result of more than a little burning of the candle at both ends and the middle!

John Dutton (Ilkeston) has been spending less time at the controls of his receiver due to the needs of his A3 bed syllabus, although quite a few of the missing "uncommon EU" type of prefixes have been winkled out to swell the total.

A good way of gaining new prefixes, or countries for that matter, is to come on during the Contests. E. Parker (Hove) did just that, and by sitting through the entire 36 hours of the recent 21/28 mc event profited handsomely. Ernie took his part in the 7 mc shindig as well, and contrasts the behaviour of the U.S. amateurs in the 21/28 mc band queueing up to give the boys a point, while the Gs on Forty were most reluctant to swap numbers, so that the going became very heavy, and things seemed virtually wrapped-up three or four hours before the end for lack of stations to work. This is one of the interesting things about the 40m. band, and it seems that those who are quite content to work the same round of EU stations stay on Forty and almost resent the presence of DX. A few evenings ago, J.C. tucked his beard inside his jacket, put on the cans, and listened round the band about 2130Z, and was amazed to find KG5 at 579 and a 559 signal from 4Z4 calling CQ and finding no takers—both as near in the clear as they could ever be on Forty, and certainly 100 per cent readable CW signals on his Eddystone 888. Eventually both got a contact, but nothing remotely like a string of them resulted.

The PCR-3 receiver used by H. N. Plumridge (Bishopstoke) has now been fitted with a BFO, and so can resolve SSB signals, although we gather it can only be done on 14 mc and then with difficulty. It rather sounds as though the BFO is not being set correctly, as stations below 10 mc use lower sideband and those above 10 mc—such as Twenty, for instance—use the upper sideband. K. Plumridge writes from the same address to say that he has added another thirty feet to the aerial and feels it is giving a slight improvement.

K. Jeeves (Huddersfield) had his finger crossed at the time he wrote his letter—uncomfortable?—as he was waiting for the result of the December R.A.E. On the question of QSL returns, Keith says that he sends a good report, encloses an IRC, and covers it by a clearly-typed letter on headed notepaper—and has a return to date of around 75%.

Nice to hear again from B. Macklin, who is now in digs at Fareham, and spending most of his spare time studying. The old CR-100 has been pensioned off and Barry has only his transistor set to play with—but an HA-500 is "in the pipeline" and will soon be set to useful work with the CW, which is now the only obstacle to a licence, R.A.E. having been passed last May.

Controversial?

From D. Whitaker (Harrogate) comes a plea that we should run a new HPX Table starting from January 1st, and also an SWL contest. Taking the first point, one feels this is somewhat unfair to the present leaders, who, if they took part in any such a ladder, would almost certainly go straight to the top again, but at a lower score. As for the second, while SWL contests are mildly popular, the logs are far from being self-checking—as the transmitting events are automatically, to a great degree, in that the contestants mainly work each other. Thus it means not only that an SWL contest needs quite a lot of organising, but also a fair number of investigators on the band if any sort of fair check is to be made on how they are sent in. No, the Set Listening Period is far more attractive—and we must see about another one!

Another graduate from the SWL ranks is A. P. Legg (Sutton, Surrey), who now has G8BCS, and operates the Club station G3UCL on occasions; we rather gather that progress is being made in the general direction of a G3-plus-3 call. Meanwhile, Anthony has a SR-600 on the HF bands and an Eddystone EC-10 for the lower ones, which have netted him an HPX total so far of 474.

Up 50 in the Table is M. A. Lount (Leicester), who, apart from having various troubles with the receiver, which were fairly easily cured, has been under the weather himself, and so has had to type rather than write his letter, and that with one hand—we can imagine the language!

In spite of pressure of work, S. Foster (Lincoln) found time for the odd hour or two on the bands, and as a result Stewart manages to rise a little further in the lists, with a new total of 914. Stuart Swain (Hayling Island) refers to the 5L A2 and 5LA8 prefixes, and points out that they were Liberian
Field Day stations—a fact that your scribe knew but completely failed to remember. *Mea culpa!*

Last time out the score in the Table was not up-to-date—but after all, if you don’t send it in, we cannot claim any reliable results by telepathy! Seriously, though, the complaint of *A. Hydes (Enfield)* resulted from the non-enclosure of his list, as a glance at the file here showed! The majority of “misses” are, in fact, *because they miss the deadline*—but the Editor expects to have this piece ready for getting into the *Magazine* on time. What it all boils down to is that your J.C. has just one week, less postal delays each way, to write the script if we are to come out on time—and *SHORT WAVE MAGAZINE* is never late out of our hands.

Getting back to Alan, he mentions that he has tacked a Codar PR-30X preselector on the front of his receiver, to the good of his score. However, it should always be borne in mind that the extra gain may result in increased cross-modulation, and so more care is needed in keeping the “front-end” gain as low as can be.

A 19 Set was recently acquired by *I. Poole (Leeds)*, which came in handy when the rectifier in the converter went west—he was able to take the one out of the CR-45 and get back on the air by using the converter ahead of the 19 Set. Improvements have been made in the shack, and some early morning listening tried on Eighty, which yielded W’s and ZL’s at good strength.

Quite a large rise in the score is recorded by *J. P. Scragg (Stockport)*, who nevertheless failed to make his target of 500-up, because the receiver decided to go on the blink, at an inopportune moment. However, it is well said that it is better to travel hopefully than to arrive, and no doubt the next entry will turn the trick.

While cutting wood *J. Singleton (Hull)* managed to investigate the sharp part of the saw too closely; the piece has been stuck back on, and John hopes to see it again by the time this gets into print, although it may take longer before he has it as new! Very nasty. John has a few pertinent comments on the question of passing the R.A.E., and feels that a lot of the protestations are the result of an attempt to save face at the Club—or with one’s self—rather than admit one was not adequately prepared! A good point, this.

Using an RA-1 built by father GC3WDX, *R. Allisett (Guernsey)* has been putting in about 24 hours listening each week; the combination of ability to listen to the HF bands with time spent has resulted in a thumping rise in Dick’s score, from 226 to 406 in a couple of weeks.

A newcomer to this piece is *P. L. Spindler (Ilford)*, who is of but 13½ years and seems to have been severely bitten by this Amateur Radio business. Paul is able to put in a first entry in the Table, thanks to a spot of hard listening on the SR-150 to make the last few up. In addition, he is up to the point of 10 w.p.m. on CW, and pressing on to try to get over the hump.

Where have all the GM SWL’s gone, wonders *D. Douglas (Dundee)*, who now has broken the “150 countries confirmed” barrier. David has a gripe about a number of amateur stations who receive cards direct, including IRC’s or return postage, but neither stump up with the card nor even a reply stating it is not the policy to QSL (using the postage sent).

That comment by G3WUD about “not being an SWL any longer” was bound to make someone rise to the bait—and it is none other than Allan, G3IDG, who points out that the licensed type is more of an SWL than the SWL, in that most HPX hunters tend to identify the call and then pass on to pastures new, while the transmitting amateur in QSO has to get the whole contact from end to end. This being so, the licensed listener will always tend to be more careful in his scanning of the band, so as to sort out for himself the stations calling in whom he is interested — whether for DX value, quality of their fist, signal strength or whatever.

*P. D. Davis (Leicester)* has dabbled in the SWL hobby for years—he built his first 0-V-1 receiver way back in 1931—but has at last decided to get down to things a bit more seriously. Pete uses a R.1475 which he has realigned and generally done up. Although a crystal-controlled converter for 21/28 mc is completed it has not seen much use yet due to interest being concentrated on Twenty. A query heard on this band is “AC5DC,” claiming to be in Zone 22; although there are a couple of AC5’s in the call-book this one sounds to be rather Ungood—has anyone any news?

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Another interesting point is that although A.W.N. does not listen much during the summer, since January 1st, 1967, he has logged 551 prefixes—which is the same total as he took thirty-three months to collect up to September of 1962. It just goes to show that it is experience that counts! *Charles Harrington (Maidenhead)* spent a lot of time on the same contest, and as a result goes up to 380 from the present QTH, all on a TV array as an aerial. To judge by his card, Charles has been at the SWL game since before the War, and is strictly a CW man, using an HQ-170A receiver.

**Deadline**

So there you have it. Remains only for your J.C. to wish you each and every one, what you hope for yourself in the coming Year, and to give you the deadline for the next “SWL.” This is rather short—first post *January 19, 1968*, addressed to “SWL,” *SHORT WAVE MAGAZINE*, BUCKINGHAM. Till then, 73 es DX.
It will be remembered that early in the year—as announced in the April, 1967, issue of SHORT WAVE MAGAZINE—Eddystone Radio Limited offered an Open Essay Competition, under four subject headings to choice, for which the judges were to be Prof. R. Jennison, B.Sc., Ph.D., F.R.A.S., F.Inst.P.; T. P. Douglas, M.B.E. (G3BA); and H. A. Bartlett (G5QA). The point of particular interest here is that 20 years ago the then Roger Jennison, G2AJV, was himself the winner of the Eddystone Competition, his prize being an S.640—which, incidentally, he still possesses, and uses. He is now Director of the Electronics Laboratory, University of Kent, Canterbury, and accepted the firm's invitation to present this year's prize, an Eddystone EA-12, to the winner.

This turned out to be Bruce Taylor, GM3NZI, a 25-year-old student at the University of Edinburgh. He chose as his essay subject a new approach to receiver design to meet the stringent requirements of international Amateur Radio as we know them today. He turned in a masterly treatise (later to be published in these pages) on the subject, his basic conception being a main chassis engineered to accept plug-in modules to meet a wide variety of amateur-band operating requirements—from HF to UHF, and in all modes—enabling the receiver always to be in step both with immediate needs and foreseeable development.

The judges agreed unanimously that of all the contributions received, this was the most useful and imaginative. Accordingly, at a very pleasant ceremony at the Hq. of Eddystone Radio Limited, on November 27 last, GM3NZI received his EA-12 (priced at £185 in the current Eddystone list) from Prof. Jennison. In addition to Eddystone senior staff, the judges and press representatives, one of those present was Austin Forsyth, O.B.E. (G6FO), Managing Editor of SHORT WAVE MAGAZINE, who had himself been one of the three competition judges when Roger Jennison was awarded the prize 20 years earlier.

In the course of the proceedings, Mr. W. Cooke, chief engineer, Eddystone Radio, discussed the EA-12—an amateur-band Rx of the highest grade—in detail, and also disclosed many of the technical features of the new Eddystone 990R solid-state VHF receiver.

Following the presentation and the hospitality of Eddystone Radio Limited—of which the managing director is Arthur Edwards, G6XJ, and himself a keen CW/DX operator—the party toured the Eddystone Radio works, to see the various production lines and manufacturing departments; the test and development rooms; and the drawing office.

From all of which not only can it be said that GM3NZI is the fortunate possessor of a very fine amateur-band Rx, but also that anyone who "buys Eddystone" invests in first-class equipment, backed by years of know-how (they started in the business about 1926), up-to-the-minute design and engineering, careful pre-sale test and efficient servicing. Had it been otherwise, Eddystone Radio Limited would not be where they are today, with up to 60 per cent of their output going for export.

The presentation, on November 27, of the EA-12 receiver to Bruce Taylor, GM3NZI (of Edinburgh University), winner of the Eddystone Essay Competition. On left, Prof. R. Jennison, with GM3NZI on the right. At centre is Arthur Edwards, G6XJ, managing director of Eddystone Radio, Ltd., and himself a confirmed CW/DX operator on the HF bands. In the foreground is the prize, an Eddystone EA-12 receiver, which is one of the more ideal types for amateur-band reception.
A general view inside the Birmingham works of Eddystone Radio Limited, Prof. Jennison is examining the chassis of one of the new Eddystone receivers, with Mr. Cooke, chief engineer of Eddystone Radio, on his immediate right. At left is GM3NZI, who was probably quite surprised to find out not only what is involved in the design, manufacture and pre-sale testing of his EA-12 (see story) but also that something like 60 per cent of Eddystone's receiver output—covering the whole range of specialised design for the marine, commercial communication, Service and amateur requirement—goes for export. The firm of Eddystone Radio, Ltd., has been in the short-wave receiver manufacturing business for the best part of 40 years.

"IT'S AN ILL WIND..."

To quote from a recent letter: "Whoever said it's an ill wind that blows nobody any good certainly knew what he was talking about. Having recently been laid up for four months, I was persuaded by amateur friends to learn Morse—which I did. I took and passed the Test a short time ago and am now the proud possessor of my callsign and can join the rest on the New QTH page." (C. F. Withall, G3XBU, 8 Sumpter Pathway, Hoole, Chester.)

"QUEEN MARY," W6PMO, LONG BEACH, CALIFORNIA

If you hear, or can work, W6PMO any time from now on, it will be the Long Beach Amateur Radio Club station aboard the ship we used to know as R.M.S. Queen Mary. In spite of all the ballyhoo, like many another great ship of bygone years, eventually she will rot at her moorings. Too big to keep clean and too expensive to maintain below the water-line, the mayor of Long Beach will come to wish that his municipality had never taken on the commitment. The awful thought is that ex-GB5QM/MM will be pointed out to sightseers as another of Britain's white elephants. Who wants a ship that can never again sail out under her own power.

USAFE/UK BID SALE, R.A.F. MOLESWORTH

With reference to the notes on p.569, November, and p.372, August, we are now informed by the U.S. authorities that the next bid sale for American surplus radio and electronic equipment has been fixed for Tuesday, January 16, at R.A.F. Molesworth, Huntingdon. The surplus being offered is valued at something like three million dollars, all subject to bid and covering a very wide range of radio-electronic apparatus. Apply for Sale Catalogue to: Sales Support Section, USAFE/UK Redistribution & Marketing Centre, R.A.F. Station, Molesworth, Huntingdon. (Tel. Bythorn 371.) And whatever you buy, make sure you get the handbook that should go with it.
SOME 18 months ago, members of the Silverthorn Radio Club found a 12-year old radio enthusiast awaiting their arrival on a meeting night. He was allowed to remain and, with some misgivings because of his age, was a little later admitted to full membership. Philip Routledge (36 Oak Hill Close, Woodford Green, Essex) amply proved that the principle of "catching them young" paid dividends. Not without some opposition from the Local Authority, he was accepted into the forthcoming R.A.E. class, together with others under age, largely as an experiment. His instructor's faith was fully justified, and starting from the bottom rung of the ladder, he passed the Exam. first time. And before the R.A.E. results were out, he also took and passed the Morse Test and so had the frustrating wait until his 14th birthday.

As a concession, the Post Office allowed him his Amateur Radio certificate, thus enabling operation under supervision. At last the day arrived with the call G3WYS, plus a birthday card from the Post Office—a very nice touch!

Time spent in studying, and experience on the air, inevitably limited construction, and although a CR-100 was acquired, the transmitter was not ready. Philip's début on Top Band was therefore made with an A.T.5 loaned by a local amateur. His own transmitter is now well under way, and should be air-borne before long.

A refreshing feature of Philip's approach to Amateur Radio is his love of the key—all too often neglected nowadays—and 20-30 w.p.m. holds no terrors for him. The writer feels rather humble when he hears G3WYS paddling a bug with all the aplomb in the world! The station is housed in a garage, and although aerial size is limited by a small garden, a potent signal is put out.

In the photograph, the A.T.5 is shown on top of the CR-100. On the left there is a home-built HF rig, covering 10-80m., CW and 'Phone, running around 50 watts. On these bands the CR-100 and R.208, also on the bench, are linked for double conversion. Under the CR-100 can be seen the Top Band transmitter nearing completion. The associated modulator, on top of the HF-band rig, was built when Philip was 12, and worked first time when tested by a near-by amateur. The future of Amateur Radio is bright indeed when one so young makes such a promising start.
THE TWENTY-SECOND MCC

The Magazine Top-Band Club Contest
November 11-12, 1967

WITH an actual entry of 94 logs—one more than last time—this year's MCC has demonstrated how resistant the average amateur is to change; in 1964 everyone said the new Rules were "impossible," but in 1967 only one Club even commented on them. Perhaps this was partly due to the extra effort expended this year, because of the rather poor band conditions on both sessions, which, of course, progressively increased its effects on the scoring, right down the Table.

Thus, we find the winner this year, Burslem, made 641 points, almost the lowest winning score since the present Rules came into force—so for them to raise their total of last year by nearly 100 points is a fine effort, on which they are to be congratulated. Runners-up Moray Firth "A" made 598 this year as against the 675 which took them to third place in 1966. Third slot this time goes to last year's winners, Kirkcaldy, who managed 530 points for 1967. At the other end of the Table, a similar trend is noticeable, the wooden spoon going to a score of 46, as against 98 in 1966.

What it all adds up to is just that the band was somewhat down as compared with last year, which is rather as one would have expected—but the 127 Clubs who played, and the non-Club stations who came on to give a point, still enjoyed themselves immensely.

It is, of course, much to be regretted that no less than 33 of the known participants failed to put in logs—some at least would have found themselves in a good position in the Final Table had they done so! But this particular phenomenon is with us every year.

MCC has always had a "training" aspect, in that many groups like the idea of using it as a means of teaching the newer members the tricks of contest working, while the experts either stand behind and criticise, or go away and demonstrate how they do things from another site. To this end, it behoves us to make sure that it is not only a pleasant entertainment but also a little more difficult than usual.

And so we changed the coding system—which also made it easier to check the logs—and required the QTH of the Non-Club stations to be recorded. Seems this was a little difficult . . . G3BMY was noted as being at Craven, Craven Arms, Cradley, Chester and Crewe in various logs . . . Otley were sending, quite correctly, 001, but half the stations he worked were foxed by his code and only claimed one point for him! . . . No. 235 Squadron, ATC had 702 for a code, and ninety per cent of their contacts could not get it first time of trying—quite a lot required it spelling out to them!

Naturally, as a result of all this, most of the claimed scores have taken a beating in one direction or another, as the Table shows. Apart from one competitor near the top, everyone did their arithmetic in accordance with the rules, and the standard of presentation of some of them was a delight, although far fewer than usual were typed. One in particular (a first entry in this or any contest) by Hemel Hempstead, was a model of all it should be. There were, thank heaven, no really bad ones this year.

Gear Used

On the equipment side, the winners, Burslem, used a KW-2000 for transmitting, and a Drake R4A receiver, together with a half-wave dipole at 70ft. firing North/South and an end-fed half-wave at the same height covering East/West, used in conjunction with an ATU. The runner-up, Moray Firth, gave no details of their equipment, but the third-placed group, Kirkcaldy, used an Eddystone 750 and a Geloso/5763 PA into a dipole at 40ft.; their change-over system went on the blink for half-an-hour on the Saturday, which may have been enough to deny them second place. Among the rest, transceivers were prominent, along with a lot of home-brew rigs, Codar A.T.5's and a few Vespas and Cannons. Receiving was sometimes done on the transceivers, but quite a number of these were used in conjunction with other receivers; Kings Norton had a brace of Project 66 transceivers cross-coupled so that both were listening together, both were muted when transmitting, and either could be radiating. The Drake R4A already mentioned was only one of many types, from an old Hammarlund SP-200, through several varieties of HRO, AR88's, a Sommerkamp used in conjunction with a transverter, Heathkit RA-1's, BC-348, to a Racal RA-17—the latter with a Top Band preselector in front.

The invigilation of the whole affair is done each year by several experienced operators, each with blue pencil at the alert. This year there was, as always, the admirable
check log from SWL D. Law (Leicester) and also check logs from G3UKC, the University of Kent group in Canterbury, and G3REI (Reigate "A"), who were aware they had poor signal quality, particularly on the Sunday evening, and so sportingly closed down early.

By and large, the netting was pretty good this year, although there were one or two who seemed consistently to be listening on the "wrong side of the crystal." Usually, the trouble with Morse is in the receiving of it—but there was one station, fairly well up the list, who, to judge from his logging, receives far better than he sends—a couple of S-points of extra outgoing signal punch is no good for radiating "Martian Morse!" One or two others lost their grip on the paddle of the bug-key at times, with strange results in the logs. Calling was, at times of stress, a little overdone, as when two stations called CQ on top of each other for three minutes, and then proceeded to a QSO well larded with "BK" during which each gave t'other a 599 report.

Some Comments

"The multiplier greatly overestimates our difficulty of scoring (no quotes or locals and colleagues will lynch me)" . . . "Hoping for some further addition to the traffic to be sent from one station to another—how about the frequency of this last contact together with the registration letters of his car?" (Kings Norton) . . . "The only side-effect was hearing CQ MCC at 30 w.p.m. during sleep on Sunday night" (Wakefield) . . . "Roll on next November" (Manchester University) . . . "CW operating procedure was shocking—many stations could not receive at 20 w.p.m., which one would think to be the minimum requirement for a contest" (Nottingham) . . . "And so—back to the drawing-board once more!" (South Manchester) . . . "Our first attempt at Top Band contests; aerial was a half-wave dipole at 200ft. which gave good results" (University College of North Wales, Bangor) . . . "Why, oh why, must some people not only key with their left foot, but also be proud of it?" (Marconi Apprentices) . . . "Thank you for organising a most enjoyable contest" (Henley-in-Arden) . . . "AI signals with 6 kc bandwidths" (Lowland Royal Signals) . . . "Scoring rate drastically reduced this year by heavy QRN—from a local power station?—so we apologise to those we did not work" (R.A.F. Sealand) . . . "One station caused serious blocking—either a wizard aerial or an 813" (Southgate) . . . "Site ten feet a.s.l., fifty yards from a creek, and surrounded on three sides by hills" (Isle of Wight) . . . "The new ident. codes were very successful" (Chester) . . . "We like the code system" (Mid-Herts) . . . "Showers of dots without a home now and again—very FB! . . . Least said, soonest mended!" (Ampfield) . . . "We heard quite a few going at Mach 2!" (Ballymena) . . . "It would neither load, match, nor radiate" (Maidenhead) . . . "Only trouble was the ident. system!" (South Birmingham) . . . "Don't go much on scoring system" (Grimsby).

Technical Points

In previous years Verulam have used the same site, and the same aerial—this year they make no mention of their tradition of hauling the earth-plate out of the moat for the annual MCC burnishing—and they are a hundred points down. Just proves tradition is useful!

Chesham, for once, had no bothers with the gear, which was an all-band all-transistor job built by G3HBW, using "three frequency synthesizers, and an overlay transistor in the PA; on the aerial side, they had a pair of half-wave inverted-Vees, with the centres held up to 110 feet, at right angles to one another. The point of interest here is that these antennae were fed in the balanced mode by using, on each aerial, a pair of cables with the sheath commoned, as a screened twin-balanced feeder, which must have done something for the noise-level.

Another G3HBW transceiver design was in use by the Harrow crowd; this one has a pair of BUYII transis- tors in the PA and, apart from the usual facilities, had a bandwidth variable from 6 kc down to one cycle (i),
The winners of the 22nd MCC, with their winning smiles—Burslem Amateur Radio Society, G3VNR, who sailed away from the GM’s to bring First Place back into the Midlands—see graph p.712. On the key, G4QD with his son G3VNR logging. Left to right, standing, are G8IX, G3SAJ, G3COY, G3USF and SWL Wild (hon. secretary, Burslem A.R.S.). The gear they used was a KW2000, a Drake R4A receiver and an electronic keyer, with choice of two good aerials—an east-west dipole and a 300ft. wire at an offset angle, both at a height of 70ft. Throughout the Contest, G3VNR was an outstanding signal and very well operated.

This, according to the Harrow operators, was the last word and their only other problem was cross-modulation. To cure this, someone thought of a 6 dB pad in the aerial feeder on “receive”—but then the receiver front end took off. They put in a cracking score. Incidentally, they got a T8 report or two on the Sunday, which puzzled them a bit, as locals said the note was quite OK and T9x.

This resurgence of home-brewing, in the sense that there were several other transceivers and receivers, as well as the usual run of transmitters is, of course, gratifying to the old-timer, but is nonetheless rather puzzling. One possible explanation could be that many operators are finding how useful real BK is from personal experience on a transceiver, and are then setting to work to make one without the shortcomings of some of the commercial devices.

Among the Non-Club stations, there were several who seem to have a connection running out over many years with MCC. G2YS, who appeared in one or two logs, is the only call to have been noted as winner of MCC from two different places—Coventry and Chester—while G3BMY took Stourbridge to the heights on several occasions—see graph. Two mobiles were worked by Clubs, one of whom was suspected of keying with his change-over switch! Other personal stations which appeared in various logs were G3TLX, GW3FSP (a winner in earlier years), GM3SVK, G3RSE, G3SWM, G6HD, OK2BJJ, PAOPN and G2MJ.

**Time and Frequency**

Dealing with last things first, quite a few of the entrants still had not adjusted the old alarm-clock (borrowed from Auntie) which we complained of last year. Nonetheless, between them, the invigilators made a note of most of the optimists, and points were docked if the QSO started after the closure—but we really will have to think up a stiffer penalty for the stations calling “CQ MCC” several minutes before and after time.

On a slightly different aspect of the Time question, one or two stations have called for a reduction in hours compensated for by a later start and a third session on
Sunday morning. This is a little difficult to comment on, but there seem to be two things to take into account: In the first one there is the undoubted fact that a Top Band contest on a Sunday morning would probably not be popular with the usual inhabitants of the band at that time—and they have a right to enjoy it without too many contests to ruffle things up. The second is that it would be very difficult to retain a balance which would give the GM’s, for example, a sporting chance. The present sessions are chosen so that a Southern station can collect a hatful of contacts, while not giving the lads with the big multipliers too much scope for high scoring.

Another factor as regards timing of the sessions is that many Clubs who use their own Hq. station already have enough trouble in getting their premises opened for weekend use.

On the point of Frequency, all we or anyone else (who monitored the event) can say is that there was a lot of wasted space due to the main concentrations of activity being between about 1805 and 1865 kc. Instead of attempting to spread out, most operators simply piled in where the activity seemed highest, thereby merely increasing the congestion. A thoughtful few tried to attract activity up to 1900 kc, but found no takers.

But here again, it is what happens every year, and why there are Club signals that are simply never heard in some parts of the country! Careful analysis of the logs reveals this as a fact.

Looking now at the Operating, to anyone monitoring some of it was pretty extraordinary—chaps put on bug keys that obviously were set too fast for them, producing a plethora of dots... the numeral “3,” occurring in practically every callsign, but so often sent as “SM”... the procedure signal BK frequently heard when it was clear the sending operator was not listening through... scrappy or indefinite signing-off or acknowledging... weakness in dealing with non-Club stations, either because the Club op. had not been briefed, or hadn’t read the rules... a general tendency for over-fast sending... and, at some stations, the marked change in operating efficiency as a new hand took over the key (though this in itself is no bad thing, as it showed that somebody else was getting a turn).

However, in spite of these mild criticisms and strictures, the general standard of operating was pretty high, and from some stations outstandingly good, with clear, steady sending, correct procedure and quick, but not hurried or scrambled, clearing of QSO’s. If the invigilators were pressed, they might mention G3VNR,
G3SSO and G2HAO/A as among the best operated stations heard. And this is not to say that there were no others.

It should be remembered that, apart from trying to give Clubs an interesting competitive event, another objective of MCC is that it should be an exercise in CW-expertise—which does not just mean extra high-speed key manipulation.

Potted History

Many people imagine that MCC has been, in essentials, the same sort of event from time out of mind—this is just not so, and perhaps now would be a good time at which to put the record straight. A look at the graph, first, which shows how MCC has gone from strength to strength over the years—as, indeed, has Amateur Radio itself.

Back in 1946, the battle was spread over nine days, out of which one could take a maximum of twenty hours, to work all takers, and with a multiplier based on the number of call areas covered. G2YS (Coventry) made 209 contacts in the time with a multiplier of six. Actually the "possible" was nine—G, GC, GI, GM, GW, DL, LA, OK and OZ.

Year 1947 saw the number of hours upped to thirty, and this time G2JL, West Cornwall, replaced Coventry on the top spot, with 179 contacts and a multiplier of ten.
In GC, GI, GM and GW they seemed to have found the going a little tough, so for 1948, it was decided to make a QSO outside one's own Zone worth two points. For the GW stations this was just dandy, and GW3FFE (Rhigos) hit the jackpot, with seven prefixes, a victory repeated in 1949 with a multiplier of eight, while for 1950, he did the hat-trick with a multiplier of no less than eleven, these being G, GC, GD, GI, GM, GW, DL, EI, HA, OK and OZ—but it has to be said that even if the earlier rule of one point per QSO had been kept to, GW3FFE would have still been very near the top.

Clearly a change was due, and so 1951 saw the first real inter-Club affair. Nine days coverage still, Club contacts only, and each Club could be worked once each day. Coventry came first once again, this time signing G2LU.

A further change the following year saw eight periods from 1830 to 2230, and was spectacular in that G2YS, now representing Chester, and GW3EOP (Neath) dead-heated for first place. From 1953 to 1958 the rules were the same, but the operating period was progressively reduced, and times varied. Afternoons were taken in '53, and GW3EOP (Neath and Port Talbot) thrived on them, as they did again in 1954. Then 1430-1630 was replaced by 1500-1900, which enabled G3BFP, batting for Surrey, to break the GW stranglehold but not, be it noted, before the second hat-trick had been brought off, by GW3EOP over the years '52 to '54.

A further reduction, this time to twelve hours, by was of four sessions 1600-1900, and G3BMY put Stourbridge on top, as he also did the following year with an increased score. G3BMY nearly made another hat-trick in 1958 but just missed it by coming joint second with Coventry to the winners, Crystal Palace. The 1959 MCC featured later hours, 1700-2000, and the dropping of the exchange of QRA/QTH in favour of a scheme of Club identifying numbers, very similar to the one used this year, with which system Stourbridge again brought home the bacon with the help of G3BMY; under the same conditions he won yet again in 1960, this time very narrowly from Aldershot, who were also

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<th>TABLE II</th>
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<td><strong>Southern</strong></td>
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<td>1 East Barnet (G3RPB)</td>
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<td>1 Newcastle University (G3GM)</td>
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<td>1 Moray Firth &quot;A&quot; (GM3KHI)</td>
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<td>2 Kirkcaldy (GM3FXM/A)</td>
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second the previous year, albeit by a much wider margin.

A new system, by which contacts were loaded by different points-value for each region, attracted a large entry—in fact a record up to then—and also a first Northern winner in Hallamshire (G3JHC). Talk there was of the absence of GI/GD stations of the previous years, and of allowing ten points per contact to the GM stations to give them a sporting chance! Indeed, in 1962, the GM stations were getting ten points per QSO—but apart from GM6RI, who was third, the order seems to have been determined solely by the number of Club QSO's made. Among the might-have-beens is the case of the Southern group who dismissed GM6RI as "not worth waiting for," as they thought he was "only a one-pointer"—but the 10 pts. would have brought him up a place and improved an already good position! Already, SWL D. Law had started his series of checklogs which have made him an institution in MCC, his first one appearing in 1961. Gravesend won this one.

As in 1962, the 1963 MCC was run off over one weekend, but with four hours instead of three in each of two sessions, GW3FSP winning on this occasion for Port Talbot. By this time the idea of MCC as a Contest wherein stations competed with one another on a regional basis, as well as for the absolute win, was well established. 1964 saw the first Contest under the present rules, using a two-letter code group instead of the earlier letter-plus-number system, and G3IGW took the plum, with Oxford (G3RBP) following Halifax into second place. Came 1965, and Racal (G3RAC) made a first stab at MCC—and won! They were followed home by Maidstone YMCA, with Sheffield "B" taking third place.

Just to show we really had a well-balanced formula at last, 1966 gave the first three as Kirkcaldy, Newcastle University and Moray Firth, in that order.

And so to this year, when no changes were made other than to revert back to a letter/number identification,
albeit this time in a standard form which made the length of the group about the same for everyone; however, there is no doubt that the ball did run ill for the lads with the 702 code—it should have been printed as Z02!

Over the years, MCC has been notably a sporting Contest, and the fact that so many of the same calls that were prominent in yesteryear are still to be heard, one way or another, is a fine thing.

Changing tack a little, it is interesting to note how few "Works" groups enter. Really, this is not surprising, as there are few of us who are so dedicated as to want to play on the same premises where we work—but it is noticeable that, over the years, those who have found the enthusiasm have usually done well. One thinks of Racal, of Plessey (West Leigh) and, of course, of Painton, who this year put in an entry which took them to 23rd place with 372 points. The gear was the Club's KW-2000A, used in conjunction with SWR bridge and ATU to energise a half-wave end-fed aerial at 30 feet. The Painton operators were G3KAN, G3WJY, G3WJZ and G3RVM, all members of the firm.

Again, looking at the picture over a period of years, it seems to your scribe that there is a tendency for the groups operating in true Club fashion—that is, using the Club gear in their own premises—to score a little lower than those groups who put in a determined entry from the station of a member. But it doesn't seem to matter tuppence to the lads if there are snags, or whether the shack is warm or cold, so long as the Contest is played out—and that's how we on the Magazine like it, too!

So there you have it. One of the friendliest, and yet keenest, Contests on Top Band, and as much pleasure, we sincerely believe, to those who operate and log, as it is to us of SHORT WAVE MAGAZINE to lay it on, invigilate, assess the logs, and to read all the wise, witty—and otherwise!—comments.

Next month, it is back to normal for "The Month with The Clubs" and your reports, covering in particular forthcoming events, should be in to us by first post January 5, for inclusion in the February issue. Address them, as always, to "Club Secretary," SHORT WAVE MAGAZINE, BUCKINGHAM. Meanwhile, a Happy and Prosperous New Year to you all.
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EI7BS, P. J. McGorman, McCurtain Street, Clones, Co. Monaghan. (Tel. Clones 97.)

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G3WSJ, A. Evans, 1 Spital Lane, Cricklade, Swindon, Wilts. (Tel. Cricklade 479.)

G3WSZ, P. Gilson, 22 Carr Manor Place, Leeds, 17.

G3WTR, D. T. Wright, 8 Nolton Place, Edgware, Middlesex. (Tel. 01-952 7342.)

G3WWX, P. C. Swann (ex-MD5PS), G3WWA, D. T. Wright, 8 Nolton Place, Edgware, Middlesex. (Tel. Cricklade 479.)

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G3XAE, B. W. Hodkinson, 33 Brook Street, Macclesfield, Cheshire.

G3XAI, J. E. Temple, 4 Coquetdale Place, Bedlington, Northumberland.

G3BBG, S. Garrity, 11 Town Field Villas, Doncaster, Yorkshire.

G3BBP, K. F. Ballinger, 125 Awood Street, Rainbow Hill, Worcester.

G3BBY, C. Hayward, Toll House Filling Station, Watling Street, Watford, Rugby, Warks. (Tel. Long Buckby 200.)

G3BCS, A. P. Legg, 12 Orchard Way, Sutton, Surrey.

G3BDR, N. E. Evans, Killyberry, Castledawson, Co. Derry.

GW3PEX, L. France, GW3NJW, C. Whelan, 24 Mount Pleasant, Ruislip, Middlesex.

G3WZJ, A. Dudley-Watt, 67 Glenhurst Avenue, Bexley, Kent. (Tel. Crayford 22564.)

G3WZM, G. A. Suckling, Station House, Railway Road, Downham Market, Norfolk.

G3WZP, G. A. Budden, 102 Frost Road, Kinson, Bournemouth, Hants.

G3WZS, H. Williams (ex-9L1HW), 4 Meadowbank Road, Fareham, Hants.

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G3MFV, A. S. Frank, 8 Kennedy Avenue, Fixby, Huddersfield, Yorkshire. (Tel. Huddersfield 23534.)

G3MH, J. Enderby, 2 Murihead Road, Troon, Ayrshire.

GW3NJW, C. Whelan, 24 Severn Road, Canton, Cardiff.

GW3P, L. France, 8 Conway Drive, Pant Farm Estate, Cwmbach, Aberdare, Glam.

G3PGX, D. G. Murdacz, 14 Raleigh Road, Padstow, Cornwall.

G3SZC, I. G. West, 110 Wife of Bath Hill, Canterbury, Kent.

G3TRA, A. Wilkinson, 25 St. Helens Drive, Leicester. LE4 0GS.

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G6KD, K. M. Dunsford, 51 Albany Road, St. Leonards-on-Sea, Sussex. (Tel. Hastings 3690.)

G6RJ, A. Robinson, Purdis Rise, Bucklesham Road, Ipswich, Suffolk. (Tel. Ipswich 78748.)
THREE-BAND AERIAL SYSTEM

FOR 40-20-10 METRES, WITH STUB MATCHING

WHERE only one transmitting aerial can be erected, the amateur with limited ground space at his disposal is faced with a problem in making this aerial operate efficiently on all bands. The problem is complicated if the line of the aerial cannot be orientated in a direction favourable to propagation along the general DX paths.

The aerial described here has proved to be very satisfactory for multi-band operation, and its performance on DX has been outstanding. Local conditions of terrain, height and obstructions play a big part in aerial performance, and it is not suggested that this one is necessarily the best for a particular situation. But whatever the conditions, it might be worth trying, as the construction is simple. The height is about 30ft. only. The mast end is on a halyard, so that the aerial can be raised and lowered easily.

Ability to bring the centre of the "flat-top" to within reach is an essential feature, as will be seen later.

Multi-Band Requirements

Use for Top Band dictates that the aerial be as long as possible, since the lengths of 50 to 100ft. generally feasible in most situations only represent a fraction of the wavelength, and anything less is not of much use except for local contacts. Much the same considerations apply to the 80-metre band. No appreciable control of directivity can be achieved on either of these bands, and the usual practice is employed of tying the feeder ends together at the transmitter end, and working the whole thing against ground. On 7 and 14 mc, however, dipole horizontal tops become practicable, and even the 66-ft. top requisite for a 7 mc dipole can be achieved at most locations.

Unless a dipole can be erected approximately N-to-S it is not the best form of aerial for the DX bands 14 to 28 mc. On the contrary, some form of long-wire aerial is desirable at these frequencies, in order to bring lobes to bear in the required directions.

As the LF section of 7 mc is becoming useful again as a DX band, a dipole top cut for Forty will be worth having for general operation on it, irrespective of aerial direction.

Assuming, then, that a 66-ft. top is erected, its operation on 14 and 28 mc as a full-wave and two-full-wave aerial respectively will provide a more desirable lobe distribution, whilst operation on 1-7 and 3-5 mc with the feeders tied and operated against ground will give reasonable efficiency for local working.

The problem therefore resolves itself into one of feeding the aerial efficiently on the three HF bands.

Feeding and Matching

The use of tuned feeders has always been viewed with distaste because at HF it is difficult to avoid losses, and to maintain balance—particularly with end-fed aerials and aerial coupling coils and tuning condensers—becomes difficult for multi-band operation. Also, at full p.e.p. output the tendency to condenser flash-over is a nuisance, necessitating wide spacing and bulk in the ATU.

Current feed, using a simple untuned link to the PA tank and a coaxial feeder, connecting into a current loop point on the aerial, is modern, simple and efficient.

Consideration of the application of this method to an all-band system led to the conclusion that a compromise was necessary, either in respect of efficiency or convenience. It was decided to maintain efficiency, and the sacrifice lies in the fact that in order to change the working band it is necessary to go outside and shift the position of the aerial end of the coax feeder.

Design of the Feeder

Above is shown a 66-ft. 7 mc dipole and the current distribution along its length. A current loop at the centre enables the feeder to be attached at that point, using low-impedance (75-ohm) coaxial cable.

The same top used on 14 or 28 mc has a current distribution such that the centre becomes a current node (voltage loop) and the low-impedance feeder cannot be attached at this point. If it is, the PA refuses to load up, because of the violent mis-match. Obviously the coax can be applied if the point of feed can be moved a quarter-wavelength (at the frequency to be used) away from the centre.

This can be accomplished by inserting a stub a quarter-wavelength long at the centre of the aerial, connecting the feeder to the other end. The effect is the same as adding another half wave into the aerial, except that since it is folded, the added portion will be non-radiating. However, two different stub-lengths are necessary for the 14 and 28 mc bands, the length of the former being approximately twice that for the latter. This led to trying out the idea shown in here, in which the open-ended stub is about a quarter-wavelength long on 14 mc and hangs vertically from the top portion.

For 7 mc operation the stub is not required, and the
coaxial feeder is attached at points AA.

For 28 mc the point of attachment is BB (quarter-wave at 28 mc below the centre) whilst for 14 mc the whole stub length is required and the feeder connects at CC.

The presence of the unused portion of the open stub at 7 and 28 mc has no effect on the functioning of the system. The stub comprises an open-wire twin-line of 16-gauge wire spaced to 3in.

The top or dipole section of the aerial was designed for 28,500 kc because it is best to cut the roof to the length necessary for the highest frequency band.

Since on 10 metres the top is two wavelengths long, the actual physical length is somewhat shorter than four times the length for a dipole at this frequency, owing to end effect.

The length may be calculated from the usual formula:

\[
L (\text{ft.}) = \frac{492 (N - 0.05)}{\text{Freq. (mc)}}
\]

Where \(N\) = the number of half-waves in the top (4 for 28 mc). The stub length is given by:

\[
L (\text{ft.}) = \frac{234}{\text{Freq. (mc)}}
\]

The stub length is actually made 17ft., so that on 14 mc the feeder taps on a few inches above the bottom end.

Adjustment and Operation

Begin with 28 mc. Attach the coax feed line to a point roughly half-way down the stub, inserting an RF ammeter in series with one side of the coax at this point.

The clips are now moved above and below this position about 2in. at a time until maximum current is indicated. At each setting the coupling of the PA tank circuit link is adjusted for constant power input to the PA.

The stub wires are marked when the correct position of attachment is found. The same process is employed to determine the position for 14 mc with the feeder clipped on near the bottom.

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FOR SALE: Stablised power supply units; five-inch and 14-inch oscilloscope displays; UHF wobbulators; 40-band 30 mc amplifiers; chassis and cabinets. Buyers to inspect and collect. No reasonable offer refused. — Wiltshire, G8AKA, 12 Leslye Road, Winton, Bournemouth, Hants.


WANTED: Hallcrafters HT-40 transceiver (circuit diagram available to DX-401 for £18 or near offer. Also new and unused KW low-pass filter for Ch.II, 75-ohm, 70s. — Brown, G3TLH, QTHR.

FOR SALE: Eddystone EC-10, 12 months old, price £38. — Whitham, 25 Chalfont Park Drive, Clifforde (2276). Lances.

EXCHANGE or Sell: Eddystone S.640 Rx. modified and in excellent condition, with Candler Morse Code and word information, plus £15. — Exchange for Model Railway, W.H.Y.—Watson, Bartlow Road, Castle Camps, Cambridgeshire.

SELLING: Lafayette HE-30 receiver. £20. Also 19 tubes, short lead 19 international, 15s. per volume. — Pilley, G3HLW, 27 Oxted Rise, Oxtoby, Leicester, LE2 5WG.

FOR SALE: Collins TCS-12 receiver, in immaculate condition, with PSU, £210s. R1475 Rx. with built-in amplifier. £7 Buyer pays carriage. — Smith, 50B Aldershot Road, Guildford, Surrey.

FOR SALE: For 70 mc band, Pye PTC-108D radio-telephone, £5 10s. Type HT34/APS-13 UHF Tx/Rx. 70s. All valued. Tuning Units TUB5, TUB6, TUB7. 50s. each. All carriage paid.—Austen, 1 Valebridge Road, Burgess Hill, Sussex.

WANTED: For my K1155, the IF transformers to suit kit, also a good filter, not fitting on a half-lattice filter, postage refunded, (London area). — Box No. 4381, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.I.

OFFERING: Due Arrivial Expensive Junior Op., my superbly-constructed 2DAF receiver, in a Philpotts cabinet, with new QCC xtal., Electroniques coils and transformers, complete except for its valve sockets and dial. Aligned and checked, cost starts over £100 but I'll snap for you at £45 (or a reasonable offer?) Also Electroniques coils and IF transformers for the 2DAF Tx £10 or offer? All carriage paid.—Sykes, GSOYW, 25 Smallcombe Road, Bakers Hill, Tiverton (3466), Devon.

WANTED: A National NCX-5, Mk. II. (Midlands). — Box No. 4584, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.I.
WANTED: Heater transformer for an 818. An Eddystone 24-in. ceramic coil former. And a Mosley TA32dr. assembly.—Benton, Q6O, 31 The Crescent, Donnington, Wellington, Shropshire.

SELLING: Frequency Meter BC-221T, with integral voltage stabiliser, PFI and probes, £32. Solartron Type SRS-152 stabilised PFI, output variable 0-500v. DC at 200 mA, 6-3v. AC, metered and with overload relays, brand new with manual (cost £100), bargain at £30. Vacuum Tube 20/103 precision attenuator, coverage 1-2500mc to 75-000, with manual and leads, brand new in carton, £15. New spares for the AR88D: mains xformer, 85s.; full 18, 70s. stage, 200/200w, AR88DF/OF xformer, 35s. Xtal for BC-221, 50s. All items plus postage. Also the official manuals for CT.45, CT.218, Type 13A 'Scope and others, s.a.e. for list. C. O. D.

ACCOMMODATION: In the Isle of Wight, bed-breakfast and evening meal, large TV lounge. Also a 4-berth caravan, with electricity and flush toilet.—Berden, G31VIFJ, QTHR (Tel. Bradford 43953). Also a 4-berth caravan, with electricity and flush toilet.—Box No. 4587, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: K.W. Viceroy Mk.IIIA SSB/CW transmitter, with extra filter, consistently reported as having excellent speech. 1965 AR88D, up to full specification, £35. Special aurality Oscilloscope, in very good condition and fully working, case resprayed like new, as offered elsewhere at £35, my price £21 only, and will haggle! A bargain for someone with more space. Command Rx, coverage 6-9-1 mc, free with 'scope, or going separately for £30.—Box No. 4587, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SMALL ADVERTISEMENTS, READERS—continued

G. W. M. RADIO LTD.

RECEIVERS

ADIRALTY B40, 640 Kc/s. to 30.5 M.C./s. 14 valves. Speaker, A.C. power unit built in, handheld switched 1, 3 and 8 Kc/s. Crystal calibrator. Large vertical calibrated illuminated dial. Circuit diagram, £21/10/-, complete with 100 Kc/s. to 300 M.C./s. and 300 M.C./s. to 30 M.C./s. covers. £24/10/-, complete with 100 Kc/s. to 300 M.C./s. and 300 M.C./s. to 30 M.C./s. covers. Also £23 covers only 150 to 300 Kc/s. 560 Kc/s. to 1.5 M.C./s., 1-5 to 10 M.C./s., 9.5 to 18.5 M.C./s., 17.6 to 30.5 M.C./s., £11/10/-, carriage 30/- per set.

B44 Mk. 3 complete with installation kits comprising aerials, connecting cables, headphones, etc., £11/10/-, carriage £1.

HEADSETS for 19 or 22 set with mike, used £15/-, new £15/- post paid.

R475., 2-20 M.C./s. Large slow motion dial, etc., with original power unit for 12 volts D.C. or 230 volts A.C. £16. Also a 4-berth caravan, with electricity and flush toilet.—Benton, Q6O, 31 The Crescent, Donnington, Wellington, Shropshire.

R209, 11 valves 1 to 20 M.C./s. 6 volt or 12 volt models available, £15, carriage £1.

10X TYPE CRYSTALs, 1000 to 10,000 Kc/s. £13/6/-, either paid post.

ACCUMULATORS, 6 volt 40 amhphr, 35/-, carriage paid, new 1213 valve bases, new 6/-. 35/-, post paid. 15 set rotary power unit, 12 volt D.C., 30/-, carriage paid.

METERS. 21 round flush. D.C. 0-100 volts, 0-500 volts, 12/6 each; 0-50 Microamps, 0-500 Microamps, 17/6 each 0-1 Ma.; in desk case, 17/6, 31 round flush, 0-100 Microamps, 30/- each. £3-50 Microamps cable leads 0-15, 0-500 volts, 8/-. 8 Ma.; post 1/6 per meter.

MARCONI B38/CR100, 100 Kc/s. to 30 M.C./s., £18/10/-, carriage £1.


B5R LOSO Audio Oscillator, 65, carriage £1.


SMALL ADVERTISEMENTS, READERS—continued

WANTED: Valve-voltmeter (VTVM), also an amateur-band receiver with circuit details, or 2DAF-type would do. Full information and price, pse; could collect. (Staffs. area).—Box No. 4586, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

EXCHANGE: Seven-valve Top Band TX, VFO, pi-output, input xtal mic., PSU stabilised for VFO, metered for grid and cathode, with one meter on PSU also receiver ARBB, in FR condition, with manual; also xtal Calibrator, with PSU and manual, giving 10/100/1000 kc points; also SWR Bridge, with 0-500 micro-ammeter; also unmodified R.1132A receiver, with Type 3A PSU and meters; also Marconi UHF WaveMeter Type TF-643A, coverage 26 to 350 mc, complete with manual and charts. All this lot in EXCHANGE for SP-600JX or R.C.A. AR-8518 or Hammarlund HQ-170, or similar Rx in mint condition with manual, plus Avo Model 8 or 9, or good Valve Voltmeter. Disposing of following valves, new and boxed: PX240, 40s.; 807, 9s.; 96CS, 10s.; 4001, 9s.; 9Ec3, 5s.; 22SN7, 10s.; OS-108/10, 8s.; 6X4, 5s. 1d.; S6F17, 1s. 1d.; 6443, 1s. 4d.; 6067, 1s. 4d.; CV-4065, 1s. 1d.; F-6060, 9s. 6d.; 5099, 12s. 6d.; G226, 20s.; 2729, 2s. 1d.; 8ASW, 1d.; ECL8, 1d.; 4P2, 2s. 1d.; 6GK5, 1d.; 12AT7, 2s. 1d.; 5021, 3s. 1d. Plus many others, pse enquire. Postage 6d. per lot.—Carey, 89 Pevensey Road, Bognor Regis, Sussex.

SELLING: Eddystone 940 receiver, in mint condition, with plinth speaker, £80. Light alloy rotatable 30 ft. aerial mast, with wall bracket, stay wires and p.f.e. bearings, £26. Shorrok MK.V receiver, VHF AM, aircraft band 110-144 mc, battery portable, as new, £21. Jockey deluxe, with matching unit, £8. Buyers, collect. —Ring Hunt, Walton-on-Thames 21842, after 7.30 p.m.


WANTED: An Eddystone bug key, in perfect condition; would consider Vibroplex, but no Jard—Barnard, 31A Whittaker Road, Rushmoor, Hampshire, Hants.


WANTED: Complete 70-centimetre station; price and full details, pse.—Batten, 31A Whilton Road, Hounslow, Middlesex. (Phone 01-701 3154).

NOW aged 50, in search to work his way round the world, seeks travelling companion, both paying own expenses. Genuine enquiries, pse.—Brown, 17 Stanley Street, Galashiels, Selkirkshire, Scotland.

SALE: Geloso converter, coverage 10 to 80m., complete with internal PSU and in good condition, price £12.—Woodhouse, G2AHY. Fellowswood, The Avenue, Crowthorne, Berks.

Transistor Double Tuned I.F. Transformer, set of three (no details), 7/6.

Transistor Audio Transformers, Driver with split sec. for transformerless output, 3/-. Output and Driver to suit OC91s, etc., 3/- each or 3/6 pair.

Epicyclic drives with 150 M/A ratio 6-1, new, 3/-.

Transistors, OC12, 4/6; GT45B (OC11), 1/6, 15/- doz.; matched pairs, OC19s, 3/-; OC84, 2/6; F364A, 600 mc's, 900 milliwatts, TO-8 case, 4/-.

Diodes, BY100, 800 P.I.V. at 550 M/A, 4/-; 35/- doz.; SX638, 1/-; ZR11, ZR13, 15/- each.

Zener Diodes, OA224, 3/6; OAZ274, 2/3; 15705A, 15705A, 6/.

SCRS 400 P.I.V. at 5A, 11/6. Transistor and Diodes are new, not rejects.

Paper Capacitors, 2,200 pf 400 V.W., 47,000 pf 125 V.W., 902 mfd. 290 V.W., 894 mfd. 780 V.W., 94 mfd. 350 V.W., 3d. each, 2/6 doz.

Tubular Ceramics, 470, 1,000, 2,000 pf, 3d. each, 1 1/2 doz.

Transistor Capacitors, 1 mfd. 50 V.W., 4 for 1/2, 12 for 2/4, 100 for 15/-.

Disc Ceramics, 0-01 mfd. 12 V.W., 2/6 doz.

Transistor Electrolytics, 4 mfd. 64 V.W., 50 mfd. 6 V.W., 100 mfd. 6 V.W., 350 mfd. 9 V.W., all at 6d. each, 5/- doz.; 150 mfd. 12 V.W. 8d., 7/6 doz.; 200 mfd. 25 V.W., 400 mfd. 15 V.W., 1/-; 9/- doz.

Double Gang Potentiometers, 1F/10log, 500K lin., 100K log, 2/6 each; G2003-16, as new, 7/6.

Printed Circuit Board, 5" x 2", 4d.; 5" x 4", 9d.; 5" x 5", 1/-; 5" x 8", 1/3 single and double sided.

Tuning Capacitors with 6-1 reduction gear 324 pf + 388 pf, 4/-.

Polystyrene Capacitors, 30 V.W., 20, 60, 100, 5000pf 5/-, 3d.

Costar 2/9 doz., £1 10 0.

Printed Circuit Board, 5" x 2", 2/6; 5" x 4", 7/6; 5" x 5", 1/-; 5" x 8", 1/3 single and double sided.

2/6 each; LAIGIV03-10, as new, 7/6.

Stabilised Double Power Supplies, variable 200-300 volts d.C. at 100 M/A twice or 200 volts at 250 M/A twice (unstable), 6-3 volts A.C. at 6A four times, 250 volts A.C. input, fully metered black crackle case, size 15" x 8" x 12". Some single power supplies, 45-65 volts at 300 M/A. Buyer to arrange collection. A bargain at £7, used, good condition (postal service only). Please add postage. S.A.E. for lists.

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Telephone: CHESHAM 6161/2
SALE: KW-77 receiver, having full pre-sale service by N.W. Electronics. Little used, as 2nd string to KW-2000A, in first-class condition electrically, mechanically and appearance-wise, price £70, no offers.—Sharpe, G3UXU, QTHR. (Hemel Hempstead 54113).


FOR SALE: Woden Transformers: 500-0-500v., 150 mA, 6-3v., 4A, 5v. 3A; 320-0-320v., 150 mA, 6-3v., 3A, 5v. 2A, ex-equippment, 30s.; modulation xfomer, 75w., p/p 807's into 6,000 ohms RF, two off, 20s. each; driver xfomers, 6J5-p/p grids, two at 10s. each. Partridge high 30w. Type WWOFB/0/1-7, 40s.; modulation xfomer, 300w., 10,000-ohm push-pull into 6,000-ohm RF, 50s. Prefer buyers collect or carriage extra. Also available Instruction Manuals: SX-28, 11s.; AR88D, 16s.; AR60T/R/S, 11s.; ET-4336B, 6s.; ET-4332B, 11s. Limited quantities, post free.—Cook, G5XB, QTHR (Tel. Kidmore End 2141).

FOR SALE: R.C.A. AR88 communications receiver, plus 6-volt battery PSU M.183810A, with spares and instructions, price £25. Valve tester and data, €8; Transformer 500-0-500v., plus LFs. 40s. (Bucks.) —Box No. 4588, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED: Faulty receiver, such as CR-100, R.107, R.1155, or what-have-you, any condition acceptable, state price, collection arranged anywhere.—Briceo, 335 Eton Road, Ilford, Essex. (Tel. 01-478 8141).

WANTED: Original handbook for the R.C.A. AR88LF receiver. —Moss, 18 Whalley Road, Wilsheir, Blackburn, Lancs.

SELLING: BC-221 in first-class condition, with professionally built-in stabilised PSU and charts, price £20. Battery-operated RQ-105s two-speed tape recorder, with all accessories, brand new, £15.—Simpson, 58 Dale Avenue, Hassocks (2394).

WANTED: Manual for the Canadian Reception Set R.103, Mk.I, 30s. offered. Also manuals or instruction books on British, American and German Army, Navy and Air Force radio equipment.—Gee, 11 Whitehorse Lane, Steyning, Sussex.

WANTED: Thermo-couple 0-5 amp meter, also 200 micro-amp moving coil meter.—Lewis, G6EDV, 37 Edwin Road, St. Thomas, Exeter, Devon.

FOR SALE: General coverage receiver, NC-77X, 550 kc to 30 mc, price £12. Codar PR-30X preselector, 70s. Codar RQ-10, 60s. All in mint condition, buyers to collect.—Pepler, 26 Springfield, Bushy Heath, Herts.

WANTED: Several Pyle High-Band Mobile Radio-telephones, suitable conversion to two metres, modulated or not. Your price paid for units in good condition.—Phillips, 40 Castle Drive, Cimla, Neath (4998). Glam, South Wales.

FOR SALE: Transistor portable, VHF/MW/LW, 15w. by 6in. by 3in., in black padded leather, £2. R.C.A. AR88 Rx, in excellent condition, will deliver to 50 miles, £37. Also two new 31 Set transceivers, with headsets, £6 each. WANTED: Modern wob- stick, valve voltmeter, valve signal generator covering 85 kc to 80 mc approximately; also a DC/PSU for the KW-2000A.—Lord, G3PHTN, Newfield House, Moira, Burton-on-Trent, Staffs. (Tel. Sandalstone 7537).

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Volume XXV THE SHORT WAVE MAGAZINE

SMALL ADVERTISEMENTS, READERS—continued

EXCHANGE: Hallcrafters SX-101A receiver, 15-valve dual conversion, coverage 10 to 80m, selectable sidebands with notch filter and xtal calibrator FOR An Eddyestone 940 or Hammerlund SP-600.—Wolloff, 7 St. Mary's Avenue, Humberstone, Leicester.

WANTED: R.C.A. S-meter, in mint condition, for the AR88.—Hervey, 259 Lutterworth Road, Nuneaton, Warwickshire. (Tel. ONU 4804).

SALE: K.W. Vanguard Tx and AR88D receiver, priced at £65 together, or £54 each. Can be seen and tried.—Hogan G3PUZ, 101 Radbourne Road, London, S.W.12. (Tel. 01-673 2061).

FOR SALE: Eddystone S.840A general coverage receiver, range 480 ke to 30 me in four bands, with internal speaker, BFO and suitable for 110v. or 220-250v. AC/DC, recently realigned, electrical condition and appearance very good, price £25, with free delivery to 100 miles.—Smith, G3PZZ, 38 Leasway, Wickford (2791), Essex.

SELLING: R.C.A. AR88D, in good condition, with manual, speaker and headphones, price £27 10s. or near offer. Transport arranged in London area.—Claxton, 36 Priory Road, London, N.W.6. (Tel. GLAdstone 0209, day time).

SALE: Lafayette KT-340 (similar HE-30), twelve months old and in very good condition, price £17 or near offer.—Adkins, 72 Courtenay Avenue, Harrow Weald, Middlesex.

SELLING: Brand-new and unused Nombrex Signal Generators; Type AF-30 at £14 10s.; RF-31 at £9 10s. Also Avomino, £8, and an "Advance" millivoltmeter, range -001 to 300v., 4-5 mc. in mint condition (list £49), price £20. (London area).—Box No. 4590, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED: Sideband Equipment in immaculate condition, such as Collins, KW-2000A, Heathkit, Sommerkamp, or similar. Also beam rotator; CSE-2A110 1000 Watt Tx, or Top Band SSB Tx, such as Cannonball. Prices and full details, pse.—Baylis, Holt Farm, Fair Oak Road, Bishopstoke, Hants. (Tel. Fair Oak 470).

WANTED: Sideband, price and details.—Vink, 7 Hayes Gardens, Hayes, Bromley, Kent. (Ring 01-462 2065, weekends or evenings; H0L0rn 6899 working hours).

BARGAIN! T.W. Communicator two-metre transceiver, perfect, very, very, very near new, with J-Beam halo and 4-over-4 slot-fed. All as new. Having moved QTH, activity now low. Bargain all-in at £68.—Adkins, G2BTY, 10 Agar Meadows, Caron Downs, Nr. Truro, Cornwall. (Tel. Perranarworthal 198).

STILL Available, Heathkit SB-10U Sideband Adaptor, as advertised November. Must sell, reasonable offers around £25.—Hogan, G3EGC, 96 Ashworth Lane, Astley Bridge, Bolton (51502), Lancs.

OFFERING £25-£28 for a recent Eddyestone EC-10 or EB-35 (FM) receiver. (Essex).—Box No. 4589, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SALE: Brand new unopened Trio 9RS-9DE, first reasonable offer? Also new de luxe Joystick, with 3A tuner, offers? Parker, 43 Trafalgar Court, Tividale, Warley, Worcs.

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Eddystone 870A, 150-380 kc/s.-24 me/s. £20 (15/-).

Heathkit RG-I, 600 kc/s.-32 me/s.

Heathkit “Mohican” GC-1 U Mk. 2, transistorised £30 (20/-).

Eddystone 680/2, 480 kc/s.-30 me/s. £60 (30/-).

R.C.A. AR88D, 540 kc/s.-32 me/s.


Hammarlund HQ-110-A, bandspread receiver £95 (55/-).

National HRO-50T-1, complete with tuning coils £125 (75/-).

Hammarlund HQ-170, bandspread receiver...

THE SHORT WAVE MAGAZINE

January, 1968

TX/RX MOBILE POWER SUPPLY UNITS

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A few in poor condition, use tested, £11

Carriage extra, send fl we will return change.

Enquiries S.E. Carriage extra, send E1 we will return change.

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