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CONTENTS

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Advertising: **Maria Greenwood**

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FOR THE RADIO AMATEUR AND AMATEUR RADIO

The SHORT-WAVE Magazine

EDITORIAL

Autumn *While in many respects the general outlook as winter approaches is bleak and full of foreboding, as far as Amateur Radio is concerned we can be a good deal more optimistic.*

The bands are opening well, and larger numbers of radio amateurs than ever before will be using them—to communicate " across the parish or across the world," as our saying goes. The extraordinary variety of radio amateur activity will once again be demonstrated—LF, HF, VHF, DX, Phone, CW and SSB; to say nothing of RTTY, A/TV, Mobile, Construction, Operation and Contest working, each with its own type and category of adherents. Amateur Radio has long since progressed beyond the stage where even a well-qualified and experienced AT-station operator can expect to be expert, or even knowledgeable, in every one of its aspects.

Today, there are things going on in the VHF/UHF regions which are as a closed book to those who keep to our LF bands. There is DX being worked on these bands which would astonish those whose only experience is DX on HF. There is high-priced commercial equipment being installed in numerous amateur stations, and also individual constructional work going on of a very high standard of professionalism and workmanship. (There is also the other kind of construction, which often gives results just as good!)

So, as what has been promised to be " a long, hard winter "—in more senses than one —begins to close in on us, we can be grateful for the solace, relaxation and pleasant distraction that Amateur Radio will afford.

Austin Forsyth, G6FO.

WORLD-WIDE COMMUNICATION

THE SELECTOJECT, TRANSISTORISED

USEFUL ADD-ON UNIT FOR IMPROVING RECEIVER SELECTIVITY

J. T. A. JOHNSTON (G3LYY)

While the principle of the Selectoject—meaning "select or reject"—has been known for many years and is discussed in the Handbooks, it is not so familiar in a transistorised form. As this article explains, a very high degree of selectivity can be obtained with an S-O-J properly built and adjusted, and thus it will be of particular interest to those using surplus receivers and communication types of the older designs.
—Editor.

THE SELECT-O-JECT, or S-O-J as it is called commonly, is an extremely useful ancillary if the receiver selectivity is anything other than excellent and, even then, to have an extra peaking control or tunable *null* can be very desirable on a crowded band.

The S-O-J produces a peak or a notch which can be tuned across the audio passband to amplify a wanted signal, so reducing the receiver bandwidth, or reject an unwanted heterodyne. In addition, the S-O-J can be used as a variable audio signal generator by increasing the feedback in the "peak" position until oscillation occurs. In this mode it can be used as a code practice oscillator.

The unit to be described cost the writer less than ten shillings and more than half the cost went on the twin-gang carbon variable resistor. The transistors are of an unknown variety, bearing an orange spot and costing less than twopence each. The *beta* of those used lay between 50 and 54 though this is not critical provided that enough gain is available to give sufficient output and the level of feedback necessary to obtain oscillation. Most of the remaining parts, including variable resistors, were "liberated" from an ancient TV receiver. The chassis is of tinplate—which immediately previously contained the peas consumed at dinner on the day the project was commenced.

The circuit is not original—it is discussed in the ARRL *Handbook*—but it has been shown that the SK3004 transistor specified is not required and very few modifications to resistance values are necessary.

Circuit Description

In order that the tuning should be accurate, R3, R4, R7 and R8 should be matched as closely as possible. While a resistance bridge is useful, an ohm-meter is good enough. Also C3 and C5 should be matched.[1] An accuracy of one per cent should be sought in both cases though this can be anywhere within ten per cent of the specified value.

TR1 and TR2 are tuned by C3/VR2A and C5/VR2B respectively and form the heart of the S-O-J. If this section does not function well, neither will the unit as a whole, hence the care taken over component balancing.

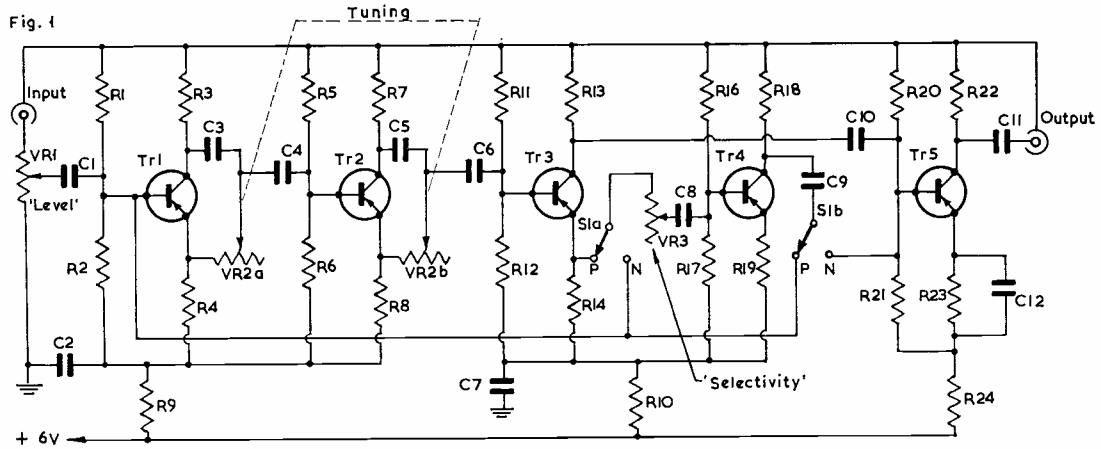
TR3 performs as an audio amplifier with negative feedback derived from the undecoupled emitter resistor R14. The signal across this emitter resistor is in the correct phase to feed TR4 and allow positive feedback over the loop TR1, TR2, TR3, TR4, TR1 on "peak." (*See* Fig 2).

TR4 is an audio amplifier with manually controlled input level, VR3. Adjustment at this point controls the feedback over the loop and so the selectivity, since the bandwidth decreases as the threshold of oscillation is approached. (Anyone who has used a regenerative amplifier or detector knows this).

TR5 is the output amplifier. On "notch" the signal arriving at the base of TR5 *via* TR4 is precisely out of

[1] *See Appendix A, p.544*

Fig. 1



Circuit of the Selectoject, which is connected between the Rx output and speaker or headphones, at high impedance.

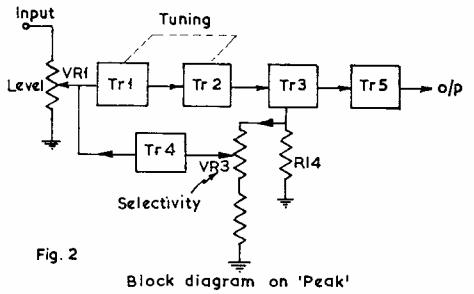


Fig. 2 Block diagram on 'Peak'

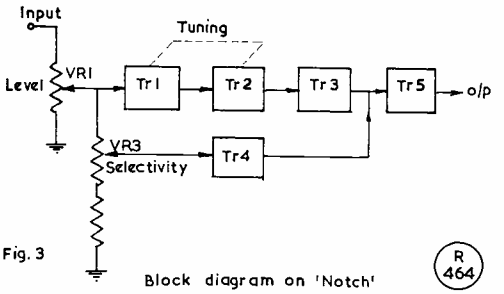


Fig. 3 Block diagram on 'Notch' R 464

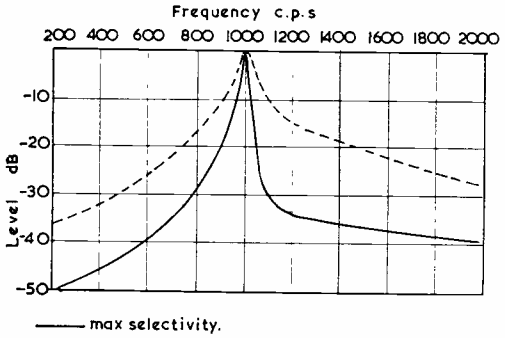


Fig. 4: Performance on 'Peak' R 465

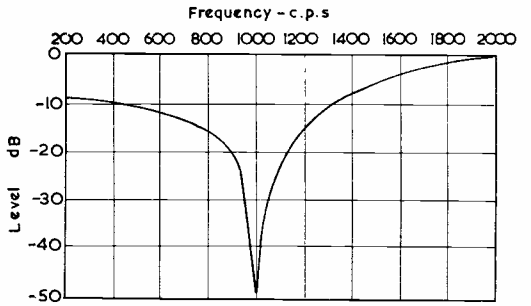


Fig. 5: Performance on 'Notch' R 466

phase with that coming through TR1, TR2 and TR3 at the frequency tuned by C3/VR2A and C5/VR2B, hence cancellation of that signal occurs. (*See* Fig. 3). Here slight adjustments may have to be made to the emitter resistor and base biasing resistors to obtain optimum performance with the transistor used.[2]

Construction

The chassis is 6in. x 2in. x 1in. on tinplate, though the overall size will be governed greatly by the size of the variable resistors, especially with small fixed resistors and capacitors. The writer used $\frac{1}{2}$-watt resistors as they were to hand but the smaller $\frac{1}{8}$-watt resistors will do as the total power consumed by the unit is only 6 milliwatts at 6 volts.

The positive HT line/negative earth convention is adopted at the writer's station whether p.n.p. or n.p.n. transistors are used as it avoids the necessity for thought before inter-connecting apparatus. The circuit diagram may look rather odd when this convention is used but no further disadvantage has been found. Also it means that at a pinch, transistor apparatus can be run from an HV pack for valve apparatus by connecting, say, the stabilised 108-volt supply through a 1-megohm variable resistor and adjusting it until the desired voltage appears across the transistor apparatus (having started, of course, with maximum resistance in circuit!).

The layout appears not to be critical but this should be as logical as possible, which means separating the input and output circuits by the maximum amount.

The tinplate bends and solders easily, facilitating chassis construction. The other big advantage is using material which can be soldered is that components can be fixed directly to the chassis without using tag and bolts.

Performance

On both "peak" and "notch" the bandwidth is less than two per cent of the resonant frequency.

On "peak" the rejection on the HF side flattens off at about -35 dB with respect to centre frequency, while

Table of Values

Circuit of the Selectoject

C1, C4, C6, C8, C9, C10, C11	= 0·47 μF	R4	= 560,000 ohms
C2, C7, C12	= 50 μF	R12	= 270,000 ohms
C3, C5	= ·005 μF (matched to 1%)	R13	= 6,800 ohms
R1	= 120,000 ohms	R14	= 2,700 ohms
R2, R20	= 68,000 ohms	R15	= 390,000 ohms
R3, R4, R7, R8	= 10,000 ohms (matched to 1%)	R17	= 47,000 ohms
R5, R16	= 330,000 ohms	R18	= 8,200 ohms
R6	= 180 000 ohms	R19	= 1,200 ohms
R9, R24	= 100,000 ohms	R21	= 15,000 ohms
R10, R23	= 2,200 ohms	R22	= 10,000 ohms
		S1	= DPDT switch
		TR1-TR5	= Audio transistors
		VR1, VR3	= 100,000 ohms
		VR2A, VR2B	= 250,000 ohms, ganged (*see text*)

[2] *See Appendix B, p.544*

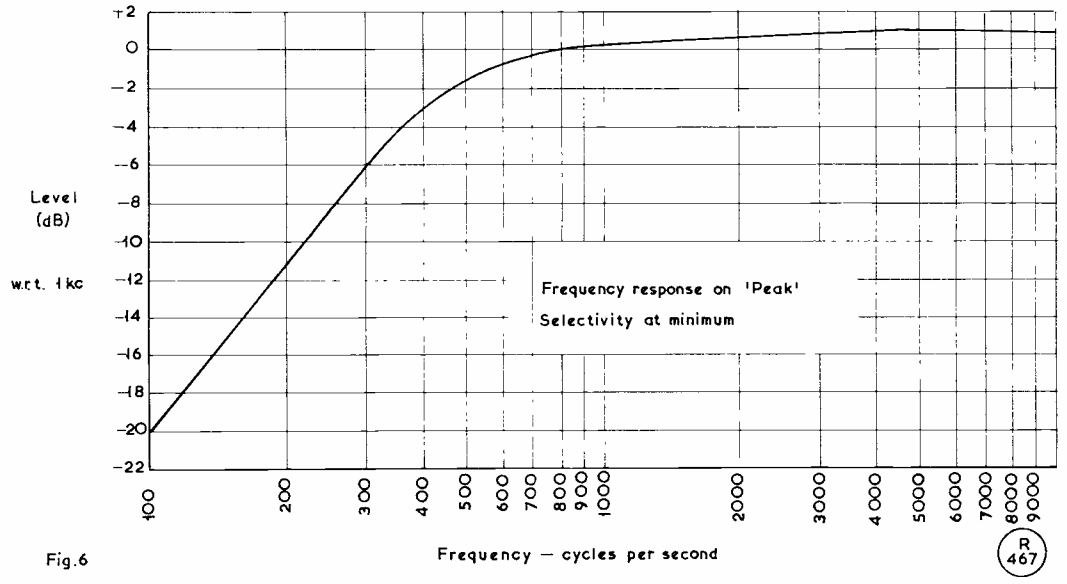


Fig.6

on the LF side the shape of the curve is slightly different but fairly similar. (*See* Fig. 4).

On " notch " the shape is similar again so a heterodyne can be removed from a Phone signal with virtually no effect upon the intelligibility of the signal. (*See* Fig. 5).

The figures obtained seemed so good that a separate check was made on different measuring apparatus with the same results.

The noise level is -56 dB which is quite good enough for communication though it might disturb the high-fi man a little in a quiet room. With the selectivity control set fully back, Phone signal quality is good and music is acceptable, so the S-O-J can be built into any communications receiver in the course of construction and provision for switching out need not be made.

Operation

A certain amount of practice will be required before the user will be absolutely familiar with the S-O-J, because the optimum setting of the selectivity control is dependent upon the audio frequency tuned. Despite this, an immediate improvement in receiver selectivity will be experienced by those who operate a general-coverage receiver of almost any type, and in particular the surplus varieties.

The deep notch is particularly useful as few receivers except those which can only be described as expensive have any comparable facility. The operator has the choice of " peak " or " null " at the flick of a switch, the resonant frequency remaining constant. The writer's preference is for " peak " on CW though a nearby heterodyne may be removed more effectively on " notch."

One important final point must be made, which is that in order to attain maximum selectivity the S-O-J must not be overloaded.

APPENDIX " A "

As a capacitance bridge is not the most common piece of test gear in the shack, the GDO finds another use:—

(1) Connect the capacitor under test to a coil and dip with the GDO,

(2) Remove the capacitor, fit another and dip again,

(3) Note the change of frequency on the station receiver. The limits of permissible *change* of frequency are $\pm \frac{1}{2}$ per cent, *i.e.* 5 kc per megacycle.

The wanted inductance is about 0·4 μH to resonate ·005 μF at 3·5 mc.

APPENDIX " B "

If it is found necessary to adjust the output stage it *is* possible to do it aurally, but is much simpler if an audio

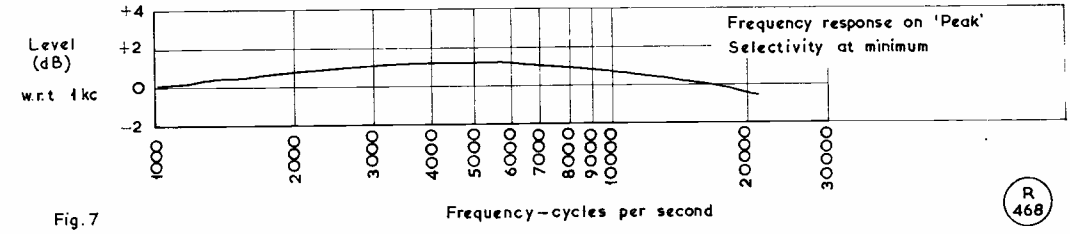


Fig. 7

signal generator and oscilloscope are available, when the procedure is as follows:

(1) Feed an audio signal to the base of TR5 observing the output on the oscilloscope,

(2) Increase the input until limiting occurs,

(3) Alter the emitter resistor until the limiting just disappears,

(4) Find the value of emitter resistor which just produced distortion on the peak of the other polarity,

(5) Choose a value half-way between the results obtained in (4) and (5).

Decreasing the base dividing resistors may increase the signal handling capacity further but there is no point in exceeding a comfortable listening level or the transistor dissipation.

APPENDIX " C "

Distortion figures are included as a matter of interest as is the complete frequency response curve up to 20 kc. (Figs. 6 and 7).

Frequency Distortion: 100 c/s, -50 dB; 330 c/s, -50 dB; 1 kc, -48 dB; 3·3 kc, -47 dB; 10 kc, -48 dB.

MODIFICATION NOTIONS FOR THE TYPE 19, Mk.III

FOR TRANSMISSION AND RECEPTION ON THE LF BANDS

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

The 19 Set is a well-known surplus item, of basically simply but effective design, robustly built and intended for reliable working under exacting conditions. This article discusses some practical ways in which it can be made more useful for amateur-band operation.— Editor.

THE Army Mk. III No. 19 Set is available at low cost and can be adapted for amateur use. The original Type 19 gives transmitting and receiving facilities on the 80m. and 40m. amateur bands. Modifications described here are for 80 and 160 metres.

The receiver covers 2·0-4·5 mc and 4·5-8 mc in two switched bands, calibrated at 0·1 mc (100 kc) intervals. It is RF/FC/2IF/DDP, with 465 kc IF—and very good it is for the LF bands.

Reception

HT at 275v. is specified but 200-250v. will be satisfactory. An ordinary receiver PSU giving about 40-60 mA at 250v. or so will be adequate. Take positive to pin 6 of the " power input " or upper connector. The set obtained by the writer had no VHF section. This leaves space for a mains transformer and PSU components. An external pack is then unnecessary.

The heaters are connected for 12v. DC or 12·6v. AC. A 12·6v. supply was obtained by connecting the two 6·3v. 2A AC windings of a mains transformer in phase. Check with a meter, as phase opposition gives no output. A small separate 12·6v. heater transformer could be used. The feed goes to pin 3 of the power input socket.

Some of the receiver-section valves are in series with the intercom. amplifier heaters and those of the transmitter section. If the heater circuit is not modified it is not possible to take out unwanted valves. Heater circuit arrangements appear to vary. It is not difficult to re-wire the receiver for the usual 6·3v. AC. Pin 1, or the chassis, is the common HT negative and heater return. For reception only, no other supplies are wanted.

The output stage is indicated as operating headphones. These can be medium impedance and are taken to chassis and pin 4 of the " output " (bottom) connector. Good output was obtained for a speaker. With a 2/3 ohm unit, results were best with a matching transformer having a ratio of about 15 : 1. Primary goes to chassis and 4, and secondary to speaker. Initially, it had been planned to use the 6V6 of the intercom. section as an audio output stage for the speaker. This seemed pointless after testing, but might be kept in view.

Performance was fully up to the RF/FC/2IF standard, both as regards sensitivity and selectivity. Tuning is with the right-hand control, which has a ball *plus* friction drive, ratio about 75 : 1, and dial markings were found to be exact. The left hand dial has a friction drive only, and tunes the aerial (PA) section. It is peaked for best output. Frequency readings here are a rough guide, and depend somewhat on the aerial used.

For AM reception the function switch is put at R/T and the " On A " switch on. The meter switch can be at any position (it reads receiver HT voltage, if wanted). Another position checks heater voltage and naturally results in no reading when using AC. (It is as well not to leave the meter switched to check AC.) At the " AVC " setting the meter falls back somewhat with increased signal strength, on *strong* signals. Some valves had risen out of their holders during transit of the Set.

Top Band Reception

Coverage to include 1·8-2·0 mc can be obtained by putting a ·002 μF capacitor in parallel with the 2-4·5 mc padder. This slightly shifts tuning in the 3·5-3·8 mc region. The padder may also need adjusting. A re-calibrated dial is of course wanted.

The air-cored FC signal frequency coil can be brought into line at 1·8-2·0 mc by placing a small ferrite core in the former, and peaking this for maximum output. This core can screw into a hole in a piece of wood cut to fit in the end of the coil. The aerial circuit is tuned with its separate control, so needs no modification.

Block diagram Fig. 1 shows circuits in use during reception (*see* p.546).

The Transmitter Side

For transmission, up to 500v. can be taken to pin 4 of the power plug and this supplies the 807 PA anode only. The aerial (AE) position of the meter switch depends for a reading on an external RF rectifier, so without this

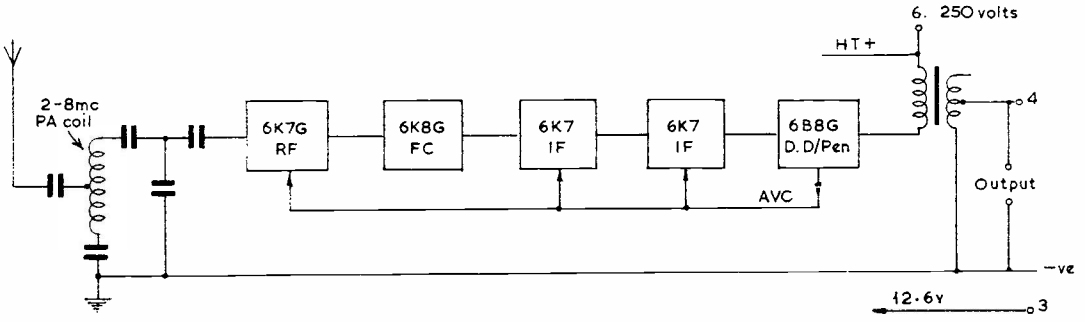


Fig.1: CIRCUIT FOR RECEPTION

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gives no indication of tuning. As there is a tapped PA coil with loading controlled by an external variometer, it is necessary to use this, or a tuner, and place an anode current meter in the PA supply.

Briefly, a second mixer receives input from the frequency changer and an oscillator at IF, to produce output at the reception frequency. This passes to a driver, diode drive level control valve, and the PA. As a result, transmission is automatically on the same frequency as reception, throughout the tuning range. A 4-gang condenser pack (right-hand control) tunes all circuits including the driver, but excluding the PA anode.

Frequency coverage is large, 2·0 to 8·0 mc, and does not allow setting up for transmission with a calibration accuracy to meet amateur-band licence conditions. This might be overcome by using some other source of frequency measurement, such as the R.502 wavemeter. But it seems that in any case reduced coverage, at least on transmission, is really required for amateur use. Block diagram Fig. 2 shows circuits in use for transmission.

Transmitter Modifications

This is where the fun begins! As transmission is on the receive frequency, it would seem a good plan to cut receiver coverage down to 3·5-3·8 mc and other wanted bands, and rely on the present mixer circuits for conversion of this narrow band for PA drive. But the large 4-gang capacitor is so built in that replacing it by a smaller value is extraordinarily difficult (the 19 Set was designed for use in a tank!). Unfortunately, series condensers to reduce coverage cramp the tuning at the HF ends of reduced bands.

Other odd points arise: Probably, few AT-station operators want MCW operation. The existing grid modulation might be improved. A *pi*-type PA circuit would be useful. Also, if the equipment is to be used on Top Band, input needs limiting to 10 watts.

Various ways of modifying the 19 Set can doubtless be worked out. The idea preferred at G3OGR was to leave the whole receiver as it is, and make such changes to the transmitter section as would allow it to cover 1·8-2·0 mc and 3·5-3·8 mc with its own calibrated 1·75-2·0 mc VFO. Relay control by a mike push switch was not required. The meter ought to do also for PA tuning. The large connectors and sundry other facilities, such as intercom. amplification, can also be eliminated.

Removing Unwanted Circuits

Unfortunately it is not simply a matter of changing a few connections. To speed the work, flat and box 4BA and 6 BA spanners are almost essential, plus small wire cutters and one or two screwdrivers. Resistors and such are cut out with long ends, for future use.

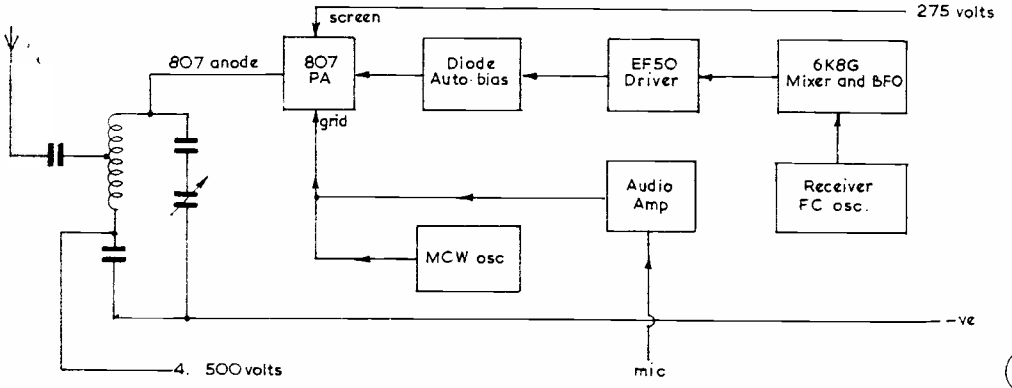

Fig.2: CIRCUITS ORIGINALLY IN USE FOR TRANSMISSION

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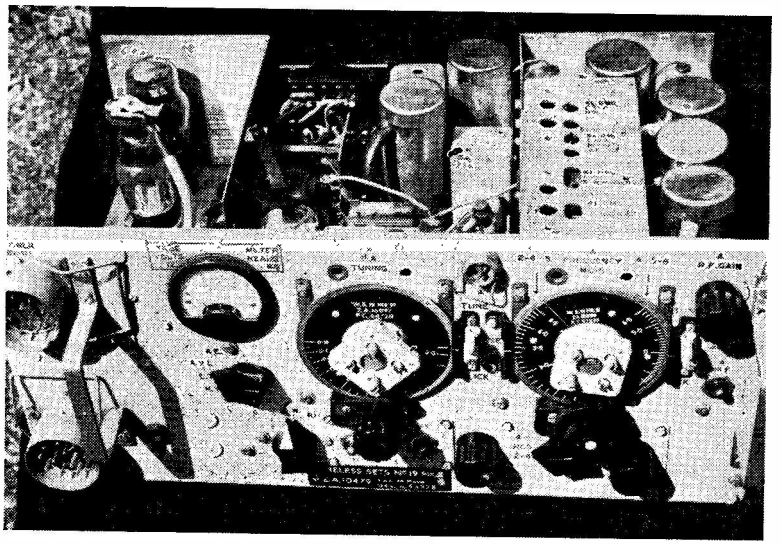


The 19 Set in its original condition, covering 2.0-8.0 mc, and incorporating an intercom. amplifier for talking between the tank crew. The receiver section is to the right.

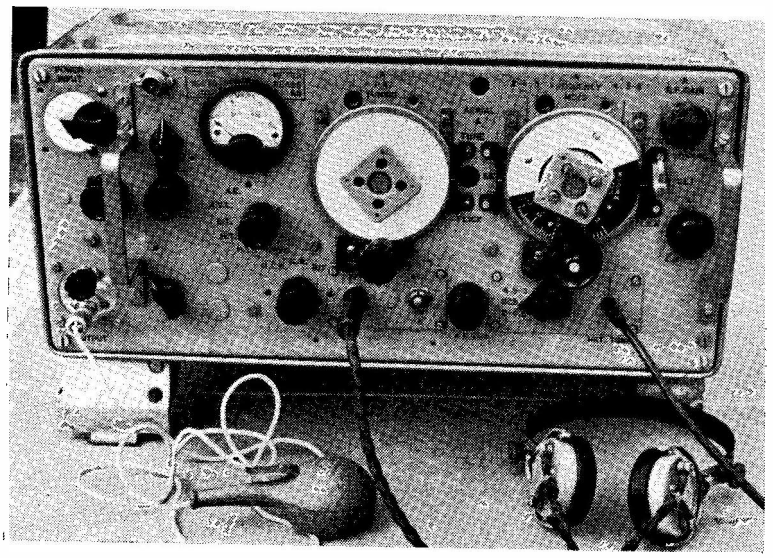
The intercom. section is completely removed; also the relay. As a telephony transceiver was envisaged, the BFO was cut out. The MCW facility and tone filter are not wanted, so these circuits and the MCW/CW/RT switch were likewise stripped out. The only position for the new VFO control appears to be in place of the original PA tuning capacitor, so the PA (which is to be changed to *pi*-output anyway) is taken away, and also the existing driver and mixer (used during transmission in the original).

This leaves the receiver. As the heater tags were quite easily reached, heaters were put in parallel for 6·3v. Separate switching of some screen grids, originally used, becomes unnecessary, so the receiver frequency-changer screen resistor is soldered directly from tag 4 to the nearby IFT HT tag, and two separate red HT feeds emerging from the receiver are joined.

The large panel connectors were removed. The green lead, 4 to transformer, will be the audio output circuit. When all is finished, only HT and 6·3v. leads issue from the receiver section, plus a connection from the last IF cathode (for the tuning indicator). The receiver should be complete, except for the RF stage grid circuit, which originally was incorporated with the PA coil.

After stripping out the circuits which are not to be used it is probably wise to complete and test the receiver. This is done by inserting the 6K8G frequency changer, two 6K7G IF valves, and a 6B8G as double-diode-pentode, connecting 6·3v. and 250v. supplies. An aerial is taken through a condenser to the vacant RF stage anode tag. If all circuits have been restored where needed (especially HT feeds) results should be satisfactory.

The RF stage can then be brought in. This was originally tuned by the PA coil and condenser, now



The 19 Set conversion as described in the article makes it into a single-unit transceiver station for the LF bands, running about 10 watts on the Tx side—see circuit p.549. The receiver line-up is RF-FC-2/IF-Det audio giving good sensitivity and selectivity.

removed. However, a small box surrounds the wave-change switch, and contains two coils used for the driver grid circuit, signal frequencies being tuned with the 1st section of the 4-gang condenser pack. These coils are used for the new RF stage.

Locate the switched primary lead (blue) and extend this for an eventual aerial connection. Take earth ends of primaries to chassis. The long lead which went from the RF valve cap to PA circuit is then connected *via* a 300 $\mu\mu$F capacitor to the 1st gang section. Replace the small box lid. The gang trimmer is unsoldered, and a panel 50 $\mu\mu$F trimmer fitted in the " A NET " hole.

Results should now be as originally. Used in this way, the receiver needs only 1·5 A. at 6·3v. and about 40 mA HT. If phones are not favoured, the original coupling transformer can be removed and a small output transformer, with a ratio of about 45 : 1 and intended for a 2/3 ohm speaker, can be fitted instead.

Metalwork

Existing holes are used whenever possible. The top connector hole is blanked off and takes the T/R/N switch. The lower connector hole accommodates both a miniature 1-megohm potentiometer (microphone gain) and the coax connector for the microphone.

The PA bandswitch and condenser occupy top and bottom of a slot (VHF section). Other panel holes used for changed purposes are as follows: Buffer 80/160m. (key); drive potentiometer (MCW/CW/RT), grid/S-meter (Ae./AVC etc.); aerial (VHF aerial); output jack (switch IC), mains on/off (switch " A "), aerial trimmer (Net), mains lead (Het.).

The 807 holder is originally sunk below chassis level. This has to be done in the new position, or a miniature 807 used. The metal case as supplied was as new, but completely unventilated. This does not seem to matter for operating periods of moderate length, but beyond this ventilation would be desirable. Some holes can be easily made in the back with a screw-up type of valve-holder punch.

Power Section

The supply provided was 300v. at 120 mA. This allows 50 mA for the PA, about 45 mA for the modulator, and 20-25 mA for the VFO/driver stages.

Other supplies should suit, if to hand, but less than 275v. main HT is not much recommended. With the values given, RF output on Top Band is larger with 33 mA at 300v. (10w.) than with 40 mA at 250v. (also 10 watts).

Transmitter VFO

This covers 1·75-2·0 mc with a little overlap, when using the EF50. The central drive can be removed so the large PA condenser was replaced by a 150 $\mu\mu$F capacitor, though 100 $\mu\mu$F would do.

The " flick " setting screws are removed, also the central nut, knob bearing, capacitor and plate. A pin holds the mechanism on the spindle, with a grub screw behind. A surplus condenser with flat front plate was bolted on. A capacitor with centre-bush fixing needs mounting on a flat metal plate, bolted to the mechanism support plate. A component with back and front bearings is recommended.

The VFO coil is 40 turns of 24g. enamelled, close-wound on a 1in. diameter paxolin tube previously smeared with a fixative. It is tapped ten turns from the earth end. A 220 $\mu\mu$F 1% parallel capacitor gave satisfactory coverage so no trimmer was provided. The coil is mounted on the screen surrounding the EF50 holder.

Calibration is from 1·75-2·0 mc with a 100 kc crystal, when all is finished. Zero beat the VFO with the crystal harmonics in turn, marking the VFO dial. Use the VFO 2nd harmonic to get 50 kc marks. Appropriate markings are doubled for 80m.—1·9 mc becomes 3·8 mc, and so on.

A stabilised supply did not seem necessary for LF band work, so the plan to arrange this with an OA2 was dropped.

Switching

Six poles of the original 9-pole 3-way switch are employed for PA input, grid current, and receiver S-meter positions. Wiring provides " Receive " in the central position, with " Transmit " at one outer position, and " Net " at the other. Poles are employed as follows: R, T and N indicating Receive, Transmit and Net, Fig. 4.

(1) Aerial to PA tank at T, to receiver *via* 500 $\mu\mu$F at R, and to receiver through twisted wire capacitor of few $\mu\mu$F at N,

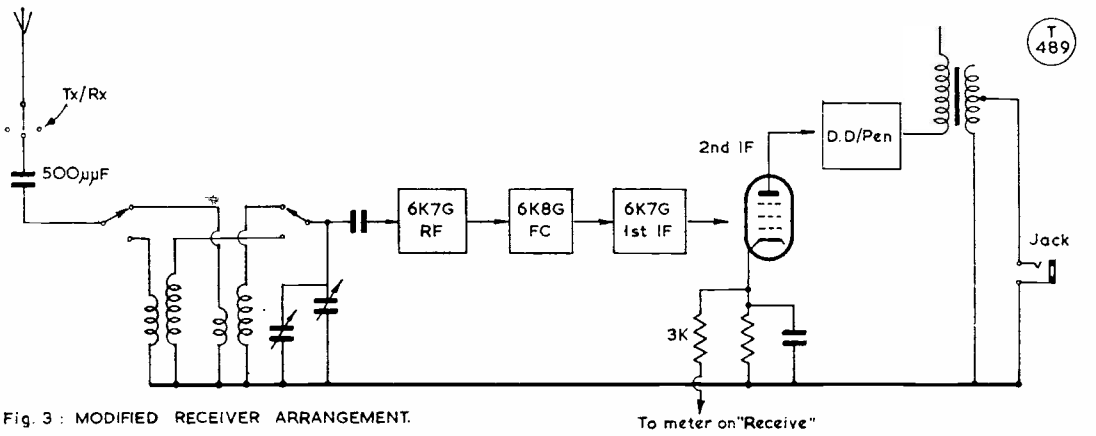


Fig. 3 : MODIFIED RECEIVER ARRANGEMENT.

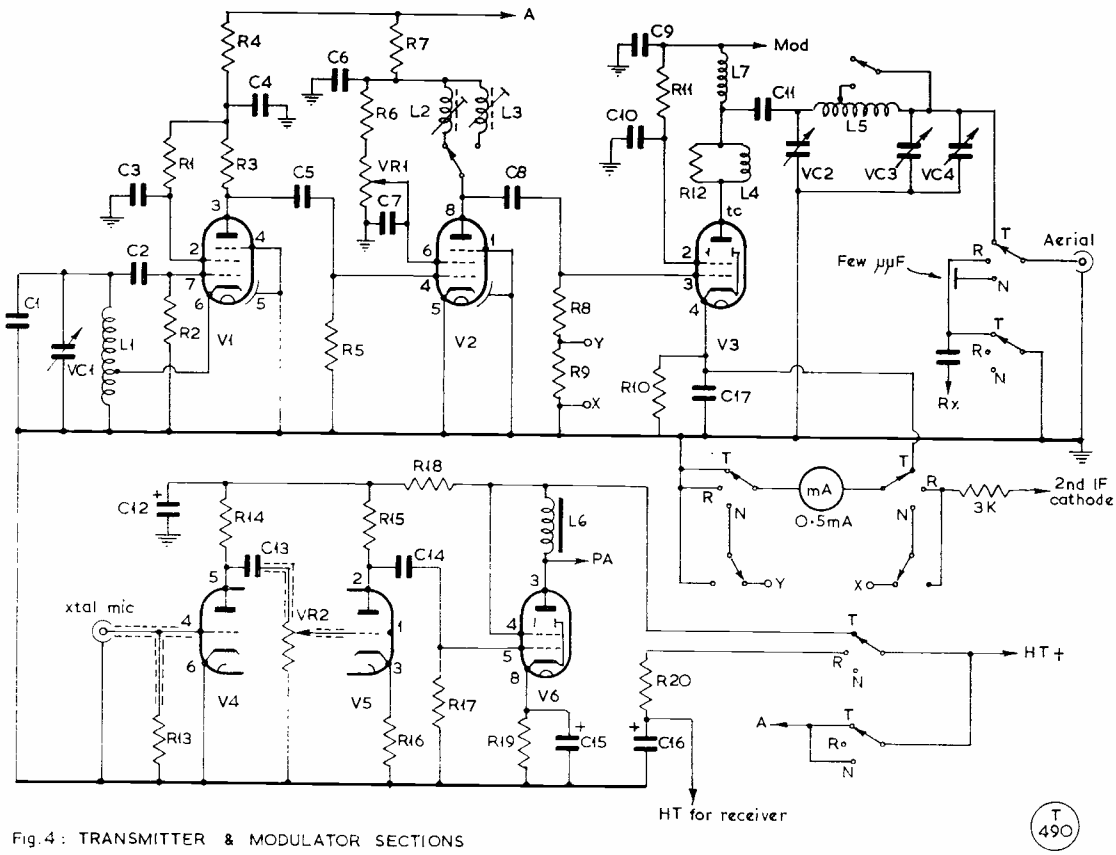


Fig. 4: TRANSMITTER & MODULATOR SECTIONS

Circuit of the Type 19, Mk.III, as modified for the LF bands.

(2) Receiver aerial lead shorted to chassis at T,

(3) HT to modulator (and thus PA) at T. HT to receiver *via* series resistor at R and N,

(4) HT to VFO and buffer-multiplier at T and N,

(5) Meter negative to chassis at T and R; to Grid/S-Meter switch section Y at N,

(6) Meter positive to PA cathode at T; to final receiver IF cathode circuit through series resistor at R; to Grid/S-Meter switch section X at N.

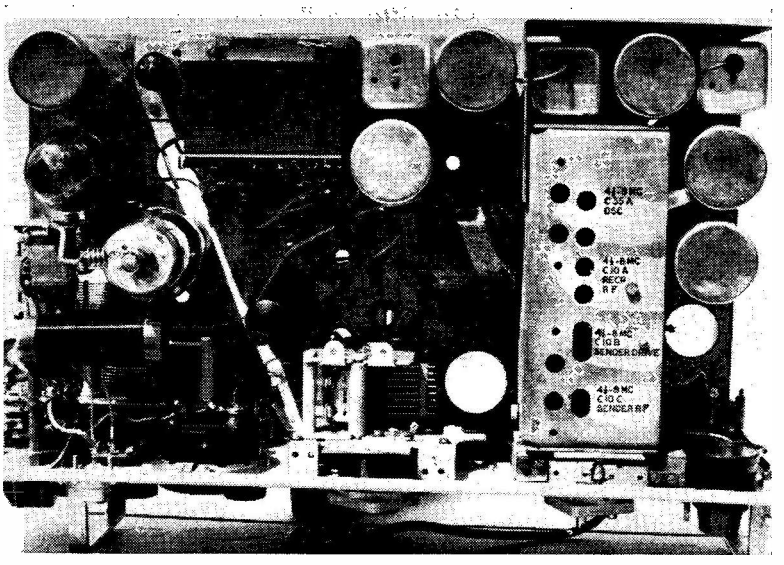
New Grid/S-Meter switch is two poles of the 5-way original meter switch. The meter operates as follows:

(*a*) On T reads PA cathode current, range 0-150 mA; (*b*) On R functions as "dip" type receiver S-meter; (*c*) Normally functions as at (*b*) on N, giving 9-plus reading when VFO is tuned to receiver frequency, for netting; (*d*) If Grid/S-Meter switch is placed in second position, the meter reads 0-6 mA, PA grid current. If the Grid/S-Meter switch is left in this position, this does not change meter working at T or R. It is only

Table of Values

Fig. 4. Modified Circuitry of the 19 Set, Mk. III

C1	= 220 μμF, s/m	R13	= 1 megohm
C2	= 200 μμF, s/m	R14, R15	= 220,000 ohms, ½w.
C3, C4, C6	= ·05 μF, 350v.	R16	= 3,300 ohms, ½w.
C5, C8	= 100 μμF, mica	R17	= 470,000 ohms, ½w.
C7	= ·01 μF, 350v.	R18	= 33,000 ohms, 1w.
C9, C13	= ·002 μF, mica	R19	= 270 ohms, 1w.
C10	= ·001 μF, mica	R20	= 5,600 ohms, 2w.
C11	= ·005 μF, mica	VR1	= 50,000-ohm potentiometer
C12, C16	= 8 μF, 350v.	VR2	= 1 megohm potentiometer
C14	= ·004 μF, mica	L1	= VFO coil
C15	= 25 μF, 25v.	L2	= 80m. buffer
VC1	= 150 μμF	L3	= 160m. buffer
VC2	= 500 μμF	L4	= APC, 5t. 20g. on R12
VC3, VC4	= 2 x 500 μμF, BC type	L5	= PA coil, *see text*
R1, R2, R6	= 47,000 ohms, 1w.	L6	= Modulator choke, *see text*
R3	= 20,000 ohms, 1w.	L7	= RFC, 2·5 mH choke
R4, R11	= 10,000 ohms, 2w.	V1	= EF50
R5	= 100,000 ohms, ½w.	V2	= 6AG7
R7	= 2,200 ohms, 1w.	V3	= 807
R8	= 22,000 ohms, 1w.	V4, V5	= 6SL7GT
R9, R10	= meter shunts (*see text*)	V6	= 6V6G
R12	= 47 ohms, 1w.		



Interior view of the converted 19 Set, as an LF band transceiver. The VFO tuning condenser is at lower centre, the PA stage at left, modulator upper left, and the PSU items along rear chassis edge.

necessary to check grid current occasionally, as when changing bands, or going from one band end to the other. The 807 operates well with about 2 mA to 4 mA grid current.

PA cathode current has to be indicated because the switch is make-before-break and cannot be in the HT positive circuit. This does not reduce efficiency, but the anode input is less than you think if you do not allow for screen current, at least. Initially, measure the voltage drop across the 10K resistor R11. This voltage divided by 10 is then the screen current in mA. (About 10 mA.)

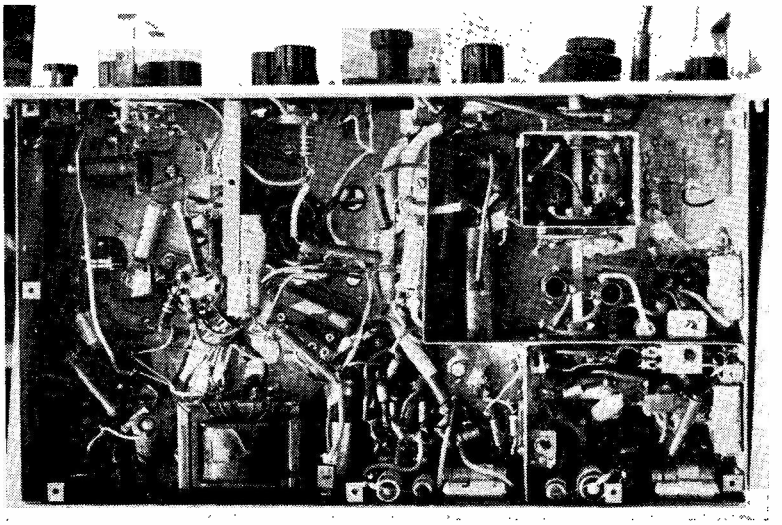
The cathode shunt R10 is most easily made with no power on the equipment. Connect a test-meter, potentiometer and battery in series, and from chassis to cathode tag, with a provisional length of resistance wire as shunt soldered on. Adjust the potentiometer for 50 mA and 100 mA, and if the meter reads low, disconnect the battery and increase the shunt value. In this way, a 0-150 mA range is quickly made. (Take care not to apply heavy current to the unshunted meter.)

The grid shunt is near enough if a 47-ohm carbon resistor is used, with the 0·5 mA 500-ohm meter. Some inaccuracy is unimportant here. For greater accuracy, check against a test-meter and make a shunt, or file the side of a slightly low value carbon body resistor.

Coils

The buffer coils were old BC receiver surplus, with unused windings taken off, and adjusted to peak at about the middle of the 160 and 80m. bands.

The 160m. coil can be 90 turns of 34g. silk-covered wire in a pile $\frac{3}{8}$in. long on a $\frac{1}{2}$in. dia. cored former. The 80m. coil can be 65 turns of 34g. enamelled close-wound on a similar former. Other coils could doubtless be used.



Underneath the converted 19 Set transceiver. Note the screened compartments, accommodating speech amplifier, PA stage and VFO section.

With the VFO at about the centre of the band, and meter switched to read grid current, each buffer coil core is rotated for best grid current. This was substantially more than wanted.

The original PA tank has insufficient turns. The PA coil is 70 turns of 22g. enamelled wire, centre tapped for 80 metres, on a 1in. dia. paxolin tube.

Results

The RF/FC/2IF receiver is actually very good on the LF bands. It is suggested the S-meter S9 point be placed at mid-scale.

Transmitter output into a calibrated RF wattmeter is fully up to standard. Coverage of 80 metres as well as Top Band is useful, because on end-fed wire is nearly always used on 160m. so can be employed on 80 metres also, often allowing distances to be worked which would be exceptional for Top Band.

Modulator

This was a 6SL7GT amplifier followed by a 6V6, because to hand. A 12AX7 (miniature) could replace the 6SL7. The 6V6 is in the original, and seems to modulate up to 10 watts PA input well. (6V6 data as for 6BW6.) A 6L6 would appear practical.

The modulator " choke " is a 80 mA speaker transformer primary. Unnecessary resistance here or in the smoothing choke drops PA volts. The modulator can be tested by temporarily connecting a loudspeaker—or feed the RF into a lamp or other load, and use another receiver. If overloading is avoided, speech should sound strong and clear.

Other Possibilities

Various experiments were carried out with the circuit. The 807 will actually take 100 mA at 500v. (50 watts) easily. This has been modulated by an external power-pack and modulator using 2/6L6's—but a wider spaced PA tuning condenser is needed, to avoid flash-over.

The screen of the 807 has also been modulated with fair success, with the 6V6 alone. This allows for larger PA inputs without the need for a big modulator.

MORE ABOUT INTERFERENCE SUPPRESSION FOR MOBILE

LESS COMMON CAUSES, AND THEIR CURES

J. E. AUSTIN (G3REM)

IN a previous article (" Interference Suppression for Mobile Radio," September '67, SHORT WAVE MAGAZINE) the writer made brief reference to causes of interference which are not so common, and it is proposed now to pinpoint some of these.

Aerial. A sudden onslaught of severe interference especially when " everything " starts to come in should lead to an immediate inspection of the aerial itself. In the case of broadcast receivers it has been found in almost every case that the aerial was at fault. The usual trouble is water that has worked its way down the rods and collected in the base. This causes a leak from the rods to ground and may be detected quite easily by putting a meter across the aerial plug. *Any* indication of resistance is too much as there should obviously be no connection between the rods and ground. Some types of aerials can be dismantled and dried out. Those which have been machine-sealed are best replaced. Finally, check the lead and braided copper screen for breaks, paying particular attention to the points where the lead passes through bulkheads, etc. See also that the earthy part of the aerial and the point of contact are not corroded. If you change your car after three years or so leave the aerial on as it is bound to be corroded and can cause more trouble than it is worth.

Battery. It is not often appreciated that noise can be present in the battery, but this is so and steps must be taken to prevent this noise affecting the receiver. An aerial will only pick up noise which is radiated into free space in its vicinity, so a good check is to note the noise when the aerial is connected and then to disconnect it and listen again. If noise is still present it is almost certain to be entering the receiver *via* the LT lead. The remedy is to fit an LT filter choke in the lead. Filter chokes for this purpose are available, built into standard car radio fuseholders, and they can be fitted in series with the existing fuseholder in a matter of seconds.

Windscreen Wiper Motor. This does not always give trouble and is often overlooked anyway—until it happens to rain! If the body of the wiper motor is at ground potential the usual 1 μF suppressor condenser can be fitted between the supply terminal and ground. However, many motors are mounted on flexible rubber fittings and in such a case a suppressor will not do the trick. Here it is necessary to bond the body of the motor to ground with copper braid, then checking, because quite often a capacitor is not required in addition to the bonding.

Gearbox Static. Not very common, but has been known to occur. Static noise can be generated in the gear train or bearings and has been encountered on odd occasions. To check, tune between stations and listen carefully when changing gear. A change in static intensity will become evident with each change in gear ratio and a steady pressure on the gear lever may reduce the effect. Here again, bonding is required and copper braid at least 1 inch wide should be fitted from the gear-box to chassis. Keep it short and resist the temptation to stretch it, as this will increase the self capacity of the braid and reduce its effectiveness.

[over

Blinker Type Indicators If previously OK, read again remarks under *Aerial* as the indicators are included under the heading of " everything coming in." The indicators are used for short periods only and any slight noise is usually ignored. If noise from the flasher unit is extra high, check that the body of the flasher unit is bonded to ground. The fitting of a suppressor capacitor is *not* recommended as it will upset the repetition frequency of the unit.

Tyre Static. Tyres containing a high percentage of nylon give the most trouble and it is difficult to effect a complete cure in some cases. The fitting of wheel bearing suppressors will often help by bringing the whole wheel to chassis potential. Anti-static brushes will of course apply for the driven wheels. Different types of road surfacing materials have a marked effect on the amount of static noise generated, some causing more than others. The writer did at one time try to evaluate the results over different types of road but the results were much too inconclusive to form a firm opinion.

In this respect the reader is reminded that electric cables run under many roads and noise from these is often confused with tyre static. Modern motorways with their many illuminated signs and the cables to them can be pretty noisy. Stopping the car and then having a listen will usually prove the point. (Do not, of course, stop in the middle of a motorway because within minutes suppression difficulties will be the least of your troubles!)

Fibre Glass Bodies. Those running cars with fibre glass bodies are liable to have a struggle on their hands, from the start. Choose the position of the aerial with care, using a transistor portable around the car to find a convenient point where any interference is at its lowest level. If a point near the main chassis can be found, so much the better. Mount the aerial and run a length of 1-inch copper braid from the base of the aerial to the chassis, keep it as short as possible and do not stretch it. After fitting the usual suppressors around the engine it is often necessary to screen the engine compartment. Various ideas, including the use of a metal-based paint and wire mesh, have been encountered in the past but the writer favours the following method:

Obtain a roll of aluminium foil as commonly used in the kitchen, choosing a suitable width for the job in hand. Using impact adhesive stick the foil around the entire engine compartment with the foil side outwards, bonding each section to the next. Then bond each section to the chassis with copper braid. The radiator block should be bonded to the foil at the top and bottom on both sides. Cover the inside of the bonnet with foil and bond across both bonnet hinges to the rest of the foil with copper braid. The main electrical earth return from the engine to chassis should be included within the whole screening system. If possible, run one of the bonding braids from the ignition coil mount to chassis in order that the coil suppressor capacitor may be grounded to the braid. In severe cases fit screened sparking plug leads or fit a plate over the plugs.

VHF Suppression. All the points made in both these articles apply but the following extra steps are advised. Reduce the length of the leads on all suppression devices to one inch or less and double-check ground connections. Keep any leads or aerial feeders out of the engine compartment altogether and shorten bonding as much as possible. The value of dynamo or alternator suppressors may have to be increased to as much as 3 μF and in some instances it may be necessary to shunt the capacitor with a disc ceramic of the appropriate value for the frequency involved.

Hydrolastic Suspension. This type of fluid suspension is used on the *Morris 1100* and its variants. Static noise has been known to occur with this suspension but less trouble has been experienced during recent years. Bouncing the car when stationary will produce noise in the receiver if static is being generated. A special suppression kit is made to meet this particular case, which contains copper-braid strips used to bond the moving parts to chassis. This kit is quite comprehensive and includes all items required for the front and rear wheels.

Locating Interference Source. The source of any noise can often be located by making a few simple tests, such as the following: *Wheel Static*—Operate in turn the hand brake and then the foot brake, noting any change in noise level. If the noise stops when operating the hand brake which controls only two wheels, this is obviously the place to look. On most cars this will usually be the rear wheels. The hand brake can have quite a marked effect as it is usually cable-operated and the hand lever is fixed to the main body shell or chassis, providing a good bond from the brakes, etc. and chassis. The footbrake will provide a clue but most brakes are hydraulic these days and the wheels are still floating at RF by reason of the flexible hoses to the wheel units. *Undefined Noise*—Check first by unplugging the aerial as mentioned earlier to determine entry to receiver. In difficult cases disconnect each electrically operated device on the car in turn until noise ceases. (Even electric speedometers can give trouble). When checking radiated noise lift the bonnet for a moment to assess its screening effect. *Suspect Wheel Bearing*—Introduce a little graphite grease into the bearing and note any difference in noise as the graphite works in.

Finally, if interference appears for the first time after the car has been serviced the following should be checked: That all suppression devices are still connected; that re-adjusted brake shoes are not rubbing; that any anti-static brushes are still intact. It is a good idea to warn your garage of the presence of any special suppression devices.

The writer has now covered in these two articles just about every case of interference, both common and uncommon, that has been experienced and it is hoped that some mobileers, at least, will in future be able to copy signals below S9+20 dB!

REMINDER—MCC

This will be played off over the week-end November 11/12. Rules in full appeared on p.506 of the October issue of SHORT WAVE MAGAZINE, with the Club identification system on p.507. A supplementary list of Clubs entering is on p.581 of this issue. MCC is a Top Band CW Contest for Clubs, and this is its 22nd annual occasion. All Clubs competing will be glad to have " single-point QSO's " (*see* Rule 6) with any non-participating operators who care to join in.

AERIAL THEORY AND PRACTICE

TUNED AND UNTUNED FEEDERS—MARCONI AND HERTZ TYPES—RESONANCE

Part II

E. P. ESSERY (G3KFE)

The first part of this article appeared in the October "Short Wave Magazine." It will be continued in forthcoming issues.—Editor.

ON p.486 of the October issue, we were looking at reflected and standing waves, essential to an understanding of aerial theory, as much is heard of them.

A rather good mechanical analogy to the standing wave can be demonstrated with the aid of a long piece of string; if about twenty feet of string is laid out on a smooth surface, and one end is jerked sharply a wave will travel down the string. Now fix the end to a hook or something fairly solid, and repeat the exercise. If the jerk has been sharp enough, it will be found that the wave will hit the far end and reverse its direction, thus returning to the sending end. If now the free end is waved up and down, it will be found that as the speed is altered, a frequency will be struck at which a form of resonance occurs and a violent standing wave can be set up with very small effort, but a change in frequency will result in much less effect for much greater output of energy. This is a very close analogy to what is going on in our piece of wire.

Tuned and Untuned Feeders

This brings us to the fundamental difference in the two types of feeders. Whereas with the aerial proper we want to encourage standing waves to form, so that the radiation of energy may take place, the same is not true of the feeder system. When we speak of untuned or matched feeders we imply that these are worked in the condition where there are no standing waves on the feed-line—or in other words that the aerial feed-point impedance is the same as the characteristic impedance of the line, which in turn is the same as the output impedance to which the transmitter is adjusted, so that there is the condition set up for transfer of maximum power from transmitter to feeder to aerial. On the other hand we may, for some reason, wish to operate our feed system with standing waves so as to gain some other benefit such as multi-band operation. In this case, we will almost certainly find that the impedance at the transmitter end of the line is some combination of resistance and reactance, either capacitive or inductive. Now, the condition for maximum transfer of power from transmitter to feeder calls for the resistive components to be equal, and for the transmitter to offer reactance equal to but opposite in sign to the reactance of the feeder. Casting our minds back to the R.A.E. we should remember that if the capacitive and inductive reactances are equal and opposite we have the condition of resonance that occurs in a tuned circuit. Hence, we are "resonating" or "tuning" out the reactance of the feeders, and the type of feed-line that calls for such treatment because of its standing waves is called a tuned feeder.

Radiation Resistance

This is the value of the resistance, which, if connected, in place of the aerial, on the end of the feeder, would simulate the aerial. Clearly this definition is not adequate unless the aerial is presenting a resistance load to the feed-line; thus the term "Input Impedance" or "Feedpoint Impedance" is substituted for radiation resistance when the aerial is not purely resistive, as will occur with any aerial that is not at resonance.

The Marconi and The Hertz

There is a basic difference between the two, in the mode of operation, even though the same wire may be made to perform in either mode on occasion. Normally, an aerial must be at least half-wave in length at the operating frequency to function correctly at resonance, and it is then said to be a Hertz aerial. However, if the frequency of operation is such that the aerial is not a half-wave long (as so often occurs on, say, Top Band) then it may be brought to resonance by using the earth to provide a mirror image. Just as with a pin in front of a mirror, a reflected image is used. To grasp the simile, lay a mirror on the table and, with a small blob of plasticine, stick the pin vertically upright by means of the clay on the mirror, and imagine it to be a quarter-wave vertical aerial. Then it will be seen that the image of the pin goes down vertically into—or, rather, under—the mirror, and the pin and its image are united at the blob of plasticine. Thus it is easy to visualise how the image in the ground forms another quarter-wave which brings the whole assembly to a condition or resonance; thus, in this case the earth connection is fundamental to the operation of the aerial, and the method of using the earth's image to make up the length of the aerial is called a "Marconi" system. In practice, of course, the aerial is seldom a vertical—certainly on Top Band—and more often than not the greater part of the top is horizontal, but this does not alter the basic fact that a Marconi aerial system *cannot* work minus its earth connection, albeit if the connection is removed it may well decide to radiate after a fashion by using the capacity of the

mains to earth or other such devious paths to ground.

To revert back to our discussion of standing waves, accept for the moment that the object of the exercise is to generate standing waves on the aerial. Now, clearly, since the end of the aerial is tied to an insulator—the end or ends remote from the feed at least—then it will follow that at the insulator the voltage standing wave will be at maximum and the current one at zero. (This may be somewhat of a fond hope with a dirty insulator on a wet night but we must ascribe such small difficulties to Murphy and his everlastingly accursed Law!) If the pattern starts from the end insulator in this way, then a quarter-wave back towards the feedpoint from the insulator the voltage will be at a minimum and current therefore at a maximum, the current not being infinite nor the voltage zero, thanks to the radiation resistance which is a measure of the energy thrown off the aerial into space; similarly a half-wave back from the insulator we shall come to another point of voltage maximum and current minimum. Clearly, if we are to dissipate a constant number of watts in the aerial, since E x I equals W, and E/I equals R, the apparent radiation resistance to which we have to match varies as from one point on the aerial to another, in some pattern which is related to the distance in wavelengths from the far end of the aerial to the point of feed—being highest at half-wavelength, or multiples of this distance, lowest at quarter-wavelength or multiples thereof, and intermediate in value at other points, the exact value depending on the fraction of a wavelength from the end of the aerial to the feedpoint.

Why Resonant Lengths of Aerial?

As we have seen, the feed impedance of our aerial is defined by the distance from the far end. If we use a resonant length, then we can be sure that the feed point will be near a specified value of resistance, and not very reactive—which at least gives us a sporting chance to "design" a system—but on the other hand an odd length is of unknown impedance, and almost certainly highly reactive to boot, either capacitive or inductive, so that our arrangements for feeding power into it have to be pretty versatile. However, that is not to say an odd length has any *intrinsic* disadvantage, other than its possible feeding problems; indeed, in a difficult location, if all else fails, by far the best way to "get out" is to hang up the maximum possible length of wire, as high as possible, and as much as in the clear as may be, give it the best possible in the way of an earth and fiddle the Aerial Coupler until the thing is persuaded to take power, with the reservation that a further improvement in the situation may often be made by persuading the "useful" parts of the wire to be the parts that are the most in the clear physically, by means which will be discussed.

The "useful" parts of an aerial are those parts of it which lie around the current maxima—that is, about a quarter-wave at the frequency under consideration away from the insulator at the far end. The "usefulness" falls off very rapidly as we leave the high-current point behind, and it could be said with more than a semblance of truth that the wire near the end insulator is only useful to attach the high-current part to the insulator! Whilst on the same tack, it can also be said that, if home-built gear is used, bringing in a part of the aerial that is at high voltage and low current, *i.e.*, an end fed half-wave aerial, or an injudicious length of tuned feeder, will almost certainly outweigh the advantages one hoped to gain by the tendency the entire station has to "take-off," when the RF finds its way into all sorts of unwanted places, like the VFO and the mike amplifier, unless the gear is extremely well designed and built. Far better to use an odd length somewhere between the quarter and half wave lengths if any such problem arises.

(To be continued)

CALLSIGNS FORTY YEARS AGO

This item on p.406 of the September issue of SHORT WAVE MAGAZINE continues to bring in a steady stream of interesting correspondence. Going back a bit further, to 1923, we find that at that period there were in existence the British Wireless Relay League (modelled on the already-existing American Radio Relay League, ARRL); the Amateur Radio Research Association (for the people who were seriously interested in finding out about the principles of wireless communication); the Radio Transmitters Society (for those who already held licences and were on the air just to make contacts—on 1000 metres, 440m. and, by the most daring exploring into the HF's, 220 metres); and the Radio Society of Great Britain, grown from the original Wireless Society of London, itself established before the Kaiser's War.

The other organisations active in the early 1920's were really formed to oppose the concept of a radio amateur society based so obviously on London and the activities and interests of the Metropolis—a feeling which is still evident today, in some quarters! Anyway, out of it all the RSGB was born, by a fusion of these societies —which, at that time, could not have mustered between them more than a few hundred members. The true progenitor of all this development was, therefore, the Wireless Society of London. In looking into the development of Amateur Radio in the U.K. it is clear that it was not until 1924 that what could be called a national society, the RSGB, emerged.

The foregoing was written before a copy of "World at Their Fingertips," by John Clarricoats, O.B.E. (G6CL), was received for review. A quick check with his excellent index seems to suggest that the general facts as stated here are substanially correct.—Editor

WE WOULD LIKE TO THANK

Those readers who, when writing to us with a change of address, or sending in their copy for a small advertisement, or whatever, not only "give their name and address clearly in block letters," but also state whether or not they are direct subscribers (which can save us searching through the card index) and at the same time give their callsign. In the world of Amateur Radio, your callsign is your passport—it identifies you as an individual. Nobody else, anywhere, can hold the same letter-figure group. Your callsign is your personal identification, and as such it makes you unique—treat your callsign with respect, as we do.

• • • SWL • • •

SHORT WAVE LISTENER FEATURE

POINTS ON THE R.A.E. — REPORTS AND COMMENTS — SOME INTERESTING TECHNICALITIES — PREFIX QUERIES, TV/DX RESULTS, MISCELLANY AND HPX

By Justin Cooper

ONE of the things that seems to crop up in the mail regularly is the letter from a disgruntled reader who has failed the R.A.E. and is certain that (*a*) He should have passed; (*b*) That the examiner had a personal " down " on him; (*c*) That it is not necessary, to operate a transmitter, to pass the R.A.E. anyway, and (*d*) That the method of conducting the examination should be changed to meet his wishes. Often, indeed the complainant voices all four!

In fact, out of all the hundred or so candidates for R.A.E. which your J.C. knows of, only one could be described as suffering from examination nerves; he came out of the exam-room nearly dead—*but* he passed first time! All on the not-passed list failed for one of two reasons only—inadequate preparation, or lack of examination technique. As for the idea that the Examiner has a down on anyone, this is so ridiculous as to be laughable, since he knows none of the candidates. The third suggestion, that it is not necessary to pass the R.A.E. to operate a transmitter, is not valid since the object of the R.A.E. is not to prove ability in that line, but to establish whether the candidate has enough basic technical knowledge to justify letting him loose on the air, so as not to be a nuisance, technically, to others. As for the fourth complaint, the examination is as good as any other way of testing the applicant's knowledge. However the test is set up, in the end the chap who is not prepared will fail—and so he should!

As for the suggestion that the papers ought to show where a candidate falls short, it is admirable in theory but totally impracticable. Even a short letter attached to each fail-slip would cost enough to double the examination fee, to say nothing of increasing the already long time-lag between taking the exam. and seeing the results.

Always there will be the odd exception, but your old J.C. has yet to meet a candidate who can honestly say it was not his own fault he failed. The oft-suggested practical test would *really* sort'em out—not one in ten of the " amateur amateurs " would be able to pass it till he has done quite a period on the air!

Reports and Comments

" No longer interested in SWL'ing " is the theme of the letter from *Robert Gilchrist;* the reason being the best one of all—he is now G3WUD of *Manchester*, and busily working the stuff instead. Along with G3WUD, G3WKE make a pair—of fully licensed members at the ripe old age of fourteen. Proud we ough to be of them, particularly when it is remembered that they cannot attend a Technical College for *any* course under the age of fifteen—so they must have done it the hard way.

W. C. Torode (*London, W.C.*1) is taking an R.A.E. course, but he is in a rather different category from G3WUD and G3WKE, in that the last time he sat an exam. was in 1930! None the less, Wally knows exactly what he is trying to do, and how to go about it, which makes him a near-certain pass in the end.

The two stalwarts of *Navenby*, *David Rollitt* and *Bill Felton* both passed the May R.A.E. and are now working up the Morse, in between spells of listening—the listening must be pretty intensive still, at least as far as David is concerned, judging by his HPX entry this time.

Crawley now has its own Electronic Banyan Tree—in the shack of *Geoff Bowden*, and his son *Philip*, who have a PCR receiver that has recently sprouted its *seventh* outboard black box—Ye Gods! Progress towards the ticket has been made, by way of the R.A.E. pass, as predicted last time in this piece, and now the Morse is being tackled. Geoff recently read through a copy of SHORT WAVE MAGAZINE for July 1961, and finds his present total of 610 would have been top of the HPX table then, along with Bob Griffiths of Ventnor; the only reader still in the hunt from those days is A. W. Nielsen.

Troubles with the HRO are besetting *S. Cusworth* (*Wakefield*) who is getting the bits ready for a station now that R.A.E. is out of the way. Steve finds the neon stabiliser in the power-pack goes out with more than 50 mA drain on the power-supply HT. The answer to this one could be too high a value of resistor in series with the stabiliser, or simply a valve-type rectifier dying of old age.

Up in *Leeds*, *M. Goldman* has passed, and writes in also to mention that there is to be a study-aid course in R.A.E., exam. technique, simple maths. and so on, run in conjunction with the Leeds A.R.S. For details contact Martin at 8 Nunroyd Road, Leeds 17.

Detective work by *B. Lowe* (*Worsley*) leads him to the erroneous conclusion that your J.C. is a certain G6—no, indeed, and we can only hope that said G6 does not shoot on sight for such an outrage on his callsign! However, Brian was a little more on the mark with R.A.E., which he is preparing for, target being the

December session.

Somebody has been pulling the leg of *A. P. Ashton* (*Stowmarket*) who celebrated *his* R.A.E. pass by hearing UB5FG working a station signing WM7OMO, who said his location was Surf Island and QSL manager W7DAZ. However, the cream of the joke is that Phil then claimed WM7 for HPX. Alas, your scribe insists on clean lists for HPX, and so he went down one.

Taking the Morse before the R.A.E. is a procedure which is somewhat unusual, but *Glyn Watson* has no fears; Morse was passed and the R.A.E. is already booked to be taken in December; so our man in *Sheffield* is really getting down to it.

YL's On The Air

How many of the fair sex get through the R.A.E. each year, wonders *Mrs. M. Worbey* (*Dartford*)? A difficult one to answer, but your scribe was delighted when the XYL in *his* class passed, although the previous year one fell down on it. Maureen mentions that the OM has now got G3WOC, and she herself has enrolled to take the course at the local Tech. College; she has not only made her usual rise in HPX but is now copying some of the CW on the bands, preparatory to putting in an entry for that section of the ladder. With all that enthusiasm, and patience, the rest should be merely a matter of time. (According to our records, there are now about 50 of the opposite sex holding U.K. AT-station licences.—*Editor.*)

To all those who have passed, it only remains for us to offer congratulations; and to those who are just starting their courses, our best wishes for a successful outcome.

Changing tack a little, we have a letter from *Karel Brenner*, whose address is Kralupy N/VLT 635, OKR. Melnik, Czechoslovakia. Karel is a keen SWL, 21 years old, and is an electronics technician. OK-1-16588 is the SWL number on his QSL cards, and Karel would like to correspond with other SWL's in the U.K.

Technical Points

Quite a few knotty points cropped up in the mail this time; the first from *A. Hydes* (*Enfield*), who has recently done a conversion of a 16-metre BC range to cover our 28 mc allocation. However, although it works tolerably, when the gain is high the receiver frequency changes slightly as the signal-strength varies with modulation. This is almost certainly an effect brought about by the closeness of the oscillator frequency to the signal frequency—in percentage terms, at a fixed IF, the oscillator gets closer as we go up in frequency—causing " pulling." A partial cure is to disconnect the mixer from the AVC system.

H. Symonds (*Altrincham*) contrasts the effectiveness of his previous TRF with the present PCR receiver, which is really pulling 'em in. Seems as though the TRF was not really trying, Hugh, as all the early DX records were made with a TRF; in terms of sheer sensitivity there is not much to touch them even nowadays, albeit they lack selectivity for Phone operation. The big problem was always that of getting the reaction arrangements to work smoothly.

QRM from an electrified railway-line is the snag for *J. P. Scragg* (*Stockport*), who finds it is always worst when the Wx is a little on the damp side. This is somewhat of a problem, and previous experience seems to suggest that leakage over the insulators is the main cause; if someone is getting TVI from it then there is a case for complaining to the GPO, but in any case a few niggles at the Railway authorities at a high enough level may produce at least a temporary cure.

Aerials of one sort and another make the meat in the letter from *D. Walsh* (*Carrick-on-Suir*),—when he is not on transformers! To deal with the aerials first. the DDRR is more properly called the " Directional Discontinuity Ring Radiator " and acts as a full quarter-wave vertical although it need only be about eight feet high for Top Band! Colleague G3KFE says it is an American patented device, invented by W6UYH, and is written up in detail in Vol. II of the CQ *Antenna Round-Up*, with practical details. The " Multi-Skirt Collinear Vertical " is merely a method of stacking coaxial dipoles one above the other to give directivity in the vertical plane while retaining the basic all-round radiation pattern in azimuth. As for the Discone, this one is well written up in the textbooks; it does not seem to be at all popular as an amateur aerial, mainly because of its lack of gain, although it has when properly constructed a frequency range of several octaves at a low SWR.

Turning to the transformer question, what Des is saying is, briefly, that if one takes a transformer rated at, say, 250-0-250v. 100 mA, with heater windings of say, 6·3v., 3A, and 5v., 2A, then, if one wants, say 500v. at 100mA, it should be possible to do this by bridge-rectifying the secondary and leaving the heater windings unused, as the total VA output would then be approximately the same as when the transformer is used in the conventional way with full load on the heaters. Obviously an attractive proposition for a cheap transmitter PSU—but the fly in the ointment is quite probably the fact that the current rating of the secondary winding may be limited by the gauge of the wire. One could, therefore, expect to get away with it on a Service transformer (designed with a large factor of safety) but a cheap-and-cheerful one, which gets warm at its normal ratings, would probably go down. To prove is to try it, and the best way is to run the transformer with full load drawn, 500v. at 100 mA in this case, for periods increasing from a minute to, say, an hour or more, and watch the temperature rise carefully. If it survives an hour, try it for two, and so on, until it has been allowed to run for the maximum period it is likely to be called on to do in operation. Remember also that it will be possible to arrange things so that the full current is only drawn during transmission, periods of reception allowing it to cool off a bit.

Interference again—this time to the disgust of *Martin Broadway* (*Selby*) who gets it from 200 kc right up to 21 mc. The best thing here is to try and D/F the noise with a portable Rx, or failing that, if it interferes with any of the BBC MW channels, take it up with the GPO. But—first make sure it is not something obvious around the shack!

The things they get up to! *A. Long* (*Coventry*) feeds the output of his receiver on CW into a tape-recorder going at full-speed, and plays it back at quarter-speed, which is one way of producing QRS—but it would be

a trifle difficult in a DX QSO, one feels. Alan finds the R.1155 a vast improvement on his old receiver, which was a one-transistor super-regenerative device used with a 15-inch aerial, anything longer producing TVI! Not all that surprising, really, as these pernicious circuits cannot work properly without radiating quite frantically at the quench frequency. Even if they don't " see off " the TV, any local amateur on the LF bands will be wondering what hit his receiver!

R. Hyde (*Oakham, Rutland*) is one of the increasing number of folk who find they cannot put up any outside aerial, for one reason or another. This is a very difficult situation, and often reduces one to very poor systems. On the other hand, often the authority concerned will take a very reasonable view of aerials provided the person concerned approaches them with a concrete proposal regarding an invisible outside aerial and points out the purpose to which it is to be put, the licence position, and generally makes the best possible case of it. J.C. once had a very effective Top Band half-wave out which used very thin wire, polythene from coax as the insulator, and very fine cord to hold it up. Nobody noticed it for months, until he took it down, in fact!

A general point arises from the letter of *I. Cooper* (*Alnwick*), who describes his aerial as a thirty-foot long-wire. Strictly a long wire, in the aerial sense, is a wire which is *long at frequency of operation*, " long " being taken to mean more than a half-wave. Thus, a 132 footer is a " long wire " on 28 mc but definitely *not* on, say, Top Band. Ian uses an R.107 in conjunction with a converter for 15 and 10 metres, which seems to be doing its stuff very well, to judge from the HPX list.

Not strictly technical, but appropriate to this section of the piece is the question of learning Morse. *M. Watson* (*Williton*) finds he can send at about 18 w.p.m., but has difficulty in reading anything like as fast. It is a good thing when learning the code to eschew using the key at any speed higher than that which can be copied, as one always finds that it is not possible to judge whether one is sending good, well-formed characters at anything higher than the speed one can read. Thus, one always ends up with a " fist " which is, at best, distinctive, and at worst difficult to read. Sending should be left till last, and then great attention paid to good character-formation, even after the test is passed.

Prefixes

Quite a few odd queries on this front seem to have cropped up. An oddball one mentioned by *R. Hannis* (*Chester*) was a gink signing LFZV and claiming to be in Guatemala. One would have thought there was more than enough rarity value in ownership of a TG callsign, without trying to go one better!

C. Claydon (*Kinghorn, Fife*) has dark suspicions as to the status of CR5CA, name of Almeida, claiming to be in Sao Tomè, mainly on the strength of a rather revolting note. Possibly, but the call is right for the place; and after all, there is probably not a local dealer to get replacement parts from. No doubt the problem will be resolved once and for all when someone comes up with a QSL card!

H. M. Graham (*Harefield, Middlesex*) has discovered that G3VXA is almost on his doorstep, which accounts for some off the weird things that had been happening in his receiver—cross-modulation, doubtless—but in the meantime, in spite of holidays and other distractions, he has acquired a goodly crop of queries. First, 7P8 is the prefix for Lesotho; the second concerns the position of the Italian stations, now appearing with prefix numbers other than one, such as, for instance, I2, or IT4, both of which he heard recently. All seems fair and above board here, as the Italian authorities are beginning to use these prefixes.

Talking about prefixes, please make sure that all entries for the HPX Tables contain a statement of the *old* total as well as the new, together with a list of the prefixes that contribute to the change; and if the total is on a sheet of paper separate from your letter, make sure your name and QTH are on all sheets. It is no joke if a sheet without a name manages to part company with its letter, and has to be identified by handwriting alone from about fifty letters!

Another point in connection with the Tables is the question of separate entries for SSB and AM only, as

Noboyuki Toyama is a leading SWL in the JA1 (Tokyo) district of Japan, with 304 countries heard and 298 confirmed. He has a modern Japanese Rx and a Mosley TA-33Jr. outside.

well as the usual combined AM/SSB/CW entry or the CW-only list. It is getting a little out of control, and so we must revert to the position where we have one list for " all modes " and one for CW Only, in order to keep the paperwork and chances of error at this end down to a minimum.

Several folk mention, and query, the status and function of ZD7WR, heard on the 28 mc band. This one is a beacon, and, like all beacons, is a very handy way of telling when things are looking up, since it will only be there when the African path is open; it is on a frequency of 28983 kc.

TV/DX Matters

In this section first thing is to welcome *F. Smales* (*Pontefract*), who, having just moved, has been rather preoccupied with matters which are classifiable as " knocking in nails for the XYL," but has nevertheless lots of news. On the aerial front, there is a rotatable mast carrying a 23-element array for UHF channels and an 11-element widespaced beam for Band III. For Band I, a widespaced 3-element array sits on a 22-foot mast in the garden, while a smaller mast, on wall-brackets, carries dipoles for E3 and E4 channels, soon to be replaced by an " H " for E3 and a 4-element Band II aerial, which will be able to cope with our own VHF/FM, and the Russian R3, R4, and R5 channels. Just to make things more difficult, Frank has been presented with a double-23 for UHF, and now has to find somewhere to hang it up! Frank believes in making them work, too; his list of TV/DX heard includes Radio Kaduna Television from Nigeria, Tenerite in the Canary Islands, Amman TV from Jordan, and a couple of Finnish channels, quite apart from the Russian and similar stuff.

Bush receivers, which seem to be the favourite among the TV/DX'ers, are in use by *D. H. Foster* (*Swansea*) who is up to 17 countries logged this year, the latest two being Finland and Belgium.

Back up in Yorkshire, to *D. Boniface* (*Ripon*), who recently had a day out at Emley Moor TV station, along with Frank Smales and his wife, and Bruce Thomas. On the screen, the most notable items were a " possible " picture from the Lebanon, Finland, and Sweden.

Miscellany

Quite a lot, naturally enough, comes into this category. Top of the clip is *R. Glaister* (*Haywards Heath*) who once again sends in a *nil* report to keep his place in the ladder. However, he is negotiating for a new receiver, and brewing up aerial plans, so by the time of the next issue he should be on with a completely revamped set-up.

Jim Carter (*Balham*) mentions a 5LA2 in his score; but with regret we have to delete this one as Ungood—and no doubt someone will now produce his QSL and prove he *is* OK!

Early-morning sessions, around 0500 have been the means to raise the score of *K. Plumridge* (*Eastleigh*), while *H. N. Plumridge* makes a first entry with a score of 220.

J. Dutton (*Ilkeston*) remarks on the upsurge in conditions of late, which, coupled with an improvement in his aerial system, has resulted in a rise in the HPX total to 606.

Nice to hear from *J. Singleton* (*Hull*) once again, after a longish interval, and our congratulations to him on his engagement. John has been doing very little listening since his trip to F, EA and CT1-land, but promises he is *not* giving up. Another traveller is *Andrew Niblock*, who writes in this time from the home QTH in *Farnham;* he used to be in Ilkeston, and went to the English Electric hostel at Alasager. Now he is off to Derby for six months to College, and says he has to think twice every time he writes a letter to make sure he puts the right address at the top.

All the enquiries as to the size of *T. R. Popham's* ears seem to have made him a little cross, and made several people jump to his defence. G3IDG (Basingstoke) took the period August 31/September 1, and from 1836 to 1836 GMT logged 168 prefixes, even allowing for " time off " for meals and a full night's sleep; CW only was used and the bands taken were 3·5 to 21 mc. Allan reckons 200 in a 24-hour period should be easily possible. *M. G. Toms* (*Ilford*) agrees and mentions that there are, in his log, several weekends when more than 200 were booked in even though he does not note the common ones. *T. R. Popham* (*Exeter*), himself, comments that there is nothing special in making the score up to 200 in a week, and goes on to describe his equipment, namely Eddystone S.640, with a Codar PR-30X preselector, AR88LF and R.208, as receivers. Up in the air there is normally a beam, a long-wire, and a Vee-beam, albeit the present situation, since moving QTH half-a-mile recently, is that only the LW, 195 feet long, is in use. Of course, this is the key—a good aerial system picks the signals up, leaving it to the operator and the receiver between them to sort things out.

This is also the answer to the question asked by *R. A. Gape* (*Leigh-on-Sea*) who wonders why so many EU's cannot hear DX that is S9 on his receiver. Also from Leigh, *K. Southgate* mentions that he is enrolling in an R.A.E. class at Southend, under the tuition of G3VGR. Keith mentions hearing 5VZRQ in Togo, and also another one signing 5VZ1 from the same area—the latter sounds to be a question, at least until his status is firmly established, but the former is quite OK and cards go to him *via* VE2ANK.

Up in *Inverness* lives *L. Phillips*, who has made an initial entry for the HPX table, using a tunable converter plus IF strip which is hooked to the back-end of a domestic receiver to provide detection and audio output. The BFO is obtained by moving the long-wave local oscillator of the latter receiver by adding a ferrite to the coil, so that tuning the receiver makes the erst-while long-wave oscillator swing across the IF range, where it does duty as BFO. Sounds almost as complicated to drive as Geoff Bowden's beast but, as in Geoff's case, it *works*—which is the object of the exercise, after all.

No doubt many followers of this piece will have been to the Show, and possibly changed their gear; *S. Foster* (*Lincoln*) has already done so, having pensioned-off his S.640 in favour of a Trio 9R-59, although the time available to enjoy it will be drastically cut because he will have started work by the time this appears.

Another one to have a new receiver is *David Henbrey* (*Northiam*) who seemed very pleased with it when he was at the Show. Although it is David's, no doubt father *Norman Henbrey* is also enjoying it—and incidentally it was a great pleasure to meet Norman quite

HPX LADDER

(Starting January 1, 1960)

Qualifying Score 700

SWL	PREFIXES
PHONE ONLY	
P. Cayless (Exeter)	1003
S. Foster (Lincoln)	896
A. W. Nielson (Glasgow)	835
D. Rollitt (Navenby)	796
J. Singleton (Hull)	745
K. Southgate (Leigh-on-Sea)	741
P. Milloy (Doncaster)	737
W. Felton (Lincoln)	730
C. Squires (Saltash)	711
A. Niblock (Ilkeston)	706
G. S. Taylor (Wolverhampton)	699
R. G. Preston (Norwich)	646
J. Tozer (Plymouth)	627
J. Hodgson (Gainsborough)	627
T. Pinch (Plymouth)	620
G. Bowden (Crawley)	610
J. Dutton (Ilkeston)	606
J. Fitzgerald (Gt. Missenden)	599
P. Coull (New Romney)	581
R. T. Jackson (Leigh-on-Sea)	578
S. Swain (Hayling Island)	577
G. J. Smithies (Halifax)	561
N. Henbrey (Northiam)	543
W. Moncrieff (Hampton)	536
J. Singleton (Hull)	530
A. G. Scott (Liverpool)	528
S. J. M. Blaber (Haywards Heath)	527
B. Macklin (Winchester)	524
A. P. Ashton (Stowmarket)	519
P. A. Cayless (Exeter)	516
Mrs. M. Worbey (Dartford)	487
P. Baxter (Winchester)	484
M. G. Allen (Heston)	482
E. Parker (Hove)	474
G. Watson (Sheffield)	472
A. Hydes (Enfield)	461
J. Tring (Sutton)	457
A. Jones (Newport, Mon.)	456
D. Sapsworth (East Ham)	455
A. P. Legg (Sutton)	449
W. C. Torode (London, W.C.1)	440
B. Thomas (Castleford)	435
A. Niblock (Alsager)	430
J. P. Scragg (Stockport)	426
H. M. Graham (Harefield)	419
W. L. Rees (Llandudno)	417
R. Sexton (Gt. Missenden)	406
M. G. Toms (Ilford)	393
M. A. Lount (Leicester)	377
R. A. Gape (Leigh-on-Sea)	375
C. Claydon (Kinghorn)	373
S. Cusworth (Wakefield)	367
D. Holbrook (Newport, I.o.W.)	352
K. Plumridge (Eastleigh)	350
A. Pyne (Budleigh Salterton)	347
D. L. Hill (Edinburgh)	344
D. Boniface (Ripon)	343
N. Flatman (Ipswich)	336
D. Henry (North Berwick)	331
J. Singleton (Hull) (*AM only*)	320
J. M. Dunnett (Singapore)	317
R. Glaister (Haywards Heath)	316
K. Southgate (Leigh-on-Sea) (*AM only*)	313
R. Hannis (Chester)	309
J. Edwards (London, S.E.20)	306
P. Smith (Linby, Notts)	304
P. D. G. Molloy (Doncaster) (*AM only*)	301
C. K. Skelcher (Larkhill)	300
D. Henbrey (Northiam)	294
A. Grove (Bromley)	288
I. T. Patterson (Carstairs Hospital)	285
T. Farkasch (Benfleet)	276
J. Cooper (Alnwick)	276
I. Poole (Leeds)	265
S. M. Phillips (Dukinfield)	262
I. A. Lucking (Stanmore)	259
D. Richards (Welwyn Garden City)	255
M. Broadway (Selby)	246
B. W. Lowe (Worsley)	245
K. Jeeves (Huddersfield)	244
J. Carter (Balham)	243
H. Symonds (Manchester)	241
C. J. Carrol (Sittingbourne)	239
M. L. Jones (Leamington Spa)	230
R. Allisett (Guernsey)	226
A. Long (Coventry)	225
R. T. Jackson (Leigh-on-Sea) (*AM only*)	225
L. Philips (Inverness)	224
D. Stuart (Caistor)	220
H. N. Plumridge (Eastleigh)	220
G. T. Theasby (Keighley)	212
S. E. Howell (Balham)	211
M. Watson (Williton)	208
J. A. Ennis (Saltash)	206
P. C. Swann (Glossop)	204
CW ONLY	
C. Claydon (Kinghorn)	492
R. de Buis (Felixstowe)	487
P. Cayless (Exeter)	425
J. M. Dunnett (Singapore)	419
R. Bacon (Thetford)	406
B. A. Smith (Ruislip Manor)	400
T. Pinch (Plymouth)	354
S. Blaber (Haywards Heath)	326
C. Harrington (Maidenhead)	309

(NOTE: *Listings only include recent claims. Failure to report for two successive issues of "SWL" will entail removal from the Table. Next list, January issue, for which the deadline will be December 1.*)

accidentally when your J.C. was at Northiam during the summer.

Just once in a while, someone comes up with a crop of queries that are easy to answer; and even rarer for prefix ones to be easy. But sometimes it happens—and *D. Stuart* (*Caistor*) managed to find all the easy ones. All his HPX queries, while they *were* rarities were easily answered without leaving the J.C. desk—thanks, Dion!

A new chum in the HPX list is *J. A. Ennis* (*Saltash*), who has a first list very much biased in favour of the DX prefixes; he joined the Saltash club, so doubtless the local lads have been giving a helping hand.

Ian Lucking (*Stanmore*) has not gone up much in the Table this time, thanks to a change of interest occasioned by his acquisition of a commercial Seventycem converter.

Every cloud has a silver lining, and for *A. F. Hunt* (*R.N. Air Station, Lossiemouth*) the silver lies in the watch he has to keep from 1800 to 0800 the following morning. when for most of the time there is not much to do except *be* there—and so, of course, he spends the time chasing the DX.

Most people hate Forty—but *John Fitzgerald* seems to be in the midst of a " be kind to 7 mc month," in which he expounds for several pages on the delights of the band; seriously, John has a valid point when he says that there is a great deal of interest in the 200 kc of the band which extends HF of our limit at 7·1 mc, in which area will be found many Phone stations of interest, mainly Americans and American possessions.

A couple of over-the-thousand types write in to retire—*D. Douglas* (*Dundee*) at 1009, and *Pete Cayless* (*Exeter*) with 1003. David is finding quite a lot of time is still being taken by study, but Peter is mounting soap-boxes and grinding axes. His first one is the axe job; this is reserved for the chaps who clear faults by hitting the gear. But that is the first principle of successful maintenance—if you know where to kick it, you either (*a*) Clear the fault or (*b*) Make it into a real problem which can be attacked in other ways. The second grouse is about the number of commercials that seem to be parading around 21 and 28 mc. This is a problem that has been with us for years, and always becomes worse nearer the sunspot peaks. The jammers are earsplitting things, and if one hears one go away, the pleasure is reduced by the thought that it is only " parked " in our bands for instant QSY to any station that speaks out of turn.

A nice letter from *E. Parker* (*Hove*), who has a philosophy about his QSL card return, which he hopes will eventually rise to 25 per cent of the reports out. However, Ernie realises exactly how the *transmitter* must feel about the majority of his SWL reports—and applies the knowledge to his own reporting.

D. S. Henry (*East Lothian*) has lost a few prefixes by way of the /A stations; but he has an idea worth thinking about when he mentions that he uses the chimney as a route for the aerial downlead—quite handy as long as there is no fire in.

A couple of months has been long enough for *D. Holbrook* (*Newport, Isle of Wight*) to amass a total of 352 prefixes, with assistance from a BC-348Q and a Codar CR-70. David uses an 80-foot wire at 15 feet high; however, he is in for the May R.A.E., and so will no doubt be getting his head down for it during the coming months, at the expense of HPX.

[over

SWL's PLEASE NOTE

The next appearance of this feature will be in "Short Wave Magazine" for January, 1968, due out on December 29. Deadline for "SWL" in that issue is Friday, December 1, addressed: SWL, Short Wave Magazine, Buckingham. Because of the Christmas rush we shall be unable to cover any SWL reports received after that date—so please be in good time!

Morse as an aid to HPX was the intention of *I. Poole* (*Leeds*), but he was somewhat shaken to hear a WA4 say he could read 60 w.p.m. It does make the target seem a little distant—but take heart, Ian; if you can read 25 w.p.m. easily you are doing as well as the vast majority of active CW amateurs, and better than many.

An interesting letter from *H. D. Fennah* (*Hawarden, Flints.*) reporting the reception of many U.S. Citizens' Band signals in their 27 mc (11-metre) allocation—*see* October SHORT WAVE MAGAZINE, p.480. Though H.D.F. queries as to how and why this should be possible (having regard to the 5-watt power limit and simple antennae) in fact it is not at all unusual when east-west conditions are good for our 10-metre band. It is not possible to identify these CB stations individually for QSL or correspondence purposes because they seldom use callsigns and are not listed by the FCC, the U.S. licensing authority. All you can do is to listen to the (somewhat extraordinary) chat that goes on—*see* again p.480, October!

We hear from the BBC that their "World Radio Club" programme, compèred by G3OGO (*see* p.509. October SHORT WAVE MAGAZINE), now has about 1,000 members. The programme goes out on the BBC World Service, also on some medium-wave channels. Full details can be obtained from: "World Radio Club," British Broadcasting Corporation, Bush House, London, W.C.1. We had the pleasure of meeting Malcolm Nisbet, G3OGO, with his producer John Pitman and their engineer Henry Hatch at the recent Amateur Radio Exhibition. There is no doubt that they are extremely enthusiastic about their programme.

Finally, a mention of *T. W. Moss* (*Exeter*), who was at the Exhibition, and showed your J.C. some of his old logs and cards. At 82, he can look back on half-a-lifetime of SWL'ing, using in the early days an O-V-1. with which about 200 countries were logged, and latterly an S.640. Incidentally, one of the cards had more than a little topical interest at the time of writing—on the front was a picture of the R.M.S. *Queen Mary* when off on her maiden voyage.

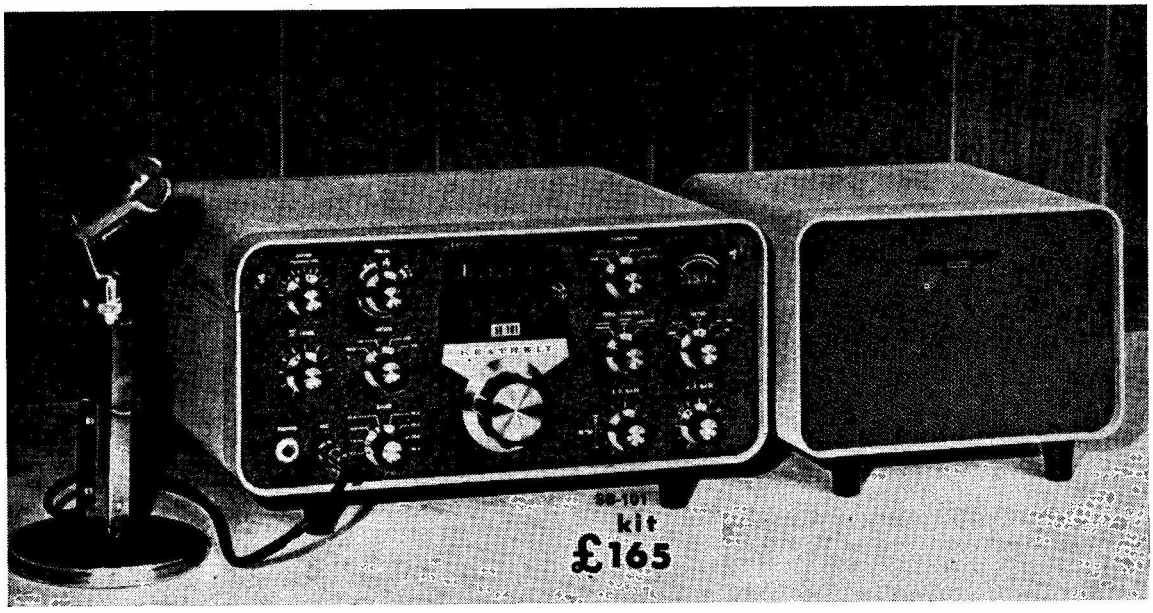
And so we come, once again to the sign-off; the deadline for the next piece will be **Friday, December 1,** addressed to "SWL," SHORT WAVE MAGAZINE. BUCKINGHAM. Till then, take good care of yourselves, and watch the bands.

BIG "BID SALE" IN PROSPECT

Reference the note "USAFE/UK Bid Sales" on p.372 of the August issue of SHORT WAVE MAGAZINE, we are informed by the U.S. authorities that a very large sale, involving radio and electronic equipment, will take place towards the end of November or early December (date not fixed at time of writing). In any case, all who have already applied to R.A.F. Molesworth, as explained on p.372, August—and we gather that there has been a considerable number—will be receiving advance details.

SUGGESTION TO NOTE

A reader who has had many enquiries following an offer in the September issue under a Box No. writes to say it would have been more courteous and considerate if all those who responded had included an s.a.e.



The new Heathkit SB-101 Sideband Transceiver runs 180 watts over all bands 10 to 80m., giving 100 watts RF output on 3.5-21 mc and 80w. on 10 metres. Additionally to the telephony provision, the SB-101 is designed for effective CW working—it has an offset carrier crystal and the crystal filter involves a 6-pole lattice arrangement for sharper Rx tuning and better sideband suppression. The filter characteristic is symmetrical and steep-sided, and is a factory-adjusted hermetically-sealed unit. The SB-101 has a 100 kc crystal calibrator built in and the dial calibration is to 1 kc, with readability to 200 cycles by interpolation. Power supply requirements are 800v./250 mA, 300v./150 mA, —115v./10 mA and 12v. at 4.76 amps. Optional extras include mobile and fixed-station PSU's; 400-cycle output crystal filter for improved CW operation; microphone and speaker. The weight of the SB-101 is 23 lbs. and its kit price is as shown in the picture.

COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

TURNING to the Eternal Topic —band conditions over the past month—things seem generally to have responded as one would have expected at this time of the year. Your conductor has only managed to listen once on 28 mc, to find a dead band—rather, it could easily have been dismissed as dead had one not observed some thumping great signals in the middle of an otherwise blank expanse.

The upswing has naturally affected most of the other bands in some way or other; Top Band, for instance has been showing signs of a fall in the static level, and the DX has been breaking through on Forty. About the only band that seems to have been regarded as not yet ripe for plucking is 3·5 mc, and so it is here that we will pick up the threads of the story.

First report is from GM3JZK (Isle of Mull) who had to go away for a while and found things somewhat improved on his return; however, as far as Eighty is concerned the report is a " Nil " one, mainly due to the lack of a suitable aerial system.

GM3KLA (Unst) dismisses the band summarily—" only Europe and W stations." However, a late report for last time, which missed the boat, came in from G3VOK (Luton), who made a few forays on 80m. after a couple of months of no-joy, and managed to raise PY7AN, PY7CA, UA9EU, and EP2BQ, together with some W and VE stations.

As far as GM3SVK (Unst) was concerned, the static was distressingly strong on occasions, but Fred is of the opinion that there were openings to Africa, VK and ZL, although he mentions no specific contacts.

Forty Metres

A marked change came over the pattern of activity at G3VGR (Southend), due to the incursion into his life of a Heath SB-101. The business end of this was hung on to a half-G5RV aerial, *via* a Z-Match coupler, with quite spectacular results. As far as 7 mc was concerned, the exercise was little more than a mere experiment to see if the thing would load, but nonetheless all W call areas except the elusive sixes and sevens were worked, along with G6ZY/CN.

G3NUT (Wirral) has acquired a novel form of QRM in the form of a bag-of-bits which, when reconstituted, will form his greenhouse—little does the poor man realise that when the greenhouse is built it will be a permanent source of S9 QRM! Jack made a check on Forty on occasion during the month but couldn't stand the rumpus, and so satisfied himself with a selection of W and VE calls plus the odd U-type prefix, to bring his total to 26.

G3VRZ, as mentioned last month, duly moved to Sutton, Surrey, but his hopes of putting a 40m. ground-plane up to match the fine take-off were dashed by parental objections to a 33ft. mast, " right in the view." Objection, regrettably, sustained, and so Hugh has to make-do with a centre-fed full wave with tuned feeders. This produced W QSO's, and a variety of escapees; several ZL's broke through but unfortunately at the same time there seemed to be a better path ZL/W and so he did not get a foot in.

G2HKU (Sheppey) mentions only Europeans worked on 40m. On the other hand G2DC (Ringwood) laments the herd-instinct of the DX stations that stay down in the first 15 kc where the noise is almost solid and contacts so frequently get lost. QSO's were made with W's, VE, VK2, VK3, ZL2, and UWØAF.

Some of the nasty noises seem to have gone into hibernation, in the view of GM3JZK, although George did not put in a lot of serious working on 7 mc. A few European gaps were filled in by way of YO, UB5(!), I and SP, with a PY and W6SYY as an earnest of things to come.

Fred of GM3SVK comments on the tendency of the DX on Forty to have become channelised through the European Net on 7070 kc. It is more or less inevitable that this system of operating will lead to a situation of three hours waiting for the sake of one fifty-second blast at the DX station, which is why GM3SVK prefers to do his own digging. However, PSU trouble with his transmitter prevented him operating CW, and so he raised nothing on 40 metres.

Reverting to this business of the

THREE-BAND ZONES and COUNTRIES TABLE

Starting date: January 1, 1967

Station	7 mc		14 mc		21 mc	
	Zone pts.	Countries	Zone pts.	Countries	Zone pts.	Countries
GM3SVK	269	38	882	156	799	121
G3IAR	265	53	828	156	811	124
G3VDL	139	34	561	65	434	68
GM3JZK	172	28	528	73	639	69
G3PQF	219	36	371	31	259	19
G3VWC	22	18	67	20	118	24

Note: The placings this month are based on the " 14 mc Zone points " column.

net operation method of chasing the DX which GM3SVK—and many others—so dislike, the main reason for the dislike seems to be that this procedure involves (a) Getting into the net—which, it is claimed, is far from easy—and (*b*) The time involved in waiting for your turn for a crack at the DX. Frankly, one doubts whether a " savvy " operator would have much difficulty in getting into the net, and as far as the second objection goes, it seems utterly illogical to cavil at a style of working which, by the very fact that it keeps several operators listening rather than calling, must tend to reduce the QRM level—but it's still not liked!

GM3KLA voiced no opinion of the band in his letter for this month, but mentions two contacts—OHØAA and 9H1AK.

Top Band Matters

Undoubtedly the big news for the period under review was the 160-metre QSO made by W9WNV from Rodrigues, when, signing VQ8CB, he worked W2RAA. In addition, it is believed that during the same expedition VQ8CRR worked VK5KO.

Another expedition to put a new country on the air was that by CEØAF on Swan Island, operated by DL9KRA. However, at the moment there is no hard news of any successful contacts on this side, and the East Coast W's were under a blanket of Aurora disturbances. A late flash from W1BB advises that DL9KRA also appeared from Easter Island, signing CPØPC, and on September 20 rang the bell well and truly when he worked W2EQS. However, one can see the quick-minded muttering curses and looking at their Prefix Lists—yes, it does look a little odd doesn't it?—but since our news came from W1BB, we print it as received and await some further comment to set the record straight.

The rest of the story is, by comparison, somewhat parochial, but of interest nonetheless. G2HKU managed a CW QSO with DJ7SW, and kept a weekly sked contact with PAØPN. Other than that Ted heard GM3OXX and GW3UGI, the latter in Denbigh.

Up in Unst, the band is beginning to brighten up, and static is reducing to winter levels again. GM3SVK reminds those who are lacking Orkney of his trip there, and also points out that if there is *still* anyone wanting Shetland they had better get a move on—he won't be there after November! To that end, GM3SVK will be working on the basis of " first-timers " nights, on which the object will be to search out and work the weaker signals. As to his own activities, DL5YT and ZB2AP were both raised on SSB, with good reports.

In spite of the new SB-101 mentioned elsewhere, G3VGR did not desert Top Band entirely—he contrived to get on and work Hereford and Montgomery, which closes his book on the G and GW counties. Dave has lost the old half-wave, and has to make do now with " an inferior piece of wire "—but no doubt that is a matter which will receive attention in due course.

G2NJ goes up to 92/92 on Phone, to make him quite a bit nearer his CW total of 98/98, thanks to GM3PPU/P in Banff and Moray. It is, as Nick says, to the credit of this DX-pedition that they were on seven nights with a different county each night (Peebles, Kinross, Kincardine, Nairn, Bute, Banff and Moray) which means they must have been *really* keen! (*See* story p.575, this issue.)

The autumn winds have done nasty things to the aerial system at GM3UVL (Glasgow)—blowing the thing down. This, be it noted, in spite of a ten-foot length of rubber rope at the shack end. Bill still therefore lacks Guernsey and Sark, Radnor and Merioneth, Armagh, and—of all places—Rutland, which one would have thought had been well and truly done to death.

Deryck, G3VLX (Sidcup) managed to find Kilmarnock, in the shape of GM3UTJ, and Flints., the latter in the person of GW3UGI, to bring him from 45 up to 47 (rather than the 48 we credited him with in the table). In the course of his note, Deryck touches on a point dear to your old scribe's heart—the question of these unutterable idiots who operate Phone at the

FIVE-BAND DX TABLE

(New Cycle)

Starting date: January 1, 1967

Station	Countries	28 mc	21 mc	14 mc	7 mc	3.5 mc
GM3SVK	191	44	121	156	38	16
G3IAR	186	67	124	156	53	52
G3VBL	111	—	—	111	—	—
G8DI	124	30	81	100	38	25
GM3JDR	193	—	165	96	—	—
GM3KLA	124	43	78	75	48	46
GM3JZK	113	36	69	73	28	11
G3NUT	110	—	65	71	26	—
G3VDL	100	25	68	65	34	7
VP8HJ	69	17	9	64	1	4
G3VOK	58	7	1	46	6	36
G3TTG	38	—	—	38	—	—
G3MDW	52	6	18	36	1	8
GI3GTR	44	1	12	35	12	9
G3PQF	88	46	19	31	36	25
G3VWC	40	4	26	21	22	5

Note: Placings this month are based on the " 14 mc " column.

bottom of what is regarded as the CW end of the band. Your vast majority of Top Band operators regard this sort of thing as, to put it mildly, a little ill-mannered, but there is a small minority who either just don't know any better or who can't help it.

This topic also forms the main part of the letter from G3UXP, (Kings Norton); and very eloquent on the subject he is, too! However possibly the more interesting part is the mention in his letter of a character signing M1BB, calling CQ, at a strength (to Ron) of about 579. He was also audible to G2NJ, both stations in fact calling him, and in addition was heard locally to your E.P.E., again at about the same strength. One begins to wonder if " M1BB " is just another pirate.

Next on the pile is G3VMQ, who is now /A from Bath, where he has got up quite a decent piece of wire. The score has advanced by one, thanks to a contact with Rutland and a card by return. When the new buildings of Bath University are erected, Phil hopes to start a radio club, as he feels the site should be near-perfect.

A note arrived too late for last month's piece from G3RPB (London, N.3) who recently had a trip, with G3NQF and another friend, to East and West Germany, and Czechoslovakia in the course of which they were able to meet ex-OL1AAM and OK1NQ. The latter station has a very impressive-looking array in the form of a Top-Band half-wave at ninety feet, strung between a couple of blocks of flats.

During August, G3WEV (Bob Hooper, 8 Pitchcombe Gardens, Coombe Dingle, Bristol) with his three brothers took one of the nicest of all holidays—on the Norfolk Broads, in a 26ft. sailing hire-yacht fitted with an auxiliary diesel engine. He operated on 80/160m., CW and Phone, using Codar equipment, the aerial being a 78ft. wire contrived in the form of an end-fed inverted-V, with its apex up the mast, about 30ft. above water-line. Some 85 stations were worked and the first experience was that the gear performed far better than from the home QTH, with a longer aerial—G3WEV says " I can only put it down to the very good earthing effect of the water, and I am now convinced that the earth is just as important as the aerial." (Well, it's what we have been saying in the Magazine for years !) The boys had a thoroughly enjoyable time, and the gear stood up well to the buffetings of sailing.

Some Miscellany

This seems to be as good a point as any to transfer our attentions to the tit-bits of this-and-that which appear in the mail or over the grapevine.

Perhaps the first thing on which one should comment is the numbers of pleasant personal QSO's your E.P.E. had at the Show with various correspondents to this piece—and to note that the number of gotaways was about normal!

A pertinent comment comes from G3IDG (Basingstoke) this time—anent the number of people who were worked by a certain DX-pedition station as, for instance, SM5B??, or G6H?, and then given 589 or 599 reports. As Allan says, if we ordinary mortals were to carry on in that fashion we would undoubtedly be branded as lids.

Those who have over the years worked GW3ALE, well known in South Wales, will be interested to know that he is now on the HF bands signing XE1RV, using a trap dipole and SB-100 from Mexico City; this information came by way of a note from GW5BI, to whom thanks.

Your scribe was pleased to have words with G3IGW and G3DYY, at the Show; G3DYY informs us that the cards for his HZ1AT operations have all been sent out; there were *no* QSO's on 160 metres.

Nice to hear from G3MDW (Halifax) and to meet him again at the Show; Arthur has sent in revised up-to-date lists for the Tables, but mentions that he is suffering severe QRM from a cracked insulator on the 11kV line which runs close to his home. Seems he has been chasing-up the Electricity Board for no less than three years, and has now reached the end of his patience and proposes to call in the GPO on this one.

G8DI (Liverpool) comes up with a novel reason for his temporary inactivity of late—preparations for the School Speech Day, and a few alternations to the fabric of the building. Bert claims all this Mural welfare is bad for his Morale welfare!

Just as this was going down, an interesting letter (posted in Cape-town), came in from G3UOF, who is 2nd R/O on the big 42,000-ton B.P. Tanker *British Judge*, signing GBCE on the commercial bands.

[over

Using the ship's R.50M receiver, with its 200ft. aerial at about 65ft. above salt-water, G3UOF has been putting in his spare time while in the South Atlantic listening over all amateur bands 10-160m. Very few G's have been heard! The only c/s he could positively identify were G2FRY and G3HMR on 40m., G2DC on 20m., and GB2SM on 10m. On the commercial side, G3UOF/GBCE has worked G3TXS/GKDS on 600m., and is on the look-out for G3PLQ/GHJX on the Tanker *Kent*. G3UOF, who is from Wigston Magna, Leicester and now doing his sea time with the B.P. Tanker Co., remarks that he is pleasantly surprised at the number of ship-station operators, and Coast stations, who use the familiar and friendly " 73 " when working commercial traffic.

Twenty Metres

Reverting back to the main business, let us now examine the 14 mc clip in some detail.

First reporter here is G8DI, who worked VP8IE, and TA2AV only, but heard VP8JI, VS9MB, VP5AB, ST2PO, VP8HZ, HK5BFY, HS4AK, and FB8YY. G3MDW uses an Eddystone EA-12, with a K.W. " Vespa " and KW-600 on the transmitting side, operated into a Mosley V3 vertical aerial mounted on the roof. With this gear, Phone contacts have been made with PY, HR, W, VE, CX, ZP, ZD3, and KP4.

G3NOF (Yeovil) has been rather inactive during the period under review, thanks to correspondence for the Yeovil Club, a visit to the Show, and pressure of work. However, Don found in the early mornings *no* West Coast W's, albeit the VK's and ZL's have been plentiful over the long path. Several openings to the South Pacific have been noted; in the evenings VP8's were sometimes to be heard around 2000. Contacts were made with DU1FH, FO8BQ, 'BT, and 'BV (all on the FO8 net at 0700), FP8CA, HS1CB, PYØTX, VK's, VS9MB, XEØKSQ, ZB2BD, 4S7PB, 5L2KG and 9V1OI.

The band has been much better with the skip tolerable during the dawn/dusk periods and at night, in the view of GM3JZK. George added PAØ, UG6, ZP5CF, CT1, plus VK5XK/2 and TJ1QQ. The last were found as a result of raising a thirst by eating salt herring, getting up in the middle of the night and deciding to go and have a look at the band after slaking the thirst—and there they were!

The early morning period between 0630 and 0800 is reckoned to be the best by G2DC; Jack finds that after 0900 the EU stations really pound through (and the commercials, of whom *eight* were counted one morning at 0900z, between 14000 and 14100 kc), to the point where things get pretty hopeless. Jack singles out for a mention the following QSO's: VK5XK/2, VK2 to 8, ZL1 to 4, KR6, JA1 to Ø, FK8AT, VS6FO and an interesting one with W3ILD/M3, who was cruising around the streets of Washington, D.C., and putting down a steady old S7 signal with the help of a KWM-2 and a mobile whip.

The list offered on 14 mc by G3NUT is so long that we must make some selection, and mention AP5HQ, CR6, FG7XF, M1B, lots of VK's, VE8MK, VS9MB, ZL's, ZP5CF, ZS's, 4S7EC, 6W8DW and 7X2VJ; a gotaway was HI3PC, who was hooked but lost, while FB8WW was heard.

TOP BAND COUNTIES LADDER

Station	Confirmed	Worked
	Phone and CW	
G2NJ	98	98
G3UBW	78	92
G3VYF	75	80
GW3PMR	71	78
G3VGR	71	94
G8HX	56	81
G3IDG	55	59
G3VLT	53	78
G3VMQ	45	73
G3VLX	30	47
G3WDW	28	67
G3VWC	10	28
	Phone only	
G2NJ	92	92
G3VYF	58	65
G3MDW	52	73
G3VMQ	30	51

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

TOP BAND LADDER

(G3U-- and G3V-- stations only)

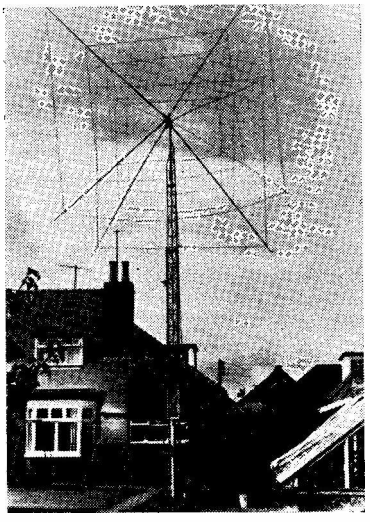
Starting date, January 1, 1966

Station	Counties	Countries
G3UTS	96	15
G3VMW	94	18
G3VGR	94	16
GM3UVL	92	13
G3UBW	85	18
G3VYF	80	16
G3VLT	75	15
GW3VPL	75	16
G3VMQ	73	15
G3VMK	70	11
G3UVT	68	12
G3UXP	67	9
GW3UUZ	66	15
G3VES	63	16
G3UGF	62	10
G3VOK	61	15
G3UJS	51	12
G3USE	51	12
G3VSL	51	9
G3VTY	49	9
G3VLX	47	8
G3UGK	43	13
G3UMK	39	7
G3UCS	36	?
G3VSI	19	4

Twenty to GM3KLA meant contacts with TA2BK, TA1SK and TA1AV (the latter two being in Europe and OK for WAE), IT1GSA and IT1AQ, LA1BC/P on Jan Mayen, VP8JD South Orkneys, and VQ9B, both the last two being all-time new ones.

It really is amazing how many people miss the deadline when they have a bumper month on the bands; this happed to G3GIQ (Ealing) who was so far adrift he just didn't bother to write—but this time, he bewails, the takings were nothing like as good! However, CE, FK8AZ, TU2CA, VP6WR, VP8JB, VP8JC, VP8FL (Falklands), VP8IU, VP8JI (Antarctica), VP8JD (South Orkneys), and VP8IE (South Georgia) are added to 5L2KG, 5Z4KL, and one solitary CW QSO with ZS3LU.

G2HKU always mixes his



The impressive spider-array at left is the three-band rotary Cubical Quad, on its 40ft. tower, at G3NRS, station of R. S. Scales, 17 Westfield Avenue, Scarborough, Yorkshire, who was well into middle-age before he acquired his licence—being inspired largely by his membership of the local Scarborough A.R.S., of which he is now president. The station equipment (in a heated shack in the garden) consists of the Collins S-Line, with a KW-600 linear amplifier and KW-2000A. In addition to the Quad, G3NRS has a trapped dipole for 40-80-160m. Chief operating interest is finding and working new ones, the score being in the region of 165 countries worked and 126 confirmed. G3NRS also runs a regular 80m. Sunday-morning sked with G3MTB, which is now totalling up to nearly 400 contacts.

medicine so that he gets about equal CW and Phone quantities—this time the CW list shows VK4TY, ZL2KP, both worked, and KP4BJD, KH6SFP, VK2FY, JA2TS, and UA9KTQ all heard around 0700. On SSB, a couple of KL7's, one of whom was QRP, getting over beautifully, but suffering severe QRM from a block of flats under construction nearby—yes, in Alaska! —plus EP2BQ, last worked many years ago when he was ZL4JA; and the regular sked with ZL2AGT is back in business again.

" Quite fair coverage " is a reasonable comment for GM3SVK to make on his list, which mentions SSB contacts with CT2AO, CX9CO, ET3USA, FP8CA, KR6KN, OX3WX, PY's, TN8AA, UD6BV, UG6AW, VK's, VS6DO, XW8AX, YV7AV, ZL's, ZS's, 3A2CP and 9M8II.

That new rig at G3VGR provided quite a lot of excitement for Dave—it must be remembered that he had only ever had a look at 28 mc last winter—and so he worked on SSB, VK's and ZL's by the dozen, PJ3CR, K6PGR/KP4, XE1XQ, FP8CA, YS1AG, KG6AAY, HV3SJ, HC1MH, plus a few (mundane) W6's. Tiring of this easy DX(!), Dave dug out a bug, and ran off a few CW QSO's with, for instance, 9L1KG, FG7XF, KV4AA, and a crop of W's, VK's and ZL's. Not a bad start, at all!

Contacts with FB8ZZ, VQ9B, CE, VU2LWZ, 9M2XX, HC1TH, FM7WO, ZD3G, VR2, KR6, CM2WS, KH6's, VK's and ZL's, KL7's, FG7, and various other spots are reported as having been made on this band by G3RPB.

On Fifteen Metres

VE7BHN/WØ is the call of Tom House, who is studying at the University of Colorado. Although Tom is English by parentage for various reasons he has Canadian citizenship; he got his call after a long delay and is now on the HF bands, with 90 watts of CW mainly used on 7 and 21 mc. The aerial on 21 mc is a 3-element Yagi at about 35 feet. EU stations are rarely more than S7 in Denver, peaking at about 1000 local time. Tom is particularly on the lookout for G's, and would specially like to work any stations in the Rushden-Kettering areas of Northants. Incidentally VE7BHN/WØ remarks that two of the best signals from the U.K. are G3KTJ and G3WPF, both up in Wigan.

The next one on the clip, by an odd coincidence, turns out to be from G3KTJ (Wigan)! Gerry comes up with an enormous CW log, which indicates QSO's with, among others, VP8JF, ZL, PYØCZR, KL7, XE1ZV, ZS, ET3FMA, VK, HI7, VS6, FG7, 6Y5, FP8, VP6, PJ3AH, 9J2, 9M8II, 9Y4, OD5LX, 6W8CQ and 5L2KG, plus one solitary Phone QSO, with W3DWG/VR6, just to prove the mike still works.

One worked, one heard, is the short-form report on the band from G8DI—in the first category ET3FMA, and in the second BY5JB. The appearance of these BY calls must give cause for doubt—are they as piratical as they sound or is this some new manifestation of the present state of Chinese anarchy?

Another short-and-sweet report on the band is that from G3MDW, who worked CR4, ZS, JA, 9M2,

W's and YV's. GM3JZK has a little more to say, including PY8RC, WA8SVU/VP9 (wonder how many contacts that laddie loses through people tuning away before he finishes his callsign?), VU2FB, VQ8CC, EA6BH, 9J2MX and VP8JH. ST2SA, who seemed to be a little inexperienced as an operator, got away.

G3NOF found very little time to listen on the band, even, but did hear JA's and VK's in the morning, and W's from noon right through till 2300. The only actual QSO's recorded have been with VK and the U.S.

Even G2DC has been damning the band with faint praise—he says the JA's are so numerous as to QRM the DX out of existence between about 0930 and noon.

Much more enthusiasm is voiced by GM3JDR (Golspie) who has, by the look of things, stuck faithfully to 15 metres, and as a result has reaped his rewards, to the tune of CE3, CE6, CR6, CR7, CT2AO, EA8EX, ET3FMA, FL8FP, HK4AET, HC5HC, HR1KAS, VS6FZ, bucketloads of JA's, KA2VT, WAØJQH /KP4 (what a call!) KL7, KX6, PY8QQ, TU2CA, UF6, VK, VQ8CBR, VP8, W's, YN1BKC, ZE, ZD8JES, 5H3KJ, 6Y5JB, 8R1S and 8R1G, all on SSB, together with TU2CA and 5L2KG as CW.

Similarly, GM3SVK, even in a short month, was able to find CX9CO, JA's, KA7RF, KX6DR, PY4UK, assorted VK's, VK9DJ in Papua and VK9WD in New Guinea, VS6's, VS9, VU2DKZ, W6 and W7, YA1AN, ZS, 5N2ABG, 5W1AS, 9V1NP. The VS6's and the 5W1 were more than usually acceptable in that they helped along with the countries and Zone points.

Pressing on with the reports, we note that G3VGR did not spend much time on 21 mc in spite of that Heathkit SB-101, finding the grass greener elsewhere. The gotaways made Dave hopping mad, as it was clear he just wasn't being heard in the pile-ups, and so thoughts are now being turned towards a beam.

G3NUT found FL8FP in the SSB mode, and used his key to effect contacts with FG7XJ, ET3FMA, TU2CA, VP7EF, VK2OI, VS6FX, ZL3IS, and 5Z4DW, plus of course the inevitable shoals of W's and JA's. This contrasts with GM3KLA, who only managed TU2CA on Fifteen.

Turning to the log of G3GIQ, we find that Henry raised DU1FH, VS6DO, VU2BK, and WA7FQQ (Nevada)—and that's about it for 21 mc this time. The stuff has been there but has been overshadowed by our next allocation which is, of course 28 mc.

Ten Metres

Here the story starts with the G3MDW letter; Arthur has, in spite of the QRM from the CEGB, managed to pick out W's, VE's, and CX. G8DI worked VS9ABL and heard a VK, during the Phone contest, shouting "Why don't you fellows listen?"... A good question!

CW has always been the favoured mode at GM3JZK, and that was the method used to work TU2CA, KS4CF and 4U1ITU, with a gotaway in the shape of VS9MB, who was being severely pestered by breakers.

Time has been short for G3NOF and his report on Ten is mainly of weekend activity; nevertheless SSB contacts were notched up with CR6BT, FG7XT, LU's, KS4CF (Swan Island), KV4EY, PY's, PZØAA, VQ8CHR (Rodrigues), ZC4MO, ZS's, 5L2KG, 5Z4AA and all W call areas.

G2DC has been biting his fingernails, watching the gales doing their level-best to fetch his Quad down—but, so far, it is still riding them out, and proving the principle of preventive maintenance is a good one. Jack mentions an outstanding signal from VK6CR, who uses a Swan 350—but he is 900 feet a.s.l., and has a three-element beam on a 62-foot stick! The G2DC worked-list includes TU2CA, VK2, VK4, VK5, VK6, ZS, 9J, 9G, and all W call areas other than the sixth and seventh.

His trip to London for the Show

"... you really needn't have bothered to deliver it, old man — the bureau would have been OK ..."

gave GM3SVK a chance to note for himself the difference in the pattern of things in the two places. However, the "worked" list, inevitably, was all from Unst, and included FL8FP, KG6SF, VK's, VQ8CH, VQ9JW (Aldabra), VS6DO, VS9MB, YA1FV, ZD7DI, ZS9H, 3V8BZ, 5Z4KL, 5N2AAF and 9L1GQ, with a notable gotaway in the shape of FH8CD.

In the face of all this, G3VGR is not to be rattled into any incautious statements—"The band seems to be opening again" is as far as he is ready to go, but he worked W's, ZS's, and CR6II all on SSB. GM3KLA is also not over-enthusiastic as yet, but managed a couple of all-time new ones for 10 metres in the form of TU2CA and PZØAA.

As far as G3GIQ was concerned the shortness of his list was purely and simply due to his spending more time on other bands—but he did work PJ2MI, TU2CA, VS9MB and 8R1S. Our final reporter, G3PQF (Farnborough) does not mention any particular stations, but merely remarks that the Quad has now been dragged out of the garage and erected—it is to be hoped it can be persuaded to stay up long enough for Dave to make a real killing.

Frank Smith, W5VA, Box 840, Corpus Christi, Nueces County, Texas, started in 1914, at the early age of ten years. In other words, he has been through it all, from the era of spark-coil Tx's. The present QTH was designed, built and equipped with active Amateur Radio in view—the site is on a bluff jutting out over the Gulf of Mexico, with antennae erected to take full advantage of the location. The station equipment includes two complete Collins S-Lines, running up to the full kilowatt. W5VA is keen on working U.K. stations and always QSL's. One of his other radio interests is the acquisition of original equipment, of which he has a unique collection, carefully restored to working order and appearance, and going back to the days of Marconi, Lee de Forest, Armstrong and Fleming. Together with this he has an accumulation of the technical literature of the period. His collections are officially recognised as being of great historical interest and importance in the field of radio communication. Professionally, W5VA is owner-operator of the Gulf Broadcasting Co., one of the big American independents, with 100 kW transmitters and regular colour-TV transmission.

Contests

The OK Contest takes place over the full 24 hours of November 12, covering all bands 1·8-28 mc, CW only. There are three categories, for single-operator single band, single-operator all band, and multi-operator; this category will be considered to be multi-band, and also all Club station entires will automatically be put in this, being considered to be multi-operator. Exchange a five-digit group, consisting of RST plus number of years the operator has been active in Amateur Radio, or for multi-operator stations, the number of years the station in use has been licensed. Count one point for each contact, or three if it is with an OK/OL station. Use the total of the prefixes worked on each band as the multiplier, taking the WPX list as the standard, so the final total becomes the total QSO points times the sum of the prefixes from each band. A separate log-sheet for each band is required, plus a summary sheet showing the scoring, your name and address in block letters, and a delcaration. Logs to Central Radio Club, P.O. Box 69, Prague 1, Czechoslovakia. The mailing deadline is December 31. (It is a fair certainty that some of these OK's on Top Band will get tangled up with MCC! Never mind—it's all part of the fun!)

We have been advised by U.R.E. that the Spaniards are running a contest in connection with a Convention which will be held in Zaragoza in May '68. As far as this contest is concerned, the basic requirements seem to be that between October 31 and December 31 one has to work one station in Zaragoza Province and any 30 other countries —and *produce the cards* by March 1 1968! Now, the people who do that have qualified—this results in a "diploma"—but the main winner will be the one who turns up the largest pile of countries—in other words, that thirty is a minimum. The prize is a $500 travel grant for a trip to the convention, second being registered and accommodated free for the duration of the Convention, while the third prize is a free registration to the Convention. If you like the idea of working for your holiday, write to Delegacion URE, Apartado 86, Zaragoza, Spain.

Sign-off and Deadline

And there you have it till next month, for which the deadline for all the news, views, Table entries and what-have-you will be first post on **Monday, November 6,** at Buckingham, addressed as ever, CDXN, SHORT WAVE MAGAZINE, BUCKINGHAM. Meanwhile, keep tabs on 28 mc, and good luck with the DX.

MINI-COAXIAL PASSIVE PRESELECTOR

FOR TWO AND FOUR METRES —THEORY, DESIGN, CONSTRUCTION AND RESULTS

P. HARRIS (G3GFN)

For VHF reception, the add-on device described here will alleviate TV/Rx beats, eliminate IF breakthrough, image responses and harmonic-mixing effects. It will also help with cross-modulation and the interference often caused by strong out-of-band signals. These advantages are all on the receiving side. Because the preselector goes in the main aerial lead, during transmission it will help to attenuate, or filter out entirely, unwanted PA harmonics and driver frequencies that may be present in the Tx output. Though constructionally the device is a bit tricky, our contributor suggests how this can be simplified.—Editor.

VHF operators are invariably engaged in a continuing quest to improve both the sensitivity and signal-to-noise ratio of their receiving equipment, and it is unfortunate that improvements in these directions sometimes lead to undesirable side effects.

The usual double superhet receiver having a crystal controlled first mixer followed by a tunable IF section needs considerable care in its electrical and mechanical design if breakthrough, beats, and unwanted responses are to be avoided. As the sensitivity of such a receiver is increased, in general so does its susceptibility to respond to signals on frequencies other than those of interest, while improvements in signal-to-noise ratio may reveal beats and responses previously masked.

Spurious Responses

While it is beyond the scope of this article to undertake a comprehensive examination of all the ways in which spurious responses can arise, a general review is not out of place since one of the objects of the preselector described here is to reduce or eliminate them.

Spurious responses, as opposed to breakthrough, occur in the mixer and are due to inadequate selectivity ahead of the mixer, coupled with harmonics in the oscillator injection voltage to the mixer. Further, if the injection voltage for the first mixer is derived from a crystal operating on some lower frequency—as is usually the case—then the presence of harmonics of a lower order than that required, or of the crystal frequency itself, can lead to some unexpected and mystifying responses.

With a superhet, one additional response is inevitable, this being the image frequency of the first mixer. With a double superhet, and where the signal circuits prior to the first mixer are usually broadband, breakthrough on the first IF is a distinct possibility. Additionally, if the first IF is high, and the second IF low, the image frequency of the second mixer may be troublesome. In summary, to what extent signals on these various frequencies will be apparent depends largely on (1) the selectivity of the signal circuits ahead of the mixer, (2) stray capacity coupling between aerial input and mixer, (3) the purity of the mixer oscillator injection voltage, (4) the RF gain prior to the mixer, and (5) screening efficiency.

At VHF the Q of a tuned circuit using a coil and capacitor in parallel is lower than that which is desirable, with the result that the ability of such circuits to differentiate against unwanted frequencies is reduced. Some improvement can be gained by the use of bandpass circuits, but if top capacity coupling is employed between the elements, or the individual tuned circuits show a marked capacity each to the other, leakage of unwanted signals through these capacities can, to a greater or lesser degree, offset the advantages of the bandpass arrangement.

Transistor mixers are potentially prolific producers of spurious responses unless the level of the oscillator injection is carefully controlled, and the working point correctly adjusted. Excessive oscillator injection can produce a varactor effect across the base-emitter junction, giving rise to the creation of harmonics of the injection frequency within the mixer itself even though the drive may be substantially free from harmonics. F.E.T's seem to be free from this effect.

Quite apart from responses to *low level signals* which may arise on (1) the image frequency of the 1st mixer, (2) the 1st IF frequency, (3) frequencies resulting from a combination of harmonics of the 1st mixer injection frequency $\pm$ the range of the 1st IF, (4) frequencies resulting from a combination of either the basic crystal frequency of the 1st oscillator, or a lower order harmonic than that required $\pm$ the range of the 1st IF, or (5) the image frequency of the 2nd mixer, Television Receivers create their own problems for the VHF operator!

TVI in Reverse

While it is generally possible in the design of a double superhet to arrange for the various unwanted responses to be located in parts of the spectrum where the signal circuits are likely to provide acceptable attenuation of the frequencies involved, and to supplement this with good screening, television line timebase radiation modulated by the frame timebase, or re-radiated video signals, can create field strengths which are far stronger than those which the usual VHF signal circuits can attenuate in a satisfactory manner. Of the two types of interference, re-radiation by the TV receiver mixer or oscillator is generally the most troublesome, for here a whole family of frequencies can result, and in some instances one frequency can be so strong that it causes intermodulation in the VHF receiver.

Experience has shown that even when there is no pick-up of regular signals on spurious response frequencies, as soon as TV receivers are in use, especially on Band I, " birdies " can cause havoc. The only manner in which these can be reduced is by a radical improvement in the Q of the VHF signal circuits coupled with a reduction in pre-mixer gain. The former course is generally not possible, and the latter invariably viewed with suspicion.

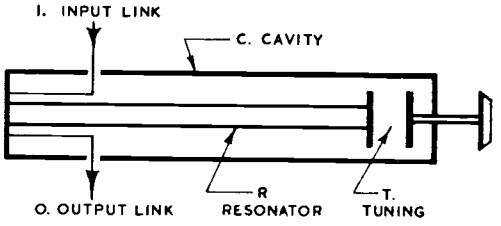


Fig. 1. Section through standard coaxial cavity. Tuning is possible by adding variable end-capacity as shown at T.

An alternative is the use of a passive preselector filter between the aerial and the VHF receiver, designed to show negligible insertion loss on the frequencies of interest, but which exhibits high attenuation outside its passband. Such a preselector may not make all the TV " birdies " disappear as though by magic, for, depending on the breed of the TV, and the local channel in use, there is a possibility of " birdies " directly on 4-metre and 2-metre frequencies. About these nothing can be done.

Passive Preselector Filter

Although a passive preselector can do nothing about " birdies " on the frequencies of interest, what it can do is to rout out those which arrive as spurious responses and make a worthwhile reduction in their number. In addition, such a preselector will heavily attenuate, or remove, regular signals on spurious response frequencies, and prevent cross-modulation or breakthrough due to strong local out-of-band signals.

Maximum rejection of unwanted frequencies coupled with minimum attenuation of the required frequencies necessitates a preselector in which the Q of the tuned circuit is very high. Equally important, the input to, and the output from, the tuned circuit must be substantially inductive, while stray capacity between input and output should be non-existent. This indicates that a standard parallel tuned circuit is unsuitable, and the physical layout critical.

Transmission Line Circuits

Tuned circuits based on transmission line techniques can be used at VHF with considerable advantage. A quarter-wave line having its input end shorted, and the far end open, exhibits the characteristics of a parallel tuned circuit using a coil and capacitor, but because the $\frac{1}{4}\lambda$ is physically resonant rather than electrically resonant—that is to say, it supports an electrical quarter wave—it exhibits an exceedingly high Q.

There is however a fundamental difference between the two circuit types. Whereas the parallel tuned circuit will show only one resonance for a fixed set of values, a line shorted at one end and open at the other will show resonances at approximately odd multiples of its quarter-wave frequency.

The use of a tuned circuit of this nature is mandatory in a preselector which is to operate at VHF or UHF.

Coaxial Cavity Resonator

The most suitable transmission-line type for receiver tuned circuit work is the coaxial configuration since this is inherently fully screened. This is illustrated in Fig. 1.

When the frequency fed to the input loop I is such that the resonator R is a $\frac{1}{4}\lambda$ long, a meter/detector across the loop O will indicate output, for at this frequency the resonator is supporting an electrical $\frac{1}{4}\lambda$ and the input and output loops show a defined value of impedance. At any given frequency, the physical length of the resonator will be shorter than that of a free space $\frac{1}{4}\lambda$ for a number of reasons, but primarily due to the capacity " seen " by the resonator. With the system of Fig. 1 output will also be obtained at frequencies where the resonators physical length is equal to an odd number of quarter waves, *i.e.*, 3, 5, 7, and so on.

A cavity of this nature can be tuned either by varying the length of the resonator, or the capacity seen by the resonator. The latter course is more usual as it is simpler mechanically. Capacity tuning invariably takes the form of end loading. In this a disc is fitted to the open end of the resonator, and another disc, on a screwed rod connected to the cavity outer, moved closer to, or further away from, the resonator disc as shown at T in Fig. 1. The total capacity used in this method must be kept very small or the Q of the system will be seriously affected, and this in turn limits the tuning range.

Optimum transfer of power requires that the loops I and O match either the transmission employed or the impedances of the source and load. While theoretically a coaxial cavity will show more or less equal resonances in the lower orders of odd multiples of the basic $\frac{1}{4}\lambda$ frequency, with inductive coupling the impedance of the I and O loops changes radically at each odd multiple since their physical size becomes progressively a larger proportion of the first $\frac{1}{4}\lambda$ supported by the resonator. The resulting source and load mismatch combined with overcoupling reduces the efficiency at each multiple.

The Mini-Coaxial Cavity

It is not a new idea to use a coaxial cavity in a preselector to counter " birdies " and eliminate spurious responses during VHF reception. However, for 4 metres, and compared to modern equipment, the size of a standard $\frac{1}{4}\lambda$ cavity is gigantic, being some 39 inches in length! Despite its potential benefits, its awkward size and shape may make it seem better to suffer the complaint rather than struggle to find a place for the cure. However, a cavity with such mammoth proportions is not essential to achieve a satisfactory preselector.

In the general review of a standard cavity it was observed that the physical length of the resonator which would support a $\frac{1}{4}\lambda$ depends to a large extent on the capacity seen by the resonator. The higher this capacity, the shorter the line for a given frequency. Thus a short high frequency line can have its resonant frequency lowered by adding capacity to it, but if this capacity is high, and is added to the open end of the line, the Q can be severely affected.

Adding capacity to any part of the line reduces the Q by an amount which depends on the point at which it is introduced, the degree of capacity added, and the frequency. As bandwidth and Q are related, and only in

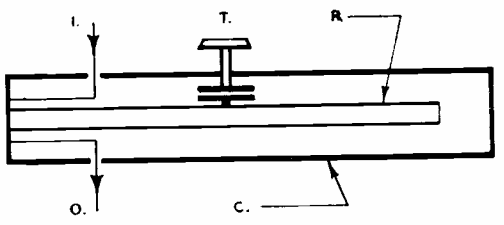


Fig. 2. Section through centre-loaded coaxial cavity in which a variable capacitor is taken to the middle of the resonator, R.

certain applications is minimum bandwidth essential, and therefore maximum Q needed, any desired bandpass can be achieved by adjusting the proportions of the cavity and resonator and deliberately adding capacity loading to produce the required working Q.

If capacity is added to the *centre* of the resonator for tuning purposes, since the open end of the resonator sees only its natural capacity to the walls of the cavity, the Q with this method is considerably higher than an equivalent length of line resonated to the same frequency with end capacity.

In a preselector intended to limit out-of-band signals rather than provide additional selectivity on the frequencies of interest, minimum bandwidth at resonance is neither required nor desirable unless its tuning can be ganged to that of the main receiver, and the two made to track. Thus the size of a coaxial cavity in such a preselector may be substantially reduced and capacity added to make it resonant at the required frequency, always provided that this does not give rise to unacceptable reduction in signals passing through the system, nor insufficient rejection of out-of-band signals.

The three preceding paragraphs are the basis of the Mini-Coaxial Passive Preselector design, and which is illustrated in outline form in Fig. 2. With centre tuning of the resonator it was found possible to construct a single unit which would cover both the 4-metre and 2-metre bands with an efficiency which was above the minimum requirements, and this is considered to be a very useful feature.

Centre tuning of a coaxial system appears to have two advantages which were neither expected or anticipated. These are offered purely as observations. (1) If the links are adjusted for a precise match into the required 75-ohm impedance at the centre frequency of the device, the input and output impedances do not vary by more than $\pm 5\%$ over the tuning range of 2·4 : 1. (2) Resonances at odd multiples of the basic $\frac{1}{4}\lambda$ frequency become progressively attenuated as capacity is added to the centre of the resonator.

Taking (2) in more detail, with the unit tuned to 70 mc where almost all of the variable capacity is in circuit across the centre of the resonator, driving the unit in the region of the 3rd harmonic (that is, in the 200 mc range), produced no measurable output. With the unit tuned to 146 mc where only a small part of the condenser is in circuit, driving the unit in the region of the 3rd harmonic produced a response at 420 mc which was 30 dB down on the output at 146 mc for the same input at both frequencies.

These figures indicate the effectiveness of the preselector in suppressing harmonics in the output of 4-metre and 2-metre transmitters. This could be particularly useful in reducing the power of any 3rd harmonic present in the output of a 2-metre transmitter and which might otherwise create unintentional signals on the 70 cm band.

Construction

Highest efficiency would be given by a circular cavity all the parts of which were made from silver-plated brass or copper, but at the frequencies involved, a simple and more easily duplicated construction may be employed without impairing the performance to any significant extent.

The main details are shown in Fig. 3. The cavity is an elongated aluminium box with a close-fitting lipped

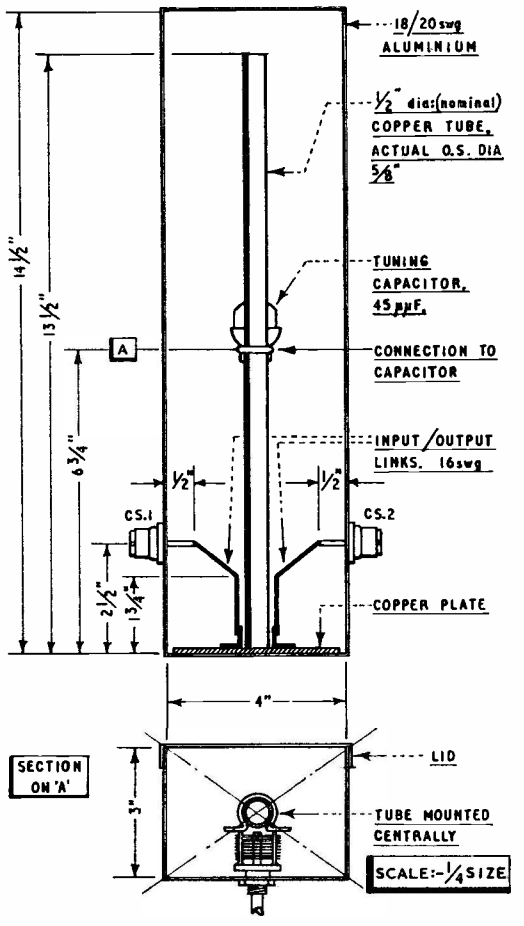


Fig. 3. Constructional details of the Mini-Coaxial Cavity, having a tuning range of about 65 to 160 mc. Low-loss coax sockets should be used, and a close-fitting lid secured with small PK screws. (Scale is approximate.)

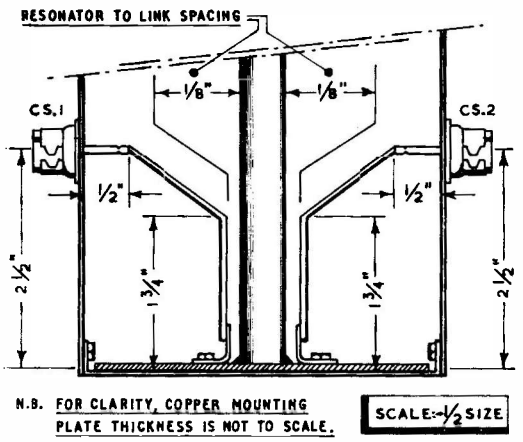


Fig. 4. Detail drawing of shape and position of input/output links. These are critical for the duplication of performance figures—scale is approximate.

lid, while the resonator is a length of ½-inch nominal copper water pipe with an external diameter of ⅝-inch fitted to the centre of a copper plate which just slides into one end of the box, and is finally secured in position with 6BA c/s bolts and nuts. The input and output links are made from 16g. tinned copper wire, but here, if more than 50 watts of RF are to be passed through the filter, 14g. or 12g. should be substituted.

Constructing the aluminium box is no problem. The short sides of the end edges need to have small ⅜-inch flanges which will tuck inside the long sides to form sealed corners. These flanges can be seen in the detail diagram Fig. 4. After marking and cutting out, the surfaces which will become the inside of the box should be polished to a high gloss with a wet *Brillo* pad. During folding up to shape, avoid touching the prepared surfaces as far as possible. Once the exact position for the tuning capacitor has been determined and its fixing hole made, the inside of the box is polished with *Bluebell* metal polish, the condenser and the coaxial sockets fitted, and then a coat of polyurethene clear varnish applied to all the inside surfaces except the end where the resonator copper plate is to be mounted.

(To be concluded)

A. J. DEVON AND "VHF BANDS"

It is very much regretted that, due to circumstances beyond our control, it has not been possible to present "VHF Bands" again this month. A.J.D. has been indisposed and unable to prepare the feature, which he has managed for so many years. At his suggestion, "VHF Bands" is being given a respite and its future form, coverage and management are being reconsidered. The threads will be picked up again as soon as possible.

BOOK REVIEW

HAM ANTENNA CONSTRUCTION PROJECTS

by *J. A. Stanley* (157 *pages*)

THIS book should be presented to every amateur with his first licence! Seriously, what is usually wanted at that stage is a sure-fire device of some sort, capable of absorbing the RF generated and getting it away. This book is full of such aerials, the majority of which can be knocked up in a few hours—some indeed almost in minutes—and tried, with the absolute minimum of expenditure.

By substitution of parts here and there, such as cotton-reel insulators and stand-offs, your reviewer was able to make a check on three of the aerials presented in the book; each took about an hour to make, and each worked in a manner which strongly suggested the claims made for it were true.

The idea of a miniature parasitic beam using the "Wonderbar" shape (made out of old conical TV aerials) leads naturally to the thought of a two, or three, element miniature beam for, say, part of the 28 mc band, which at a casual glance looks the same shape and size as a TV aerial—which could save such a lot of trouble in some districts! After all, the *Wonderbar* has nothing magic about it, and the principles could be applied to straight elements . . . this author certainly sets the brains to work!

It is an agreeable surprise in a book which is really nothing more than a collection of practical projects to find an index—and a pretty thorough one at that.

As to the small matter of "Anglicising" the designs: In most cases there is hardly a problem, but one observes that naturally enough he usually makes his co-axial connections by means of the normal American UHF connectors. It should be realised that these are the sort of connector which is most common in the States and equivalent to the ones we find on TV sets and cables. However, the UHF connectors can be obtained, and as they are a better job mechanically and easier to water-proof than the English types, the extra few shillings is well worth it.

To sum up; this is not the sort of volume for people with aerial farms and tame designers. But it most definitley *is* the treatment which the new amateur—to whom aerials are a closed book—needs and it is the sort of book that the more advanced student of skywires should have as a catalyst for ideas.

Editorial Note: This book is available ex-stock from our Publications Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1., at 24s. post free. It should be ordered as "Ham Antenna Construction Projects (Sams)."

PORTABLE IN EIRE ON FOUR METRES AND OTHER BANDS

SOUTHAMPTON UNIVERSITY, EI3SU/P, CO. WICKLOW JULY 20-30, 1967

A. R. CROSS (G3WEA)

'TWAS back in March of this year that a trip to the Emerald Isles was first conceived. After last year's abortive trip to Keswick, when G3KMI/P made a very sketchy appearance during the July 4-metre portable event, it was resolved that this year something better be organised. Consequently, several suggestions were mooted as to possibilities (some unprintable) and in the end it was decided to try Eire. Accordingly, plans were made to take a 4m. station, and as none of us have had any experience of 4m. portable in Ireland or indeed knew of any EI stations on 70 mc, it was suggested that if things did not work out, we would feel a bit out of it with only a 4m. set-up and nobody on the band.

As always there are members of clubs who contend there *is* RF below 70·1 mc, and at this juncture some sanity prevailed—hence the final addition of another member complete with KW-2000A and a Morse key. It was eventually agreed that 4m. should have preference, and after that it was up to the people concerned as to how much operating they attempted. We also began writing to firms and other amateurs in Ireland; two firms in particular were forthcoming and two EI's were very helpful, as we cast around rather in a daze. A special licence was taken out which covered two additional call signs—EI4SU and EI5SU, both /P or /M as required, neither of which were used as it turned out.

These arrangements were made in spite of such diversifications as University work, lectures, Morse practice (two of our members have recent G3W - - call signs) so really it was remarkable that anything was achieved at all. Bookings for the two cars and six people were eventually finalised after months of effort and some camp sites and useful information had been gleaned from EI2W, EI6X and the I.R.T.S. EI6Y had also agreed to lend us a generator; J-Beams a 4/4Y and poles (and Guinness had agreed to print us some QSL cards!).

By then it was the Easter vacation, and after that much swotting and exams. followed so very little more could be arranged. Exams. over, last-minute preparations were made, which was none too easy with the six members of the Expedition scattered all over the country, and of course everybody on different bands or not at all, in some cases. Eventually, however, we arranged for all the gear, cars and people to be at GW3NJW's place in Cardiff on one particular day, Tuesday, July 18. We motored from Cardiff in good time to catch the 2.15 a.m. boat, from Fishguard, and the crossing, despite earlier misgivings, was uneventful.

Over in Eire

On disembarkation however, a slight problem arose with the Customs officials, who had never seen so much old junk in two cars before. Still, after a bit of negotiation (which was quite fun at 5 o'clock in the morning) it was agreed to deposit a sum of money with them to ensure that we would not sell the KW-2000A whilst visiting—the rest of our equipment being dismissed as of no value! We went off to investigate our intended camp site but after many hours' drive were a little disconcerted to find all was *not* well. The camp site turned out to be screened on all sides by hills, so we searched round, eventually landing up at the top of the hill near the Sugar Loaf mountain. Here there was an organised camp site, so two tents were immediately erected; the strain of 30 hours odd without significant sleep proved too much and we all took to our sleeping bags.

The next day, we again ran into a hitch over the loan of the generator. Due to a slight misunderstanding we were not able to collect this essential item immediately and many gloomy predictions were muttered about " EI3SU/P remaining QRT all the summer," so a start was made that very evening to get us going, somehow, albeit QRP. We had surveyed likely sites by now and found an outstanding pinnacle of high ground 1500 feet a.s.l., a few miles inland, called Kippure, in Co. Wicklow —the only apparent snag being the careful siting of a TV Tx right at the top. This proved, in fact, to be a blessing in disguise as Telefis Eiraan had built a very neat tarmac road to this station, so we duly drove up and erected the pole and fired up the mini-transistor rig. We expected the TV Tx to do all sorts of terrible things to our receiver, but were again very lucky—there was only one spurious in-band beat and this was not serious. We notched up two contacts that memorable

Inside the tent at Kippure, Co. Wicklow, when EI3SU/P was working 4m. for the contest on July 23. Their gear included an Eddystone S.640, a modified B.44 Tx and an EC88C converter. This set-up, with a 4/4 J-Beam outside, produced some 50 contest QSO's, many G's being worked on CW and Phone—see text.

The stones at the top of Mt. Sugar Loaf, Co. Wicklow (1660ft. a.s.l.) now spell out "EI3SU/P" and the Southampton University group who climbed up there to leave their mark were, left to right: GW3NJW, G3WEA, G3SQX, G3SAK and G3WFN.

evening: GW3EKP/P in Anglesea, 59+ both ways which of course woke up EI6AS, and we also worked him 59+ both ways. This proved the excellence of the site and take-off; we were only running *one watt*, so we retired that evening feeling very pleased with these first efforts.

Tests from Kippure

The next day at some unearthly hour (for us) we were on our way to Dublin to collect the waiting generator. Little time was lost on our return, and before long we duly appeared on 40m. CW using a 5RV and eventually on Top Band CW with a dipole, which latter aerial (as it turned out) was a far more successful proposition. Back on 4m. the following day we were involved in some tests, mainly because the Kippure TV engineers were worried lest 4m. interfered with their IF—a microwave link at 4000 mc is used to connect the studios to the transmitter; the IF at the Kippure end is 60-80 mc, but after 10 minutes of continuous testing, no interference was reported. We then had a listen on the 4-metre band and, lo! and behold, the "Liverpool Lads" were coming in at good strength. Several were worked before QRT was declared, with less than 12 hours to go before the start of the 70 mc contest on July 23.

Operating from Kippure on July 23, EI6A was (inevitably) our first contact, followed by many "locals" (say, up to 50 km.) and 15 stations were raised in the first hour. What seemed to us very good DX was worked including Chipping Sodbury, Exeter, Newquay and Hitchin on Phone as well as Shaftesbury, Worthing and Newbury on CW—altogether a very satisfactory day's work. The 4m. rig was a much modified B.44 running 20 watts to a QQV03-10, an E88CC valve-converter into an Eddystone S.640 receiver, and the aerial of course the J-Beam 4-over-4 Yagi at 1500ft. a.s.l. (We heard GC3OBM come up to RS59 on a sudden burst of tropo. but he faded away and was never heard again).

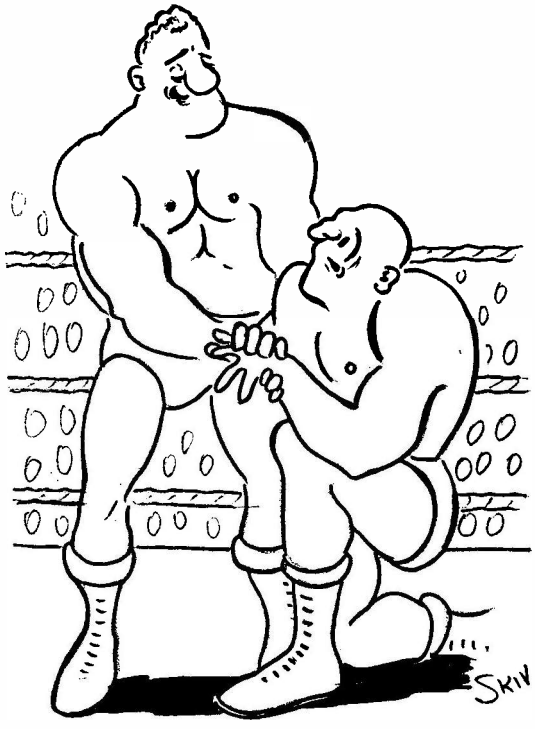
General Results

After the excitement of the 4m. contest, radio activity settled down back at the Sugar Loaf camp site, with 20m. and Top Band CW predominating and some 40m. CW also—mainly handled by the two DX'ers in our party, while we others contented ourselves with forays round the district. Many QSO's were obtained, although the Sugar Loaf site was not all that it could have been. But it was more convenient to stay and try to get our mini-signals out from there rather than hump all the paraphenalia to another, possibly less favourable camping, QTH. We had great fun with the generator, it being a rather elderly Fairbanks-Morse device and some trouble was experienced with the head-gasket; eventually a cornflakes box replacement was effected and it continued to plug away until Sunday, July 30 when our expedition finally closed down. The return crossing was fairly uneventful, after a drive down to Rosslare in appalling English-type rain; but we had the advantage of actual beds for the Sunday night prior to the sailing on July 31.

Results—and Lessons

A summary of the QSO's made is as follows: On 4m., 54 contacts with G, GD, GI, and EI worked, and GM and GC heard. HF/LF bands, about 200 QSO's, all bands being activated at one time or another during our stay, with 160m. and 40m. CW receiving more attention than the others. The best 160m. DX was PAØPN and PAØGMU, and many W's were worked on 40m.

There are several lessons to be learned from this trip. The first, of course, is that of Organisation; we were handicapped to some extent by lack of communica-



" . . . Oh, so it's your keying finger, is it . . . "

Few DX-peditions reported in these pages over the years have got through without having had "trouble with the generator." (This is always due to lack of maintenance, of course!). The EI3SU/P boys had a borrowed machine, and here they are sorting it out. The average portable P-E set is a well-designed piece of equipment which will run for ever—if someone gives it a bit of attention before the party starts.

tion between members once we had gone home from Southampton after the exams., and there was a bit of a mad scramble and some hectic letters a few days before we were due to start. We did learn that from a 4m. point of view, Ireland is excellent, with the obvious proviso that one must have a good site (we certainly had that) and naturally this applies also to the HF bands.

The operators concerned in the venture were (in no particular order) GW3NJW, G3SAK, G3TVW, G3SQX, G3WFN and G3WEA. One last point, about QSL cards. We will send cards *via* the bureau to any station who would like one. Any cards direct to EI3SU/P should go to G3KMI, *QTHR*.

THE INVESTMENT IN AMATEUR RADIO

More than 13,000 U.K. amateur licences are now in issue and we can assume the average over the last three years or so at about 11,500. We can also take it that the average *per capita* expenditure must have been around £80—which means that the current U.K. investment in Amateur Radio is in the region of £1 million. This estimate could well be on the low side, having regard to the volume of business now being done, the relatively high price of good commercial equipment, and the value of the current advertising in our Small Advertisement columns.

As an example, a check through the Readers' Small Advertisement section in the October issue of SHORT WAVE MAGAZINE shows that the total value of the priced radio items offered for sale, alone, was about £4,300! This takes no account of the exchange-and-wanted equipment—nor of the two houses (not that we are also estate agents, but both those offers were of direct radio interest), which would together add another £12,850 to the total!

DAYSTROM LIMITED—NEW MANAGEMENT

Ever since Daystrom, Ltd., manufacturers and suppliers of Heath and Heathkit apparatus—covering an enormous range in the fields of radio communication, test gear, hi-fi and audio, professional and amateur—became established over here at their modern factory down at Two-Mile Bend, just outside Gloucester, their managing director has been Mr. A. E. B. Perrigo. An engaging and unassuming personality, highly qualified in science and radio engineering, he has made an outstanding success of the Daystrom development in this country (the firm is, of course, American based).

Obviously because of his Daystrom success, he has been offered, and has accepted, the appointment of Director of the Small Business Centre in the University of Aston, Birmingham, where his business and administrative talents and commercial experience will have much wider scope. It is important to notice that this Chair is that of Small Business—meaning the management, control, planning and development of the sort of competitive commercial undertaking (like, indeed, Short Wave Magazine, Ltd.) by which the commerce of this country lives and earns not only a U.K. taxable profit but also hard currency from overseas. (While obviously the big concerns make the major contribution, together the smaller firms, of which nobody has ever heard outside their own fields, earn just as much).

The new managing director at Daystrom Limited, Gloucester is Mr. L. T. Perriam, who is very well experienced in the Daystrom business, and whose appointment has been welcomed by the staff.

MORE ADVERTISING—EXTRA PAGES

We don't know if anyone has noticed it—if so, the fact has not been mentioned!—but the September, October and now the present issue of SHORT WAVE MAGAZINE each carry an extra eight pages, making these issues 72 pages plus cover.

The additional pages of text have been made possible by a significant increase in displayed advertising—as anyone can check by a comparison with previous issues, or the corresponding period of last year. Actually, the nett increase in advertising over these three comparable months of 1966 and 1967 is about 15 pages. This success has been shared with readers to the extent of providing 24 extra pages of text over the three consecutive issues. The normal SHORT WAVE MAGAZINE format is 64 pages plus cover. (It was only 56 pp. in 1963). We hope we may be able to continue with the 72 pp. As we have said on another occasion and in a rather different context: Nothing succeeds like success—but you have to keep trying and that is what makes it hard work!

WHEN WRITING TO AMERICA

Remember that it is very important nowadays to include the string of numbers—known as the Zip Code—that appears after the main place name. This is to make their postal coding system, now coming into use throughout the United States, function properly. So if you want your QSL card, or whatever, to be delivered without loss or delay, make sure you have the Zip Code clearly written in the right place.

TOP BAND FORAY IN SCOTLAND

WITH GM3PPU/P IN SEVEN COUNTIES, SEPTEMBER 8-17, 1967

P. J. SMITH (G3PPU)

A BRIEF sortie into the countryside of Oxfordshire one Sunday afternoon late in August proved that portable activity on 160m. is enormous fun. G3RRT and I decided that in spite of the fact that there seemed to have been a number of expeditions to Scotland during the summer, one more would not come amiss.

It surprised us when we got down to it how much preparation was required for even a relatively simple expedition such as ours. Transport provided the first problem; various attempts to procure a van of some description came to nothing, so we had to settle for my Triumph *Vitesse*—certainly not ideal for the job. We were lucky in being able to borrow a *Honda* 300-watt petrol generator; this is a very compact little 40 lb. unit which gave excellent service. For safety's sake it was decided to take two complete stations. These were virtually identical, consisting basically of an HRO receiver and Codar A.T.5 transmitter. Other items included ATU, SWR bridge, 200 yards of p.v.c. covered stranded copper wire, 100 yards of tough polythene line and a comprehensive tool kit.

Eventually all the equipment was shoe-horned into the car and we left home at 5.45 a.m. on September 8. Although we had not originally intended to go on the air that night, we made such good time that we decided to set up a station in Peebles. We had thought that suitable camp sites might constitute a problem, our ideal being a spot well off the road with easy access for the car and suitable space for the tent, a clear take-off to the South and two 40-foot trees at least a half-wavelength apart, plus a nearby stream for washing ourselves! The possibility of disturbing the locals with the noise from the P-E set also made it necessary to keep well away from habitation. In spite of the specification suitable sites were not too difficult to come by. Fortunately, the weather was excellent, and apart from being plagued by swarms of midges on the first night we had very little discomfort.

The Itinerary

Counties visited were Peebles, Kinross, Kincardine, Banff, Moray, Nairn and Bute. Thanks to Mike's excellent hammerthrowing technique we managed to erect some very good aerials, using the polythene line and a suitable stone. A catapult was tried with lead fishing weights and nylon line; although excellent heights were obtainable the line tended to get caught in thick grass and bushes whilst running out and also tangled in the branches of the trees. (After losing about half a dozen lead weights and most of our fishing line we gave up that idea). Aerial lengths varied between a half-wavelength and a full wavelength, anything up to 40 feet high. About 260 contacts were made in all, with regular reports of 589 from the South of England. The most notable QSO was with W1BB/1 on the morning of September 9; Stew was peaking 589 in Kinross and gave us 559. Our aerial at the time was a half-wave about 35 feet high running east-west.

Although the total number of contacts made was not particularly high, we seemed to be busy all the time. The daily routine of packing up camp, driving to the next county, finding a site, erecting the tent and aerial, setting up the gear and then spending about five hours on a straight key *was* rather tiring. We have since decided that when the camp is to be moved every day a caravan or Dormobile would make life much simpler. However, we thoroughly enjoyed the trip and look forward to the next time.

GETTING THE MAGAZINE—MORE COMPLAINTS

We constantly have letters from book-stall readers—those who obtain their copy from a local newsagent—saying either that they cannot get the *Magazine* at all some months, or that it is always late. All we can say is that every trade order received by us is despatched in ample time for delivery by the Saturday, or Monday at the very latest. And there are plenty of local newsagents, up and down the country, who have it ready for delivery to their customers on the Friday, the day of publication —so it cannot be that the fault lies at our end, since obviously the despatch system is the same for all trade orders.

If you cannot get satisfaction locally as regards delivery, the only alternative we can offer is a direct subscription—which costs 42s. post free for a year of 12 issues, with posting guaranteed on the Thursday morning. Direct subscription orders, with remittance, should be addressed to: Circulation Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

VISITORS' BOOK—EXHIBITION

We now have a complete record, in a series of quarto and foolscap hard-cover books, of all who have signed in with us at our Stand since the first Amateur Radio Exhibition, at the old Royal Hotel, London, in 1947. Each year, a check is made through our Visitors' Book, not only to pick up comments from the column headed " Notes " (some unprintable, needless to say!) but also to see where our visitors come from, and who have been with us since the beginning. The entries for the recent Exhibition include names and callsigns under 23 different prefixes, of which the most interesting, in terms of DX, were VE6, VK2, VP8, VQ8, W5, ZE, ZL, ZS6, 4X4, 5A1 and 9M2. The other twelve prefixes included nearly all the U.K. and the nearer European countries.

THE MONTH WITH THE CLUBS

By "Club Secretary"

(Deadline for December Issue: November 3)

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

FIRST thing is to remind all whom it may concern that the **Magazine Club Contest, MCC,** will be played off over the week-end November 11/12—and that won't be far off as you read this! If the number of requests for additional Club identifications—*see* Supplementary List, p.581—is anything to go by, we shall have a heavy entry this year. As explained (in the small print) on p.507, October, this year's master list was drawn up of Clubs who have been reporting to us for this space during the last twelve months or so—the idea being to keep the List to manageable proportions by eliminating "doubtfuls" and some possible "dead wood." As made clear in October, any Club not in the List and wishing to enter for MCC was invited to apply for an identification. At the moment of writing, more than 30 have done so.

There will probably be a few more yet, but obviously it will not now be possible to list them. So, if in the course of MCC you hear identifications not included in the Lists on p.507, October and p.581 here, do not be either surprised or suspicious! (Some people *will* leave things until the last moment!) We accept all *bona fide* entries, right up to the opening of the Contest on November 11—but they must be using code groups issued by us to qualify for participation.

We have a nice GM entry this time, and the competition should be pretty keen. But remember that your real competitors are the other Clubs in your own Zone, and that we show Zone lead placings separately. And, as ever, the invigilators (who, between them, can read any sort of CW—fast, very QRQ, slow-sloppy or indifferent) will be on the *qui vive* for infringements and points will be chopped at their discretion, and in particular for any out-of-time working. This also means that your clock should be accurately reconciled with GMT—anyway, we expect accurate timing in the log sheets!

Important. Those responsible for the paper-work affecting their Club's entry in MCC are reminded that the log *must* be set out as stated in Rule 7, p.506, October, and also that it is *essential* we have all entries in by or before **Friday, November 24.** There is little enough time to get the Report and Results done for the January issue as it is. We are allowing ten clear days for Club scribes to complete their entry, which should be ample. Hence, any not with us by November 24 will have to be firmly rejected because our own preliminary checking work must be started over that week-end. Every year, late logs come in, with all sorts of excuses—"had it in my pocket, but forgot to post it, *hi*";—"my secretary was away ill";—"log-keeper went off on holiday";—"sorry we are late this time but hope you can squeeze us in";—"we had to have a committee meeting before the entry could be approved";—"this may be late but we hope we can be included";—"the XYL thought it was *next* month";—"till we saw the November issue we did not know we had to get it in by the 24th";—"Pse excuse late entry, have been very busy at work"—and so on. This year, no excuses can be accepted, even if they are made to look like good reasons—because the work of evaluating and checking the logs must start by the deadline date, November 24.

Now, it only remains for us to wish all Clubs entering this year's MCC another pleasurable and interesting experience—remember that the Clubs who get the most out of MCC are those who find something for everyone to do.

CLUB REPORTS AND NEWS

First stop this time is with **Purley,** who advise that the first Friday in each month is the Natter Nite, while the third is given over to a formal affair. Thus, for November 3 read "Natter," and on the 17th, all being well, "slide show." For further details, write to the Hon. Sec.—*see* Panel.

Bishop's Stortford are in residence at the British Legion Club, on the third Monday in each month, from 2000 clock; October and November programmes are interlinked in that there is MP4MAX and the W1BB tape-and-slide lecture booked on both dates—which one finally appears in October is, at the time of writing, not settled, and indeed cannot be known till the last minute. Visitors and prospective members are always welcome.

Shefford use the Church Hall, High Street, for their sessions. From 7.45 till 8 p.m. is given over at each one to Morse tuition; from 8 p.m. the main part of the evening commences, this being "Films on Industrial Electronics" on the 2nd, followed on the 9th by a business meeting at which the important matters of the future programme and the annual dinner will be thrashed out. A talk on the technique of using the HRO receiver on CW, which is billed for the 16th, will surely be of great help to the SWL's and the less-experienced members, while the evening of the 23rd is devoted to a talk on the gentle art of servicing radio and TV sets.

Amateur TV is the subject of the meeting on November 21, at the Midland Institute in Margaret Street, Birmingham, of the **Midland;** this one is to take

the form of a demonstration. A special event is the Annual Christmas Party, which, all being well, will occur on December 7, at the Savoy Hotel in Birmingham. Tickets will be about 24s. apiece, from G3JDJ (*QTHR*).

Construction contests are quite a popular way of filling the programme, and often become an annual attraction. The one being held by **Reigate,** at the George and Dragon in Cromwell Road, Redhill, on November 8 should be a winner—there are three classes, for Open, Junior (under 18 and not engaged in the industry), and, of all things, " Hilarious." A trophy is at stake in all three categories.

Publicity is always a good thing, and **Leicester** were understandably pleased when their stand at the City Show made headlines in the local paper. Apart from the LF bands, there was a station on 20 and 15 metres, with a dual-band Quad up, which " fascinated visitors when it was rotated "—we can imagine! In addition, a RTTY station, manned by G3PBC, was also demonstrating.

Saltash want to see all their members at the affair on November 3, this being the Annual General Meeting; on the 17th they have a film show, which includes two films; one is the popular GPO " Ship to Shore," and the other is a film on the subject of the " Capacitor."

Many of the licensed amateurs of U.K. origin who are on the air from other parts of the world are members of the **Ex-G Radio Club;** they have a most interesting *Bulletin,* and run regular nets over the air. For details, contact G2FUX at the address in the Panel.

Just recently one or two of the newsletters have been incorporating pictures; one such is *Wiltshire Hams,* which is the organ of the **Swindon** crowd. Alternate Wednesdays is the form, and the meetings are held at Headlands School, Cricklade Road, Swindon.

* * *

Their monthly *Radial* is the means by which the members of the **Radio Amateur Invalid and Bedfast Club** and the supporters—an essential part of the group incidentally—keep in touch with each other. One most interesting piece in the current issue discusses ways and means of doing woodwork, by a blind member. Any club that can arrange for members of RAIBC to be fetched and returned to their own meetings, or any other such assistance, will almost certainly find that a reference to G3LWY will produce the name and address of someone who would be delighted to have the chance to make some new acquaintances.

In the time-honoured tradition, the **Clifton** AGM roasted the previous committee for its sins in the year just past—and then re-elected them *en bloc*! Of course after the AGM the programme has to be sorted out—and so Clifton puts out an SOS for visitors and for anyone who can give them a talk.

October in **Mid-Sussex** means October 4 at Lindfield Primary School, near Haywards Heath—the attraction is a lecture by G3TR on the tricky topic of HF aerials. October 18 at the same venue is an informal, at which the Hon. Sec. will, if no one stops him, carry out a threat to talk about the design of Solid-State Power Supplies! (At least, that is what he says—but we think the true picture is a little different!)

Wirral also held their AGM in the recent past, and so are at a loose end for November 8 and 22; but no doubt by now they will have organised something—so a line to the Hon. Sec. at the Panel address seems to be indicated.

Up in the Frozen North, **Bradford** get together at Bradford Technical College, Great Horton Road, Bradford, 7. November 14 is slated for a Mullard Film Show, while a week later, on the 21st, G3KKP will be talking on an Approach to VHF.

Progress is still in the forwards direction for the **Hereford** crowd, who are meeting on November 3. This being the only group in the county, their catchment area is very large indeed, with members coming up to twenty miles and more to attend. Nevertheless, new members are still sought, and visitors welcome.

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G3WDA, wife of G3MYI, showing how DX is worked to visitors round the Leicester Radio Society's stand, signing G3LRS/A, at the recent City of Leicester Show. And it really was DX because they were on 15-20m., with a transceiver. Using a Cubical Quad aloft, some excellent contacts were made, producing RS-59 reports from Stateside, with the W's entering into the spirit of the thing and lining up to work G3LRS/A.

Factor of Distance

Down in the West Country, activity in the Amateur Radio context is lower than some other districts; thus the Clubs are more widely spaced territorially, although it must be said that they are all well worth the trouble involved in travelling a long distance to meetings. **Yeovil,** for instance, have a regular Wednesday evening session at Hq., which for the coming month will be slanted towards those who are taking the December R.A.E., plus a whole host of other activities outside.

Still in the West, our thought turns to **Cornish** whose *Link* is consistently one of the best of the newsletters that come our way—but this time the copy had a page missing —and it would be the one with the meeting information on! However, it is possible to say there is a monthly meeting of the troops at the SWEB Clubroom, Pool, Camborne, *plus* a VHF and SSB group who hide out in the " Coach and Horses " at Truro, these all being respectively on the first, second, and third Thursdays.

Not a new Club, but a new reporter, is **Ballymena,** who have what sound to be the perfect premises for an Amateur Radio Club, but not enough members—or so they say! Seriously though, there is a programme being planned which needs the support that only a strong membership can give—so all unattached types, whether licensed or SWL, please step forward, and make yourselves known. As for the activities, there is a Morse and an R.A.E. class, and the shack is being re-equipped so as to provide a VHF-capability in addition to the other gear.

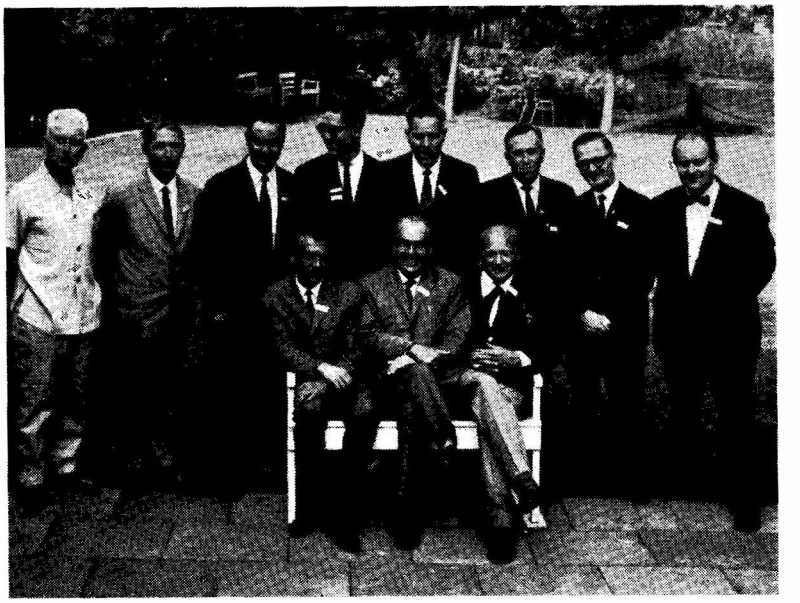
Also from Ireland we hear that a group has been formed in **Bangor, Co. Down,** who get together on the first Friday in each month at Silverstream Unionist Hall, Belfast Road, Bangor; a programme will be organised, all being well, by the time this is in print.

Another new group is in process of formation in the Ilford area of London, called the **Redbridge Amateur Radio Society,** the meetings being on the first and third Monday of each month, at the QTH of G3JTS, 62 Dudley Road, Ilford.

Liverpool have advised a pretty crowded October calendar, including the AGM and various other activities, culminating in a Construction Contest set for November

Names and Addresses of Club Secretaries reporting in this issue :

ADDISCOMBE: S. E. Fuller, 116 Shirley Way, Croydon, CRO-8PE, Surrey (*01-777 1298*).
A.R.M.S.: N. A. S. Fitch, G3FPK, 79 Murchison Road, London, E.10. (*LEYtonstone 6700*).
BADEN-POWELL HOUSE: A. Watts, 8 Thornycroft Court, Kew Road, Richmond, Surrey.
BALLYMENA: G. McDowell, 51 Old Grange Avenue, Ballymena, Co. Antrim.
BANGOR: J. W. Campbell, GI3OLJ, 48 Abbey Drive, Bangor, Co. Down.
BISHOPS STORTFORD: A. Marriott, G3VWC, 21 Thorley Hill, Bishops Stortford (*4796*), Herts.
BRADFORD: E. Barker, G3OTO, 63 Woodcot Avenue, Baildon, Yorks. (*Shipley 58629*).
BRIGHTON TECHNICAL COLLEGE: R. A. Bravery, G3SKI, 7 Copse Hill, Brighton, BN1-5GA. (*506418*).
B.A.T.C.: D. Mann, G6UOU/T, 67 West Hill, Wembley Park, Middx.
CHELMSFORD: P. Chadwick, G3RZP, 121 Lady Lane, Chelmsford.
CHIPPENHAM: N. Cutter, G3PQG, 1 Fosseway Close, Colerne, Chippenham, Wilts.
CIVIL SERVICE: D. Maclennan, G3KGM, 52 Pinewood Avenue, Sidcup, Kent.
CLIFTON: A. J. Gould, G3OGE, 60 Merlin Road, Beckenham, Kent.
CORNISH: W. J. Gilbert, 7 Poltair Road, Penrhyn, Cornwall.
CRAY VALLEY: D. Buckley, G3VLX, 234 Halfway Street, Sidcup, Kent. (*ELTham 6945*).
CRYSTAL PALACE: G. M. C. Stone G3FZL, 10 Liphook Crescent, London, S.E.23. (*FORest Hill 6940*).
DORKING: D. Underdown, G3MBK, c/o J. Greenwell, Eastfield, Henfold Hill, Beave Green, Dorking, Surrey. (*Newdigate 236*).
ECHELFORD: D. Walmsley, G3HZL, 153 Worple Road, Isleworth, Middx. (*POPesgrove 3239*).
EX-G RADIO CLUB: F. W. Fletcher, G2FUX, 53 St. Ives Park, Ringwood, Hants.
FARNBOROUGH: D. G. Arigho, G3NVM, 6 Frensham Close, Yateley (*2174*), Camberley, Surrey.
GLENROTHES: E. H. Ross, GM3LWS, 24 Ettrick Way, Glenrothes, Fife.
HARROW: R. C. Ray, G2TA, Wintons End, Springfield, Bushey Heath (*1762*), Herts.
HEREFORD: B. Edwards, G3RJB, 5 Powys Walk, Hereford.
INTERNATIONAL AMATEUR RADIO CLUB: The Secretary, Box 6, Geneva, 20, Switzerland.
LEEDS: M. Goldman 8 Nunroyd Road, Leeds, 17. (*68171*).
LEICESTER: J. T. McAllister, 239 Sturdee Road, Eyres Monsell, Leicester. (*Wigston 6157*).
LIVERPOOL: I. Barton, G3TYE, 23 Moss Side, Liverpool, 14.
MAIDENHEAD: E. C. Palmer, G3FVC, 37 Headington Road, Maidenhead (*20107*), Berks.
MEDWAY: P. Carey, G3UXH, 29 Miskin Road. Hoo, Rochester, Kent.
MELTON MOWBRAY: D. W. Lilley, G3FDF, 89 Sandy Lane, Melton Mowbray (*3519*), Leics.
MIDLAND: C. J. Haycock, G3JDJ, 29a Wellington Road, Handsworth, Birmingham, 20.
MID-SUSSEX: E. J. Letts, G3RXJ, 87 Meadow Lane, Burgess Hill, Sussex.
NORTHERN HEIGHTS: A. Robinson, G3MDW, Candy Cabin, Ogden, Halifax (*44329*).
NORTH KENT: P. T. Baber, 64 Latham Road, Bexleyheath (*8655*), Kent.
PADDINGTON: N. Copperwaite, G8AQO, 62a St. Marys Mansions, St. Marys Terrace, Paddington, London.
PLYMOUTH: C. G. Clark, 19 Beverston Way, Widewell, Plymouth.
PURLEY: A. Frost, G3FTQ, 62 Gonville Road, Thornton Heath, Surrey, CR4-6DB.
R.A.I.B.C.: Mrs. F. Woolley, G3LWY, 331 Wigan Lane, Wigan, Lancs.
REDBRIDGE: T. L. Stoakes, G3JTS, 62 Dudley Road, Ilford, Essex.
REIGATE: D. Thom, G3NKS, 12 Willow Road, Redhill, Surrey. (*Reigate 45033*).
ROYAL NAVY: R/S W. Metcalf, G3TIF, H.M.S. *Mercury*, Leydene, Petersfield, Hants.
SALOP: W. Lindsay-Smith, G3WNI, 22 Kingswood Crescent, Copthorne, Shrewsbury.
SALTASH: 95 Grenfell Avenue, Saltash, Cornwall.
SHEFFORD: D. A. Pike, G3VMI, 11 Hazel Grove, Stotfold, Beds.
SOUTH BIRMINGHAM: A. Bishop, 40 Cecil Road, Birmingham, 29.
SOUTHGATE: A. Dutton, G3TIE, 77 South Lodge Drive, Southgate, London, N.14. (*LABurnham 3390*).
SOUTH LONDON MOBILE: C. Malcolm, G3UYN, 41a Cambrai Road, Balham, S.W.12.
SOUTH MANCHESTER: W. M. Furness, G3SMM, 16 Coniston Avenue, Sale, Cheshire (*061-973 6676*).
STEVENAGE: D. R. French, G3TIK, 98 Austen Paths, Stevenage, Herts.
SUTTON COLDFIELD: J. E. Symes, G3LNN, 20 Plantsbrook Road, Walmley, Sutton Coldfield, Warwickshire.
SWINDON: E. J. Andrews, G3JAP, 56 Windsor Road, Swindon (*21402*), Wilts.
VERULAM: J. Thomas, G3RXA, 9 Highland Drive, Hemel Hempstead (*55136*), Herts.
WAKEFIELD: E. Price, G3TQV, 23 Elmwood Road, Horbury, Wakefield.
WESTMORLAND: N. Stanley, G3UEC, 9 Castle View, Sedgwick, Kendal, Westmorland.
WIMBLEDON: K. Alexander, 23 Pepys Road, West Wimbledon, London, S.W.20.
WIRRAL: J. Phillips, G3PXX, 16 Collingham Green, Little Sutton, Wirral, Cheshire.
WOLVERHAMPTON: J. P. H. Burden, G3UBX, 28 Coalway Road, Wolverhampton.
YEOVIL: D. L. McLean, G3NOF, 9 Cedar Grove, Yeovil, Somerset.
YORK: J. A. Rainbow, 14 Temple Road, Bishopthorpe York.



The 7th meeting of FIRAC, the railwaymen's radio amateur society, took place during August at Ribe, Denmark. It was attended by about 100 people, with delegates from 11 countries, and here we see, left to right, standing: G3SCW, OH2OM, I1ZCT, OE6KGG, HB9QA, F2AP, OZ9FM, PAØLVK, and seated: LX1BW, DJ3UN, SM3WB.

7. For more details contact the Hon. Sec.—*see* Panel.

Beauchamp Lodge Settlement, 2 Warwick Crescent, Paddington, London, W.2 is the home of the **Paddington** lads; they have recently found themselves able to borrow, temporarily, G3MHQ's SSB transmitter, and are using it on both Phone and CW. In addition, the VHF aerials and rotators have recently received an overhaul. Meetings are held each Wednesday evening.

November at **Maidenhead** sees two dates taken up; the first Monday evening is given over to final arrangements for MCC, while the third Tuesday will be occupied in dealing with the Annual Party, and to an inquest on MCC exercise(!).

A Heathkit aerial tower is regarded as the " Christmas Tree " by the chaps at **Brighton Technical College**, and they are, therefore watching it being erected with some care, and debating among themselves as to how it should be " dressed "—with wire, doubtless! From November 1, the Autumn term will be in full swing, with a get-together every other Wednesday at the main Technical College building in Richmond Terrace, from 7 till 9 p.m.

Dorking took That Van to Dunkery Beacon, on the Somerset/Devon border, for a VHF field day. Since then, it is understood that a junk sale has been successfully held, but unfortunately, details on the November activities are not to hand, and it is therefore necessary to refer you to the Hon. Sec. as in Panel.

* * *

In a note which missed the deadline last time, we hear that one of the **Glenrothes** members, Andrew Thompson, GM3RCI, was killed in the Michael Colliery disaster. A wreath was sent on behalf of all the club members, who were naturally deeply distressed. However, " The Show Must Go On," and so, on November 15, hey will once more be in session, and will be addressed by GM3EGW, Fraser Shepherd, whose subject will be VHF/UHF techniques.

A couple of interesting talks are in prospect for the **Leeds** gang during November; on the 8th, G4AD will discuss transmitters, while on the 22nd there will be a talk and discussion on QSL's and SWL'ing. This slant towards the newcomers is natural, when one realises that in addition to this a group effort is being mounted to help candidates for the next (May) R.A.E., by way of a " study aid " course, for which the only qualification is the not unreasonable one that students should be members of the main Club. These lads all get together at the Swarthmore Education Centre, Woodhouse Square, Leeds, 3.

As far as their meeting on November 6 is concerned, the **Wolverhampton** Hon. Sec. has been suffering crossed lines in his efforts to find a speaker—we sympathise!—but there are no such problems on November 20, when a Symposium on Seventycems will take place; both are at Hq., Nechells Cottage, Stockwell Road, Tettenhall, at 8 p.m.

Murphy and his Law seem to have transferred themselves to the **Chippenham** chaps. During their recent

MCC WEEK-END—NOVEMBER 11/12

Rules and Club identifications for this year's Club Top Band Contest (MCC), on pp.506-507, October. Supplementary List of Club identifications on p.581 this issue. Requests for identifications by non-listed Clubs wishing to participate can be accepted if made in writing before November 9. Essential to ensure that all Contest logs reach us by Friday, November 24. Address for all communications and entries: " MCC," Short Wave Magazine, Buckingham.

exhibition station exercise, both the 14 mc transceiver and the Top Band receiver ran out on them, necessitating some rapid changing to spare gear, and then, to crown it all, a weight with string attached, which was to have gone over a convenient tree, missed and ended up by falling on a nearby car and breaking the rear window. Luckily the owner, an innocent, took it all very reasonably! (Would you?) Every Tuesday evening they can be found at Chippenham Boys High School—visitors welcome, of course—and the highlight of the month will be on November 28, when they are to hear the Heathkit Lecture.

* * *

One of the pleasures of the London Exhibition as far as the writer is concerned is the annual confrontation with G3MDW, the Hon. Sec. of the **Northern Heights** mob. On November 6, the boys will spend the day working up a thirst for the evening trip to a local brewery; a couple of days later, G6LD will explain all about SSB, and on the 22nd Mr. L. M. Dougherty, M.Sc., F.R.A.S., takes the stand to lecture on " Radio Astronomy."

Bromsgrove and **South Birmingham** play off the return half of a Quiz on November 15 at the South Birmingham Hq. which is The Scouts' Hut, Pershore Road, Birmingham 29.

Just one of the ordinary modulator valves as used by the BBC on some of their transmitters. This was an " out of hours " specimen presented to the chairman of Northern Heights as a memento of the Club's recent visit to the BBC's Skelton Pastures Tx station in Cumberland. This is the sort of bottle that needs about 100 amps. on the heater and 5000v. on the plate!

Rackhouse Community Centre, Daine Avenue, Sale Road, Manchester 23, is the place to look for the **South Manchester** group. On November 3 there is a Junk Sale, followed on the 10th by a Hot-Pot Supper; November 17 is a promising one with a lecture on Cryogenics and Superconductivity given by G3VIW. Incidentally, the final details of the Hot-Pot Supper date will be settled ere this is read, and so a call to the Hon. Sec. is called for if details are wanted.

Last month, **Sutton Coldfield** made their Hon. Sec. give them a talk on SSB but for November they have the AGM *and* a Construction Contest to occupy the evening (of the 13th) while at the beginning of December there is talk of a " nice quiet evening dinner at a local restaurant."

" Bright Emitters and Ebonite Coils " is the title of the lecture to be given by old-timer G3TQV to the lads of the **Wakefield** group on November 7, while the session of November 21 is to be occupied by members bringing along and showing off their favourite bits of gear.

Across The World

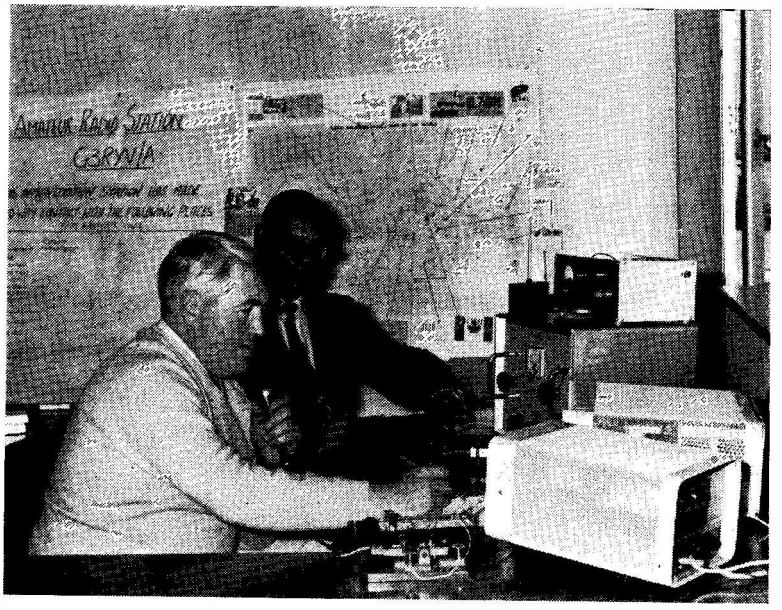
Our next three reporters are all best described as non-territorial in that they cover wide areas of the globe. **International Amateur Radio Club** have a newsletter, from which it is interesting to note how it does live up to the claim to be international—while the membership mentions are mainly of W's, there are also others, both Western European and from the Communist bloc countries, which is how things should be. The IARC is, of course the owner-operator of the Club station to end all Club stations, namely 4U1ITU, which is well equipped for all bands 1·8 to 28 mc.

Amateur Television is a somewhat esoteric feature of our hobby; so much so that the BATC *CQ-TV* articles seem " out of this world " to the average amateur. None the less, **BATC** is not just a group of A/TV enthusiasts, but, on the rare occasions when they are able to get together at Convention or Show, a very good crowd. There can be no doubt whatever that anyone with interests in amateur TV will find it almost impossible to continue without becoming a member.

Our third extra-territorial group is **A.R.M.S.** who are set up to look after the /M interest. *Mobile News* is, from the technical point of view, going through a phase of producing better articles, which is a fine thing. —but we do feel that the editorial attitude is one that at times gives the impression that they just don't understand the terms of the Amateur Transmitting Licence! Fair to say, though, that on other occasions they are very much to the point, as in their comments on the W9WNV DX-pedition.

Saturday, November 18 is set apart for a talk on an HF transmitter and its building, given by G3OOU with assistance; this is the fare for the **Crystal Palace** club. For further details contact the Hon. Sec., G3FZL, as in Panel.

" Twenty-one this month " was the theme of the October programme for the **Radio Society of Harrow,** with a nice issue of their *QZZ*, which shows that they had their anniversary supper on October 20. Meetings in November are arranged for the 3rd, 10th, 17th and 24th, and include a lecture by G3HBW and a Quiz decider with Verulam. The Practical Lecturettes, as



For the annual staff show organised by John Mowlem's, the well-known firm of civil engineering contractors, on September 9, G3RYV/A was on the air from the Brentford head office. Gear used was a KW-2000A and an 8KW trap dipole at 120ft.—well, they ought to be able to put up a decent aerial with all that plant around! Here we see G3RYV (foreground) with G3WUE. In all, 76 contacts were made with 26 countries, all continents being worked on SSB during the afternoon.

mentioned on p.439 of our September issue, have been started.

A most interesting news-sheet this month from the **Baden-Powell House** Scout Amateur Radio Station, with a good description of the Idaho station K7WSJ at the World Jamboree, together with notes from GB3BPH, their own station, and GB3BSI and Brownsea Island. Considering that the group had its operators stretched out over all three stations, one can understand what they mean when they imply that GB3BPH could have done with a little more in the way of operating assistance!

IDENTIFICATION CODES FOR CLUBS IN "MCC"

Supplementary List

A07	Addiscombe "A"
A08	Addiscombe "B"
A09	Aberdeen
B20	Belfast YMCA
B21	Burnham-on-Sea
B22	Burslem
B23	Bury St. Edmunds
C20	Cheltenham
D06	Dover, Deal & Dist.
E05	East Cheam
E06	Echelford "B"
G08	Govt. Comms., Cheltenham
G09	Grimsby
K02	Kings Norton (Contest)
K03	Kirkcaldy
L10	Loughton
L11	Leyland-Hundred "A"
L12	Leyland-Hundred "B"
L13	Leyland-Hundred "C"
L14	Lindholme R.A.F.
M11	Marconi Apprentices
M12	Moray Firth "A"
M13	Moray Firth "B"
M14	Moray Firth "C"
M15	Macclesfield
M16	Manchester University
N12	Northern Polytechnic
P08	Painton, Northampton
R08	Reigate "B"
R09	Reigate "C"
S31	Speedbird, BOAC
702	235 Sqdn., A.T.C. Stoke

They are to be congratulated on a good show and a fine signal.

November for **Verulam** means an Informal on November 1 and they follow this up by a lecture on Aerials and Aerial Matching by G3HRH, on November 15. This sets the pattern for the winter evenings, as both these meetings are to be held at the Cavalier Hall, Watford Road, St. Albans; previously the informals were being held at the Salisbury Hall venue.

Addiscombe get together at the Toc H, 152 Lower Addiscombe Road, on the second and fourth Tuesday in each month. Details of the November doings can be obtained from the Hon. Sec. This also seems to be the gist of things as far as **Medway** are concerned, although their dates are alternate Mondays. November 6 sees the end of a series of Constructional evenings at which the lads have made several useful things to put in their shacks—possibly a chance for the committee to think up something extra good for the November and December entertainment of the members?

* * *

After our mild gripings about being out of phase with **Wimbledon's** *QRK*-5, with the resultant scratching about to find what they are up to—we got *two issues* this month! From them, we gather that the joint SARA camp with Purley and South London Mobile was quite a success, and that the meetings for November are slated for the 10th and 24th, the former for an introduction to SSB for beginners (given by G3GKF) and the latter for what are known locally as "Club nights"—otherwise, informals.

Not very often we hear from **Stevenage,** but the grapevine says that on November 2 there will be a gathering of the clans at the Hawker Siddeley Dynamics Staff Canteen, to hear G3LXP expounding on Aerials.

Echelford are thinking along the lines of a second meeting in each month; thus on November 20 the lads

will be at St. Martins Court to hear a lecture with the title " From Drawing Board to Drawing-Room," to be given by G3TDR. On November 30, the topic is Interference Detection—and who better to give it than Mr. Turner of the GPO.

A strong programme is on the plate for the **Cray Valley** chaps; November 2 starts them off with a lecture by G2FKZ on " Auroral Propagation at VHF " while on the 7th they will visit Crystal Palace TV Transmitter, and finish up the month with a Natter Nite on November 16. The lecture is held at the Congregational Church Hall, Court Road, Eltham, S.E.9, and the informal at All Saints Church Hall, Bercta Road, New Eltham.

Salop also have a strong programme, with G3BA and G3BHT talking on " County Blarney and All That " at the lecture meeting, November 9; the informal will be on the 23rd, and will feature G3UQH talking about Propagation. Incidentally, the venue is the Old Post Office Hotel in Milk Street—which they forgot to mention!—and the Hon. Sec. says if anyone is thinking of looking in on them please contact him—*see* Panel—as there is a possibility of a date change.

We are taken to task by the **Cheltenham** Hon. Sec. for missing them out of the MCC list last time—but that is explained in the preamble. After all, if we don't hear from Clubs for a whole year, how do *we* know that they are still active! At the same time we gather that quite a lot of things are happening on Wednesday evenings at St. Marks Community Centre, Brooklyn Road, Cheltenham.

York are not often " in touch " here, and your scribe had almost " written them off," when back they came with quite a story of activity during the summer months. Their major event in November is on the 30th, and takes the form of a dinner—which they hope to make an annual affair—at the Granby Lodge Hotel. Details about this group can be obtained from the Hon. Sec., as in the Panel.

November 14 is set aside by the **Farnborough** group for the annual junk sale and is followed on the 28th by the AGM, at which the president, G2DX—one of our most distinguished old timers—will address the meeting. Incidentally, the R.A.E. proposals for the area were taken up so enthusiastically that there are now *two* courses running—a fine show.

Talking of R.A.E., the **Westmorland** lads have also got their course on a sound footing, with an attendance of ten; they have changed the venue for the sessions of the Club—now alternate Fridays at the home of G3WBZ (20 Kendal Green, Kendal, Westmorland) and for details of current activities there, contact G3UEC as in Panel.

The programme for the **North Kent** crowd is settled through till the New Year; for November 9 we see that G3FRB is to take as his subject " Crystals." This one, as always, will be at the Congregational Church Hall, adjacent to the Clock Tower, Bexleyheath.

One way of getting the attendance up at the AGM was used with success by **Chelmsford**—they ran a junk sale the same evening! However, in spite of a good AGM, they seem to have no secretary—at least, the report makes no mention of this important official. As far as the *Magazine* is concerned, the name and address of the Hon. Sec. is an important part of the report. It gives us somewhere to send prospective new members who ask where their nearest group may be, and also draws in local readers who may not otherwise know of the Club's existence. It is one of the responsibilities of an hon. secretary to act as contact man for prospective new members—which is one reason for our regular Secretaries' Address Panel.

R.N.A.R.S. held their AGM at the New Horticultural Hall on September 30, during the Exhibition. All those at the Show will be aware that the R.N. stand was well patronised, particularly the code-practice runs. Membership is well worth-while for the R.N. types.

Nice to hear, after a long interval, from **South London Mobile,** who advise that they are in session at Clapham Manor Baths, Clapham Manor Street, London, S.W.4, on November 4 and 18.

Civil Service write to say that as a result of the write-up last time they have gained more support. For November, the talk on the 7th is to be given by representatives of K.W. Electronics, as part of an exhibition and demonstration of all sorts of Amateur Radio equipments. The Informal Evening is on November 21, when G3CSR will be put on the air. As for December, we are particularly requested to mention the Informal on December 20, when the committee entertain the members to a treat in the Christmas spirit.

The **Southgate** *Newsletter* for October does not tell us much, except that their next meeting is on November 9, at the usual place; that the proposed visit to the BBC's Brookmans Park " had to be cancelled "; and that there is some thought about batting in MCC.

A poignant entry in the **Plymouth** programme for November 7 says: " Junk Sale (no old TV chassis, pse!) " —we know the feeling! There is junk, good junk, really marvellous stuff you could not get anywhere else at three times the price, and old TV chassis! But whenever there is a junk sale, some eager junior appears weighed down with old TV chassis. This is not what it says in Plymouth's very readable newsletter called *QUA* but it is probably what they have in mind!

Next meeting of the **Melton Mowbray** Amateur Radio Society is on November 16, at the St. John Ambulance Hall, Asfordby Hill, when there will be a tape-lecture on Receivers, by G2IG—and, it's the first we've heard of *him* in about the last 15 years!

Deadline

And that brings us to the end of story for this month. Remember to read carefully over the rules for MCC (on p.506 of the October issue) and have your team ready for the Go at 1700z on November 11. We shall be there and listening! For the next appearance of " Month with The Clubs," the deadline is **Friday, November 3** and, because the January issue will be taken up with the MCC Report, any forward information should be included. Address everything for this space to: " Club Secretary," Short Wave Magazine, Buckingham.

NEW QTH's

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

EI8BN, L. Dorrington, 9 Church Street, Tralee, Co. Kerry, Eire.

G2RV, S. Higson, 37 Ashburton Road, Birkenhead, Cheshire. (*re-issue.*)

G3DOT, J. S. Allen, 77 Rosslyn Crescent, Luton, Beds. (*re-issue*). (*Tel. Luton 32319.*)

G3UXX, J. E. Baylis, Holt Farm, Fair Oak Road, Bishopstoke, Hants. (*Tel. Fair Oak 470.*)

G3VIT, Sgt. R. Stancliffe, 45 Commando R.M., Stonehouse Barracks, Plymouth, Devon.

G3VZF, J. Adams, 85 Rosecroft Gardens, Twickenham, Middlesex.

G3WAX, D. J. Paterson, 99 Shepherd Road, St. Annes-on-Sea, Lytham St. Annes, Lancs.

GM3WHT, M. J. Smith, School House, Urafirth, Heylor, Shetland Islands.

G3WJB, L. Arlen, 88 Old Shoreham Road, Hove, Sussex.

G3WIR, Burnham Beeches Radio Club, c/o A. Bell, Marcross, Kingsway, Farnham Common, Bucks.

G3WOC, R. J. Worbey, 1 Spring Vale, Dartford, Kent.

G3WOK, D. L. B. Clifton, 19 Sandy Way, Shirley, Croydon, Surrey. *CRO 8QT.*

GM3WPU, A. G. Blewett, 41 Salmond Street, A.M.Q., R.A.F. Station, Kinloss, Forres, Morayshire.

G3WPZ, J. Squire, 15 Laurel Grove, Wilton Estate, Batley, Yorkshire.

G3WQM, J. W. Thompson, White House, Tollerton, York.

G3WQP, N. K. Waring, 33 Chestnut Street, Southport, Lancs.

G3WQU, P. L. McKay, 1 St. Agnes Terrace, Stoney Rock Lane, Leeds 9, Yorkshire.

G3WRI, P. A. Brown, 23 Stratford Drive, Fulwood, Preston, Lancs.

G3WRN, C. R. McRae, c/o Sgts' Mess, R.A.F. Station, Topcliffe, Thirsk, Yorkshire.

G3WRO, K. L. Haynes, 10 Fullers Close, Collier Row, Romford, Essex.

G3WRP, T. A. Beaton, 373 Bellegrove Road, Welling, Kent.

G3WRV, A. Rowlandson, Lezant, Chilton Close, Tylers Green, High Wycombe, Bucks.

G3WRZ, K. I. Thompson, 2 Rookery Drive, Penwortham, Preston, Lancs.

G3WSA, D. J. S. Allen, 32 Whirlow Court Road, Sheffield 11, Yorkshire. (*Tel. Sheffield 363792.*)

G3WSH, F. W. Hattemore (*6Y5FH*), 94B Staple Hill, Bristol.

GI3WSS, C. A. Billington, 33 Wood End, Holywood, Co. Down.

GW3WSU, C. S. Beynon, 20 Victoria Square, Penarth, Glam. (*Tel. Penarth 709171.*)

G3WSV, J. C. Lawson, Monks Cottage, Burton End, Stansted, Essex.

G3WSW, J. Holmes, 190 Chorley Road, Walton-le-Dale, Preston, Lancs.

G3WSY, C. D. Rutter, 30 Tweed Grove, Longhill Estate, Hull, Yorkshire, E.R.

G3WTA, M. L. Kinnersly-Taylor, Seaton Ryde, Tranwell Woods, Morpeth, Northumberland. (*Tel. Morpeth 2541.*)

G3WTT, C. J. Goodwin, 49 Common View, Letchworth, Herts.

G3WUB, P. Rice, 21 Lifford Road, Wheatley, Doncaster, Yorkshire.

G3WUD, R. M. Gilchrist, 117 Egerton Road, North, Whalley Range, Manchester 16, Lancs.

G3WUI, G. Spink, 7 Cunningham Road, Lindholme, Doncaster, Yorkshire.

G3WUW, A. R. Papworth, 25 Station Road, Over, Cambs. (*Tel. Swavesey 339.*)

G3WVI, G. H. W. Boys, Crowthorne Farm, Crowthorne, Berkshire. (*Tel. Crowthorne 2589.*)

G3WVO, K. R. Cass, 4 Heworth Village, York.

GW3WVT, A. J. Humphrys, Tower Lodge, Nercwys, Mold, Flintshire. (*Tel. Mold 409.*)

G8BCL, H. F. Bottomley, 36 Bubwith Grove, West End, Halifax, Yorkshire.

G8BCF, G. S. Podmore, Granville, Langley Road, Lower Penn, Wolverhampton, Staffs.

G8BCN, G. Coleman, 3 Knox Road, Clacton-on-Sea, Essex.

G8BCO, C. A. Boys, 17 Claremont Gardens, Surbiton, Surrey.

G8BDI, H. Bunting, C.Eng., M.I.E.E., A.M.I.T.E., 34 Bowerfield Avenue, Hazel Grove, Stockport, Cheshire. (*Tel. PO Ynton 3956.*)

CHANGE OF ADDRESS

G2HHV, J. Spivey, 24 Norfolk Avenue, Carlton Grange, Batley, Yorkshire.

G3ATH, H. Pain (*ex-9V1MT*), c/o Officers' Mess, R.A.F. Station, Lindholme, Doncaster, Yorkshire.

G3BRQ, K. B. Tackley (*ex-XAGA/SVØAC*), 1 Greenways, Fleet, Aldershot, Hants.

G3ERN, G. E. Read, Homesdale, Lower Road, Little Hallingbury, Bishops Stortford, Herts.

GM3FIZ, D. M. Sangster, 12 Ashley Court, Linlithgow, West Lothian. (*Tel. Linlithgow 2853.*)

G3FQJ, J. W. Barton, 23 Carsick View Road, Sandygate, Sheffield 10.

G3FVV, R. C. Fagg, 5 Ridge Way, Marlpit Hill, Edenbridge, Kent. (*Tel. Edenbridge 2407.*)

G3FZL, G. M. C. Stone, 11 Liphook Crescent, Forest Hill, London, S.E.23.

G3GJV, H. Brooke, Thistledown, Church Hill, Spofforth, Harrogate, Yorkshire.

G3GRV, G. L. Halse, 10 Royal Close, Chalfont St. Peter, Bucks.

G3HCL, D. E. C. Lockyer (*ex-9M2LO/9M6CL*), c/o Officers' Mess, R.A.F. Station, Old Sarum. Salisbury, Wilts.

G3HGD, V. S. Best, 315-C Horbury Road, Wakefield, Yorkshire. (*Tel. Wakefield 72155.*)

GI3HNM, C. E. Davies (EI8BL), 52 Abbey Street, Bangor, Co. Down.

GM3IVZ, W. E. Stephen, 63 Barassie Drive, Kirkcaldy, Fife.

G3JUY, A. Mallinder, 7 Walnut Drive, North Colerne, Chippenham, Wilts.

G3KTJ, G. P. Rigby, 30A Pimbo Lane, Up Holland, Wigan, Lancs. (*Tel. Up Holland 2601.*)

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NEW QTH's—continued

G3KYE, J. Orr, 102 Manor House Lane, Birmingham, 26.

G3KYT, K. Schofield (*ex-GW3KYT*), 37 Collins Drive, Eastcote, Ruislip, Middlesex.

G3LAS, J. B. Butcher, 7 Barclay Close, Hertford Heath, Herts.

G3LCR, D. Garlick, 20 Western Fields, Ruddington, Notts.

G3LEX, R. J. V. Reed, 52 Chestnut Avenue, Grays, Essex.

G3LOV, M. J. Francis, 8 Hollies Close, Newton Solney, Derbyshire.

G3MCY, G. C. Moore (*ZC4GM*), c/o Officers' Mess, R.A.F. Station, Episkopi, Cyprus, B.F.P.O. 53.

G3NUA, J. Hogg, 68 Southbrooke Avenue, Hartlepool, Co. Durham.

G3NVC, T. Howard, Ashlyns Bungalow, Lybury Lane, Redbourne, Herts.

G3NWQ, M. J. Caplan, 7th Signal Regt., B.F.P.O. 15.

G3NZK, P. G. Robson, 6 Eastleigh Road, Fair Oak, Eastleigh, Hants.

GM3OGJ, A. M. Cameron, 15 Greygoran, Sauchie, Clackmannanshire.

G3OHH, R. A. Hargreaves, 44 Castle Road, Mow Cop, Staffs.

G3OHX, I. Jackson, 154 Ryefield Avenue, Hillingdon, Middlesex. (*Tel. Uxbridge 33861.*)

G3PDX, J. R. Barker, 21 Orchard Road, Nettlestone, Isle of Wight.

G3PJY, R. H. Millman, 46 Madison Avenue, Hodge Hill, Birmingham, 34. (*Tel. 021 STE.6007.*)

G3PWQ, A. Marven, 182 Barnsdale Road, Reading, Berks.

G3PXV, R. E. Wiseman, 7 Bedford Avenue, Wyton, Huntingdonshire.

G3PXX, J. J. M. Phillips, 16 Collingham Green, Little Sutton, Wirral, Cheshire. (*Tel. 051-339-4571.*)

G3RGN, L. Binns, 707 Halifax Road, Hartshead Moor, Cleckheaton, Yorkshire.

G3RK, H. A. Spashett, The Hills, Uggeshall, Brampton, Beccles, Suffolk.

G3RRK, A. D. W. Atkins, 23 Maiden Greve, Castle Howard Drive, Malton, Yorkshire.

G3SGN, Mrs. G. M. C. Stone, 11 Liphook Crescent, Forest Hill, London, S.E.23.

G3SSD, J. Derbyshire, 2-A Hoyle Bottom, Oswaldtwistle, Lancs.

GM3TCW. J. F. Kelly, 27 Barassie Drive, Kirkcaldy, Fife.

G3TJA, R. Street, 117 Parkway, London, N.W.1. (*Tel.01-387-2158.*)

G3TKF, R. W. Thompson, Stapledown, Hill Drive, Failand, Bristol.

G3TKH, K. J. Winnard, North Corner House, Chaingate Lane, Iron Acton, Bristol.

GW3TML, T. H. Lloyd (*9L1TL*), Beulah, Coast Road, Rhyl, Flintshire.

G3TTV, B. Robertson, 12 Hazel Close, Thetford Road, Mildenhall, Suffolk.

G3TTY, B. J. Field, B.D.S., L.D.S., R.C.S., Monkswood, Merlewood Close, Daws Hill Lane, High Wycombe, Bucks. (*Tel. High Wycombe 20245.*)

G3TZL, P. A. Bowen, 133 London Road, Horndean, Hants.

G3TZL/A, P. A. Bowen, 6 Gurnard Road, Cosham, Portsmouth, Hants.

G3TZV, P. Fry, 3 Geneva Road, Bramhall, Stockport, Cheshire.

G3UDR, A. J. Martin, Rew Cottage, Abinger Common, Dorking, Surrey. (*Tel. Abinger 114.*)

G3UFL, F. H. Ladd, 385 Main Road, Broomfield, Chelmsford, Essex.

G3UIE, B. F. M. Dennis, The Dennies, Abshot Road, Titchfield Common, Fareham, Hants.

G3UQK, F. Cummings, 25 Caldy Road, Salford 6, Lancs.

G3UUE, N. Carter, 30 Broadmayne Avenue, Sunderland, Co. Durham.

G3VIE, P. D. de la Mothe (*ex-ZE1BK*), 35 Brookside, Wokingham, Berks. (*Tel. West Forest 4048.*)

G3VMC, T. L. Sadler, 28 Sough Hall Crescent, Thorpe Hesley, Rotherham, Yorkshire.

G3VOA, R. H. Boydell, Oakwood Centre, High Street, Kelvedon, Colchester, Essex.

G3VOF, M. G. Foster, 50 Fairfield Rise, Billericay, Essex.

G3VOZ, C. Burke, 30 Green Lane, Bovingdon, Hemel Hempstead, Herts.

G3VRZ, H. de Lacy, 37 The Highway, Sutton, Surrey.

G3VTX, R.A.F. Lindholme Amateur Radio Society, c/o G. Spink, 7 Cunningham Road, Lindholme, Doncaster, Yorkshire.

G3WEP, R. M. Dotchin (*VE3CXG*), 34 Princes Street, Peterborough, Northants.

G3WEW, R. W. Wood, 36 Kendall Avenue, Shipley, Yorkshire.

G3WIW, A. S. Leach, 199 Braemor Road, Calne, Wilts.

G3WJH, W. Wilkinson, 1 Company Fold, Little Clifton, Workington, Cumberland.

G4JH, W. V. S. Williams, 27 Fifth Avenue, Lancing, Sussex.

G5CP, C. R. Plant, The Cottage, Gynn Lane, Milltown, Ashover, Derbyshire. (*Tel. Ashover 253.*)

G5GX, H. M. Rix, 6 Gorton Road, Willerby, Yorkshire, E.R.

G6MU, W. J. Munt, 64 Cardinals Drive, Pagham, Bognor Regis, Sussex.

G8KI, P. C. Mortimore, 38 Green Lane Close, Byfleet, Weybridge, Surrey.

G8RY, F. E. Wyer, Gosford Cottage, Little Hereford, Ludlow, Shropshire. (*Tel. Brimfield 339.*)

AMENDMENT

G3GSO, T. W. Bryan, 16 Hardwick Street, Derby. *DE2 8BA.*

NEW U.K. CALL BOOK

The latest (1968) issue of the *G Call Book*, published by the RSGB and obtainable from us, brings the U.K. listings up-to-date as at August this year. It shows that since the last issue, in October 1966—the *G Call Book* appears annually—there have been increases of approximately 580 G3/3's in the six U.K. countries; about 170 in the G8/3 category, VHF only; and in G5/3's (reciprocal licensing for foreign nationals resident in the U.K.) fewer than 30. The total U.K. increase is roughly 770 callsign/addresses. The *G Call Book* costs 6s. 7d. post free and is available from: Publications Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SMALL ADVERTISEMENTS

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RESISTORS: Half-watt carbon film, 5%, all preferred values in stock from 10 ohms to 10 megohms, 2d. each (send s.a.e. for free sample). **Capacitors:** Mullard miniature metallised polyester. P.C. mounting, all 250v. DC working, ·01 mF, ·022 mF, ·047, 0·1 mF, 0·22 mF. all at 6d. each. Hunts tubular 0·1 mF, 200v. working, at 3d. each. Send 6d. stamp for extensive list of low-priced Electronic Components, Instruments and Equipment. Please include postage/packing 1s. on all orders under £1. — **Brensal Electronics, Ltd., Dept. SW.4, Charles Street, Bristol, 1.**

MOECAN Offers: Geloso G.207DR receiver, 10 to 160m., £40. Heath RG-1 Rx, £30. Green TMR-5, £20. Electronic Bug, £14. All these in excellent condition. Solartron D-500 'scope, superb instrument, £35. Brand new bug keys. £4. Two-metre transistor converter (FET), £7. AR88LF receiver, £35.—**Moecan Electronics, Westbury Road, Cheltenham (24217).**

DECEMBER Issue appears November 24. Single-copy orders, 4s. post free, to reach us by Wednesday 22nd., despatch by direct mail Thursday 23rd. Annual subscription 42s. post free, posting day prior to publication each month.—Circulation Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

READERS' ADVERTISEMENTS

3d. per word, min. charge 5/-, payable with order. Add 25% for Bold Face (Heavy Type). Please write clearly, using full punctuation and recognised abbreviations. No responsibility accepted for transcription errors. Box Numbers 1/6 Extra. Replies to Box Numbers should be addressed to The Short Wave Magazine, 55 Victoria Street, London, S.W.1.

SALE: Rack-mounted S.T.C. RTTY unit, Rx5, with one only Super-Pro Rx, less xtal, with 450 mA PSU. Amplifier Type A, Telegraph Unit, Amplifier Type B, fuse panel, etc., price £15, buyer to collect. Creed Type 3X teleprinter and PSU, bench tested but now requires some attention, price 70s. TCS-12 transmitter, with power plug, £6. HT Unit Type 45, rated 1200v. 200 mA, £6. Type 13A double-beam oscilloscope, complete, £12. Add 20s. postage/packing on above.—Sands, G5JZ, Corona, Heathfield, Sussex.

SELLING: Eddystone 888, with S-meter and mounting blocks, in very good condition, price £48. Pair TT21 valves, unused, 20s. each. — Ring Newland, G3VW, 01-205 1443 (London).

GOING SSB: Selling Tiger TR-200 transmitter, easy 150 watts, in first-class condition, much DX worked (no TVI trouble), bargain at £50 or near offer, demonstration arranged for buyer collecting—or Exchange for Viceroy Tx, in any condition.—Cleland, G3PWU, QTHR (or Ring Reading 83523).

SALE: Heathkit SB-10U, built from new kit exactly to specification, 15 months old, in absolutely mint condition and working all bands, price £30. Will deliver to 30 miles or so. — Hoban, G3EGC, 96 Ashworth Lane, Bolton (51502), Lancs.

SMALL ADVERTISEMENTS. READERS—*continued*

SELLING: R.C.A. AR88D, in good condition, with S-meter, price £35.—Alden, G3VUN, 30 Brook Road, Gidea Park, Romford (44480), Essex.

GOING Transceiver: Selling FL-200B Tx, £95, and Hallicrafters SX-101A receiver, £90, both in perfect condition.—Thurlow, G3WBN, 19 Gravel Hill, Croydon, Surrey. (Tel. 654 2761).

WANTED Urgently: A Geloso VFO, for 10-80m., in good condition, will pay £10 also carriage and packing. Pse have a good dig round and let me know right away!—M4257267 Cpl. Smyth, A.F., 2 Squadron, c/o DL5YZ, R.A.F. Gatow, B.F.P.O.45.

FOR SALE: Marconi CR-100 receiver, with noise limiter, kit of spare parts and works manual, price £12 10s.—Nichols, Roquebrune, Carlton Road, South Godstone (2250), Surrey.

UNWANTED Raffle Win! Transmitter covering 10 to 80 metres, with VFO, buffer stages and 813 PA, including blower but no PSU. What offers? —Donohue, 66 Allison Avenue, Chatham, Kent.

SALE: Transceiver NCX-5 (new PA valves), with matching NCX-A 230v. AC/PSU and moving-coil microphone, all as new, price £195.—Moxey, G3MOE, QTHR.

SELLING: Codar CR-70A Rx, in nice condition, complete with stand and speaker unit, asking £15 plus carriage.—Glaysher, Yewani, Elm Grove, Barnham, Bognor Regis, Sussex. (Ring Chichester 8-4063, 9 a.m. to 5 p.m.).

FOR SALE: Heathkit RA-1 amateur band receiver, in good condition, £30 carriage paid.—Kennedy, G3OCS, 77 Seaview Road, Brightlingsea, Essex.

SALE: Mullard Valve Tester, with all cards, in immaculate condition, cost over £100, will accept £50. Bemac television tube tester and reactivator, cost £40, taking £20. Cossor FM/TV signal generator, £7 10s. — McLewee, G3OML, 111 Camborne Road, Morden, Surrey.

OFFERING: An Eddystone S.740 communications receiver, perfect and in as-new condition, tuning calibration spot-on, sensitivity and selectivity excellent, with headphones, speaker and mounting blocks, £23 10s. or near offer, for collection in London area.—Box No. 4562, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: TW "Communicator" for 4 metres, unused, £50. TW 4m. converter, mains PSU, new, £10. Green mobile receiver, new, £30. R.C.A. AR88LF, with S-meter, £35. Mobile Tx, coverage six bands 1·8 to 28 mc, with 6146 in PA, £20; mains PSU and modulator to suit, £10.—Howard, G2DUS, 40 Regent Street, Stotfold, Hitchen, Herts.

SALE: Hammarlund HQ-180C communications receiver, with manual and matching speaker, in immaculate condition, at £110. Also a Heathkit Mohican GC-1U transistor receiver, factory built, price £25.—Smith, Candia, Dunsley, Stourbridge, Worcs.

WANTED: Heathkit Mohican. Details, price and condition, please.—Colling, 3 Margaret Terrace, Coronation, Bishop Auckland, Co. Durham.

SNIP at £30! Ten-metre 100-watt Tx, table top, for AM/FM operation, pair 6146's in PA, with external PSU rated 509v. 250 mA. An excellent performer, only requires 50-watt modulator for full AM operation. Write for details.—Jeapes, G2XV, 165 Cambridge Road, Great Shelford, Cambridge.

SELLING: Compact Phone/CW rig for 80/160m., only 8 x 6 x 6 inches, VFO control with 5763 PA and Woden UMØ mod. xformer, first £6 secures. SSB half-lattice rig for 80 metres, 6146 PA, £8; PSU, £4 (collect). Avo-7 Test Meter, £4.—Loader, 20 Manor Lane. Sutton, Surrey.

BARGAIN; Trio 9R-59 Receiver, in mint condition, coverage 535 kc to 30 mc, bandspread, SSB, Q-multiplier; also self-powered Codar preselector and including speaker and headphones. Offers over £20.—Chandler, 21 Harvard Mansions, St. John's Hill, Wandsworth, London, S.W.11.

SMALL ADVERTISEMENTS, READERS—*continued*

WANTED Urgently: Labgear Wideband Multiplier Unit Type E.5026. Also the circuit for a transmitter using 2/807 in the PA.—Curgenven, Beech House, Uffculme, Devon.

SALE: Eddystone 888A, one of the last off the production line, a very FB receiver, £70. Class-D Wavemeter, 35s. Geloso Type 4/102V VFO, mounted up, with escutcheon, £5. AM Tx Type 102, 65-watt, suitable two metres, with modulator, 75s.; PSU to suit, 75s. Standard Sig. Gen., coverage 9·5 kc to 30 mc, with calibrated attenuator, £10. B.44 Mk.II Tx, with five 4-metre xtal channels, Rx, VFO, £5. Four-metre 4-ele J-Beam, 50s. An R.1132A Rx, ideal conversion for two metres, 25s.; PSU to suit this Rx, 25s.—Harrington, G3VQM, QTHR.

EXCHANGE: Three-speed tape recorder for a 70-centimetre Converter.—Hunter, 30 Cawdor Crescent, Kirkcaldy, Fife, Scotland.

FOR SALE: Cossor Type 1049 double-beam Oscilloscope, perfect working order, less graticule, Y-amplifiers DC to 100 kc, time-base 1·5 sec. to 150 mS, £10. Mains transformer, Gardners, brand new, 250-0-250v. at 250 mA, total 6·3 v. 6A, 0-5-6·3v. 3A, price £4. Two-transistor medium-wave radio, 20s. Following items at 10s. each: Mains isolation transformer, 30 VA; new 7in. x 4in. 3-ohm speaker; miniature round meter, about 500 microamp.; handbook for Collins 75A-2; xtal, 100 kc, 3-pin mounting.—Shaw, 38 The Circle, Pinehurst, Swindon, Wilts.

OFFERING: Rack-mounted CW/Phone Tx, rated 50 watts, Geloso VFO, coverage 10 to 80 metres, buyer to inspect and collect. Unused components for HT/PSU, 1000-0-1000v. or 650-0-0650v. 250 mA transformer, with rectifiers, choke and smoothing condensers, £7. PT-15 Valves, 12s. 6d. Also other items.—Hunt, G5IK, Keyhaven House, Milford-on-Sea, Hants.

SALE: Heathkit Mohican GC-1U receiver; Bendix TA-12G Tx; Type W.1191 Wavemeter; two power packs; various valves and other oddments. Take the lot for £35.—Gorst, 5 Lea Croft, Crowthorne, Berks.

IF You Have anything worth a fair price, you can turn it into cash by using this space—but pse no tired old junk, for everybody's sake! Your adv. need not cost more than a few shillings (rate is 3d. a word, plus 25% for bold face, like this) and every month many £100's worth of good gear changes hands through these columns. To catch the December issue, send your advertisement in right away. Space is always limited and every month we have a large carry-over of insertions too late for acceptance. — Advertisement Dept., Short Wave Magazine Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: Heathkit DX-100U in FB condition, price £50 or near offer. Hallicrafters SX-28 Rx, with manual, in rough condition, but worth £8. Olympic 150-watt loaded Z-Match, £6. Buyers to collect.—Wright, G3RHB, 5 Mistletoe Road, Yateley, Camberley, Surrey.

SALE: Hallicrafters S-120 receiver, price £10. Prefer buyer to collect.—Ring Walton-on-Thames 28595, evenings and weekends.

REQUIRED: To buy or borrow, circuitry for walkie-talkie Mk.III. — Williams, 33 Sidmouth Road, Sale (5396), Cheshire.

SELLING: Hammarlund HQ-170, in mint condition, at £80 or near. Good BC-221T, with charts and PSU, £16. Taylor Type 31A 'Scope, good, £8. Magslip Mk.I plus two repeaters Mk.I, £5. Pentax S1A in mint condition, 2X, converter and meter, with cases, £75. All items plus carriage. — Rothery, G3RJR, c/o 520 Coventry Road, Birmingham, 10.

SALE: Working Phone rig for four metres, 25-watt. Pye 703 Tx and tunable/xtal R.220 Rx. Price £20, buyer to collect.—Baker, G6QN, QTHR or ring LIBerty 3104.

SMALL ADVERTISEMENTS. READERS—*continued*

SELLING: Voltage Regulators, AC input 190-260v., output 220-240v. at 3,000 VA, in new condition, offers? Twin-channel tape recorder, 230-250v. AC input, offers? Pye Ranger 144 mc, transistor PSU for 12v. input, £10. Type ARN-21 Tx/Rx for 1250 mc approx., offers? Type D mag oscillators, 30s. each. Type 52 Rx, in new condition, £9. Pye Rx xtal converter, 4 metres, 240v. AC input, £3. Indicator Type 230, 18 to 87 mc, £5. Sig. Gen. Type 1-222-A, coverage 8-15 mc and 144-230 mc, 115v. input, £8. QRP UHF Tx for 70 centimetres, £4. Driver unit for 70 cm., DET-24 in cavity, 50s. PA for 70 cm., ACT-22 in cavity, 90 watts output, £8. Pulse modulator 2 of 6080, 2/EF91, 20s. each. Type 103 Indicator, with PSU. £8. Transistor switching units, 4/SOO4, 20s. each. Miniature trimmers, 10 mmF, 6s. doz. Miniature indicators, panel mounting, orange, 5s. doz. Carriage extra, s.a.e. for replies. (Lancs. area). WANTED: TV Camera, or parts suitable for Amateur TV.—Box No. 4563, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED: Eddystone EC-10 receiver. SALE (offers invited): Green 2M1000, 70CM1000, also 70 cm. converter (IF 12-16 mc), self-powered. Will split.—Ring Davidson, West Drayton (Middlesex) 3275.

FOR SALE: Almost complete linear amplifier, 150 watts, 813 PA, with PSU, etc., £7 10s.—Witt, 5A Fairview Parade, Mawney Road, Romford, Essex.

SELLING: Minimitter 150-watt AM/CW Tx, 10 to 80m., good transmitter, for £40 cash. Also AR88D, well used but a good receiver, £30 cash. Buyer collects after demonstration.—Boyce, G6DK, Lotemore, Rookery Road, Staines, Middlesex. (Ring Staines 52063 after 6.0 p.m.).

SALE: Lafayette 350 with speaker, crystal and angled easy-view mounting, price £50. Also ali. Quad for 15 metres, £10. Both perfect, no offers.—Ring Pickett, 01-303 0605.

OFFERING: As new, a KW-600 linear, £90. An SB-34 transceiver, in mint condition, at £145. Avo Multi-minor, £5.—Barry, G3UFU, 15 Fairlawn Court, London, W.4.

SELLING: Eddystone 840C receiver, complete with Ericsson headphones and instruction manual, and in immaculate condition, at £38. — Tilt, 16 Salisbury Road, Seaford, Sussex. (Ring Seaford 4384, evenings).

WANTED: Joystick aerial and tuner, please state price to include postage/carriage. Selling an R.208 receiver in perfect order, £8 10s., buyer collects. — Eckford, 29 Harewood Crescent, Whitley Bay, Northumberland.

FOR SALE: R.109A receiver, covering 40-80-160m., 70s.; PSU, 15s. Also 38 Set, 15s. All perfect, carriage extra. — Sharp, 170 Walsingham Road, Liverpool, 16.

SALE: K.W. Mk.II Viceroy SSB/CW Tx, with AC/PSU, handbook and circuitry. Superb performance and utterly reliable, price £70 plus carriage. — Parsons, GW8NP, 90 Maesycoed Road, Heath, Cardiff (68768), South Wales.

SELLING: Modern all-band 100w. table-top transmitter, high level modulation, £27 10s. Also Type 36 Tx, with mod. and PSU. £12 10s.; Type 52 Rx, £8 10s.; BC-639A, coverage 100 to 156 mc., with PSU, £15 10s.; Solar Bridge, ten guineas; Marconi Lab. VTVM, ten guineas; and 4X150, 17s. 6d. All o.n.o.—Byrne, G3KPO, Jersey House, Eye, Peterborough.

FOR SALE: KW-201 receiver, as new, £85 or nearest offer.—Painter, 23 Crossways, Newferry, Cheshire (Tel. Bromborough 4496).

SALE: Marconi CR-100 receiver, recent professional overhaul, £20. Also 12 Set, complete Tx, coverage 20 to 160 m., £20. Buyers to collect.—Rix, 17 Forest Drive East, Leytonstone, London, E.1.

SMALL ADVERTISEMENTS, READERS—*continued*

SELLING: Triple conversion 12-valve amateur band receiver, Electroniques tuner, with S-meter and BFO, speaker and PSU, FB job, price £25.—Ring Adams, 01-876 2070.

FOR SALE: New AR88D receiver, with trimming tools and manual, £58. BC-342N, new and unmodified, with auto-transformer, £22. Command receiver, 500 kc to 1·5 mc, new in carton, 70s.; BC-453 in ditto condition, £7. Valves QQV03-20A and QQV06-40A, brand new and unused, 55s. each. All items plus carriage. WANTED: USM38 Oscilloscope or similar double-beam instrument; AM-913/TRC VHF converter; Hallicrafters S.36A receiver; and LM-14 frequency meter. (Lancs. area).—Box No. 4564, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: BC-221 frequency meter, £12. Receiver BC-348J, £12 or offers? No power units. Carriage extra or collect. — Morris, 1 Hambleton Court, Knaresborough, Yorkshire.

SALE: Type CG6/1 Sig. Gen., coverage 100 kc to 100 mc., slow-motion dial, 70s. Marconi VVM, 25s. 2N3055 silicon n.p.n. transistors, 115w., 30s. pair. Eight volumes "Radio & TV Servicing", 1956-/64. mint condition. £10. Hundred yards 14/·0076 circular twin, 40s. Hundred yards Don 8 bell wire, 15s. Transistorised PSU, 12v. DC input, 400v. 200mA, 6·3v. 3A. etc. output, 50s. Jumbo PSU, giving 750v. 400 mA, 500v. 400 mA, 425v. 200 mA and several 6·3 outputs, for AC mains input, £10. —G3VQM, QTHR.

SELLING: McCoy Golden Guardian filter, 9mc, with two carrier crystals, new and unused, £10. Collins mechanical filter F-455-C31. £8. Electronic keyer, self contained and with monitoring, arranged for grid-block keying, £5. Q-multiplier, 455/465 kc, 50s. C-core transformers: 3250-2750-2250-0-2250-2750-3250v. at 450 mA. £5; 10v. at 5 amps, 12s. 6d.; 6·3v. 8 amps. 12s. 6d.; 6·3v. 5 amps. 10s.; 2·5v. 10 amps, 10s.; 5v. 15 amps, 12s. 6d.; 570-460-0-460-570v. at 500 mA. 60s. All carriage extra. — Marshall, G2MA, 57 Godstone Road, Rotherham, Yorkshire.

FOR SALE: K.W. Viceroy Mk.IIIA, extra half-lattice filter, 6146B's in PA, realigned by K.W. Electronics three months ago, unmarked and in mint condition. £90. KW-77 triple conversion AM/CW/SSB receiver, also in mint condition, £60. (Will deliver these items to radius 100 miles). C-core transformer, 115/260v. AC primary, secondary 0-2800-2850-2900v. at 280 mA, £10. — Martin, G3UDR, Rew Cottage, Abinger Common, Dorking, Surrey. (Tel. Abinger 114).

WANTED: Power pack for K.W. Valiant transmitter.—Sweeney, G3TFS, 58 Grosvenor Road, Epsom Downs, Surrey. (Tel. Ashtead 2689).

SELLING: Monitor 'scope Type SB-610E, in as-new condition, price £32, carriage paid.—Denman, G3MEW, 17 Testcombe Road, Gosport, Hants.

SALE: Pair Pye 150 mc Transceivers, in fair condition. £3. Class-D Wavemeter, accurate, 40s. Transformer 500-0-500v. at very conservative 120 mA. 20s. All o.n.o.—G3VMK, QTHR.

WANTED: Copies "Short Wave Magazine" for October '58 and April '59: buy or hire, state terms.—Webb, 20 Giffard Drive, Farnborough, Hants.

WANTED: Good Signal Generator, appearance not important but calibration must be spot-on, for range in region 100 kc to 25 mc, and must have calibrated output attenuator, with output voltage monitored —Ratcliffe, 73 Crawford Avenue, Leyland, Lancs., PR5 2JP.

SALE: Collins 32S-1/2, 516F-2 PSU, with manual, cables and extra crystals for 10m., price £180. Tiger TR-60X transmitter, 100w. CW or 75w. Phone, coverage 10 to 160m, and TVI-proof, price £40.—Ring Ray, G2TA, 01-950 1762.

SMALL ADVERTISEMENTS, READERS—*continued*

PACKAGE Deal: Heathkit DX-100U, RA-1 receiver and Q-multiplier, all in very good condition, at £80 complete.—Hobbs, G3OBW, QTHR.

FOR SALE: An exceptional National HRO, general coverage 50 kc to 30 mc, bandspread 10-20-40m., excellent on SSB, with external Q-multiplier, solid-state stabilised PSU, and matching speaker. Sacrifice at £28, s.a.e. details.—King, G3PVA, 10 Holne Chase, Morden, Surrey.

LOOKING For Fireworks? This K.W. Viceroy Mk.III is a real sparkler and it performs like a rocket! So don't be a damp squib—be the chap who'll give me £100, or make a near offer. If disposed of by November Fifth, I'll give the lucky buyer a Z-Match ATU (to lose the RF in!). While you're celebrating an historical event why not read these ancient manuscripts: "CQ" for 1962-'66; RSGB "Bulletins" 1964-'65 (Jan. to Sept., 7s. 6d.); CQ's "Sideband Handbook". All at 10s.—Sykes, G3NFV, 8 Uplands, Ashtead, Surrey. (Tel. Ashtead 2546, after 7.0 p.m.).

SELL: Eddystone 888A receiver, with speaker and mounting blocks, mint, £65. Eddystone EC-10 Rx, as new, £38. Labgear LG.300 Tx, with mod./PSU, perfect, £40. Green & Davis 4-metre transmitter, unused. £10. Partridge ATU, rated 300 watts, £5. Brand-new Electroniques transistorised "Quoil-pack" for amateur bands, £10. IF/SSB 1·6 mc strip, with xtal filter, £6. Durst RS.35 Enlarger, complete with brand-new and unused Taylor-Hobson F3·5, 2in. Ental II, gift at £30. (Lancs. area).—Box No. 4565, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED: Hammarlund S.100 loudspeaker, in good condition.—Tomes, 15 Balham Park Road, Balham, London, S.W.12.

GOING Sideband? Heathkit DX-100U Tx with SB-10U SSB adaptor, excellent condition and FB working order, £67 10s. Panoramic Adaptor, 3in. screen, 465 kc input, 200 kc sweep, 230v. AC, excellent condition and perfect working order, £25. PCR receiver, new and unmodified, £6. Wilcox-Gay VFO, rock stable, 60s. Vanguard Tx cabinet and metal-work, with Geloso VFO, 6146 PA stage and VFO PSU, £7. Delivery can be arranged anywhere.—Rowley, G3KAE, 4 Coastal Road, Burniston, Scarborough, Yorkshire. (Tel: Scarborough 1777, during business hours).

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FOR SALE: AR88 in excellent condition, electrically and mechanically, price £37, and will deliver to 50 miles. Also Minimitter 20w. Tx for 40-30-160m. mobile, £9. Minimitter mobile Rx for 160m., fully transistorised but requires attention, £3 10s. WANTED: PSU, 12v. DC, for KW-2000A; also a modern wobbulator.—Lord, G3PHN, Newfield House, Moira, Burton-on-Trent, Staffs. (Tel: Swadlincote 7537).

SELLING: Hy-Gain TH-3 three element Beam for three bands, complete with balun, at £20.—McEwing, GM2DPW, 33 Hazelwood Avenue, Newton Mearns, Renfrewshire. (Tel: New 1564).

SALE: R.C.A. AR88D, with Heathkit Q-multiplier and spare set of valves, first-class performance and condition, price £60—Pembrook, 31 Augusta Gardens, Folkestone, Kent.

SMALL ADVERTISEMENTS, READERS—*continued*

FOR SALE : Eddystone EC-10 transistorised communications receiver in mint condition, complete with mains adaptor unit, price £40.—Ridgley, 62 Elmfield, Gillingnam, Kent.

SELLING : Trio 9R-59 Communications Receiver, 540 kc to 30 mc, nearly new, £22. Handbooks : S.27, 10s.; AR88D, 15s.; AR88 (rough), 7s. 6d. Xtals, mainly 10X type: 1930, 1962·5, 1981, 1990·39, 3555, 3580, 3720, 3674·78, 7010 kc, 5s. each; 1000 kc for BC-221, 15s. SCR-522 driver and mod. transformers, 15s. pair. WANTED : IF xformer Type 9697, 2830 kc (Command Rx).—Roper, G3IEX, QTHR or ring Winscombe 2344 (Somerset).

WANTED : Sphinx SSB Tx, good price offered. Please state details and condition.—Marriott, G3VWC, 21 Thorley Hill, Bishop's Stortford (4796), Herts.

SALE : KW-2000A, with AC/PSU, price £150. Pair 4-125A, with bases, £10. Pair 2E26. £5. Inspection invited, cash-and-carry (Dorset).—Box No. 4566, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SELLING : KW-2000A, with PSU and as new, £165. Heath DC HP-13 unit, never used, £25. Jennen 9R-59 Rx, £10.—Moller, EI8B, Fair Green, Longford, Eire.

SSB Transmitter and Receiver : K. W. Viceroy Mk. II with PSU, and Drake-2B Rx with Q-multiplier, speaker and calibrator, all 10m. and 160m. crystals. Everything in excellent condition, both £85.—Clemmetsen, G3VZJ, 19 Hillfield Road, London, N.W.6.

SELLING : In mint condition, a Heathkit DX-100U Tx, full coverage 10 to 160m., with change-over box, at £60. Also a Lafayette HA-350 Rx, boxed and hardly used, with mechanical filter, crystal marker and speaker, £65. Beautiful hand-made 160m. transmitter, with matching PSU, Eddystone dial, and in spray finish, with Z-match/SWR meter, £20 or near offer. Delivery possible.—Bray, 24 Old Hatch Manor, Ruislip (38165), Middlesex.

WANTED : To buy or borrow, copy "Short Wave Magazine" for April, 1959.—Pettman, 17 Birchdale, Gerrards Cross (84320), Bucks.

OFFERS ? B.P.L. Sig. Gen., coverage 250 kc to 30 mc.—Tagg, G8IX, 11 Botteslow Street, Hanley, Stoke-on-Trent, Staffs.

SALE : R.C.A. AR88D, not working (RF coil u/s), but with S-meter, Codar Q-multiplier and Codar preselector, only £17. Japanese CR-150, medium-wave plus coverage, 1·6 to 30 mc, cost £16, going for £8. All-transistor Siemens de luxe 3-speed 4-track tape recorder for hi-fi, practically unused and worth treble, going for £22. Buyer collects.—Boxall, Flat 1, 40 Altenburg Gardens, Battersea, London, S.W.11.

FOR SALE : AR88D with S-meter and K.W. Vanguard Tx, 10-80m., for £25 each.—Ring Allison, G3IZA, 01-674 2093.

NEW G3/3 requires Gear. Rx, Tx, HFM, AWM, Z-match, filters, etc., etc. All letters answered, collection 50-mile radius.—Pryse, G3WXT, 36 Hart Road, Byfleet, Weybridge, Surrey.

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FOR SALE : Heathkit RG-1 Rx, mint condition, transistorised Q-multiplier, with speaker, £30 or near offer. Prefer buyer inspects and collects.—Jones, 96 Belgrave Road, Bingley, Yorkshire.

WANTED : Copies "Short Wave Magazine" for November, 1965, January-February, 1966. Also HRO-MX official manual.—Nutt, 72 Colleymoor Leys Lane, Clifton, Nottingham.

WANTED : Transmitter for 160 metres, AM/CW, with 240v. AC/PSU. Price and full details, pse. —Powell, 18 Abinger Avenue, Cheam, Surrey.

SMALL ADVERTISEMENTS, READERS—*continued*

SELLING: Minimitter Top 2-7 transmitter, excellent condition, £14. Type B2 Tx/Rx, in good condition, complete with xtals, circuitry and instructions, £12 or near offer.—Griffiths, G2DFH, 4 Westbourne Terrace, Saltash, Cornwall.

WANTED: R.1132 or R.1392, in working order.—Brooks, 5 Farrant House, Winstanley Road, London, S.W.11.

WANTED: A Swan 350/500 Transceiver. For Disposal, at £165. KW-2000 transceiver with AC /PSU, in mint and unmarked condition, about 3 years old and 20 hours' use.—Ring Wilkinson, G3KWW, Reading 27329.

WANTED: R.1155N receiver, with PSU. Must be in good working order.—Walters, 6 Oaklands Road, Etwall, Derbyshire.

FOR SALE: National HRO-MX receiver, coverage 50 kc to 30 mc, nine GC coil packs in good condition, with original PSU, price £20. Canadian Marconi 52 Rx, coverage 1·75 to 16 mc, with preselector and mains PSU, £9. Tape recorder, 4-track Fidelity Playmaster, less xtal microphone, £10. W.S. 19 Set Mk. III, with headphones, variometer and internal speaker, 60s. or offer. Linear L45A amplifier, 4w. audio, with bass, treble, 60s. RF-27 Unit, 15s.—Constable, 15 Waverley Crescent, Ettingshall Park Estate, Lanesfield, Wolverhampton, Staffs.

WANTED: R.C.A. AR-8516L receiver. Cash waiting. —Lane, 7 Nant Terrace, Menai Bridge, Anglesey.

SALE: National HRO Senior Rx, bandspread coil packs for 10-15-20-40-80m., with manual and many sheets service data, price £20. Commercial preselector, cost £7, accepting £4. Geloso VFO, with dial and valves, never used, £6.—Stirling, GM6RV, East Lodge, Kerelaw, Stevenston, Ayrshire, Scotland.

COMPLETE Station for AM/CW, 10 to 160m. coverage, comprising Tiger TR-100B Tx with TT21 PA, aerial change-over relay, microphone, etc.; and Marconi Type HR-100 receiver (made by Eddystone, similar to their S.750), price £56 complete, or would separate. Also AVO Multiminor, £5. Everything in mint condition. (London).—Box No. 4559, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SELLING: Eddystone 888 receiver, fitted internal S-meter and product detector, good performer, price £60.—Pantony, G3KXB, Springmead, Longtye Drive, Chestfield, Whitstable, Kent.

FOR SALE: Minimitter MR-44 amateur-band Rx, as new, £19, delivered London area. FT-241 crystals, one each of Chs. 0-38, 50-54 and 56-79, 4s. each, post free.—Headland, G3BFP, 13 Tollers Lane, Old Coulsdon, Surrey.

SELLING: Hammarlund HQ-170A receiver, amateur bands only, 10 to 160m., AM/CW/SSB, with S-meter, slot filter, clock timer, etc., in as-new condition, costing £124 in March, price £75, no offers. Eddystone EC-10 with mains PSU, mint condition, £35.—Niall, 4 Ham Road, Worthing, Sussex.

SALE: R.107 receiver, fitted S-meter, in perfect condition, at £11; also K.W. Electronics Geloso amateur-band converter unit, 4·6 mc output, with mounting feet, as new, £18—or the two together for £27. Crystal Calibrator No. 10, 60s. Two-metre 12-element Aerialite array, unused and boxed, 60s. Also meters, gramophone motors, scratch/rumble filter, AC/DC converter, books on radio, the lot for 60s. To view, ring Weybridge 42902 after 6.0 p.m. Buyers collect.—Dent, Wychwood, Granville Road, Weybridge, Surrey.

REQUIRED: Multiband vertical array; transistor signal generator; and GDO. FOR SALE: Honda 300-watt generating set, new July, '67. — Corson, G3WQJ, 182 Holland Road, London, W.14. (Tel. 01-603 4442).

OFFERS? Creed Perforator Model 7P/N3, brand new and unused.—Reynolds, 149 Waller Road, New Cross, London, S.E.14. (Tel. 01-639 1443).

SMALL ADVERTISEMENTS, READERS—*continued*

FOR SALE: R.C.A. AR88D, with R.C.A. headphones and 14 spare valves, price £50, collected. Also New Items: Codar PR-30 preselector, 70s. K.W. E-Z Match, £9 10s. K.W. SWR Bridge, 52/75 ohm, £6.—G3PDW, QTHR.

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SELLING: Complete 20-Metre SSB Station, comprising HW-32 Transceiver, with xtal calibrator and crystal microphone, latest modifications, recently realigned by Heathkit, and FB £50 HP-23 mains PSU, £20. HP-13 DC PSU, £30. The lot for £95, but will separate. WANTED: Eddystone EC-10 Rx, and T.W. two-metre Tx, high or low power considered.—G3UFQ, QTHR.

SALE: Eddystone EA-12 amateur band Rx, 18 months old, recently serviced by manufacturers; in perfect, as-new condition, a superb receiver for £130, or offers?—Thexton, G3URE, 78 Greenfield Road, Brunton Park, Gosforth, Newcastle-on-Tyne 3, Northumberland. (Tel. Wideopen 3044).

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