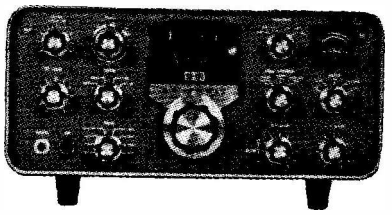
3/6

The SHORT WAVE Magazine

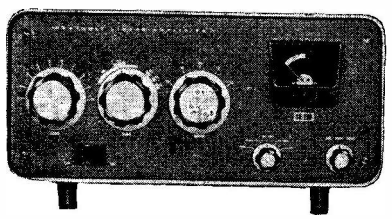
VOL. XXV OCTOBER 1967 NUMBER 8

HEATHKIT — The World's Largest

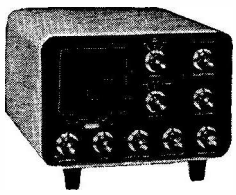
THE FAMOUS HEATHKIT SB-SERIES



SB-101 80 Through 10 Meter SSB Transceiver . . . 180 watts PEP SSB, 170 watts CW (the practical power level for fixed/mobile operation). Features USB/LSB on all bands, PTT & VOX. CW side-tone, and more. Unmatched engineering and design.
Kit SB-101, 23 lbs., **£165** Assembled **£200**

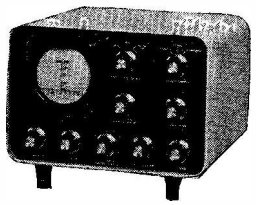


SB-200 KW SSB Linear Amplifier . . . 1200 watts PEP input SSB, 1000 watts CW on 80 through 10 metres. Built-in antenna relay, SWR meter, and power supply. Can be driven by most popular SSB transmitters (100 watts nominal output).
Kit SB-200, 41 lbs., **£107 . 10 . 0** Assembled **£132**

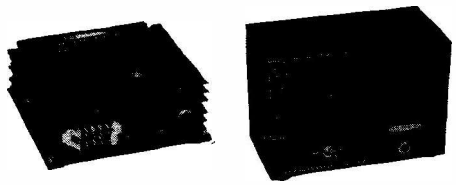


SB-610E Signal Monitor Scope . . operates with transmitters on 160 through 6 meters at power levels from 15 watts through 1 kw. Shows transmitted envelope. Operates with receiver IF's up to 6 Mc/s. showing received signal waveforms. Spots-over modulation, etc.
Kit SB-610E, 14 lbs., **£37 . 2 . 0** Assembled **£47 . 2 . 0**

New!



SB-620 "SCANALYZER" Radio Spectrum Monitor and Analyzer. New narrow sweep widths with crystal filter for single channel analysis. 10 Kc/s., 50 Kc/s. Variable width to 500 Kc/s. Styled as SB series.
Kit SB-620 £57 . 10 . 0



HP-13 Mobile and HP-23 Fixed Power Supplies . . . For the "Single Banders" and SB-100. Provide all necessary operating voltages with excellent dynamic regulation.
Kit HP-13, 7 lbs., **£33** (+ earth available) Assembled **£40 . 10 . 0**
Kit HP-23E, 19 lbs., **£27 . 10 . 0** Assembled **£33**

MODELS
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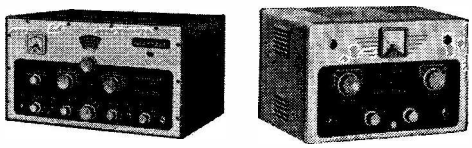
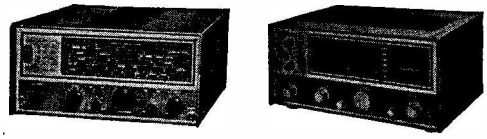
HW-32A (20m.)

HW-12A and HW-32A Filter-Type SSB Transceivers . . . 200 watts PEP input TX. 1μV sensitivity RX. PC Board. Pre-aligned circuits. Power required : 800v. D.C. at 250 mA., 250v. D.C. at 100 mA. —125v. D.C. at 5 mA. 12v. A.C. or D.C. at 3·75A.
Kit, either model, **£53 . 10 . 0** Assembled **£68**
GH-12 Push Talk Microphone Assembled **£3 . 10 . 0**



DX-100U Transmitter . . . 120 watts CW, 100 watts Phone. Built-in VFO and all power supplies. Band coverage : 160, 80, 40, 20, 15 and 10 metres.
Kit DX-100U £81 . 10 . 0 Assembled **£106 . 15 . 0**

DX-40U Low-priced Transmitter . . . 75 watts CW, 60 watts peak. Controlled carrier Phone, 80-10 metres.
Kit DX-40U £29 . 19 . 0 Assembled **£41 . 8 . 0**



RG-1 High Sensitivity General Coverage Receiver . . . High performance at lowest cost. Covers 600 Kc/s. to 1·5 Mc/s., 1·7 Mc/s. to 32 Mc/s. Full specifications available.
Kit RG-1, 18 lbs., **£39 . 16 . 0** Assembled **£53**

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Kit RA-1 £39 . 6 . 6 Assembled **£52 . 10 . 0**

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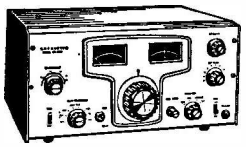

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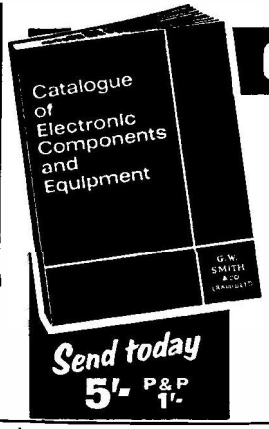

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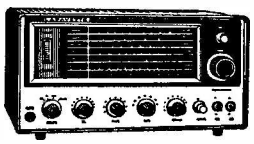
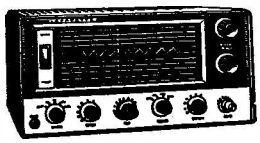


New outstanding Ham Bands only receiver covering the 80/40/20/15/10/6 metre bands. Incorporates 10 valves, product detector, two mechanical filters, S Meter, dual conversion on all bands, crystal calibrator, B.F.O. noise limiter, aerial trimmer, I.F.s. 2,608 Mc/s. and 455 Kc/s. Output 8 ohms and 500 ohms. Operating 220/240 volt A.C. Supplied brand new and guaranteed with handbook, **42 gns.** Carr. 10/-. 100 Kc/s. crystal, **35/-**.

NEW LAFAYETTE MODEL HA700 AM/CW/SSB AMATEUR COMMUNICATION RECEIVER



Eight valves, 5 bands incorporating 2 MECHANICAL FILTERS for exceptional selectivity and sensitivity. Frequency coverage on 5 bands 150-400 Kc/s., 550-1,600 Kc/s. 1·6-4·0 Mc/s. 4·8-14·5 Mc/s., 10·5-30 Mc/s. Circuit incorporates RF. stage, aerial trimmer, noise limiter, B.F.O. product detector, electrical bandspread, S meter, slide rule dial. Output for phones, low to 2KΩ or speaker 4 or 8 ohms. Operation 220/240 volt A.C. Size 7¾in. x 15in. x 10in. Supplied brand new and guaranteed with handbook, **36 gns.** Carr. 10/-. S.A.E. for leaflet.

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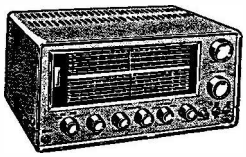
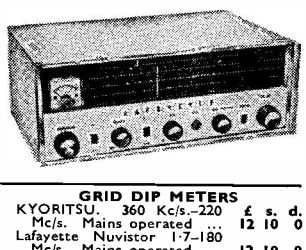


Build this wonderful receiver and save pounds. Supplied semi-completed, mains components ready mounted, RF section already wired and aligned. Full and precise instructions supplied. Specification 8 valves + rectifier, 4 bands covering 550 Kc/s.-30 Mc/s. Incorporates 1 RF and 2 IF stages, "Q" multiplier. BFO, ANL, "S" meter, bandspread, aerial trimmer, etc. Operates 115/230v. A.C. Price **25 gns.** Carr. 10/-.

HAM-1. 4 BAND COMMUNICATION RECEIVER



Four wavebands covering 535 Kc/s.–30 Mc/s. Five valve superhet circuit. Incorporates S meter, B.F.O., BANDSPREAD TUNING, BUILT-IN 4" SPEAKER, FERRITE AERIAL AND EXTERNAL TELESCOPIC AERIAL. Operation 220/240v. AC. Supplied brand new with handbook, **£15/15/-**, carr. 10/-.

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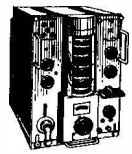

Just released by the Ministry. High quality 10 valve receiver manufactured by Murphy. Five bands 650 Kc/s.–30 Mc/s. I/F. 500 Kc/s. Incorporates 2 R.F. and 3 I.F. stages, bandpass filter, noise limiter, crystal controlled B.F.O. calibrator, I.F. output, etc. Built-in speaker, output for phones. Operation 150/230 volt A.C. Size 19½in. x 13½in. x 16in. Weight 114 lbs. Offered in good working condition, **£22/10/-**, Carr. 30/-. With circuit diagrams. Also available B41 L.F. version of above. 15 Kc/s.–700 Kc/s., **£17/10/-**, Carr. 30/-.

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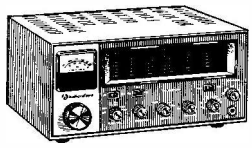

SR.2000 Hurricane Transceiver ...	£495
P.2000 A.C. P.S.U./Speaker Console	£195
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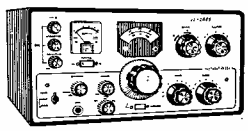
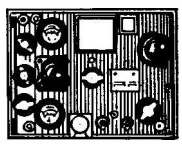
SX.146 SSB Receiver	£125
SX.122 General Coverage Receiver	£135
SX.130 General Coverage Receiver	£79
HA.1 Electronic Keyer	£39

SOMMERKAMP EQUIPMENT



FR.100B. RECEIVER. 80–10 Metres. Mechanical and crystal filters 4/2·1/·5 Kc/s., **£112.** FL-200B. TRANSMITTER. AM/CW/SSB. 240W. PEP. 100W. AM, VOX, PTT, Break-in CW. Sidecone Monitoring, **£130.** FL-1000 Linear Amplifier, **£90.** FT-100 SSB Transceiver, **£180.**



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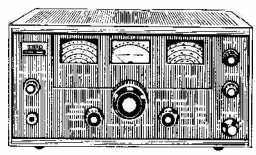

Model JR59DE. General coverage 550 Kc/s.–30 Mc/s., 4 band 8 valve receiver. Incorporating ANL, "S" meter, product detector, B.F.O., 2 mechanical filters. ONLY **35 gns.**
Model JR-500SE. 10–80 metre Amateur Band Receiver. Crystal controlled Oscillator, 7 valves + 2 transistors, mechanical filter, product detector, crystal B.F.O., A.N.L., "S" meter, ONLY **59 gns.**

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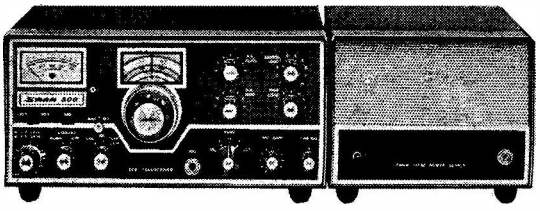

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SHORT WAVE MAGAZINE

(GB3SWM)

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Managing Editor: AUSTIN FORSYTH, O.B.E. (G6FO/G3SWM)

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E. & O. E.

FOR THE RADIO AMATEUR AND AMATEUR RADIO

The SHORT WAVE Magazine

EDITORIAL

Utilisation

Proceeding from the basic assumption that the ether is free for all to use subject to reasonable safeguards reached by mutual agreement—a principle which needs constantly re-emphasising—we should look at the conditions under which amateurs are at present operating. Briefly, on virtually all HF bands except perhaps ten metres, they are " working in the cracks." That is to say, our rightful allocations are being trespassed upon by illegal commercial stations, to say nothing of noises emanating apparently from idling jammer transmitters. Though these encroachments have been increasing steadily and the whole situation gets progressively worse, the challenge is nevertheless being met in the sense that more and more amateurs are coming on the air and a great deal of DX is being worked, world-wide, on both CW and Phone.

What this means is that amateurs are quite capable of operating under shared-band conditions, if they must. But it also implies that a shared band means sharing—in other words, commercials have no ground for complaint if they are being interfered with by amateurs. Nor does it necessarily follow, if a complaint is made, that in all circumstances a commercial station's operations are more important than the amateurs'. It could be shown that a great many commercials waste ether space and spend many hours transmitting merely to " hold the channel." In any case, the apparent threat of amateur interference on a shared band is more imaginary than real; the commercials competing with us (on our bands) are always much higher-powered and practically never use their own frequencies for reception.

In the same way that amateurs—as a body, the most experienced, capable and progressive communicators in the world—have long since ceased to expect their own frequencies to be clear of interference by other amateur stations, so the commercial use of the spectrum as a whole must be worked out, geographically and in time, to allow one channel to serve as many interests and services as possible. These may be regarded, perhaps, as " thoughts for the next plenipotentiary conference."

The present level of amateur activity, with the high state of development of the art of Amateur Radio, has become its own justification for a proper share of the ether. This is not a matter of " privilege," or even a " right " (in the moral sense), but simply a requirement by virtue of sheer weight of numbers! Moreover, since radio amateurs are primarily concerned with and interested in Communication, they must have frequency areas available which are capable of carrying their DX traffic—that is to say, any suggestion that amateurs can be compensated for HF bands lost by making fuller use of the UHF or SHF areas is completely unacceptable.

Austin Forsyth, G6FO.

WORLD-WIDE COMMUNICATION

FET CONVERTER FOR TWO METRES

HIGH GAIN, LOW NOISE, CHEAP TO BUILD— CONSTRUCTION AND ALIGNMENT

D. R. DRYDEN (G3BKQ)

We are glad to see our contributor back again with a well-tried and up-to-the-minute Rx design for the two-metre band.—Editor.

THE converter described here uses the FET type 2N3819 in grounded source for the RF and Mixer stages, and the bipolar transistor OC171 throughout the crystal chain. The crystals can be either FT-243 surplus types, or the new *Cathodeon* product in overtone mode. Noise figure is better than 1·8 dB at 144/146 mc. When the converter is used ahead of a *good* receiver the increase in noise is very small. Local interference (such as car QRM) appears to be greater than with a valve type of converter, *e.g.*, one using Nuvistor RF stage, owing to the low noise and high gain of the FET.

A high degree of immunity is also obtained against effects due to overload and cross modulation, the latter being minimized by the square-law transfer characteristics of the FET. It is possible to listen to weak stations within 10 kc of a near-local two-metre signal.

Grounded source FET RF stages must be neutralised. Capacity neutralisation is difficult, because the internal capacity of the FET varies with signal input, temperature, and applied HT voltage! If the capacity-neutralised stage is adjusted correctly at one time, it will be found to be in a self-oscillating condition on another occasion. It was therefore decided in the present design to use inductive neutralisation, since in practice this was found to be extremely stable. (Inductive neutralisation uses the internal capacity of the FET plus the self-capacity of the neutralising coil to resonate the coil at signal frequency, and changes in the FET capacitance are smaller than the fixed capacitance of the coil, so that the neutralising coil hardly changes frequency.) It is possible, when the stage is properly neutralised, to remove the aerial and replace it by any length of wire without any sign of instability. The neutralisation does not need frequent resetting, which can be a curse with capacity-neutralised stages.

All setting-up procedures can be carried out without using expensive or complicated gear. (Full details are given later.) The power requirement for the converter is 10/14 mA at 12 volts HT. This makes it extremely convenient for mobile use. The chassis can be single or double-sided copper-covered glass-fibre laminate board, or ordinary single sided printed circuit board. The whole unit may be encased in an Eddystone die-cast box, or a tin box of similar size. RF chokes isolate the RF and mixer HT supplies from the oscillator chain, to avoid mixing that can occur when using transistor xtal-controlled chains, *e.g.*, broadcast stations appearing, emanating from a lower frequency band. A further precaution is the use of a high-Q break between the output of the oscillator chain and the mixer, link coupled twice, so avoiding lower frequencies from the oscillator chain reaching the mixer. In this article an IF out at 24-26 mc has been adopted for descriptive purposes, but of course the actual frequency can be varied to suit individual requirements.

Signal Circuits

The RF stage takes a 2N3819 FET, inductively neutralised. The aerial is fed into a one-turn link, inductively coupled to a high-Q coil tuned by a small variable capacity C1 which drives the gate of the FET. This arrangement considerably reduces second-channel interference from the FM and police broadcast bands in the region of 90 mc. The RF output from the FET drain is inductively coupled (by L3, L4) to the mixer stage gate, a further precaution against second channel.

The mixer is a 2N3819 FET, constituted similarly to its valve counterpart. A stopper of 56-68 ohms, R4, is fitted in the connection between the drain and the IF coil to suppress any tendency to self-oscillation.

Output from the mixer, at IF, is auto-transformer coupled through a ·001 μF capacitor C8 to the output socket of the converter. In this design the output frequency may be varied from 22-32 mc by adjustment of the tuning core or the fixed capacitor across the mixer

Table of Values

Fig. 1. Circuit of the FET Two-Metre Converter

C1	= 0·5-7 μμF tuning, midget var.	R3, R6	= 10,000 ohms
C2, C8	= ·001 μF	R4	= 56-68 ohms (*see text*)
C3	= 470 μμF	R7, R8	= 470 ohms
C4	= 15 μμF	R9	= 270 ohms
C5, C7, C9, C11, C12, C13,		X1	= FT-243 6650 kc, or *see text*
C14, C15	= ·001 μF, feed-thru	Tr1, Tr2	= 2N3819 FET
C6	= 5·6 μμF	Tr3, Tr4, Tr5	= OC171
C10	= 22 μμF		
R1	= 3,300 ohms		
R2, R5	= 100,000 ohms		

TABLE OF COIL DATA

L1	— One turn, ⅜in. i.d., 16g. or 18g., self-supporting, wound from 7½ inches of wire.
L2	— 3½ turns, ⅜in. i.d., 16g. or 18g., self-supporting.
L3, L4	— *See* Fig. 1: L3, 6 turns close-wound, 22g. enam. L4 5 turns ditto L3.
L5	— 10½ turns close-wound, 22g. enam.
L6	— 30 turns close-wound, 28g. enam., tapped 4 turns from cold end.
L7, L16	— Single-turn links, 24g. p.v.c.
L8	— 26 turns close-wound, 28g. enam.
L9	— 4 turns 24g. p.v.c., wound on cold end of L8.
L10	— 26 turns of 28g. enam.
L11	— Two turns 24g. p.v.c., wound on cold end L10.
L12	— 11 turns close-wound, 22g. enam.
L13, L14	— Single-turn links, 24g. p.v.c., placed as shown in Fig. 1.
L15	— 14 turns close-wound, 22g. enam. (*see* Fig. 1). C is self-capacity of L15.

Notes: Coils L5, L6, L8, L10, L12 and L15 wound on ¼in. diameter standard *Aladdin* cored formers. All resistors rated ⅛th watt. RFC1, RFC2 made by winding 34g. enam. on ¼in. iron-dust cores wrapped with two layers *Selotape* to blank off threads; these chokes are single-layer close-wound.

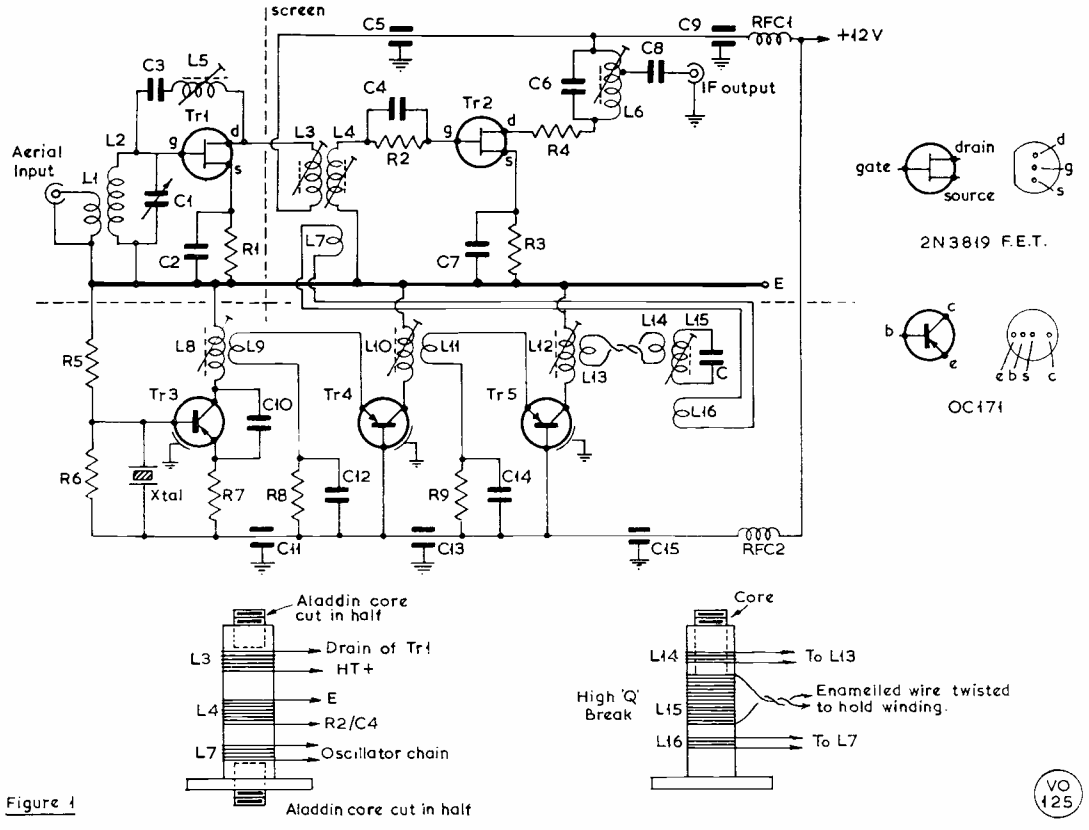
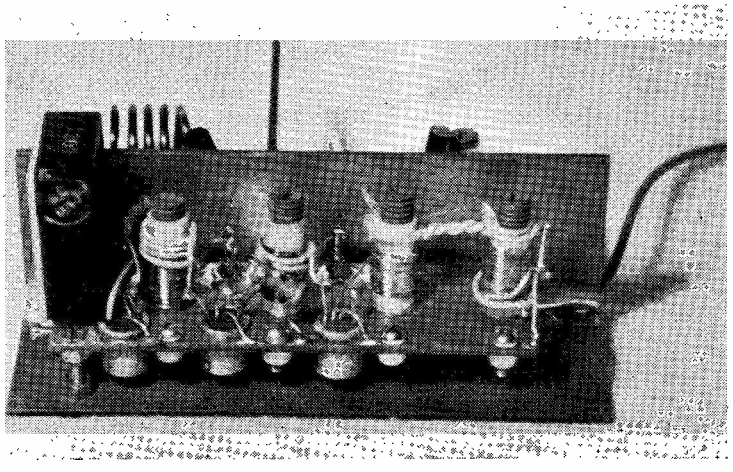


Figure 1

output coil L6, the latter being a coarser adjustment. The oscillator-chain output is fed *via* a high-Q break (L12, L15) at 120 mc to the mixer input coil L4 by a single-turn link at each end of a pair of twisted p.v.c. wires.

Crystal Chain

The xtal chain is quite straightforward. Two circuits are described here, one using FT-243 xtals in an overtone circuit, as above, and the other HF *Cathodeon* crystals, Fig. 2. The FT-243 circuit employs a xtal frequency of 6650 kc, which can be varied according to the actual IF required. The oscillator stage is an OC171, with 3rd overtone operation of the xtal, *e.g.*, a 6650 kc crystal gives an output frequency at 19·95 mc. The oscillator output is link coupled to an OC171 in grounded base, operating as a doubler or a tripler. With recommended coil details (*see* p.470), operation in either mode is



Construction of the xtal chain in the G3BKQ two-metre converter when using an FT-243 crystal—see text. The method of mounting the assembly off the main chassis is also indicated. In Fig. 2 on p.472 is shown the alternative CO circuit using a Cathodeon 40 mc HF crystal.

possible by adjustment of the tuning slug. There is no difference in performance, but perhaps it would be as well to point out that running this stage as a tripler might lead to trouble in the Midlands, where BBC1 is on 61·75 mc.

Output from this stage is again link coupled to a further grounded-base OC171, TR5, operating as a tripler if the previous stage is tuned on 40 mc, or as doubler if TR4 is on 60 mc. The final frequency output of this stage is 120 mc in either case.

The 120 mc output coil is link-coupled to the high-Q break (L12, L15) tuned to 120 mc, using a one-turn link at each end, as already described. The high-Q break is a coil with the ends of the winding twisted together to hold them in place, but still insulated by the enamel of the wire. The capacity shown in the circuit Fig. 1 as C across L15 is the self-capacity of that coil, which is self-tuned for the highest possible " Q." It is slug-tuned, with a sharp resonant peak at 120 mc. It ensures a clean sine wave at 120 mc, with none of the other frequencies and harmonics present in the oscillator chain, as found with other forms of coupling. Therefore, the mixer is driven at 120 mc only.

The alternative crystal chain, Fig. 2, involves one less transistor, and a *Cathodeon* 40 mc xtal in a similar OC171 oscillator stage, as in Fig. 1. (The only difference is that the feedback condenser C10 in the FT-243 circuit is replaced by a 5·6 $\mu\mu$F, C20, in the Cathodeon circuit.) The oscillator is link-coupled to an OC171 grounded base tripler, as in the FT-243 chain in Fig. 1.

Decoupling of the various stages is by feed-through ·001 μF condensers inserted in the supply between stages. No isolating resistors are required, since lead reactance at the frequencies employed is sufficient to ensure good RF filtering.

The oscillator chain is mounted on a sub-chassis supported by two 1-inch 6 BA screws and nuts on diagonally opposite corners. The sub-chassis is made from a flat strip of copper laminate or printed circuit board, 1in. x 3¼in. The converter main chassis is also copper-laminate or printed circuit board, 3in. x 4in. with a 1¼in. screen—*see* photographs. The screen is easily soldered into position with a small iron.

Adjustment—Xtal Chain

Connect a 12v. supply to the crystal chain only, and measure the current drain. If the chain is taking about 9-12 mA the crystal is oscillating. If it is *not*, the current of the chain will be about 2 mA only. In this case adjust the core of L8. When the oscillator fires, the current will rise sharply to 9 to 12 mA, depending on the activity of the xtal. Adjust the core for maximum current, then switch off the HT supply. The oscillator should restart when the HT is re-applied. If it does not start, ascertain, by slight adjustments, which way the core in L8 must be moved to ensure restarting, and then turn the core one turn further in that direction. No further adjustment will be required.

If the FT-243 circuit is being used, it should be possible to find a beat at around 20 mc on the main receiver. If a calibrated absorption wavemeter is available, this can be used to check the oscillator output.

Should the FT-243 fail to start at all, try another

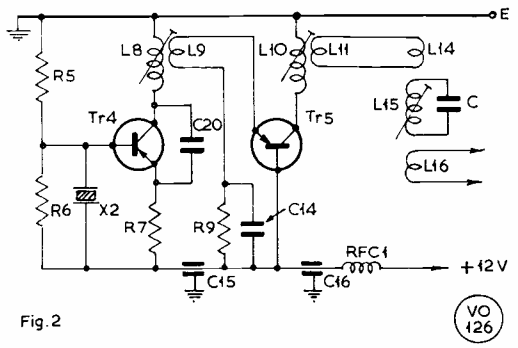


Fig. 2. CO chain using Cathodeon 40 mc xtal. C14, .001 μF; C15, C16, .001 μF feed-thru; C20, 5.6 $\mu\mu$F; R5, 100K; R6, 10K; R7, 470 ohms; R9, 270 ohms; Tr4, Tr5, OC171; L8, 17t. 18g. enam. close-wound; L9, 2t. link; L10 11t. 24g. close-wound; L11, L14, L15, L16, as table p.470.

crystal (within 100 kc of the original). Any further failure to go off probably indicates an unsuitable core in the coil, or incorrect number of turns. Some FT-243 xtals oscillate in this circuit with the core in *any* position. The writer has found that of 20 crystals tried, all fired with no trouble.

Adjustment of the following two stages, L10 and L12, may be made either with the absorption wavemeter, or by a 2-turn coil loosely coupled over the appropriate winding, driving a diode and micro-ammeter, as shown in Fig. 3. Tune each stage for maximum output, including L15, the high-Q break.

Converter Adjustment

The crystal chain may now be fitted to the main chassis. Connect the HT supply to the converter, a 2-metre aerial to its input, and its output into the main receiver. Tune the main receiver to the expected IF. If you have a 2-metre Tx, use the exciter stage as a signal source. If no transmitter is available try and arrange for a local station to give you a signal for about 10 minutes, or use a signal generator at 145 mc. First unscrew the core of L5 so that it is half-way out of the former, then tune the main Rx for an incoming signal. Now peak the cores of coils L3, L4, L6 and C1 for maximum signal. If at any time the converter goes into oscillation, unscrew the core of L5 (neutralising coil) until oscillation stops, before proceeding. When the coils are roughly peaked, switch off the signal source. It should now be possible to obtain a noise peak by adjusting any of the coils, but adjust for noise peak in the following order: IF coil L6; mixer coils L3 and L4;

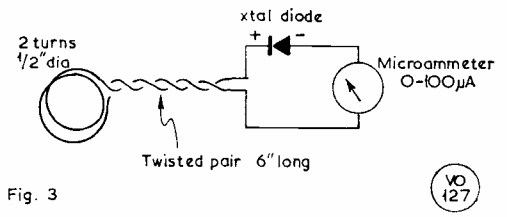
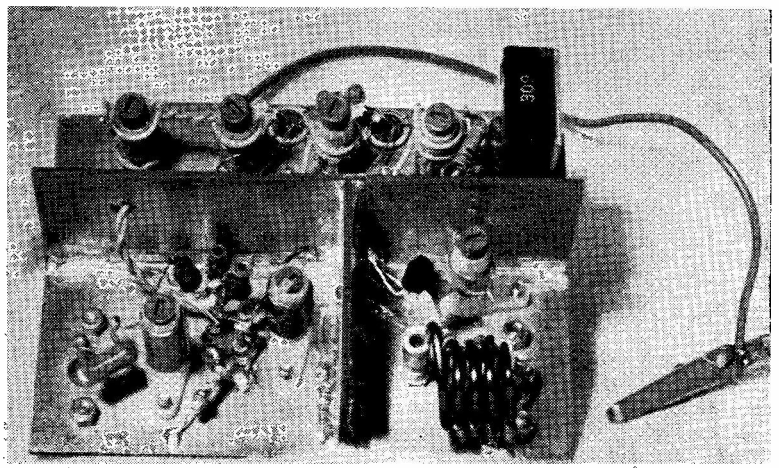


Fig. 3. RF probe for checking outputs in oscillator chain.



View of the IF, mixer and RF stages for the G3BKQ two-metre converter, with the oscillator line in rear of the transverse screen. The general chassis layout is well suggested by this photograph, and the standard croc. clip is a useful size comparison.

aerial coil, and C1. Now screw in the neutralising core of L5 until the converter goes into self-oscillation, back off till oscillation stops, then unscrew about one turn extra. Tune C1 for maximum noise; now adjust neutralising core for maximum noise, and repeat with C1 again for noise.

Should the converter go into oscillation at this stage of adjustment, screwing the core L5 out should always be the procedure to stop oscillation. A further peaking of all cores and C1 input condenser should complete the adjustment. The converter should remain stable with the aerial disconnected. If oscillation occurs when the aerial is disconnected, unscrew L5 core a half-turn. It should now be possible to receive 2-metre stations up to 10 miles away at S8/9+, and local car QRM, with no more than a 12-inch wire poked in the aerial socket.

In operation, with a beam aerial, it is advisable to set the main receiver AF gain control at near maximum, and the RF gain to a point where hiss is just heard in the receiver. If this is not done, and the RF gain control is too far advanced, noise from the main receiver may degrade the performance of the converter. The noise level is much lower than that encountered in transistor or valve front ends, and weak stations seem to pop up from nowhere. The overload characteristics are excellent, signals up to 500mV being easily handled without cross-modulation. Car ignition sounds tremendous, and noise limiting on the main receiver should be effectively applied!

The author has found that distant signals registering S5/6 heard on this converter fail to detect a call using 80 watts input. About six models of this particular design are in use in the Midlands, and thanks are due to G3WGD, G8AWW and G6CIK/T for co-operation in trying them out, and to A.E.I. Co., Ltd., for use of measuring gear.

SPILSBY JUNK SALE

This well-known annual event, which seems to get bigger every year, will be held at the Bull Hotel, Halton Road, Spilsby, Lincs. on Friday, October 13, opening at 7.0 p.m., admission charge 2s. 6d. For any further information, write: N. T. Hodgson, G2ABK, 53 Main Road, Hundleby, Spilsby, Lincs.

U.K. AMATEUR LICENCE STATISTICS

As at August 31 last, the total of Amateur Sound (A) licences—the category held by the great majority of us—was 12,445; of Sound (B), for VHF/UHF only, 658; Mobile (A), noting that these permits are only granted to existing A-licence holders, 2373. There are 18 Mobile B-licences, operable on the 70 cm. band, and 182 permits specifically for Amateur TV transmission. The nett increases in the three months May 31-August 31 this year are: A-station licences, 162; B-licences, 83; and Mobile (A), 49. The totals (A + B) of U.K. AT-station licences in issue is thus 13,103—quite a healthy total, and representing a pretty large investment in Amateur Radio. Oddly enough, there are also 12,016 licences out for Model Control—which, though it has nothing to do with Amateur Radio, is also of interest to radio amateurs because the model controllers' QRP transmit-receive channels are in a band just LF of our 28 mc allocation. A model-control licence is valid for five years and only costs 20s.

FAST WORK—OR "IS IT A RECORD?"

From *R. K. Rogers, G3WPX, High Wycombe, Bucks.:* "Having been a reader of SHORT WAVE MAGAZINE since pre-war days, I decided recently to do something about getting a ticket. I took the last R.A.E. and the Morse test, successfully, within six days of each other, to get my licence—and wonder if anyone has done it in less?" Well, has anyone? (We think that there have been cases where, immediately on receipt of the R.A.E. pass-slip, an applicant has gone round to G.P.O. Hq., taken the Morse test, paid the licence fee, and emerged with a callsign—all on the same day.—*Editor.*)

NEW RECEIVER IN OLD CABINET

REBUILDING THE HRO TO MODERN NEEDS — RETAINING COIL PACK AND TUNING MECHANISM

D. I. MITCHELL (G3MQY)

This is a particularly interesting practical article because it shows what can be done to modernise an early design which is still very sound electrically and mechanically. While we would not recommend the inexperienced to embark on such a project, any constructor who has built a few superhet receivers successfully should have no difficulty in following our contributor's ideas and suggestions. Though his result may not be quite the ultimate for modern amateur-band conditions, it is a long step towards it.— Editor.

THE recent excellent articles by E. P. Essery (G3KFE) —*see* SHORT WAVE MAGAZINE, November '65, January-February '66—on the basic HRO have been very instructive indeed for those possessing one of these receivers in reasonable condition. However, the HRO at G3MQY, when obtained, was pretty bad, with corroded earth points, untraceable modifications, burnt components and the like, so rather than make any attempt to clean up the receiver, it was decided to embark on a complete rebuild—which became a new design in the HRO carcase. The steps to achieve this are outlined below.

Make a diagram of the coil contact strip connections (Fig. 1) and label the leads of the filter unit, IFT's and BFO (note which trimmers tune input and output, and which IFT precedes the detector) then dismantle the receiver.

Discard all components *except* for the main tuning condenser, pack and dial, filter unit, IFT's, BFO and capacitor, S-meter, phone jack and switches. Retain the NTC capacitor on the top of the chassis from the oscillator tuner to earth. New ceramic skirted valve bases are necessary for the RFA's, IFA's, mixer, oscillators and BFO.

Saw the coil housing out of the chassis, leaving a half-inch lip all round for remounting.

Make or buy a 16g. aluminium chassis (same size as the original) and transpose a layout on it after marking component positions on graph paper. Ensure that IFT's and all valves are positioned for minimum lead length to appropriate grids and anodes—the same applies to all valve bases behind the main tuning condenser.

Cut out a section of the new chassis (as plan) to accommodate the coil housing and make all holes for valve bases, IFT's, crystal holder, power supply and aerial plugs, etc. The product detector tuning condenser is mounted close to the chassis backdrop, so leave sufficient clearance for this when cutting the power supply and aerial plug holes.

Remove the coil contact strip units from the housing, clean, reset and replace. Solder 4in. flying leads to the two centre sets of contact tags, with those connecting to the main tuning condenser made of 16g. solid wire. (This is necessary as it is impossible to make these connections once the condenser is mounted back on the housing.)

Mount the coil housing on the new chassis with bolts through the ½in. lip using a locking device on each bolt.

Clean the tuning condenser, mount it on the coil housing and, referring to the diagram made before stripping down, connect the flying leads, after cutting to length, to the appropriate condenser tags. Connect NTC condenser from oscillator section to earth.

Open the filter unit, clean, check trimmers not shorting out, and connect thin 9-inch colour coded screened wires in place of the old leadouts. Remount in original position and reconnect earth lead between right-hand side of tuning condenser and filter unit.

Rewire the IFT's in the same way and clean up the trimmer adjusters with file and hacksaw. Check trimmers

[*Cont'd p.478*

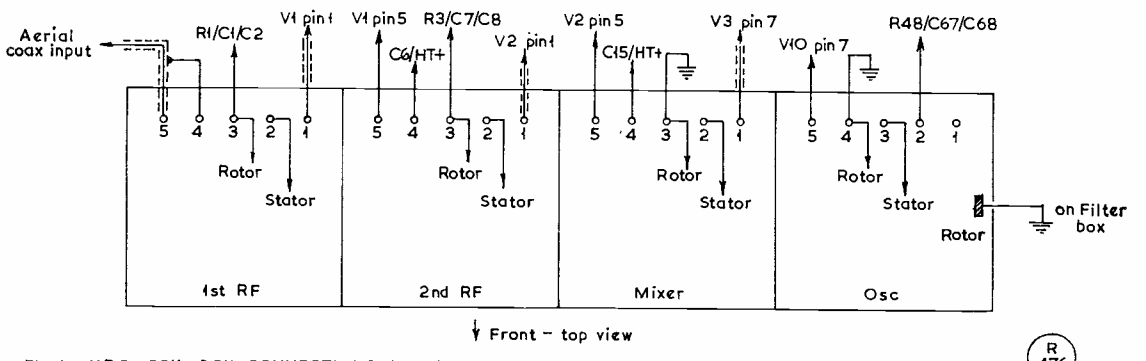
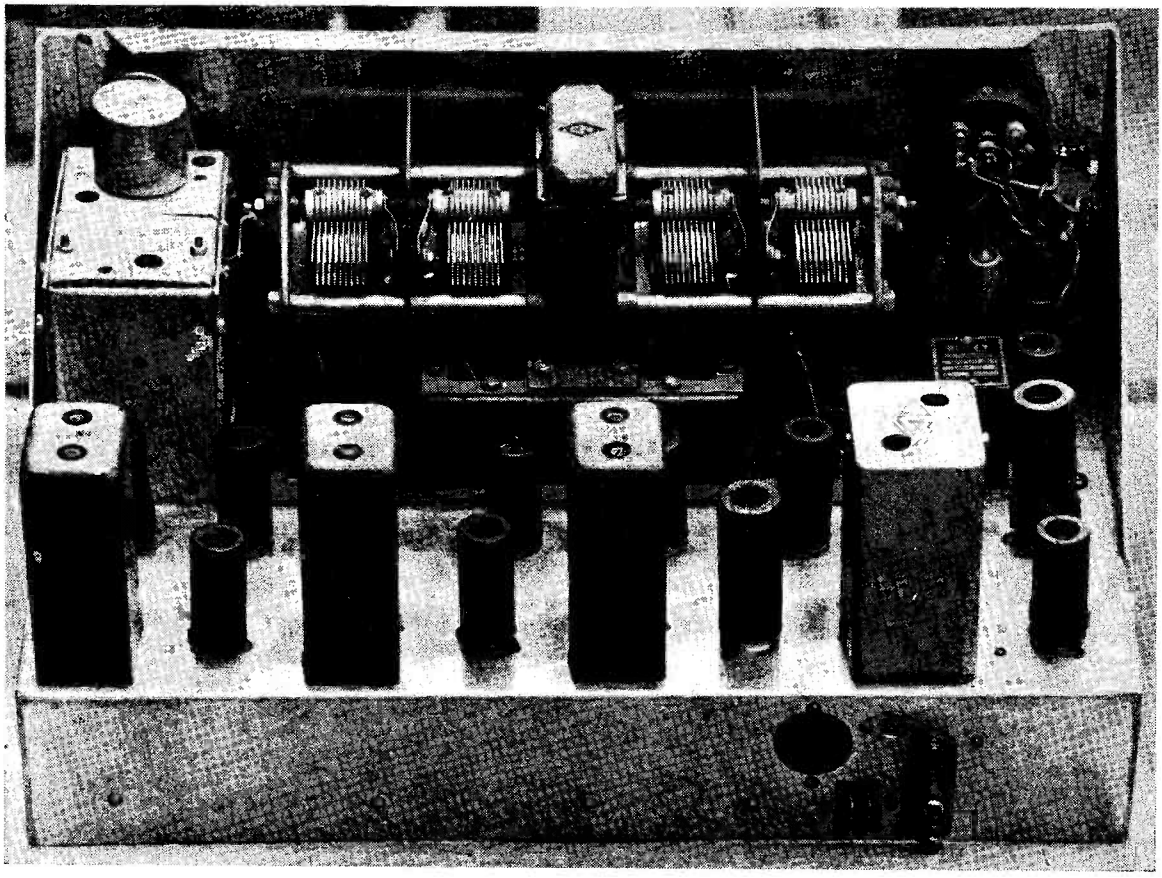
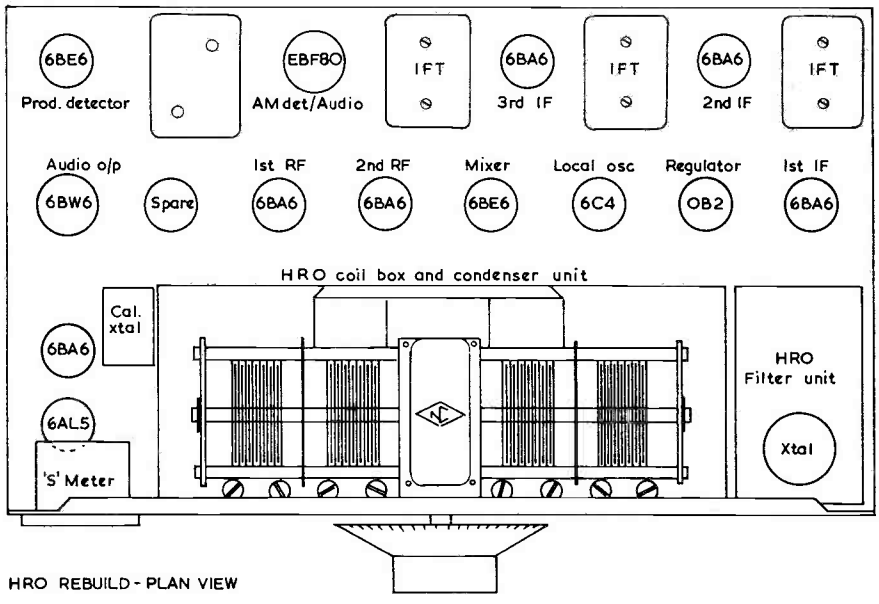


Fig. 1: HRO COIL BOX CONNECTIONS FOR RE-ASSEMBLY

Fig. 1. The HRO coil-pack connections.



Above — the HRO as rebuilt. Below — revised chassis layout, Fig. 2.



HRO REBUILD - PLAN VIEW

R 477

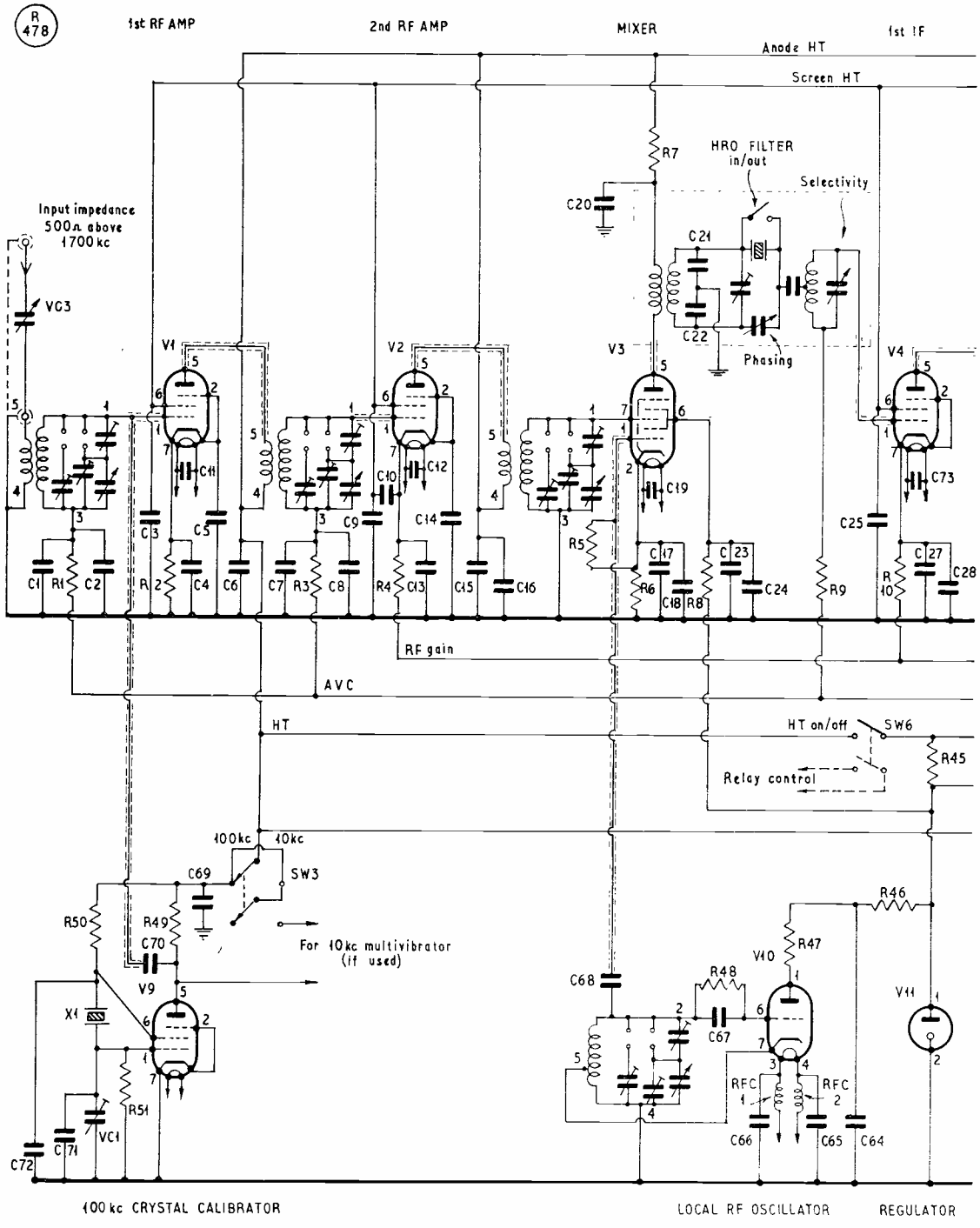
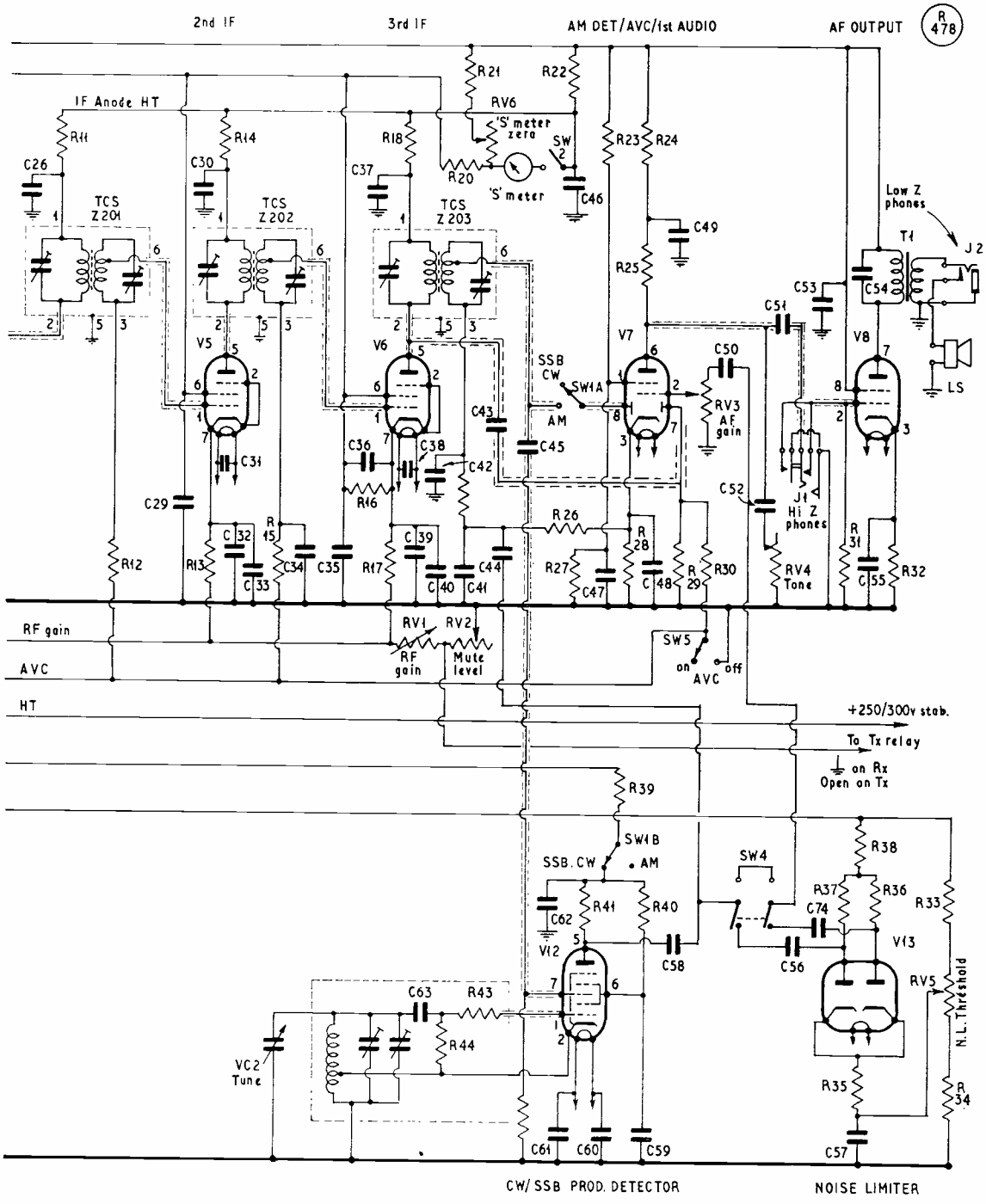
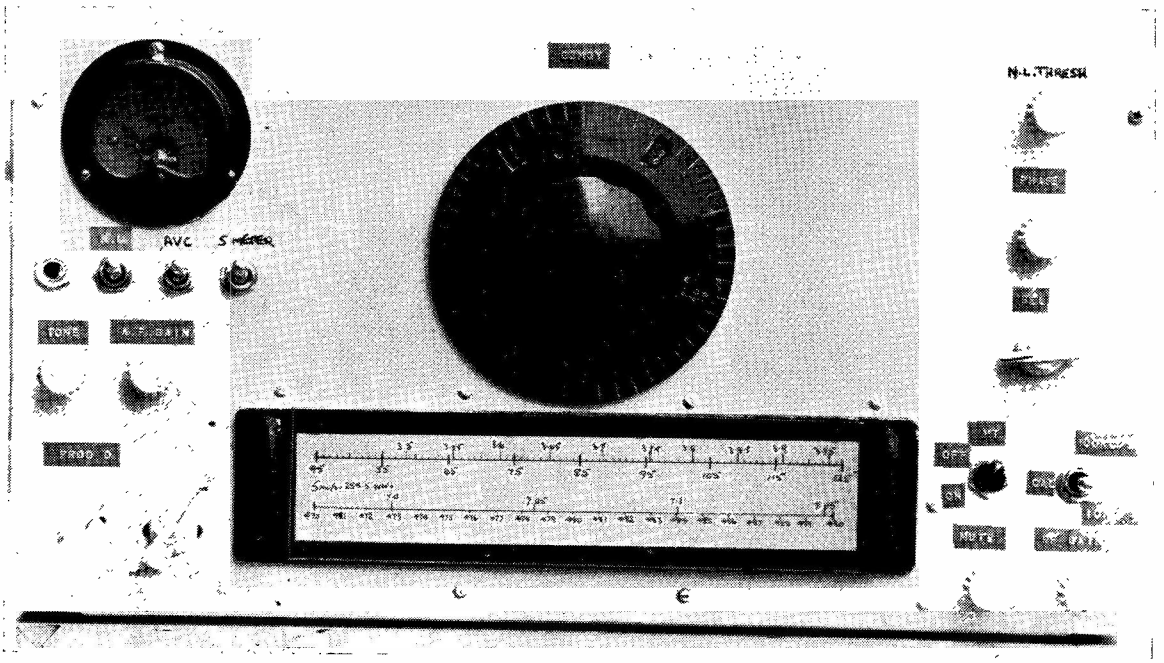


Fig. 3. Circuit diagram of the HRO rebuild.



For Table of Values see p.479.



Front panel appearance of the new Receiver.

not shorting. Position IFT's in sequence on the chassis ensuring that the final IFT to the detector is the same as in the original. (The writer used IFT's from a TCS receiver that were smaller and in better condition—hence the extra stage and grid taps shown, which can be disregarded if using the original HRO units.)

The IF valve bases are mounted with earthing tags under the bolts and positioned for short grid and anode leads to earth IFT. The BFO is then rebuilt as a product detector with the components inside the dashed line on the diagram p.477 inside the can. Fit coded flying leads before mounting on chassis in original position.

Fit all remaining valve bases with earth tags under the bolts and, in the case of the RF's, mixer and oscillator, position so that pins 1 and 7 are facing the coil contact tags. Solder a tin-plate screen across each valve base to separate grids from anodes. Fit the male power plug, aerial socket and loudspeaker take-off to the chassis backdrop.

Wire up the valve heaters with p.v.c. wire, routeing round the chassis edge from the power plug wherever possible and clear of all grid leads.

Assemble the crystal calibrator and noise limiter circuitry on a tag board with 4-inch flying leads for connecting up, and fix on chassis sidewall. Wire up AF output section as it is difficult to get at once the following stage has been done.

Fit a new DPDT slotted dolly toggle switch (obtainable from *Bulgin*) in place of the original BFO On/Off switch, then make a new mounting so that the tuning condenser can be fixed to the sidewall over the new product detector valve base. A quarter-inch polystyrene rod through the chassis front actuates the switch and condenser *via* a suitable coupling.

Make up a 16g. aluminium front panel of the same size as the original with a slot to take the coil units. Determine the panel layout carefully, as the controls are close together, then cut holes as required. Paint the front panel and, when dry, bolt in position and fit all components. A small bush to steady the polystyrene product detector control can be made from the threaded portion of an old potentiometer bolted to the panel with two shaft nuts. Make two triangular side pieces and bolt to front panel and side of chassis after wiring up is completed. Fit AF transformer inside chassis.

Solder the remaining components in position using tag strips where necessary. All resistors and capacitors going to earth from each valve base are soldered vertically from the pins and connected to the earthed screen plates.

Make all power, AVC and control leads of colour coded screened wire taken round chassis sides where possible.

After assembly check the receiver for correct wiring and continuity. Fit all valves and a coil set. Apply LT only and check that valves and S-meter bulb light up. If all seems well, apply HT and check that the regulator valve V11 strikes (and nothing starts to burn!).

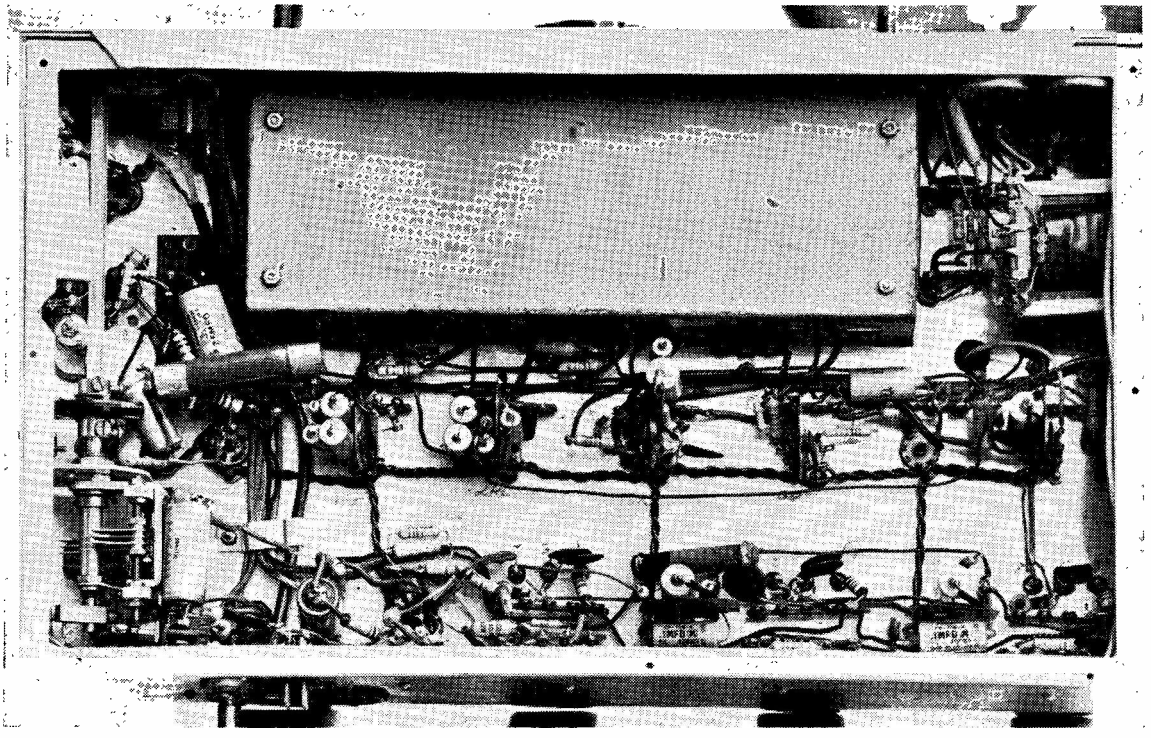
The full circuit diagram for the rebuild is given as Fig. 3, pp.476-477. This should be carefully studied before starting the work.

[*Cont'd on p.480*

TABLE OF VALUES

Fig. 3. Circuit of the rebuilt HRO receiver, after G3MQY

C1, C5, C6, C7, C11, C12, C15, C17, C19, C23, C31, C34, C38, C44, C47, C53, C56, C58, C60, C61, C65, C66, C69, C73, C74 = 0·01 μF
C2, C8, C18, C24, C54 = 0·001 μF
C3, C4, C9, C13 = 0·05 μF
C10, C14, C16 = 0·005 μF
C20, C25, C26, C27, C29, C30, C32, C35, C37, C39 = 0·02 μF
C21, C22, C41, C42, C63, C67 = 100 μμF (silver mica)
C28, C33, C40, C50, C51, C57, C64 = 0·1 μF
C36 = 0·003 μF
C43 = 20 μμF
C45 = 30-100 μμF
C46 = 0·25 μF
C48, C55 = 25 μF 25v. (electrolytic)
C49 = 8 μF 350v. (electrolytic)
C52 = 4,700 μμF
C59 = 2-8 μF 150v. (electrolytic)
C62 = 8 μF 150v. (electrolytic)
C68 = 10 μμF (silver mica)
C70 = 2 μμF
C71 = 50 μμF
C72 = 250 μμF
R1, R3, R12, R15 = 500,000 ohms
R2, R4 = 68 ohms
R5, R48 = 22,000 ohms
R6 = 220 ohms
R7, R11, R14, R18 = 1,500 ohms
R8, R21, R46 = 2,200 ohms
R10, R13, R17 = 68-100 ohms
R16 = 30,000 ohms, 5w.
R19 = 47,000 ohms
R20 = 15,000 ohms
R22 = 1,000 ohms
R23, R25, R35, R44, R50, R51 = 100,000 ohms
R24, R39, R40 = 10,000 ohms
R26, R29, R30, R36 = 470,000 ohms
R27 = 20,000 ohms
R28 = 820 ohms to 2,200 ohms
R31 = 680,000 ohms
R32 = 330 ohms
R33 = 56,000 ohms Balance for correct null
R34 = 33,000 ohms Balance for correct null
R37, R38, R49 = 220,000 ohms
R41, R42 = 68,000 ohms
R43 = 100 ohms
R45 = 6,000 ohms, 5w.
R47 = 22 ohms
RV1 = 10,000 ohms, log.
RV2 = 25,000 ohms
RV3 = 500,000 ohms
RV4 = 1 megohm
RV5 = 5,000 to 10,000 ohms
RV6 = 1,000 ohms
X1 = 100 kc calibration crystal
VC1 = 3-30 μμF Philips trimmer
VC2 = 100 μμF variable air-spaced aerial trimmer
J1 = Original HRO phone jack for high impedance phones
J2 = For use with low impedance phones and speaker
RFC1, RFC2 = 2·5 mH chokes
S1 = Double pole double throw slotted toggle dolly switch
S2, S5 = Single pole single throw
S3 = Double pole double throw spring loaded "Off"
S4 = Double pole double throw toggle
S6 = Double pole single throw
V1, V2, V4, V5, V6, V9 = 6BA6
V3, V12 = 6BE6
V7 = EBF80
V8 = 6BW6
V10 = 6C4
V11 = OD3
V13 = 6AL5



Under-chassis view of the rebuilt HRO.

Alignment

This has been adequately covered by G3KFE and others, so only a reminder to constructors is necessary of the possibility of reversal of potentiometer connections and misalignment of the coil contact strips. Don't forget that there is an IF trimmer (No. 10) at the rear of the filter unit. Calibrate the direct reading frequency chart with WWV, and signals of known frequency combined with the crystal calibrator output. The aerial input impedance is 500 ohms so the serious enthusiast might like to experiment with the aerial input coil, although a receiver ATU will suffice. Power supply requirements are more than for the original HRO and can be calculated by adding all anode and screen currents for HT at 250 volts and heater currents at 6·3 volts. Low impedance phones are used across the output transformer secondary as shown but high impedance phones can be used in the normal circuit—*see* V8, p.477.

Comments

Performance is apparently excellent and though nothing has been measured, the exercise has been well worth while. It has resulted in a good Rx and a completely home-constructed station. No claims are made for original design because much published circuitry has been adapted—no doubt the professional types will be able to find design and construction faults, about which the writer would be only too pleased to know!

THE U.S. CITIZENS' BAND

During the last five years there has been a remarkable growth in CB licensing in the United States—in fact, if is said to be one reason why the Novice licence figures, for strictly amateur-band operating, are going down. In the early part of this year, CB licence applications were averaging 20,000 a month.

Under the Citizens' Band licensing procedure, anyone can get a CB permit merely by asking for it, without formality. But there are certain nominal restrictions: CB operation is confined to the band 26·96-27·26 mc, crystal controlled on spot frequencies, with a maximum PA input of 5 watts, and the aerial must be simple single-element.

It is estimated that there are now approximately 850,000 CB licences current in the United States. This is about *three times* the total of U.S. amateur stations licensed, for regular amateur-band operation as we know it.

Of course, it all means big business for CB equipment manufacturers, as the great majority of Citizens' Band licensees are non-technical, and simply want something that they can plug in and talk into. Consequently, there is a wide range of QRP channel-switched transceivers for the 27 mc band on the U.S. market—more than 30 manufacturers are in the business, offering equipments ranging in price from £20 to £130, for anything from five to 23 spot frequencies by switch selection, and running PA inputs of two to five watts. And with this

". . . well, here I've still got the same old dial . . ."

goes a large market for spike aerials, which come in all sorts of shapes and sizes, and all claimed to have some " magic advantage "—but they can never be more than quarter-wave GP's.

These CB equipments can be freely used from home, or in car, boat, caravan or private aircraft. CB operators take their licence number as their callsign, *e.g.*, KOD3631, KPK5855, etc., and there is an official code, the National CB 10-Code, which can be used (by the more serious-minded) in much the same way as radio amateurs understand the Q-Code, *e.g.*, 10-3 means " stop transmitting "; 10-20, " my location is . . . "; 10-45, " all units within range please report "; 10-85, " my address is . . .," and so on.

In many districts, there are " neighbourhood nets," for emergency message handling; local communication systems for Civil Defence back-up; and similar worthy exercises, making the proper and intended use of the CB facility.

But, in the nature of things, there is also much abuse of the CB licence. So much so, indeed, that there is a now growing demand that " the FCC should clean up CB." How this can be done, nobody really knows. The situation is right out of hand, and has by all accounts assumed massive proportions. One new rule the FCC (Federal Communications Commission, the U.S. Licensing authority) is making is that with effect from 1968, all CB equipment will have to be type-approved, *i.e.*, it will have to conform to certain standards as regards frequency coverage, 26·96-27·26 mc, and maximum power, 5 watts. Presumably, the issue of a CB permit will then be conditional upon the licensee installing approved equipment. But the problem of enforcing proper *use* of that equipment—with CB licences throughout the U.S. approaching the million mark—will still remain. It is not surprising that our own authorities have resolutely avoided such a situation!

Our Small Advertisement section is the U.K. market-place for anything of radio amateur interest — see pp.519-528 this issue.

WHERE'S COUNTY BLARNEY?

OR, THE STORY OF THE EI2AX/P-GI3BHT/P EXPEDITION, JULY 7-16, 1967

T. P. DOUGLAS (G3BA)

While all who are active on VHF, and especially those who made their QSO's with the expedition, will be much interested in this account of the G3BA /G3BHT tour round Ireland—one of the most successful expeditions of its kind yet recorded—the more serious lessons underlying their effort will not go unlearnt. The first is that there must be adequate and intelligent planning, started in good time; the second is the need to make firm schedules; the third is that the gear must be absolutely reliable; the fourth is that the team should possess a high standard of operating ability and general VHF know-how; and lastly, a strenuous tour such as the one we are discussing here demands fortitude and determination. Too many expeditions go out in a slap-happy, unorganised and generally inefficient sort of way and however much fun they as expeditionaries may have, a lot of keen operators are disappointed at their failure to provide contacts.—Editor.

IT all started one Tuesday evening at the local where, in an atmosphere of almost continuous leg pulling, banter and beer, the subject for discussion, or argument, call it what you will, revolved around the need or otherwise of a VHF expedition somewhere. Brian, G3BHT, and I seemed to have the most to say about the *pros* and *cons*, having been on these jaunts before. Wales had been flogged to death by various sorties in recent years and Scotland had been done most competently by the Birmingham Varsity and Midlands Contest Club members. Brian had been to EI on a semi-amateur holiday and knew many of the good sites and I had had a burning desire to do the rounds of some of the more exotic counties and break some new ground. We decided that about the middle of July might be the best period as conditions could be up on normal at this season and the weather might be kinder then than it often is in Ireland.

The Planning

To mount an expedition on VHF needs very careful planning and thought a long time before the actual journey takes place. Anyone who thinks that a DX-pedition is a jolly good idea to run as a sideline to a domestic holiday is backing a loser right from the word "go." We can assure those who may be contemplating a tour that it is hard work *and* a full-time job, and unless it is undertaken seriously and with a sense of purpose it should not be taken on at all. The number of hours some of us have wasted in the past waiting for some advertised expedition to pop up at the time appointed must run into hundreds, and it makes one rather cynical when one hears of this-and-that expedition to GM or GD or GW or some remote island off EI—and not a cheep is heard or even anyone in QSO with the station. With this sort of carry-on in mind both Brian and I agreed that what we wanted for our efforts were *results* and plenty of them.

About February, we set about the initial preparations. Publicity is all important and the *Magazine* of course played its part in letting people know what we had in mind. Brian took on the job of general administration and dealt with such matters as transport arrangements, tickets, insurance, *carnets* and all the little details which have to be seen to when going over the water to another country. Some three months were taken up in finalising all that side of the trip and trying to foresee emergencies which might happen even to the best of organised journeys. On the more technical front many ideas were discussed in detail as well as the broad plan of action concerning likely sites and what counties to visit and which to cut out. A look at the map of Eire and Northern Ireland will show that to have a QSO would mean on average a hop of some 250 to 400 miles to the main centres of activity. This kind of distance is about the limit of VHF propagation for normal conditions of weather, temperature and pressure—therefore, the mode of transmission was quite clearly to be CW rather than AM or NBFM. I was also convinced that if CW could get through so also would SSB if comparable power was used. The final plan adopted was to have a daily stint of 4½ hours each evening and to run to 10 counties in the two countries, eight in Eire and two in GI. Four hours would be devoted to CW and half-an-hour to SSB, net frequency working only.

Equipment Involved

Now to decide on what gear to take. This was difficult as the natural tendency was to duplicate every mortal thing, but this became unrealistic when we took stock of vehicle loading and packing space. We were able, however, to work out a plan which would cover nearly all breakdowns and still enable us to be on the air, certainly on CW at least. One sure thing was that a fair amount of RF power would be needed to get through to the less favourably situated stations and this had to be associated with receivers as sensitive as practicable. The prime mover of the whole set up was chosen to be a TW "Communicator" with a special GM.290 preamp. in front of the RF section. The transmitter RF was also taken to a separate output socket mounted on the rear apron. The Communicator receiver noise factor with preamp. was measured as 2 dB, and 6 watts of RF was available from the Tx section to drive a large power amplifier which we decided ought to be a QQV06-40A for reliability. Under Class-C conditions the Tx power output on CW was 80 watts of RF, measured. A frequency translator was also contained on the chassis with the PA and this accepted 14 mc to give out at 145 mc. For SSB drive we were to use a KW-2000 (which was part of the permanent installation on the G3BHT vehicle) running this into a dummy load and attenuator

at 14 mc; with the right choice of frequency this would transpose us to 145·41 mc, the SSB net frequency for European two-metre Sideband operation.

The all-important aerial was the J-Beam 10-element "Skybeam," to give the greatest gain for size and weight of metal up aloft with UR-1 coax for minimum loss. A robust mast which had been gale-tested over several years was to be taken on top of the Volkswagen on a roof rack. Stand-by gear consisted of a Withers TW2 and Twomobile receiver, with an Eddystone EC-10 at IF. Choice of CW frequency was made at 145·9 mc for several reasons: Nearly all the EI/GI stations can operate at that end of the band and would therefore be near our channel for G stations to hear them after they had worked us. Secondly there was less chance of QRM covering us, and lastly the beam was found to be particularly well matched at that frequency, so that every watt of RF we put out would be a working watt at full efficiency. We made it known that the frequencies we were searching in the main were at the LF end of the band—again, to prevent stations from jamming us out. Our crystal frequency was checked as radiated, so that there could be no possibility of error with the frequency which we said we would be on—a very common complaint, this, with some expeditions!

PSU Arrangements

The weak point on a long expedition can be the power supplies and the means of replenishment. We thought the best thing to do in the light of tests conducted beforehand was to use the KW-2000 on the normal 140 AM 12-volt system which was usually charged from the caravan dynamo. The TW Communicator had two 40 AH accumulators for its power source, which gave enough for about 20 hours of operation on the key. The transposer and linear had a separate 75 AH accumulator, and this was capable of about 5 hours' continuous operation; if it failed, the battery for the KW-2000 could always be pressed into service immediately. A 300-watt four-stroke charger completed the power installation.

Sked Fixing

From the operating side we both knew very well that to go to EI or GI and hope for contacts on a "come-as-you-please" basis was just not workable. A properly engineered programme of spaced out and prearranged, timed skeds must be the backbone of the whole operation, with sufficient time left between schedules to fit in non-sked QSO's. It was my job to arrange the skeds and what with the advance publicity and talking generally on the band for many weeks before departing, the number of people who had interest in what we were doing and who asked for skeds numbered 45 by the time we left for the tour. Many more made skeds whilst we were in EI and there were about 60 or so on CW sked in the end. The SSB net was not skedded as such but was under the control of two MC's, G6HV in the S/W and G6CW in the Midlands. To ensure that everyone knew just what was going to take place, who was on sked and at what time and on what frequency, a list of *all* skeds and associated details was sent to *everyone* who had written in. A further 50 were sent to likely people whom we knew would appreciate knowing the drill. A brief outline of operating procedure was given in the "griff sheet" and also the telephone numbers of the MC's, so that all changes of sked and so forth could be passed to them on a day-by-day basis and then we would collect this from G6CW or G6HV just before each evening session, using 80 metres and the KW-2000 as the talk-back link.

Over in Eire

On arrival at Dun Loughaire (Dublin) on July 7, Customs formalities were got through with a certain amount of suspicion by the authorities, but Brian had done his homework so well that we had an answer or a document for every question. EI6AS met us at the quay-side by way of welcome and then we headed south down serviceable roads devoid of much traffic to our first site at the Sugar Loaf Mountain in County Wicklow. Brian had operated from here before and it was known as being a certainty. This was so essential because of the time factor between landing and getting set up, cooking a meal, and all that kind of thing. Eventually, the beam and its mast were up in the (more or less) vertical, along with the 80-metre inverted-V dipole. A hurried meal was cooked and we were ready for the 6.30 p.m. 3695 kc link-up back home to G6CW and G6HV. They were there all right calling us and very soon we had exchanged all the news for the night and had a cheery word from EI7AF before we broke off for the main work of the evening. At 7.0 p.m. to the pip we called EI6AS on Phone to check times and that our transmission was OK. Our next sked was at 7.05 near London so full of hope we rattled out a call and listened on the appointed frequency—not a sausage—the silence was S9+! Again another call—not a bleep. General disappointment and minor panic all round. It certainly did not look so hot and we had that awful sinking feeling that a boo-boo had been made somewhere. Anyway, we had to press on willy-nilly so out went the call for G3EJO in Birmingham. "145·9-VFO on our channel" the griff sheet said, so 145·9 mc it was, and there was Bill at 589! Were we thankful to hear him! A quick exchange of reports and we were off to the next sked. And so it went on for the remainder of the time until 10.0 p.m. when we got all tied up in double-ender plugs for the SSB session on 145·45 mc. When we eventually got the right things in the proper sockets there was 6CW and 6HV calling us at very good strength. They said that a crowd of stations was awaiting us, so off we went with the first call—you never heard such a racket! There were stations from all over, some on channel but most of them off frequency. We had to leave the MC's to sort the lads out and this was eventually done and QSO's began to move about one a minute until our Sideband time was up. The last hour on the key was quite busy and by the time we closed down from Wicklow some 50 odd QSO's had been recorded. The wonderful thing was that nearly all our skeds had been kept and signal strengths were far from being down in the muck, as we had half expected. We had a drink and turned in, very weary but happy now that it looked as if the expedition was launched satisfactorily and nothing too serious had gone astray with the organisation.

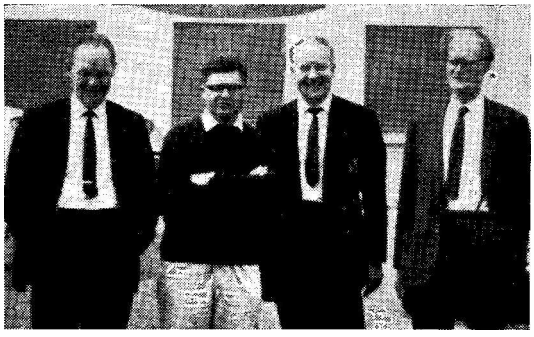
The journey down south to Carlow was much better than we thought it might be. After shopping at a con-

venient town we made the next site by lunch time. We decided not to tarry in Bluncuddy, the nearest population centre, but get up the mountain as soon as possible to survey the land. By 2.0 p.m. we had got up to 2,400 feet and it was blowing heaven's hardest. We spotted a convenient lay-by which was slightly sheltered and also had the most delicious take-off to the west you could imagine. We had a little more time to spare so we sorted out a few of the domestic things that could be improved upon before we cranked up the KW-2000 on 80 metres. Brian got through the sked sheet changes with our MC's whilst I set up the VHF gear and tested it into aerial. Came 7.0 p.m. and we were off with EI6AS. As again the 7.05 London sked did not turn up we got cracking with some quick CQ's and this established the pattern for the future. We tried to get the sked over within a minute and this then left time to squeeze in two or three CQ's and QSO's before the next sked was on the clock. It was all too easy this time, everyone was S8-9, and we could peel them off at a goodly rate—so much so that we had run off 120 QSO's for Carlow by the time we closed down just after 11.30 p.m. There was no doubt at all now that the expedition was really swinging and that the boys over the water in G and GW were right on the ball.

We started a new procedure of charging the accumulators whilst we slept and this worked out very well indeed so that we had everything ready before we set off in the morning. Our third county was Wexford and by cunning planning we had only a short distance to travel to get a good take-off from about the same height as in Carlow. We had time to bring the QSL's up to date. The weather was fine and we began to get brown. The Wexford session went much as the previous night and we were much more relaxed at operating and dove-tailing in with one another on what was required, which meant that the pace was less hectic than had been the case. Another 100 odd QSO's went into the book for Wexford, this time including some near-400 mile contacts on SSB, so we were very pleased with the outcome.

Slight Contretemps!

The Monday morning early saw us all packed up to start the trek to the north. Our map work was done and we made for the town of Carlow to shop and have the vehicle maintained. It was here that things became a little strained as far as Irish relations go. The mechanic who was going to do the oil-change said in that most disarming way the Irish have that he would be taking the van round the back of the garage—well, he did start taking it round the back but just after he disappeared from sight there was an awful sound of scraping metal against stone. Brian and I raced round to see his lovely V.W. with its side all scratched to blazes! When the mechanic was asked how in hell he managed to do that his explanation in fluent Irish-English was that he was verry sorry but he was trying to avoid some wet cement on the path! You can't win—you just have to be very very patient and tolerant and unless you have a twisted sense of humour you would be lost! We drowned our sorrows over a wonderful lunch and made a rather erratic way up to our estimated site in County Leix. It was only 600ft. a.s.l. with a grazing take off but not too bad



During their VHF expedition to Ireland, G3BA and G3BHT (signing EI2AX/P and GI3BHT/P on the tour) got this picture, in which we see, left to right : EI6X, G3BHT, EI6AS and EI9F.

for all that. We found a flat piece of ground and set up camp for the evening. Nothing untoward happened except that we were invaded by flies, but luckily we knew of this possible hazard and had armed ourselves with an *Aerosol* fly killer. About 80 QSO's were worked that night with signal strengths much lower than from the previous three counties. This was to be expected, really, as we were now getting into the difficult areas, but at least people knew by now that we were operational and meant to do our utmost to keep faith with those that were out to follow us round.

From Leix it was only a short drive over to Kilkenny and we had already selected the area. This site turned out to be almost perfect with the text-book type of take-off in the right directions. It was a lovely day with bright sunshine and we had a relatively quiet afternoon filling in QSL's and doing minor camp chores. Just before we were due on the air the owner of the land where we were parked came to visit us and she was most interested in what we were doing. She told us about the area, its historical background and the present industry of mining anthracite. It was with the greatest difficulty that we had to beg leave from this wonderful personality, but we were later to be invited in for drinks and a chat with some friends who she had asked to dinner.

Contacts were made with almost every sked station from Kilkenny and many new stations as well, and once again the tally was up around the 100 mark. In the morning, after the usual photographic session, we bade *au revoir* to our kind hostess and set the V.W. north for a long journey towards the Northern Ireland border. The route took us to Navan where we routed EI2A out of his cosy little workshop. After leaving EI2A we made off to our next hill-top, in Co. Cavan. After permission was obtained to use the site we set up amongst the heath and the peat with almost a perfect all-round take-off. After the usual 80-metre conversations with 6CW and 6HV I was testing the VHF gear when EI6AS called in a little ahead of his sked time. As an opener he asked Brian where we were this time and quick as a flash the reply came out " Oh, we are in County Blarney tonight." There was a sort of stunned silence when Albert came back to us, and we could hear papers being shuffled around and pages being turned over—after a minute of this, Albert's incredulous voice asked us

" Where's County Blarney? " When we had got the comic stuff out of our system, Brian, taking the first watch, made his 30 QSO's without batting an eyelid. By now we had really slick operating coming at us and so we were able to squeeze in more stations in the early part of the evening than had been possible in the other Counties. During the SSB session a thundering big voice broke in at the end and said " how about the GM's? "—it was GM3EGW, and when the beam was brought round to his direction his signal was almost overpowering. We told him he was the first GM contact although we had called GM3TFY earlier on in the evening. We were reluctant to break off such a wonderful QSO but the skeds were there and we had to keep them. Nothing spectacular happened after the SSB period and we finished off the night with several AM contacts with the GI and EI boys, who seemed to come on fairly late at night for local natters.

Not So Smooth!

Our next county was Monaghan, only 30 miles or so away but by late afternoon we found that all four of our prospective sites were no good at all, and the clock was getting on in a most relentless and disturbing fashion. By 4.0 p.m. we were without a site and none likely either. So we decided to make all haste to Mt. Oriel in County Louth, which spot we had really reserved for the last County of all on the way down from Northern Ireland. We were there by 5.0 p.m. but the sites were private property which made it difficult. As we were thinking what to do the sound of voices attracted our attention and we saw a farmer and his horse baling hay in a field nearby. I nipped over a gate and started in on my story—it was very hard going and almost one-sided. Things were getting desperate until I mentioned that I was in fact the son of a farmer in GM and we started in on talking about ways of baling hay! I said that of course we would like to pay him for the site and that we were not the usual sort of holiday-makers—as if he did not know that by now! He weakened visibly and after he had clutched a crisp note in his toil-worn palm he told us to be careful to shut the gates and wished us all a place in the Good Lord's Holy Garden! We dashed through the chores and were just ready in time to keep the LF band sked at 6.30 p.m. It was most noticeable too that the sky was darkening and the static level was unusually high. When we started on the VHF side the signal strengths were quite weak from most stations except some of the big boys from the London area. Ionospheric pings from stations calling us were most noticeable every time there was a lightning flash. By 10 p.m. the storm broke with dreadful violence and we had to close down because the static was so strong that nothing would penetrate it. We dropped the mast very quickly and shut the doors of the V.W. and went to bed after a brew-up and meal. The night was very rough, with many lightning strikes within a few hundred yards of us.

Next morning it was dismal but dry and we were able to pack without too much difficulty. We took the road over the border to Newry and went round the coast to Kilkeel, home of GI3GXP, whom we found at his business in town. We had a wonderful lunch from Mrs. 'GXP and then set off on a site-finding expedition. Most of them were rather difficult to get to with a large vehicle but we did spot a place that had the makings

". . . Oh, they're the regular stand-by rig . . ."

of a good location. As luck would have it there was a derelict house just where we wanted to go and the owner was hedge-cutting just nearby. The tale was told and we had the site for the night! A brisk meal and once again we were ready for the " off." Wonderful place for radio that, and only 500ft. a.s.l., too. GI3GXP and GI3ILV called in on us that evening to see us in action. When the SSB session was being worked you could almost see the jaws dropping as we knocked off 19 stations in 25 minutes. Not anything to brag about on the DX bands, maybe, but on two metres and from a DX location it was ridiculous! We gave many stations their first GI QSO that night so we felt it was justified to have taken a relatively easy County for many. After the mere 35 worked in Co. Louth we felt we had to restore confidence again.

When we left Co. Down in the morning the mountains of Mourne were in sad mood with the mist swirling around the winding road and streams most of the way into Armagh. The county town is a beautiful old place and we regretted we did not have sufficient time to explore it properly. GI3ILV invited us to have lunch with his family and after this we went on to the site for the evening, Dead Man's Hill. After the usual permission was sought we set up on our two bands and also on 70 mc so as to say " hello " to the GI gang. There is no doubt about it, the 4-metre net in GI *does* work, and we had a pleasant time listening and chatting around the country. The serious work of the evening was accomplished much as usual and we had plenty of spare time to do what we liked between operating spells of an hour on and an hour off. The next morning was the Sunday, July 16, and we got off to an early start to make our way to as near Dublin as possible. Unfortunately, we got a little off track and when we eventually got to where we had planned the road was barred, so we had to turn back for the coast just south of Dublin Bay. We eventually located a nice field with a friendly farmer so our troubles were at an end and we set up for our last session, over-

looking the Irish Sea towards England. After the 80-metre check we had several AM contacts with the Midlands at good strength before we went into the nightly VHF routine. We hit the century again that night and finished off the event with several local Phone QSO's whilst downing a bottle of real Irish wine. After a sound sleep we got up somewhat later than usual the next morning and cleaned the whole vehicle out prior to the last packing for the journey home. We had made a luncheon date the previous night with some of the I.R.T.S. members and this was quite a hilarious affair as one might expect. We bade our hosts farewell and turned back to Dun Loughaire to catch the afternoon ferry. Whilst we were waiting in the queue on the pier a young man rushed up to us from the crowd saying that he was a SWL and had had the time of his life listening to us and all the stations we had been working on our tour. He thanked us profusely for having created such activity which he said had never occurred before. This simple and sincere gesture just made our day. We felt that after all the effort had been well worth while.

This little story would not be complete without a word of thanks to those people who helped us in one way and another. Our two MC's G6CW and G6HV did a sterling job for us every day, coping with the telephone calls at home and arranging the skeds and SSB queues. Hospitality over in Ireland was embarrassingly showered on us and we are again grateful to so many who made us so welcome. And finally our real and sincere thanks to all the hundreds of stations that were at the other end to give us the QSO's. The final score was just over the 800 mark with 150 contacts on SSB . . . There are other " County Blarneys " yet to conquer and this is a very tempting prospect!

AERIAL THEORY AND PRACTICE

GRASPING THE ESSENTIALS—CONTRIVING AERIAL SYSTEMS FROM KNOWLEDGE OF FIRST PRINCIPLES

Part I

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

This short series of articles—intended to cover aerial installation from the practical point of view, might be sub-titled " sugar-coated aerial theory and practice." Putting up something as per book is all very well—it is far better and more satisfying, as well as more likely to produce pleasing results, if the way the system works is clearly understood.—Editor.

THE topic of aerials and their behaviour is one of the most important parts of the study of Amateur Radio. It is also one of the most mystifying, as there would seem to be little or nothing which is not either of the " copy it exactly and it will work " type, or the too-advanced theoretical article which blinds one with science and then forgets to tell you how to put the theory into practice. It is hoped that this offering will contrive to simplify the picture, and make it more understandable, so that some idea of the whys-and-wherefores of the operation of particular aerials may be obtained simply by thinking about them.

In the first instance, when an alternating current passes along a piece of wire, electric and magnetic fields are set up around it. If the wire is fairly long, then the effect of these is to interact in such a way that some of the energy in the field " escapes " and travels through space to great distances; the effect of the local fields, however, is only noticeable very close to the wire. The local magnetic and electric fields, which are basically the same as the fields that exist in an inductance or a capacitor, play no part in reception at a distance, but they *do* produce the effects which are to be found when, for instance, another wire is brought close to the aerial to act as a reflector —the point being that the local field causes the second piece of wire to operate as an aerial in its own right, so that the distant fields from the two wires may then add or cancel in different directions, producing a directional effect.

Thus it is obvious that the only field we are interested in at the receiving end, or when we are making measurements on an aerial, is the distant one. This is why we are exhorted to make sure that our field-strength meter is used at least a distance of one wavelength away from the aerial under test, and for preference more—just to keep the local fields out of the picture.

Standing Waves

Stating the obvious, an open-circuit cannot absorb energy—if it does the insulation has absorbed enough to go up in smoke!—and so, if you poke a pulse of current down a wire whose end is O/C, there is only one thing it can do, which again is a bit obvious, and that is, of course, to turn back and return whence it came. A similar argument holds good in the case of a pulse that rattles down the wire and suddenly finds itself up against a dead short. Now this is where the first moan appears every time; because the objector points out that if he puts a dead short across the HT line of his Rx, the wiring cooks up, which proves the short is *absorbing* energy and not reflecting it. This argument looks fine, but it is fallacious. If the wire that cooked up was in fact a *dead* short, then it would have no resistance, and so, no matter what current you passed through it, I^2R must be zero—whatever you multiply by zero, the answer just has to be zero. Try putting a lump of two inch square copper across the terminals of a battery; the battery will boil up but the copper will most certainly not.

Which brings us to the next point, which is that electrical power sources, just like loads, have resistance inside them, and in the case of our battery, all the watts went into the battery internal resistance

and none into the dead short, and that accounts for the battery boiling up. Taking the argument one stage further, the mathematically inclined might like to do a few sums in Ohm's Law, and prove to themselves that the maximum power *in the external circuit* will always occur when the internal resistance of the battery is exactly equal to the load resistance.

Going back to our pulse for a moment, we agree then that if the pulse runs into an open or short-circuit, it turns round and returns to the source, *i.e.*, it is reflected. If we hang a resistor exactly equal to the generator internal resistance on the end of the line, then the pulse is entirely absorbed by the resistor, and nothing comes back at all. If the line is infinitely long, then again nothing at all comes back, because the pulse never gets to the end—it is attenuated out of existence. Thus we come to point number three which is that the generator cannot tell the difference between an infinite line, and one that is of known length but correctly terminated. If the end of the wire terminates in anything other than short, open, or a perfect termination, some, but not all, of the pulse will be absorbed, and some (the remainder) will be reflected.

Now let us consider what happens when our transmitter RF is allowed to travel down the wire and hit an open-circuit end. Obviously, the RF will come back, like the pulse. However, as the transmitter is continuously pumping RF down the line, RF is also continuously coming back (always assuming the PA holds up!), and the return wave is of the same frequency, and travelling at the same speed as the outgoing one. Now, if we select some specific point on the wire a known distance from the far end, and in some way contrive to measure the volts going towards the end and the volts coming back *at the same instant in time* we shall find that every time we do this the forward and reverse volts will be different, but their *sum* will be constant; an answer that will be repeated at any other specified point along the line. Carrying this out at several points along the line, plotting the results will yield a pattern that repeats itself every wavelength at the frequency of the RF we are pumping along the line. Thus arises a situation that sees a travelling-wave going down the line and another coming back, adding together to produce a *standing* wave which does not move.

(To be continued)

FARADAY COMMEMORATION

The great scientist and original thinker, Michael Faraday (after whom the unit of capacity is named), died just 100 years ago, in August 1867. His grave, in Highgate Cemetery, is cared for by the Institution of Electrical Engineers, and on this year's anniversary a commemorative wreath was laid by Sir Albert Mumford, one-time Engineer-in-Chief of the Post Office.

GB3BSI—SCOUT EXPEDITION TO BROWNSEA ISLAND, POOLE

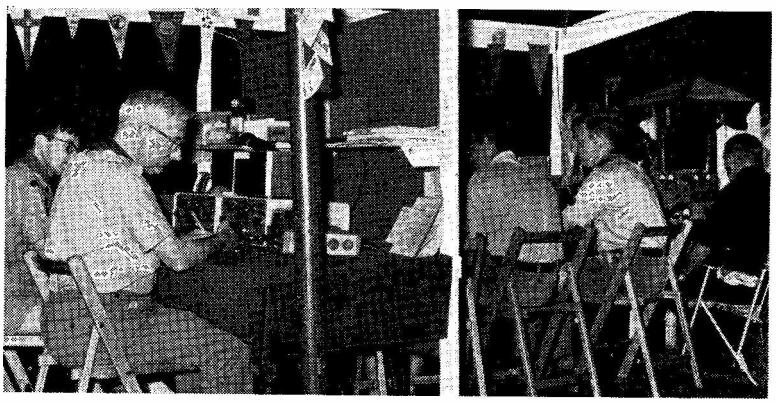
WORLD RADIO JAMBOREE, 5/6 AUGUST, 1967

L. R. MITCHELL (G3BHK)

SEVERAL years ago Scout Headquarters decided to organise a National Patrol Leaders' Camp on Brownsea Island to commemorate 60 years of Scouting and to coincide with the 12th World Scout Jamboree in Idaho, U.S.A. The location of the camp was to be on the exact spot where Baden Powell held his first experimental camp in 1907.

Early this year the writer was approached concerning the possibility of organising an Amateur Radio link between Brownsea and Idaho and providing training in our sort of radio for the Patrol Leaders in camp. Later, it was agreed to continue operations from this site for the 10th Jamboree-on-the-Air over the weekend, August 5-6.

A call for Scout volunteers produced G3SEM (Great Yarmouth), G3SDG (London), G3OBD (Poole), G8APT (Bruton, Somerset), G3VHB from Devon, G3WFW (Manchester) and an SWL from Wiltshire. It was discovered that between them these scout amateurs could provide the following equipment:—An AM 160-metre home-built Tx; a 50-watt 80m. transmitter; an



The all-band station set up for GB3BSI, Brownsea Island, Poole Harbour, Dorset for the recent Scout world DX event. The HF section (left) was operated by G3SEM and G3BHK; the LF bands were taken care of by G3VHB and G3SDG; and at far right is G3OBD on the VHF station.

HRO-MX receiver; a KW-2000 all-band transceiver; a Heathkit SB-301 and SB-401 receiver and transmitter; and equipment for 2m., 4m. and 70 cm. Daystrom Ltd. kindly loaned an HA-14 Linear amplifier for use with the other Heathkit equipment.

The only remaining problems were the mains supply and sufficient masts to satisfy the rather ambitious aerial farm we had in mind. A visit to the Royal Corps of Signals at Blandford Camp resulted in the generous offer of the loan of twin trailer-mounted mains generators and four 48ft. masts.

A site on high ground, not far from the 1907 camping area, was chosen and by July 28 a marquee had been erected and G3SEM and his father were busy inside constructing an excellent " Radio Olympia " type stand to carry the equipment. Despite the fact that the amateurs concerned had not previously met, everything quickly fell into place with remarkably few snags and by nightfall the station was ready, tested and waiting to be launched on the air the following morning.

Aerial System

The aerial farm consisted of dipoles for 160/80m., 80 and 40-metre inverted V's, a three-element Mosley Triband Beam and rotator, a Mosley V46 all-band vertical, an 8-over-8 slot Yagi for two metres, a 4-element Yagi for 4m., a 14-element Yagi for 70 cm.—and the most impressive array of all, a Vee with 350ft. legs aimed on Idaho. Quite a system!

No rotas were arranged and operators used the equipment as and when they could. Usually there was no shortage of volunteers except when band conditions were very poor. This often happened just after lunch when the operators could be found outside the marquee sunning themselves on the grass. Any comment resulted in the outcry that they were " striking for better radio conditions!"

The arrangements for the daily training sessions of five one-hour talks and demonstrations on Amateur Radio were rather more disciplined and we were all impressed with the interest shown by the groups of patrol leaders attending. These sessions resulted in a constant supply of volunteer loggers in the evenings and indeed we came to the conclusion that most of today's Scouts will be tomorrow's QRM!

Results and Experiences

It is interesting to compare results with GB3SP, the station which operated 10 years previously during the 1957 World Scout Jamboree at Sutton Park. This probably indicates more than anything else the vast improvement in Amateur Radio equipment over the past decade, mainly resulting from the use of SSB and also the upsurge of interest in Amateur Radio within the Scout Movement. GB3SP with 60 operators made 1,712 contacts in 71 countries in 12 days. GB3BSI with only seven Scout operators made 935 contacts in 64 countries in 8 days.

The results at GB3BSI were very satisfactory and a contact scoreboard is shown herewith. DX-wise some of the most interesting contacts were with VP8, Falkland Islands; ZD7, Saint Helena; KV4, Virgin Islands; and FG7, Guadeloupe. Of course, we had a vested interest in island stations! Very many of the stations raised were operated by Scouts or ex-Scouts and if any operator wished to chat we stayed with them, no doubt thereby drastically reducing the total number of stations we could have worked. Still, the whole idea was to make friends and not to break any records!

The V-array paid off with a total of eight contacts with K7WSJ at the World Scout Jamboree at Idaho. John Beresford, the British Contingent Leader, and Ted Hayden from British Scout Hq., spoke to us direct from the Jamboree site out there.

One interesting QSO was with W1PFA/M, operating from a car in motion in New Hampshire. He turned out

The Scout group associated with GB3BSI for the Jamboree-on-the-Air last August. Left to right: G3WFW, SWL, G3VHB, G8ART, G3OBD, SWL, G3SDG, G3BHK and G3SEM. A special GB3BSI card was produced to QSL all contacts and reports.

Keen group round G3UBI of Northern Heights Amatuer Radio Society, operating for the 3rd Keighley Scout Troop during the August Jamboree-on-the-Air event. Gear available included an NCX-5, KW-2000 and K.W. Vespa, KW-600 Linear Amplifier and KW-77 receiver—with which they had various antennae.

to be a Scoutmaster driving a car-load of radio equipment to Camp Onway to set up a Jamboree-on-the-Air station there! The log also included contacts with 13 other mobiles in Britain, Germany, Italy and Switzerland.

We found that W9HPY/AM was an aircraft in flight between Iceland and Greenland at 17,000ft. Contacts were also made with ships off the Swedish coast and in the North and South Atlantic.

We were very pleased with our seven Australian Jamboree-on-the-Air contacts, especially as some of these lasted for over 30 minutes. In all some 120 QSO's were made with Scout stations during the Jamboree weekend.

One of the final contacts from GB3BSI was with HV3SJ, an ex-scout in the Vatican—a fitting end to a most successful project.

The writer would like to express his grateful thanks to all those making GB3BSI possible. All the operators, both with and without equipment, and to G3OBD for his most useful additional launch facilities for getting across Poole Harbour. Special thanks to the Royal Corps of Signals at Blandford Camp for generously supplying the corner-stones of the station—the generators and the masts—and to Daystrom Ltd., whose Linear added a useful punch to our HF signals. Also included are thanks to the cooks without whose efforts we would have been unable in our turn so generously to feed the particularly voracious breed of Brownsea mosquito (*Lancelot Amateuris*).

Table of Countries Worked and the Number of Different Stations contacted in Each

G, G5, G8 and GB(England)—231 stations. **W**(U.S.A.)—216 stations. **DL, DJ**(Germany)—59 stations. **SM**(Sweden)—26 stations. **GW**(Wales)—20 stations. **VK**(Australia)—12 stations. **VE**(Canada)—11 stations. **OE**(Austria)—11 stations. **LA**(Norway)—10 stations. **I**(Italy)—9 stations. **ZS**(South Africa)—9 stations. **EI**(Eire)—9 stations. **PAØ**(Holland)—8 stations. **JA**(Japan)—6 stations. **GI**(Nth. Ireland)—5 stations. **GC**(Channel Isles)—5 stations. **OZ**(Denmark)—5 stations. **F**(France)—5 stations. **ON**(Belgium)—3 stations. **HB**(Switzerland)—3 stations. **OK**(Czechoslovakia)—3 stations. **UA**(European U.S.S.R.)—2 stations. **ZE**(Sth. Rhodesia)—2 stations. **ZC4**(Cyprus)—2 stations. **PY**(Brazil)—2 stations. **LU**(Argentina)—2 stations. **MP4**(Bahrain Is.)—2 stations. **YU**(Yugoslavia)—2 stations. One station was raised in each of the following countries:—**CE**(Chile), **CR7**(Mozambique), **CT**(Portugal), **EA**(Spain), **EL9**(Liberia), **FG7**(Guadeloupe Is.), **GD**(Isle of Man), **GM**(Scotland), **HA**(Hungary), **HV**(Vatican City), **KP5**(Puerto Rico), **KV4**(Virgin Is.). **LX**(Luxembourg), **OH**(Finland), **OHØ**(Aaland Is.), **OY**(Faeroe Is.), **SP**(Poland), **UB5**(Ukraine), **VP2**(Grenada), **VP8**(Falkland Is.). **VP9**(Bermuda Is.), **VS9**(Aden), **VU**(India), **YS1**(Salvador), **YV**(Venezuela), **ZD7**(Saint Helena), **ZL**(New Zealand), **ZP**(Paraguay), **3V8**(Tunisia), **4UI**(United Nations, Geneva), **4X4**(Israel), **5N2**(Nigeria), **9G1**(Ghana), **9J2**(Zambia), **9L1**(Sierra Leone), **9M2**(Malaysia).

FOR HUGO GERNSBACK—WITH RESPECT

Recently, the death was announced of one of the most colourful (and successful) personalities in the world of American scientific—and science fiction—publishing. For nearly 60 years Hugo Gernsback had been turning out technical material, fictional and factual, on a wide range of subjects connected with radio communication, electronics and light engineering. Early on, he became his own publisher—by far the most lucrative way to engage in the business—and founded his *Radio-Electronics Magazine*, which has a huge circulation in the States—most of it, incidentally, written by himself.

Hugo Gernsback also had almost a Wellsian faculty for scientific prognostication—he was writing space fiction and working out the practical problems involved long before real travel in space, as we know it now, had even been contemplated. He knew all about gravitational effects, the physiology of weightlessness, space suits, meteoric bombardment, the problems of human sustenance and survival on long space flights lasting years, and so on, decades before these problems had to be faced up to in real terms. One of his most interesting early ideas about propulsion in space—the electron-beam "jet"—is even now being developed for that very purpose.

This remarkable man regularly circulated, at Christmastime amongst his friends, acquaintances and business contacts throughout the world, not a Christmas card, but a little personal magazine, full of ideas, criticisms, suggestions and scientific predictions on all sorts of subjects. This he called his *Forecast—Year 1966* (or whatever it was).

Though in later years he was much afflicted physically, and had difficulty in getting about, his mental powers never failed, and he was in full control of all his enterprises, and still pouring out ideas, until the end—which came on August 21, at the age of 83, at his home in New York.

COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

COMMENTS here last time on the subject of TVI seem to have touched a raw nerve. It is really quite surprising how much TVI affects so many readers of this piece, and it is even more surprising how the attitude of the authorities and the set-makers is tolerated. In fairness, it should be remarked that the attitudes taken at GPO top level are, in general, reasonable and enlightened, but there is strong evidence that this does not percolate to the lower strata.

One can understand the afflicted amateur going QRT to avoid trouble with the people around him, with whom he has to live but regrettably this often seems merely to result in the "other side" taking advantage of the position. After all, in spite of the publicity and the real efforts that have been made over the years to train competent TV service engineers, there is still an enormous shortage. Possibly 10% are fully competent, and the remainder are semi-skilled men who can clear simple faults quickly and return the "dogs" to a more competent man—one such firm requires each of its engineers to clear 20 faults in a normal working day! Imagine what can happen when he is sent out to deal with a case of TVI which is quite outside his limited experience. Unless a strong line is taken by the amateur concerned, he is quite likely to be told that "he really doesn't know what he is doing and should be closed down." A few losing cases such as this do the amateur movement no end of harm in the eyes of the public—who are completely uninformed and uninstructed as to what Amateur Radio is all about, much less that licensed amateurs also have rights.

It was not many years ago that, in one of the New Towns, there was an attempt to petition the Development Corporation to ban all Amateur Radio activity on the grounds that it interfered with television reception! The amateur in question went QRT for a month and in that month the piped-TV system over which the argument raged broke down more than twenty times—how lucky that in this case the local GPO people were determined to see fair play, did so and got it! (And on the topic of TVI, see notes further on reference G3VBL.)

However, to scan the correspondence for this month—the autumn has at last brought an uplift in conditions generally even if the winds have blown down a few aerials.

Twenty Metres

As usual, this band carries the bulk of the traffic, and so gets the greatest number of mentions in the mail.

Perhaps it is a good thing to remind the avid DX types of today that some very interesting things have been going on for a long time—for instance, that G5QA (Exeter) still runs his daily CW sked, started 'way back in 1936, with ZL2OU—it has totted up to more than 10,000 QSO's, and just now seems to be kept twice daily. A sobering thought for some of the "DX Lions" of today is that this sked was started before they were born!

G3IDG (Basingstoke) managed a fortnight of stay-at-home holiday and so spent far more than his usual time on the 20m. band. His impressions can be summed up as wonder at the number of CQ's being put out at one and the same time. The odd part of this is that if one sits down and answers some of these characters, they rarely come back; your E.P.E. found upon experiment that if one called CQ right under the nose of one of these types, having called him and got no joy, then he came back to the CQ. Three times on the trot, which seems to suggest Something Odd.

On a "per capita" basis, Unst must be the most radio-active island in the world—GM3KLA managed VP8IU, 4X4YY, EP2MK, 4U1ITU, GC3SHZ/P, UF6AW, UG6EA, and UG6JJ. Bill's QRM, GM3SVK up the road, found things rather variable, with the period 0600 to 0800z possibly best. Midnight to 0530 showed South America and the Caribbean, 0530 to 0800 VK/ZL and the Pacific. Europe occupied the morning, and most of the afternoon, with Africa in the early evening, together with VK's and ZL's; 2000 to 2100 produced

THREE-BAND ZONES and COUNTRIES TABLE

Starting date: January 1, 1967

Station	7 mc		14 mc		21 mc	
	Zone pts.	Countries	Zone pts.	Countries	Zone pts.	Countries
G3IAR	265	53	828	156	811	124
GM3SVK	269	37	847	147	789	115
GM3JZK	158	23	516	67	592	66
G3VDL	139	34	561	65	434	68
G3PQF	115	28	130	24	190	17
G3VWC	22	18	67	20	118	24

Note: The placings this month are based on the "21 mc Zone points" column.

the odd VP8, and the evening ended back where it started, with South America and the ubiquitous W's. In the intervals, QRM from work, food, and sleep! Particularising, Fred mentions CW contacts with JA's, OX3LP, VP8JG and ZD3G, while SSB yielded a rather richer haul, including EP2GI, FO8BI, HS4AK, JA's, KG6AAY, KR6USA, MP4BGL; PX1's, IE, JS, and NV; VP2AA, VP8IE, VK's, VK9XI (on Christmas Island), ZD9BE, ZL's, 7Z3AB, 9G1BF, 9L1KG, 9Y4VT; in addition, TT8AR and TN8AH failed to rise to his cast.

Andrew of G3VWC (Bishops Stortford) has recently been tasting the delights (?) of work for the first time, which enabled him to creep into the Club shack at lunchtimes for a rapid look round—KR6FQ, who seemed to be almost on the line, disappeared under no less than three EU's. It really is quite remarkable the way these characters call CQ in groups like this right on top of good DX, but *never* on a clear channel.

A first letter from G3SGH (Ashford) indicates he is made of stern stuff—his particular gotaway was KX6EQ—but John says that come hell-or-high-water he will get him sooner or later! Just to show he can do it, he worked KL7MF, HC1TH, YS2RC, 5U7AK, 9M8II, plus the usual crop of JA's, VK's, and KP4.

The offering this month from G3UTS (Newcastle-on-Tyne) shows quite a lot of activity on the HF bands, all on the 265-foot wire, although a groundplane went up at the end of the period. The 14 mc list includes DJ2IB/LX, EI3BF, PJ3CD, FP8DG, FY7YM, HK4TA, K3FOY/OX5, KH6, LU, OA1, PA9EO, PX1IE, PZ1AG, TG9RN, assorted rare varieties of U-call, VK's, VP2SAB/MM, ZL's, ZP5CF, 9G1YJ, and 9Y4PL.

Gardening is a mixed blessing from the Amateur Radio point of view—one needs one to put an aerial in, but at the same time one has to take time off to grow things and keep them tidy. The latter occupation has somewhat reduced the G2DC activity, but Jack managed to keep an eye on the band all the same. A new pest has appeared on 14050 kc, using what used to be known thirty years ago as "spitch," together with RTTY and CW. EP2MK, OA4PF, UM8KAI, VU2LE, VR2DK, DU1OR, FK8AT, VP6AM, XE1EK, ZD3G, 5L2KG, 9L1KG, VK2-8 and ZL1-4 were all booked in during the month.

Pressing on with the story, we next come to the letter from G2HKU (Isle of Sheppey), who worked his first VK1 in VK1LN, also ZL2KP, WB6LNW, VK2IC, and VK3NC (who remembered Ted's name after twenty years since the last QSO), all these being CW. As for Sideband, among those worked were WB6UVU (a YL who spends a lot of time on phone-patch traffic), W7HQC, WØLWG; VK9RU was hooked but lost in the end, and in addition various interesting signals were heard, mostly around 0700, such as HP1AD and VK8HA on CW and TI2JCC, KH6's (including KH6IJ of beam aerial fame), TI5MR and HK3HC.

G3VBL (Preston) eventually got his TVI problems sorted out, and it was found that two of the sets were cleared simply by the insertion of 12 dB attenuator pads in the aerial leads. The other one was put right by changing the existing Channel 2 and 9 aerial to one for Channels 9-12, *plus* a 12 dB pad *plus* a Faraday-shield type link, which cleared things up completely. This is an interesting point, as it suggests a level of signal coming in which would make cross-modulation a near-certainty with normal techniques of TV set design! The level was such that with *no aerial at all* these was a weak, but viewable and QRM-free, picture. One would hate to try and design a TV Rx to cope with such a signal level and be free in interference when connected to a gainy aerial!

Reverting to the DX from G3VBL, his SSB produced CR6, CR7, EA9EJ (who seemed to be a little short of takers on his CC frequency) FC's, KH6, KL7, KR6, PX1's, TI2JCC, VK7RX, VP2's, VP8, VQ8, VS9, ZB's and ZS's, also various "valve-type" callsigns. Chris has a compliment to offer G3NMH, who is handling the QSL chore for

FIVE-BAND DX TABLE

(*New Cycle*)

Starting date: January 1, 1967

Station	Countries	28 mc	21 mc	14 mc	7 mc	3.5 mc
G3IAR	186	67	124	156	53	52
GM3KLA	119	41	76	71	45	46
G3PQF	80	41	17	24	28	23
GM3SVK	182	34	115	147	37	15
GM3JZK	105	32	66	67	23	11
G8DI	117	26	78	94	37	25
G3VDL	100	25	68	65	34	7
VP8HJ	69	17	9	64	1	4
G3VOK	58	7	1	46	6	36
G3VWC	40	4	26	21	22	5
GI3GTR	44	1	12	35	12	9
GM3JDR	185	—	157	96	—	—
G3VBL	111	—	—	111	—	—
G3NUT	89	—	57	53	19	—
G3TTG	38	—	—	38	—	—

Note: Placings this month are based on the "28 mc" column.

In some ways, one of the most interesting pictures we have ever had for this space—for here, together, are five married couples, all holding call-signs! Left to right, with the back row given first: G3MYI/G3WDA, Leicester; G3VFN/G3VZB, Halifax; G3MQD/DJ6BS, Devizes; G3ESR/G3LWY, Wigan; and G3FQH/G3VQH, Denby Dale, Yorkshire. They were caught together at the Derby Mobile Rally on August 13. Congratulations, happiness and good luck on the air to them all!

VP8JC—just three days from working the VP8 to receiving the card! One could wish that some of the other characters who call themselves QSL managers could take a lesson from Hal in keeping up-to-date with the chore.

What with holidays and fine weather G3VDL (Chalfont St. Giles) only booked in a couple of new ones, EP2MK and ET3FMA, plus PY/LU, UG6, EA8, and YUØJ. Gotaways included FB8YY, VQ9B and UA1KAE.

Quite a long letter this month from G3NOF (Yeovil), who heard VK/ZL and the Pacific in the mornings, with KL and KH6 later, all over the long path; the afternoons have given short-path signals from VK2SG and VK3ACW, both of whom were worked around 1600, at the same time as the Asians were on. The African stuff has been better for Don in the last month, with the evenings yielding North and South America, followed as a nightcap by the odd long-path opening around 2300 to VK, ZL and JA. In terms of actual contacts this added up to QSO's on SSB with HL9TE, HS1RZ, HS4AK, VQ8CBB (St. Brandon), VR2, VU2, VP8IE, YK1AA and much besides.

Aerials are very much in the front line when consistent DX results are desired, and so GM3JDR (Golspie) has been doing things to his vertical, ending with the thing some 25 feet up in the air. Possibly it is too early to say just how much this has done to the signal, but certainly the JA's, for instance, are now giving Don 599 reports. CW produced EP2MK, HKØAI, 6W8DD, 9L1KG. The SSB list is enormous, from which we select EA6, HK's, HC2RT, KZ5NH, OA4MX, TI2PAS, TG9OP, VK7RX, lost of XE's, 3V8BZ and 9G1BF.

Up in Leeds, G3WDW has deserted 160 metres in favour of a start on the HF bands, and found as most of us do that he got 599 from all local TV sets, and in addition BCI on the VHF/FM channel! However, the majority of his troubles are connected with phone operation and so for the moment CW is most used—a small hint for a lot of people!

G3USE (Luton) has 30 watts to a groundplane available; this has resulted in all U.S. call areas except W6, DJ2IB/LX, UH8CI, UA9EU, HK4AOY, PY2AN, VE2XPO, 3C8RX (located at Norman Wells, 100 miles west of the Great Bear Lake) ZB2BE, 6Y5JB, 9L1KG, and other lesser mortals—which suggests he is getting out quite well!

The NCX5 and trap dipole at G8DI (Liverpool) is also producing the goods, albeit Bert has been off for a last-of-the-season trip in his caravan during the period, and as the XYL is somewhat anti-radio as far as holidays are concerned, things have been slack; however, CW yielded VS9MB, 9V1LK, AP5HQ, TF5TP, LU1HBS, OX3DJ and TG8IA (for the last American mainland country needed), while the SSB mode gave HP, HC, XE, and YS1JSL.

G3REM (Bearsted, Maidstone) has no troubles with the XYL—she looks after the logging, the map-work and the coffee-pot. Some time ago they tried an all-night session on the band just to see what could be found, and recently repeated the experiment; the spring session turned out to be the better of the two, in that 8R1, KZ5, YS1, OA4 and HK were all being neglected by the W's in favour of phone-patch traffic. A QSO with EL2AC was a pleasant surprise in that he was off the side of the aerial, and yet reported the G3REM signal as "flattening his receiver."

Fifteen Metres

A query arises in the mind of G3IDG, as a result of his recent chasing of JH1EYB on 21 mc. Just how many of the characters who chased him knew where the call really hailed from, or even if it was genuine? A good question this, which appears to have given Allan so much food for thought that he let the chap off the hook! Incidentally, QSL this one *via* the Bureau.

GM3SVK found 21 mc quite reasonable, the pattern being rather similar to Twenty with the exception that the JA's were not audible in the early evenings. CW gave contacts with CX3, HL2, HS4KJ, JA's, KG4, KX6, VK4CK, VK8UG, PX1IE, and 5L2KG. SSB produced CR6, JA's, K6/K7, KG6SF, KH6, KL7, KX6, W3DWG/VR6 (on Pitcairn) VK's assorted, VP8, VS6, VS9MB, YV5AGM, ZP3AB, 3V8BZ and a couple of 9L1's.

GM3KLA offers VP9FO, 9L1KG, 5L2KG, 9G1HM, G6ZY/CN, 9V1NV, EA9EO, UI8AI, VS6EN, 4X4YM and all JA other than 8 and 9 as his haul for the month.

Coming back southwards G3SGH appears in the lists once again, with WA1EAN/VP9, VS9MB, VP6PJ, EL2NE, ZL1AJU, 5L2KG, DU1CL, and TU2BK, followed closely by G3UTS who hooked SVØWV, ZC4CI, I4VOS, and VK9DJ on the key, and talked to YU7LBM/M, and lots of JA's, although he still needs a JAØ for a full hand.

[over

Something Momentous has happened at the G2DC QTH. In referring to the band conditions, Jack mentions that although they have been good, DX has been sparse on CW as compared with the SSB end of the band—the first time G2DC has ever even mentioned the stuff! If this sort of thing goes on we shall even find him having Phone QSO's! The sparse CW DX included CR6AI, CX3BH, EA9EO, FP8DH, LU8DK, OA4PF, PZ1AH, TT8AR, assorted rare U calls, VS6FO, VR2, VP1, VQ8CBB, VP8JD, ZD3G, 5L2KG, 9L1KG and hordes of VK's and ZL's.

From the "sceptr'd isle" of Sheppey, G2HKU worked UAØMX, and heard VP6PJ (who was rather chirpy) and HP1LR. G3VDL did not consider 15 metres very interesting, but worked 5L2KG, CR6DA, EA8, and JA's, while TJ1QQ and FW8RC got away, the latter being very loud at 0830z.

As far as G3NOF was concerned things were not too bad at all; several opening to the Far East, with South-East Asian stations audible till as late as 1800, and W's in from 1000 till 2300 and later. Many JA's were worked, along with VK9XI, VQ8CBB, VS6FZ, YA4AR, ZC4TK, 9L1KG and, of course, W's.

A Bumper Bundle comes to hand from GM3JDR by way of SSB QSO's, including hordes of CE's, CP1 and CP5, CR4, 6, and 7, CX's, a couple of DJ5/LX's, EL2, FL8, HC5, HK4, HL9, odd I prefixes, KG6's, KZ5, KP4, LU's, OD5's, PJ3CJ, PX's, 7F2WKE and so on, right through the gamut. Sounds as though Don has really been making merry this month!

A couple of new ones rewarded the labours of G8DI, both on CW, in FB8XX and FM7WO, with CE3ZK also mentioned.

Up-Holland is the sort of place-name one expects to find in Lincolnshire, but it is in fact the home of G3KTJ near Wigan. A long list of interesting DX worked on CW on the band is included in his lot, from which we note PJ2ME, TI2RO, ZD8RC, XZ2ZZ, CR5, VK, PZ1AP, FB8XX, PX1IE, KG6AAY, FY7YI, TT8AR, VP8JG, TJ1QQ, PZ1CQ, EP2BQ, TF2, YN1GMR, SVØWB, and EA9EO. PZ1AP passes on the information *via* G3KTJ that the Club station PZ1AA will be on during the Trade Fair over the last week in September and the first week of October; special QSL cards and possibly certificates will be going out in connection with this activity.

Query from G2VV (Sunbury-on-Thames) as to the whereabouts of the 5L2 prefix being used by W6KG and W6DOD; it is the special one allocated by the Liberian authorities to Lloyd and Iris Colvin. Jim mentions a very interesting CW ragchew with W1TS, Don Mix of ARRL and *QST* fame in earlier days. Apart from the W and JA contacts, the pick of the G2VV crop seems to be FP8DH (QSL *via* WA9QXY), FG7XT, 6Y5JB, ZE1, UI8, UAØ, and 9J2.

There must be something about the air in Scotland that makes them chase the DX—GM3HGA (Aberdeen) has been banging away with 70 watts to a simple dipole at 25 feet firing E/W, and proving that the old touch is still there. 5L2KG, UAØSD in Zone 18, UO5KBA, DU1CL, three contacts with 8M8II, UAØDA (Zone 19), VK8HA, VE7EH, CR7, VP6, ZD7, EP2HB, FM7WO, and FP8CA who was underneath a king-sized pile-up, all attest. Incidentally, Jim mentions that years ago he often used, when he was in the Shetlands, to have QSO's with GM3JDR, but has never worked him since returning to the mainland ten years back.

Ten-Metre Clip

As far as GM3SVK saw the situation, it was one of unalloyed pleasure—he was at last able to make *some* sort of a report of signals heard/worked! The early part of the period was pretty flat, but at the time he wrote the previous few days had been quite good. Fred had CW contacts with JA2IPE, VK5DS, and ZS6BT. Sideband gave CR6, OD5, assorted JA's, UA9, UF6, UD6, UG6, VK's, ZC4's, ZS's, 5Z4AA, 9J2WR, 9LZGQ, 9V1FF—enough to keep him happy even if he does hope for more next month.

As for G3SGH, all he mentions specifically is 9L1KG, but once again he is sitting back waiting for better things. On the other hand G3UTS, to whom all is still grist to the mill, mentions a lot of DJ/DL calls, OK's assorted, sundry other Europeans, JA's, HB9LO, PY5ASN, YO8AP, VK6DS, VS9MB, and a couple of ZC4's, although, sadly, the tally of rare stuff that contrived to escape his clutch was quite large.

A useful check for the state of the 10-metre band is mentioned by G2DC, who reminds us that there is a beacon signing ZD7WR on 28995 kc, which can be heard when things are beginning to open up; it had been peaking S8 around noon during pretty well all the week prior to Jack's letter. His DX included CR6, CR7, JA1 to 9, PY7AGQ, VQ8CA/A, VQ8CBB, VK8HA, ZD3G, ZE3JO, ZS6MM, 4X4WD, 5L2KG, 9L1KG, 9V1LK and 9J2MX. 9L1KG was also worked by G2HKU for a new country, while ZD7DI and ZS1JA were heard on SSB.

In contrast to G3VDL, who submitted a *nil* report, G3NOF sends in a comprehensive comment from which one gathers that as far as he is concerned, 28 mc is at last picking up, though still not as good as it really could be. SSB was worked with CR6IL, EL2AK, KV4AD, PY's, VQ8CHR (who was VQ8CC operating from Rodrigues—QSL's *via*

TOP BAND COUNTIES LADDER

Station	Confirmed	Worked
	Phone and CW	
G2NJ	98	98
G3UBW	78	92
GW3PMR	71	78
G3VYF	68	76
G3VGR	61	92
G8HX	56	81
G3IDG	55	59
G3VLT	53	78
G3VMQ	43	70
G3VLX	29	45
G3WDW	28	67
G3VWC	10	28
	Phone only	
G2NJ	89	90
G3VYF	53	60
G3VMQ	29	50

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

KØTCF), ZC4MO, 9G1FV and a crop of W's.

One contact only mentioned on 28 mc is the story from GM3KLA, although that one was well worth while—it meant that Bill has now worked *and* got the cards in for contacts with 4U1ITU on all *six* bands.

G8DI is quite satisfied to have any sort of QSO on Ten as an omen of things to come, so that he was pleased with a bunch of EU's plus CT3AS.

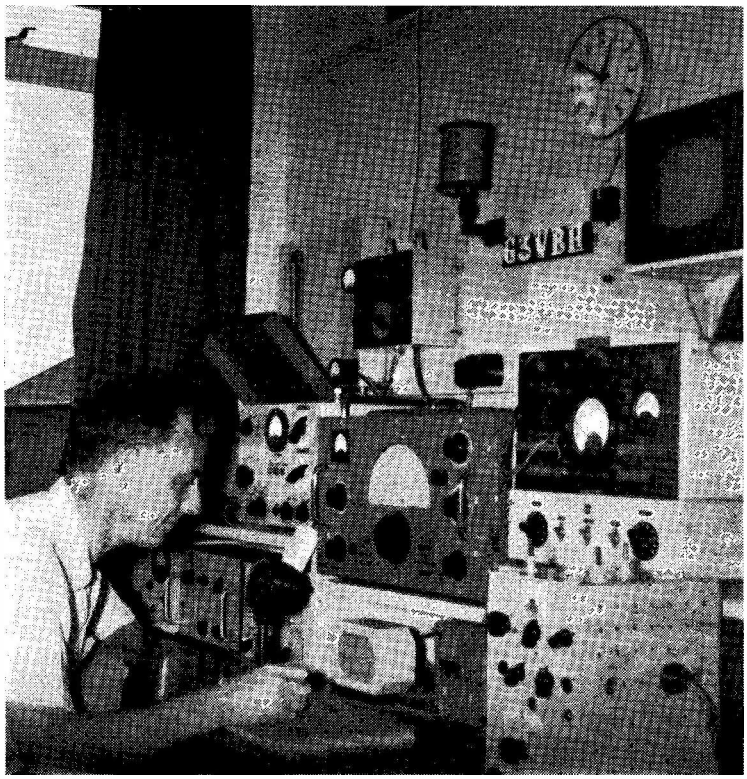
* * *

And that is about the lot as far as the HF bands are concerned; there is a large clip for Top Band, which justifies a piece to itself (later), and a few gleanings covering 3·5 and 7 mc. This seems to be a good moment to look at them. Addict Number 1 on the pile is G3VRZ (Moseley, Birmingham) who has at last returned to the fray after holidays and examinations. During the week August 17-26 on 40m. Hugh worked 4X4, PY's, KZ5, HI8, HK4, UL7's, W7, VQ8CBB, VK, UD6, a couple of UA9's and CO2, in addition to the obligatory W's. All this activity was brought to an end by the need to pack traps for a move to Sutton, Surrey, where his new QTH will be decorated, all being well, with a groundplane for Forty, which ought to be quite interesting.

Both Forty and Eighty were covered by GM3KLA at times. The former yielded 4X4NTR, 4X4WN, UD6 and UL7's, with CX1AAC; best of the bunch. Eighty on the other hand came up trumps with VQ8CBB and EP2BQ, for a couple of new ones.

G3VDL hardly touched the LF bands, UF6LA being about the only contact of note, found on Forty. A similar situation with G2HKU, and even G2DC, who seldom if ever misses much, is not markedly enthusiastic, albeit he says, fairly, that DX is often to be found when a contest is on. His pickings on 7 mc CW: CR6, PY's, UD6, UL7, UWØAF, ZD3G, VK, ZL and 9L1KG. Eighty yielded contacts with all U.S. districts apart from the elusive W7, and with ZD3G to make it on all five bands 3·5-28 mc during the month.

A *nil* report for 3·5 mc, but contacts with ZL4BO and F2CB/FC for a new Zone and a couple of new countries gave GM3SVK a lift, and JA, VK and Africa were all heard during various openings.



Station of L. Parker, G3VBH, at 29 Westerleigh Road, Combe Down, Bath, Somerset, whose apparatus is largely home-built, with an Eddystone 358X as main receiver. He has a variety of test gear and calibration equipment, and the range includes a small mobile Tx/Rx for Top Band. At the moment, activity is mainly on 80/160m., using a 132ft. end-on aerial.

A new reporter is G3WJS (Dorchester) who was struck by the dearth of news of the LF bands last time out, and so has valiantly leapt into the breach. John almost wishes he were an SWL again—he finds it a sight easier to hear them than to actually hook the DX stations, and so on Eighty, although he heard quite a lot, his 30 watts only connected with Europeans, such as F, ON, DL/DJ, and the U.K., OK1ALS being the best of the bunch. Forty gave similar results, with DL7NP in Berlin as best, although, as yet, the PA is still being used as a power doubler. Heard were K3DCY, VE3CTP, UR2KAS, and K1JU, all of whom escaped. No doubt things will begin to look up 'ere long—as he gets more into the operating side—and so we await developments and future reports from G3WJS.

To wind up, it is nice to hear once again from G3VPS (Hailsham), who was almost given up for lost after parting up with the loaned Viceroy he started with, and changing over to a 19 Set about six months ago; however, G3VPS has been getting considerable entertainment from his 26 watts, working all over Europe, and improving his knowledge of French over the air. He is now thinking along the lines of an improved transmitter—and it is a fair bet that G3VPS has a far better idea—and different, at that—of what he wants out of his Amateur Radio activity. It is also probably fair to say that G3VPS will be continuing on the LF bands, even if he does go back to chasing DX on the other bands, having found out the most important of all things about this

hobby of ours—there is always some different line to follow.

Top Band Story

The depth of the pile this time is truly astounding, and will be necessary to compress considerably to get it all in. The Trans-Atlantic Tests this year will, as indicated by W1BB, who does so much to keep this activity boiling, be held from 0500-0730 GMT, over the following dates: December 3, 17, 31, January 14, 1968, and February 4 and 18. The usual five-minute calling and listening periods will be used, until QSO's result, as in earlier years. In addition, there will be "First-Timers" sessions, these being on December 17, January 7, and February 4; and on this occasion there will be selected stations known to be capable of getting over with ease standing by "in the wings," to help out.

TOP BAND LADDER

(G3U-- and G3V-- stations only)

Starting date, January 1, 1966

Station	Counties	Countries
G3UTS	96	15
G3VMW	94	18
G3VGR	92	16
GM3UVL	91	13
G3UBW	85	18
G3VYF	76	16
G3VLT	75	15
GW3VPL	70	16
G3VMQ	70	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	48	8
G3UGK	43	13
G3UMK	39	7
G3UCS	36	?
G3VSI	19	4

In addition there will be further tests this year to attempt the far-more-difficult Trans-Pacific path. Dates are December 2, 16, 30, January 13, and February 3 and 17; times from 1330 to 1600 GMT. W's calling CQ "DX Test" for the first five minutes in the hour, and thereafter every alternate five minutes, in their allocated areas of the band, DX on the other periods. West Coast W's have 1975-2000 kc, and the JA's are on 1907·5-1912·5 kc, and the rest are spread over the LF portion of the band in their normal segments. While the chances of much joy for us over here seem pretty remote, it is not impossible, and it will be well worth a listening watch to see how things develop.

Talking of propagation, G3TKN (I.o.W.), has been keeping a regular *lunch-time* sked with G3NEO (Sheffield)—path length about 180 miles—which has given good results. It is rather interesting to note that the vertical has not been as good for these tests as the half-wave, which radiates a big sky-wave, and signals have had QSB on them, which suggests that most of this propagation has been by reflection.

G3VLT (Orpington) is full of joy at the 160m. activity from Hereford, and also collected Aberdeen and Caithness, leaving only one G county outstanding—Rutland, which has not been well-patronised this year from the expedition point of view.

After three months of static scores, G3VLX (Sidcup) moves up two in counties, with Clackmannanshire and Kinross, and similarly GW3PMR and GW3VPL have movements to be taken into the Table.

Bute, Armagh, Radnor, Merioneth, Guernsey and Sark are the blanks in the list of GM3UVL, who is still living in hopes of some expeditionary activities in time to let him collect the lot 'ere winter sets in.

Most of the Hereford activity seems to have been from G3RFT, who was on during August 19-25, and made 91 contacts spread over 33 counties. He was worked on all seven nights by G2NJ, who reports on this effort as well as moving in the Tables.

Another DX-pedition to report is G3UTS, who betook himself to Selkirk on August 26, and worked 36 stations in three hours.

G3VMQ has a movement to claim, and goes up thanks to contacts with Huntingdon, Montgomery, and Caernarvon. Phil has been "giving the aerial a drink" at regular intervals, and playing with a VSWR indicator, as a result of discussion at the local club. A rise is also reported by G3UVT, with Suffolk, Brecknock, Radnor and Hereford, plus another country with EI3SU/P.

The Hereford lads give advance warning that they are going to become rarer still—they are going to Radnor! This is slated for October 21-22, and will be signing GW3HVX/P. The Hereford club should have plenty of enthusiastic operating assistance, for their membership, believe it or not, is 41.

That same October weekend should see activity from Cumberland, and the group, comprising G3VYX, G3WES, and G3VXI, plus a couple of SWL's, hope to have two SSB stations on Top Band all night, and one on Eighty during the day.

Wednesday and Thursday October 11-12 is the date for the diary if you still want *Orkney*. GM3SVK is going to be there, and will be looking out for those who have not made it as yet. To that end, he will be armed with the GM3GIZ/P logs. CW the first night, SSB the second, and daytime operation on the HF bands. So—if you already have Orkney, give the others a chance. Incidentally, Fred will be leaving Shetland finally in November, after which either of these places will be workable only by way of a sked or a DX-pedition; so a certain amount of haste is indicated in rectifying any shortages.

Activity from ZC4 should please the 'chasers. This is on offer from G3MCY, who becomes ZC4GM as soon after October 20 as he can get the gear unpacked; from November onwards, Gordon will make a point of being on Top Band as much as possible—and most of us know that the G3MCY signal on 160m., wherever he has been, was always potent.

Here and There

A DX-pedition to Lord Howe Island (South Pacific) is promised by VK5XK, who will be there over October 3-23, signing VK5XK/VK2

with a crystal-controlled transmitter on 14089 kc. Callers *please* call off his frequency—Arch's last trip was badly marred by UA and JA stations piling up on his single channel.

The "Tops CW Club" 80m. Contakes place from 1200 December 9 to the same time on 10th; call "CQ TAC" or "QMF," using the area 3·5-3·6 mc only, and state whether the entry is single or multi-operator. Contacts in one's own country one point, contacts with other countries in the same Continent two points, and with other Continents 3 points. Total score equals total points times the number of Prefixes worked, the prefixes being counted in the same way as for WPX. Each call area in W, UA, etc., VE/VO, and VK will be counted as a separate country.

October 7-8 and 14-15 are other dates to keep, for the VK/ZL/Oceania DX Contest, and in this case the logs should go to W.I.A., Box N1002, GPO, Perth, Western Australia, to arrive before January 20. In the same breath, a last reminder about the *CQ* WW DX Contest, the Phone end of which will be played off before our next (November) issue is out, on October 21-22, while the CW end is slated for November 25-26.

A most interesting letter from 9V1OG, who is ex-GM3WBX, saying that he has been agreeably surprised at the low cost of getting on the air out there, and the useful facilities in the way of junk-shops, in which things can be made cheaper still if one is ready to do a little bargaining. It is proposed to send us a photograph with a list of the bargains—sounds interesting!

Reporting the HF Bands

From VQ9HB (Seychelles) we hear that he intends to activate Farqhar some time, and possibly also Chagos, albeit the latter is nearly 1000 miles away, and is therefore quite a difficulty. Dates are not yet known but no doubt Harvey will contrive to circulate them just as soon as he can.

From G3NOF comes a mention that the OD5 and the 9K stations are once again on the air—a point which has already reflected itself in the reports this time.

Recent activity by W9WNV has been VQ8CBB from St. Brandon, and then VQ8CB from Rodrigues; this operation is understood at the time of writing to have been wrapped up on September 13, when Don returned to Mauritius, but his movements from there seem a little uncertain.

During the *CQ* Contest, it is understood that UP2KNP—to whom all QSL's should go—will be operating as a club from Georgia, signing 4L7A, operating all bands 3·5 mc to 28 mc. Beams will be in use on the four higher frequency allocations, while on Eighty a ground-plane will be available, using 3·6 to 3·65, and listening above 3·8 mc for the W stations. Another one to be on for the same event, but nearer home, will be GB2AA, operated by the Exeter Contest Group. QSL cards for GB2AA should be directed to G3RUV, *QTHR*.

The YV's now have a National Society, the Asociacion de Radioaficionados de Venezuela, Apartado 3636, Caracas, Venezuela; the secretary-general is YV5BYM, and the callsign YV5RV.

Finally, a note for the RTTY enthusiasts, of the *Alexander Volta* RTTY DX Contest due on December 2-3. Last year's rules and this year's are in general the same with a few minor exceptions. For all the gen on this one, write to the SSB and RTTY Club, Box 114, Como, Italy—also the address for the logs, which must be postmarked no later than December 24 to qualify.

Sign-Off and Deadline

And that is about it for this time; deadline for the November issue is **first post October 9,** addressed to CDXN, SHORT WAVE MAGAZINE, BUCKINGHAM. Thanks for all the interesting letters, 73 es gd DX.

THOSE EARLY CLUB CALLSIGNS

Anent the note on p.406 of the September issue of SHORT WAVE MAGAZINE—"Club Callsigns—Forty Years Ago"—we hear from Reg. Baker, G6QN (London, S.W.19) that he was the original holder of 6JB on behalf of the then Wimbledon Radio Society. He also mentions the following Club callsigns of the early 1920's, not included in our list in the September issue: Burton-on-Trent, 2CD; City & Guilds, 2CK and 5MQ; Brighton & Hove, 2KA; Cardiff, 2UN; Dartford, 2NI; Highgate, 2US; and Worcester, 2OZ.

Also we hear from E. A. Parsons, G6SU (now of Ryton, Co. Durham) who writes that at one period in those early days he operated 2KA on 440 metres for the Brighton & Hove Radio Society. The Hq. of this group was in the workshop of the Volk Electric Traction Co., which at that time ran a tram-way system along the front at Brighton, being the pioneers of this form of transport. The rig at 2KA in those days consisted of an MO-PA Tx with 460v. HT from the Brighton Corporation's three-wire DC mains—beautifully smoothed and, according to G6SU, giving "a first-class CW transmission." He obtained his own ticket in 1924 and is still happily at it from Co. Durham.

MCC—MAGAZINE CLUB CONTEST

For the 22nd year, we shall be running MCC, the *Magazine* Club Contest, which is a Top Band CW-only affair, in which Clubs and local Radio Societies throughout the country contend. The date this year is the week-end November 11/12, and the rules with full details appear in this issue. All operators interested in contest-style CW working on 160 metres are invited to join in, because—though the scoring emphasis is on inter-Club contacts—Clubs can make themselves some extra score by working stations not actually in the Contest. Indeed, in previous years the number of these "single-point QSO's" has often decided the winning Club, and those in the front positions—*see* pp.506-507.

QRP TRANSISTOR Tx FOR FOUR METRES

FOR LOCAL WORKING, USING TRANSISTORS THROUGHOUT

G. V. ENTWISLE (G3MXT)

THE circuit diagram shows a transmitter designed for the 70 mc (4-metre) band using cheap and easily available transistors. Several of these rigs have been constructed and have proved to be easily repeatable and fairly tolerant of component values.

A piece of *Lectrokit* pin board measuring 4¾in. x 4in. provides ample space for an experimental layout and in fact two models, one for 70 mc and one for 144 mc, were constructed without difficulty on *Lectrokit* strips measuring 4in. x 2½in., the miniature capacitors and resistors of the audio amplifier being closely grouped and mounted vertically. A copper screen 1½in. or so high was placed between the modulator and RF section with a screen between the driver and PA stages. Coils and chokes are mounted at right angles to each other to reduce couplings. Inductances L1, L2, L3 are air cored and self-supporting.

Circuit Points

The oscillator is of the overtone type and was found to produce third or fifth overtone oscillation quite readily, using 7 mc fundamental FT-243 xtals, *i.e.*, 7040 kc, fifth overtone 35·200 mc; 7850 kc, third overtone 23·550 mc. The circuit also works well with third or fifth overtone type crystals produced for the purpose. C2 and L1 resonate at the desired overtone frequency. RFC1 is nominally 1 mH but values down to half this may be used equally well. C3 can be any value between 47 $\mu\mu$F and 100 $\mu\mu$F, and should be tapped to L1 at a point where the setting of C2 is not too critical. Progressively moving the tap towards the collector increases the output until a condition is reached where the crystal can no longer maintain control.

Tr2 operates as a frequency doubler or tripler, C7 and L2 resonate at 70 mc. The position of the tap on L2 determines the level of drive to the PA and the amount of loading on Tr2.

During experiments with this circuit, the driver and PA transistors were run at quite high temperatures, the driver in particular being almost too hot to touch—which says a lot for the ruggedness of the P346A!

As the base tap is brought closer to its optimum position, the driver transistor runs cooler and the PA transistors warmer.

Setting Up

Initial tuning up may be carried out using a calibrated receiver with an S-meter; a 100-ohm resistor should be temporarily connected across the transmitter aerial socket, as a load.

The combined value of C11 *plus* C12 should normally be between 50 $\mu\mu$F and 150 $\mu\mu$F, depending on the aerial arrangements. At G3MXT a ¼-wave whip has been used, as well as a coax-fed 4-ele beam. Changing the aerial requires readjustment of C11 and probably C8 as well, as there is some interaction between the two. Therefore, final tuning must be done with the aerial connected and with the aid of an indicating absorption wavemeter.

The method of applying modulation, though very simple, is nevertheless quite effective and reports on the air have been very favourable. The microphone in use

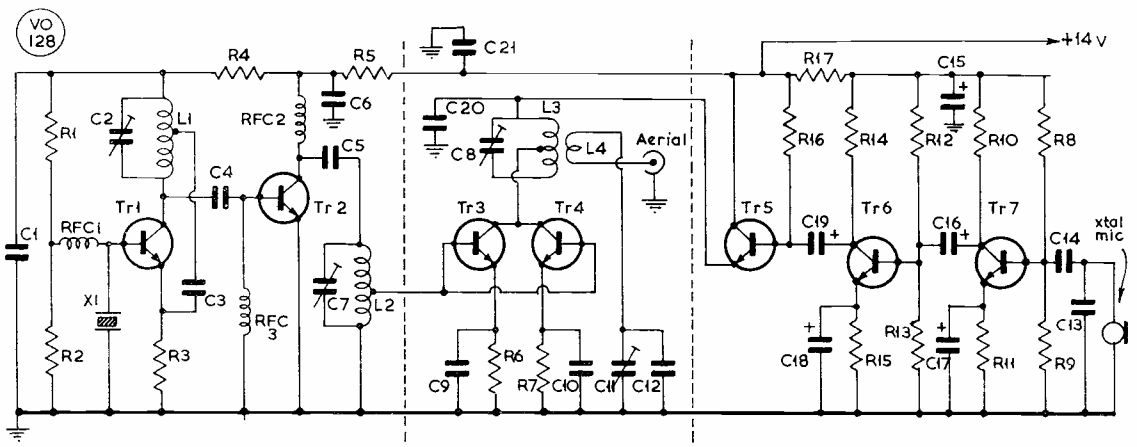


Fig. 1. Circuit of the G3MXT Transistor Transmitter for Four Metres.

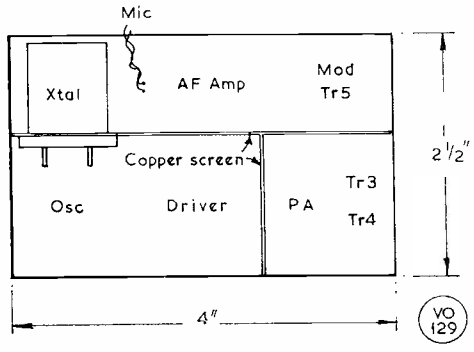


Fig. 2. Suitable layout arrangement for the G3MXT transistor transmitter—which is essentially a QRP job.

was crystal insert, and nothing more than the simple two-stage audio amplifier shown was required for adequate output.

With a 14-volt supply, the voltage on the PA was about 10 volts, and when tuned up and operating the PA current was in the region of 30 mA.

RFC2 and RFC3 were made by close-winding 36g. enamelled wire on small ½-megohm resistors, using the resistor wire ends for connecting.

Though the input is of the order of only one-third of a watt, good contacts are possible over local distances, *e.g.*, RS-59 at 15 miles, when using the 4-ele Yagi—and even with an indoor dipole, the signal gets out round the town. The author would like to record his thanks to G3RIK and G3SXT for their assistance, mentioning also that the same basic circuit can be used for the two-metre band providing that a 72 mc overtone crystal is used.

Table of Values

Fig. 1. Circuit of the G3MXT 70 mc TTx

C1, C6, C9, C10, C20, C21	= ·01 μF	R4	= 270 ohms
C2, C7, C8	= 40 μμF, ceramic trimmer	R5	= 27 ohms
C3, C13	= 100 μμF, s/m	R6, R7	= 47 ohms
C4	= 4·7 μμF, s/m	R8	= 82,000 ohms
C5	= 220 μμF, s/m	R9	= 18,000 ohms
C14	= ·047 μF	R11, R15	= 1,000 ohms
C15	= 20 μF	R12	= 22,000 ohms
C16, C17, C18, C19	= 6·4 μF	R16	= 10,000 ohms
C11, C12	= *see text*	R17	= 1,500 ohms
R1, R13	= 3,300 ohms	Tr1, Tr2, Tr3, Tr4	= P.346A
R2, R10, R14	= 4,700 ohms	Tr5	= C.426, 2N1302 or similar
R3	= 470 ohms	Tr6	= 2N2926, *orange*
		Tr7	= 2N2926, *green*

TABLE OF COIL DATA

L1 — 12 turns 22g. tinned copper, $\frac{5}{16}$in. dia. by $\frac{3}{4}$in. long, tapped 2¼ turns from cold end.

L2 — 8 turns 22g. tinned copper, $\frac{5}{16}$in. dia. by ½in. long, centre-tapped.

L3 — 6 turns 20g. tinned copper, ½in. dia. by ⅝in. long, collector tap 3¼ turns from cold end.

L4 — 4 turns 22g. p.v.c., close-wound over cold end L3.
RFC1, RFC2, RFC3 — Wound on resistor bodies, *see text*.

VHF LISTENING IN THE U.S.

From American radio magazines, it is astonishing to see SWL receivers offered specifically for the purpose of listening on the U.S. Police and Fire Dept. frequencies —which is, of course, most definitely forbidden by our licensing system, a ruling which is in accordance with the I.T.U. agreements (and not just a regulation invented by the Post Office to be awkward).

One American advertiser has a receiver, called the " Patrolman " which tunes, with the AM/BC MW band, the 30-50 mc and 152-174 mc bands in which the U.S. Police and Fire services operate—as well as other interesting networks, such as the railways, civil defence and certain airline services. In fact, it is said that the New York City Fire Dept. will QSL DX reception reports! All very odd, to say the least! The I.T.U. prohibition on listening over these commercial channels is to ensure the security of correspondence, like not having your letters opened or your telephone tapped. Indeed, it was not so long ago that, officially, listeners with ordinary BC licences were not supposed to eavesdrop on amateur-band transmissions!

WHO WOULD WANT IT?

Further to the note on p.441 of the September issue (" It Had to Happen "), W. E. Thompson, G3MQT, of St. Leonards-on-Sea, Sussex, writes that he nearly had it—in fact, at one time he seriously considered " booking " G3WET for himself. There is no doubt that call letters corresponding to the name or initials of the holder are thought to confer a certain *cachet*—like those " personal " car-registration numbers. And in this context, it might be mentioned that the callsign G6FO (first issued to the present holder in 1928), also G3SWM and its counterpart GB3SWM, did not come about entirely by accident!

". . . Method of mounting the mike here is a bit unusual . . ."

USING STUBS FOR HARMONIC REJECTION

ANOTHER APPROACH TO TVI

E. JOHNSON (G2HR)

THE use of *pi*-network output in modern amateur-band transmitters is almost universal. Although such a network is designed to work into an impedance of 70-80 ohms, it is a fact that one can match into both low and high impedance, provided that the divergence is not too great. For this reason, though certainly not the best of practices, it is possible to feed an end-on aerial direct without a separate ATU.

In areas of high field-strength near to a local TV station, one may well get away with this as regards TVI. The *pi*-section offers quite high discrimination against harmonics, attenuation being equal to the square of the offending frequency. TV Channel I in the London area is a problem, being in almost direct harmonic relation with the amateur bands. With the inevitable mismatch and consequent possibly high SWR on the coax output, actual losses are relatively unimportant, as inter-connections are short. However, in certain cases a voltage loop can be formed on the output capacitor. It is customary to switch in additional fixed capacitance, C3, here to cope with very low impedance aerials, and a high voltage developing at that point can destroy the component.

Quarter-Wave Stub Rejection

If harmonic interference is slight, a ¼-wave open-ended stub as connection in Fig. 1 could be the answer. This is cut to resonate at approximately 45 mc, or perhaps somewhat lower, and due allowance must be made for the velocity constant of the coax line. It is suggested that this be assumed to be around 0·7 at the most, which gives one leeway to snip off an inch or two at a time until rejection is at a maximum. Probably the best idea

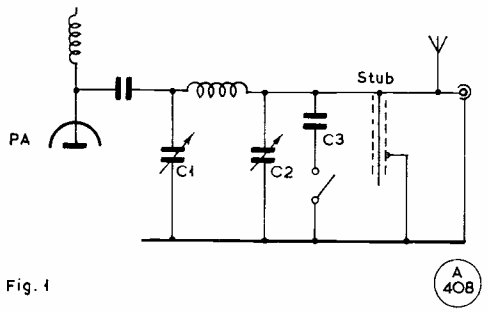


Fig. 1

Fig. 1. Method of feeding an end-on aerial direct, not generally recommended, though often used and in some instances quite effective. See text for drawbacks from the point of view of harmonics.

BAND	STUB Electrical Degrees	*Cot. L*	*Xc ohms*	CAPACITANCE (*approx.*)
3·5 mc	7·5°	7·6	608	75 μμF
7 mc	15°	3·7	296	77 μμF
14 mc	30°	1·7	136	84 μμF
21 mc	45°	1·0	80	95 μμF
28 mc	60°	0·6	48	119 μμF

Fig. 2. Effect of the rejection stub on amateur bands. Note in particular that difficulties can arise on 28 mc with a high-impedance aerial feed and the increasing reflected capacitance.

is to make a careful note of each successive length until one overshoots the mark. This only entails a small wastage, and the trial length can then be replaced with one cut exactly to size.

If the line were entirely loss-free, the impedance at the "home" end would be zero, evaluated by the expression :

$$Z_{sc} = \frac{Z^2_o}{Z_{oc}}$$

Where Z_o = characteristic impedance of stub, and Z_{sc}, Z_{oc} are short-circuited and open circuited ends respectively.

Theoretically, Z_{oc} is infinity, and as in practice it will certainly be very high, Z_{sc} will be correspondingly low. Very low-loss coax can have its disadvantages, as the "Q" will be high, making the adjustment of the rejection point quite critical. Here, it may be well worth while to experiment with high-value resistors at the open end. Although attenuation of the harmonic may be reduced, the "Q" will be lowered, and the rejection band-width broadened. It is, of course, absolutely essential for the stub to be thoroughly screened inside the transmitter after initial adjustments.

In many instances, a poorer quality coax stub may give better results, as a "lossy" line will have a broader resonance.

Effect on Pi-Network

Except at resonance, the stub will look like a capacitance at frequencies lower than this, and herein one can run into trouble, feeding direct into an end-on aerial the impedance of which will be high at the fundamental frequency and all its integral multiples. With high impedance, the loading condenser may well be approaching a low value in order to load up the PA to its normal rating.

The reflected capacitance can easily be worked out by considering the electrical length in degrees of the stub on the various amateur bands. At the ¼-wave position, *i.e.*, rejection frequency, the electrical length will be 90°, and no reactance will be reflected in. The table in Fig. 2 shows the capacitive reactance on the various bands, and the equivalent value of

capacitor. The formula for calculating this is $X_c = Z_o \cot 1$, where " 1 " equals length in electrical degrees.

It is interesting to note that at the 1/8th wave position (1 = 45°), the reactance is always equal to the characteristic impedance of the line.

When working into high impedance, as with most end-on aerials, it is clear that in many instances the reflected capacity may be such as to militate against full loading of the PA where, without the stub, C2 is near minimum. Although, and once again one must emphasise this point, a stub rejector alone can solve TVI problems in districts of high field-strength, it is obviously far better to employ an ATU, where reflected capacitance across the line is unimportant. The transmitter will now feed into a link of low impedance, where C2 certainly will be of quite a high value. The reflected capacitance of the stub will merely necessitate a slight reduction in C2 (Fig. 1). The inductance of the link should be chosen so that its reactance at the working frequency

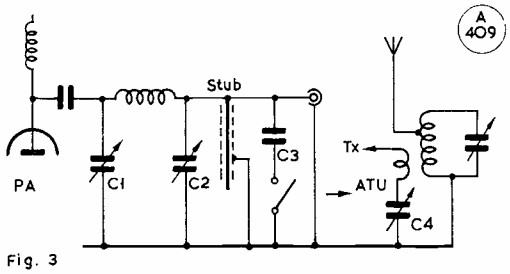


Fig. 3

Fig. 3. A far more effective method of aerial coupling, where the effect of stub reflected capacity is normally unimportant. Note C4, and see text, by which the nett reactance of the link is adjusted.

is equal to the characteristic impedance of the coax output, a point often ignored. Here, it is useful to insert a large variable capacitor C4 in one leg, say ·001 μF to make final adjustments, as shown in Fig. 3 above.

NOTE ON THE I.T.U.

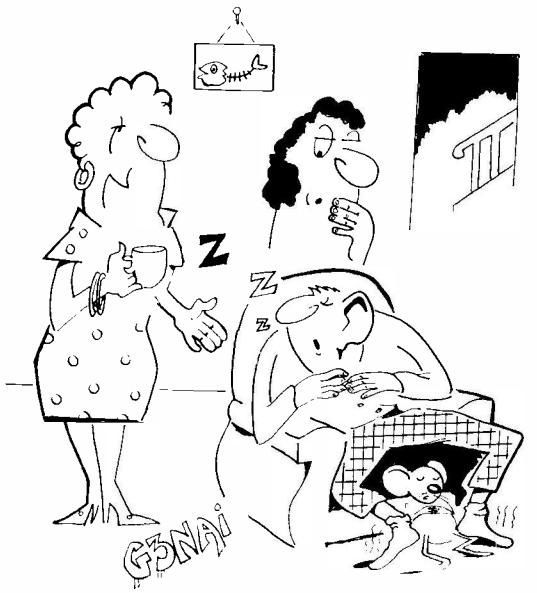
The International Telecommunications Union—the world authority on all matters affecting radio communication—did not become known as such until 1932, when the second meeting of all the world's communication authorities took place in Madrid. The previous conference of its kind was at Washington in 1927, when the international character of the problems of radio communication began to emerge, taking shape at Madrid five years later. It was not until 1947, at Atlantic City, U.S.A., that it was possible to hold another plenipotentiary conference (at which decisions could be taken for ratification by all countries concerned). The next I.T.U. international meeting was in Buenos Aires in 1952, followed by the Geneva conferences in 1959 and 1963, it having been agreed and decided by 1959 that Geneva should become the permanent Hq. for the I.T.U., now housed in a fine new building there, opened in 1962. The general intention is that main (plenipotentiary) conferences should be held every five years or so. The most important decisions affecting the Amateur Service—as it has come to be known—were probably those taken at Geneva in 1959.

WHEN WRITING TO US

On any subject, *please* scribe your name and address clearly—in block letters, that means—and if you hold a callsign always show that too. Because the whole fabric of Amateur Radio is based upon the licensing of AT-stations, we prefer to " deal in callsigns " wherever possible. And it is also very helpful to us if you can keep *different* subjects on *separate* sheets of paper. It saves a lot of office time in making transcripts and writing memos.

" VHF BANDS "

It is much regretted that because of heavy pressure of work and demands for space, it has not been possible to present the feature in this issue. All being well, A.J.D. will be back for the November " Short Wave Magazine, " due out on October 27.



" . . . It's always the same if he works a new one . . . "

• • • The Mobile Scene • • •

REPORTS AND PICTURES—NEWQUAY, DERBY AND SWINDON—REFLECTIONS ON THE SCENE

THIS has been the most active year yet on the Mobile Rally front—with about 2,400 U.K. amateurs now licensed for /M operation, attendances have been good at Rally events all round the country. As regards mobile band-occupancy, the great majority of mobileers (and that means about 80 per cent) keep to 160m. There are relatively few all-band /M's and looking higher in frequency, the VHF bands, two metres and four metres, claim most of the remainder.

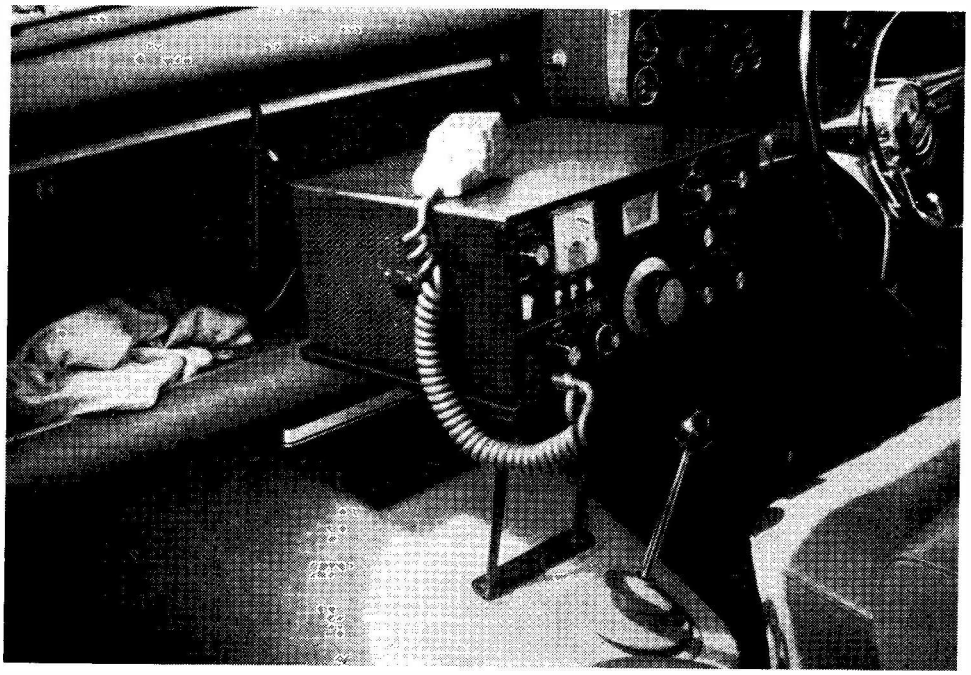
However, with the opening of 10 metres—confidently expected during the next few months—we should see much more 28 mc /M activity. It is a band ideal for DX working using simple resonant " spike aerial " radiators —in effect, all one needs to work VK/ZL on 10m. when the band is open is an 8ft.-whip, to create a ground-plane resonant at the frequency.

* * *

The Solo Mobile Expedition notion would appear not to have caught on, judging by the reports that come in—on the other hand, the actual activity heard on the 160m. air suggests that it has! We will think about this again for next season and probably try a few Sunday afternoons earlier in the year. There might be something in making this into some sort of a competitive event—but most people would probably prefer otherwise.

* * *

The Mobile Rally for Cornwall—at Pentire Head, Newquay, on July 23—was apparently the " perfect day " for the local organisers. They had 30 mobiles at the site with some long journeys made, from such places as Halifax, Cardiff and Manchester. And at the end it was found that the Rally had also been a modest financial success for the Cornish Amatuer Radio Club—well done!



Mobile installation for G5FH/M (L. H. Lee, 17 Knottsall Lane, Warley, Oldbury, Worcs.) as fitted in his Rover 3-litre coupe, above the gear-box tunnel, to avoid either interfering with the driver or inconveniencing the passenger. The rig is an FT-100 transceiver, which gives very good results over the 10-80m. bands using a Halson mobile whip, base-loaded, and mounted on the rear apron of the Rover. The FT-100 works very economically, being transistorised up to the Tx output stages, drawing only 2½ amps. when on Tx stand-by, and 12 amps. on " transmit," to give 120 watts p.e.p. output. Good DX has been worked when /M on the 10-15-20m. bands and G5FH mentions that—like G5LC, whose Rover /M installation was described on p.235 of our June issue—he had to obtain the advice and assistance of the Lucas Labs. in Birmingham to get all the car noises suppressed.

General view of the Rally site for the Mobile meeting organised by the Cornish Amateur Radio Club, at Pentire Headland, Newquay, Cornwall, on July 23. About 30 mobiles clocked in.

Impression of the main car park for the Derby Mobile Rally on August 13. It is estimated that about one thousand vehicles came in, for one of the most successful Rally events of the season.

The main event of the day at the Derby Mobile Rally on August 13—the mammoth junk sale. As usual, the hall was packed for this very popular event.

* * *

The Derby story—their Rally on August 13—is best told from the pictures accompanying this piece. An immense amount of organisation and background work goes into this event, to make it a very full afternoon for visitors, with numerous trade stands and side-shows. The honorary organiser is G3FGY, already making plans for next year's " Derby."

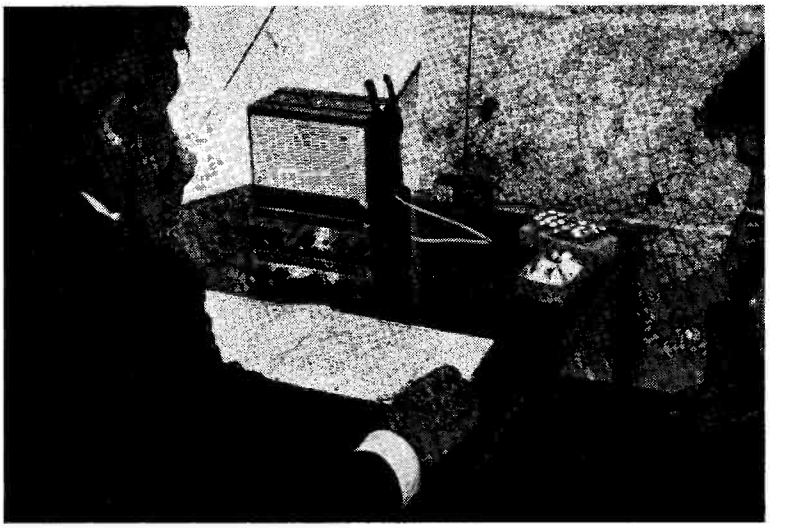
* * *

On August 20, the Stratford-on-Avon group held a Mobile Picnic, near the Theatre, for which a roped-off area was provided by the town council, free of admission charge. The attendance, on a fine and warm afternoon, was about 100 people, with 22 vehicles fitted mobile. This was the second such Stratford Picnic and was felt by the local group to have been a success, as their object was to provide facilities for a get-together rather than to try to put on a big Rally occasion.

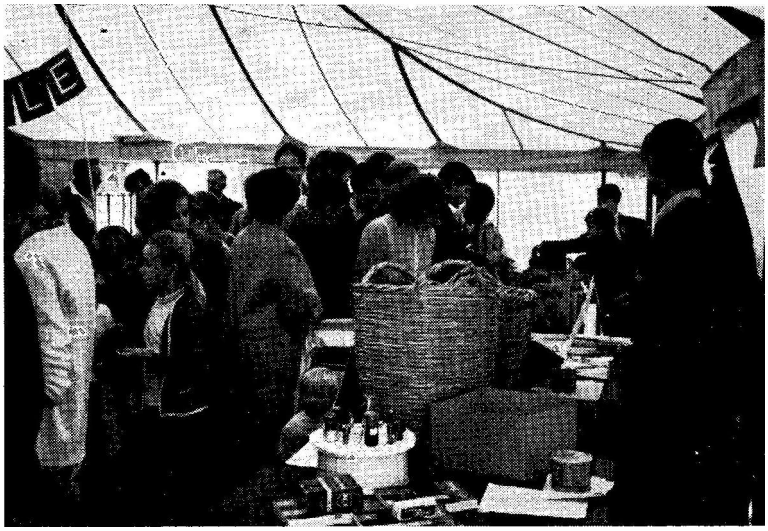
* * *

Another " second occasion " was the Mobile Rally organised by Swindon & District Amateur Radio Club at Lydiard Park, just outside the town, on September 3. With an attendance estimated at about 450 people, cars fitted mobile totalled 54—again, mainly for Top Band, which kept the 160m. talk-in station very busy. Accommodation on site comprised a large marquee to house the trade exhibition and the various side-show stands to be found on these occasions. A generous raffle and

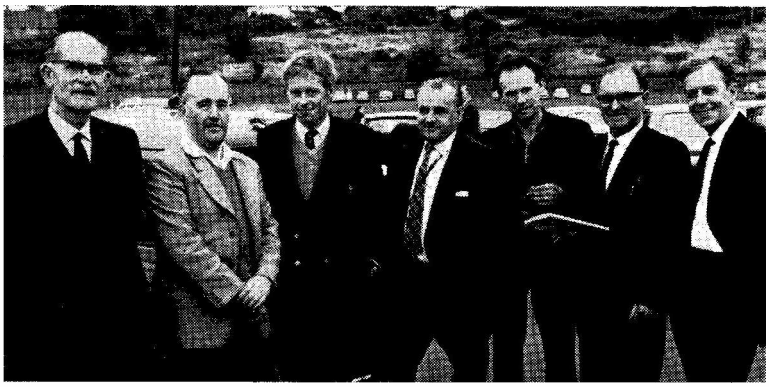
Upper left, the Top Band talk-in station G3ERD/A for the Derby Mobile Rally, manned by G3JFD and G3IJA when this picture was taken. Above, the president of the Cornish Amateur Radio Club, who is Miss Edna Cooper, G3UGO, making a presentation to Ron Hooper, G3SCW, well known in the south-west.



Above, for the Derby Mobile Rally in August, they had some nice equipment for the two-metre talk-in station signing G2DJ/A, here seen operated by G3SZJ, complete with local map. At right, the Top Band station working the mobiles into the Swindon Rally on September 3, with G3WIW in charge.



Not, as you might think, just another scene of housewives busy in a supermarket—but a general view inside the big marquee at the Swindon Mobile Rally, supported by about 450 people in 150 cars, of which some 45 were fitted /M.

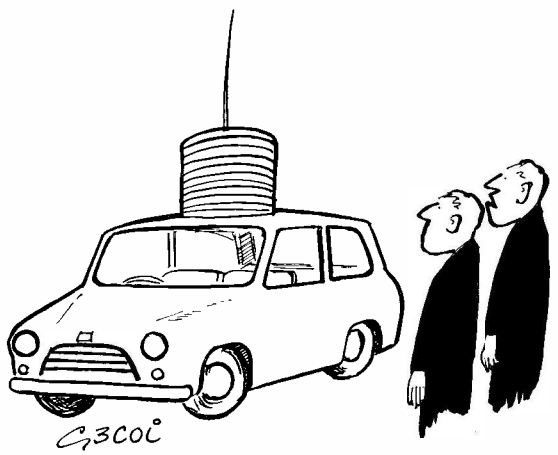


On left, a group of members of the East Lancs. Amateur Radio Club, who made the journey to the Derby Mobile Rally on August 13. Call-signs included in this picture are G3LCU, G4CJ, G8JA and G4JS.

programme gifts greatly pleased the visitors. The prize winners included: G3NXV/M, for mobile safety; G2HFG/M, best home-built rig; G3NAC/M and G8FU/M, for their commercial mobile installations; and G3NXV/M, for longest distance worked on talk-in. Though the Wx gave the Swindon group a bad start, it cleared up in the afternoon and the North Wiltshire Model Engineering Society were able to run their very impressive outdoor model railway layout—the sort of " side-show " that is a certain attraction on any Rally occasion.

* * *

By the time this appears in print, the 1967 Mobile Rally season will be over. By those who have undertaken the always-honorary and very onerous tasks of organisation, much has been learnt. Those mobileers keen enough to have taken in several of this year's Rallies will have formed opinions about what they most enjoy at a Rally, and will already have decided where they would prefer to go next year. But every year there is something new, or somewhere fresh to go, where Mobile Rallies are concerned.



". . . Yes, I know it looks a bit grotesque but the Q is marvellous . . ."

TAKING THE GEAR ABROAD

SOME EXPERIENCES AND FRUSTRATIONS

W. FARRAR (G3ESP/M)

WHEN the G3ESP/LX trip to Luxembourg was first mooted, it seemed prudent to enquire about possible documentation for the radio equipment—it would have been a bit frustrating if we had not been allowed to proceed through some Customs post.

An enquiry to the Dutch Customs at Rotterdam (our port of entry) produced the reply that we would need an *A.T.A. Carnet*, to be obtained from " the Chamber of Commerce in our District." Since we don't have one, a letter was sent to the nearest Customs and Excise office, nine weeks before the sailing date. About two weeks later, having received no reply, a telephone call elicited the response that the official concerned, *Mr. X*, was on leave—but he would be back next day, and the speaker guaranteed a reply in three or four days. After another couple of weeks, a further telephone call, asking for *Mr. X*, produced the reply that the official with the so-say was in fact *Mr. Y*—but he wasn't there, either. Eventually, our informant gave the address of the Customs Office in Hull (the port of departure). He also said that we needed an *A.T.A. Carnet*, and gave the address of the Leeds Chamber of Commerce, also of the division of the Board of Trade which deals with foreign business. A letter to the Leeds Chamber of Commerce produced sixteen sheets, which had to be partly filled in (including a bank guarantee form for the value of the equipment!)

All this seemed a bit hard referring as it did to " name of firm," " commercial samples," etc. A letter to the Board of Trade brought a pleasantly-worded reply, explaining that the *A.T.A. Carnet* was indeed required because—although some items of sporting equipment are allowed passage without formality, such as a cinè-camera, hunting gun, skis, etc.—an Amateur Radio station is not included in the list as scheduled. So the forms were duly filled in, the description of equipment being written *fifteen* times, and despatched to the Chamber of Commerce, with the demanded fee of five guineas. (In addition, the Bank charged half a guinea for its guarantee!)

The forms were returned, five days before departure (tied together with red tape) with a request to telephone the " details of usage." This conversation showed that there were apparently not yet enough forms, so more were sent, bringing the grand total to *twenty-three*.

Getting Away

So the journey began. We were cheerfully signed out of Hull and into Rotterdam. A little later, reaching the Dutch Customs post at the Belgian border, on the main Rotterdam-Antwerp highway, we were informed that, since it was Sunday, they didn't handle documents such as ours. Try the Belgian post, they said. Well, we thought, if the ON's are of similar mind we can't proceed—so we just drove on, without declaration. Between Belgium and Luxembourg there is no Customs post, so we arrived at our destination with the gear.

Homeward

On returning from the LX foray, we declared nothing (in fact, nobody asked us to), until we were about to embark at Rotterdam, and again on arrival at Hull. In all, of the twenty-three large sheets provided, five were taken up. Only Hull Customs on departure wanted to see the items and check the list. Nobody else did. On arrival back at Hull a different Customs man said: " We are not really bothered about documentation in a case like this. Sometimes you can have too much paper-work." (!).

So, a lot of toil and bother, not to mention five and a half guineas, were expended to little avail. Surely one's hobby apparatus, such as Amateur Radio, should be classified along with sports equipment, photographic gear, etc., and be transportable throughout Western Europe, at least, without documentation.

One fact is certain: The Automobile Association can*not* issue documents for such equipment. Their only concern is transport; and a tourist does not need any *carnet* for his expensive car (only for his relatively inexpensive Amateur Radio gear).

DIPLOMATIC WIRELESS SERVICE

When the trouble round our Legation in Peking reached its height, on August 22, it was announced by the Foreign Office that the last message from the radio operator there was to the effect that " . . . they are just coming in." It may surprise many people to know that direct, private radio circuits are maintained with all our Embassies, Legations and Missions abroad, so as to ensure quick and secure communication. Of course, all this is on a strictly reciprocal basis—that is to say, foreign diplomatic offices in this country likewise have their own similar services in the opposite direction. Hence, the simultaneous announcement by the F.O. that " wireless privileges had been withdrawn from the Chinese Legation in London."

The Diplomatic Wireless Service, operated as its private radio system by our Foreign Office, is a world-wide communication network with its own transmitting and receiving stations, cipher systems and design and research sections. Thus, the D.W.S. is now a large radio organisation in its own right. When one remembers that the Government itself, as well as the Navy, the Army and the Royal Air Force, also operate similar systems for their own requirements, one wonders whether there could not be an enormous saving in overheads by establishing one official common-user service . . . (it has been argued over for years! *Editor*).

THE MONTH WITH THE CLUBS

By "*Club Secretary*"

(Deadline for November Issue: October 6)

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

IT is now getting near MCC-time, and rules and full details appear on pp.506-507 of this issue. It will be noted that the only change from the basic rule-system, established by years of experimenting with variations (after all, this the 22nd annual event!) is in the identification coding—now a 3-character group. So far as possible, these identifications are of nearly equal "sending length."

Should there by any Clubs not included in the list on p.507, who wish to enter for this year's MCC, they should write in *straight away*. If necessary a supplementary list of such additional entries will appear in the November issue, due out on October 27.

So there you have it—and as the referee says to the boxers before the first round: "Now then, boys, you know the rules—I want a nice clean fight."

* * *

Stourbridge report the beginning of the autumn activities on October 3, when they get together at Longlands School, Brook Street, to hear G3HXN of Daystrom Limited explain the basic differences between AM and SSB.

It was recently our pleasure to mention the formation of the **Hereford** group in this piece; we now hear that already they have had to make a change of Hq. and for October they have the use of the Mortimer Room, Mortimer Road, for a Mullard filmshow. Unfortunately the date is not mentioned, but it is believed to be very soon after this issue appears—so contact the Hon. Sec. at the address in the Panel.

A first report comes in from Simon Langton Boys School *via* G3LCK, who has done so much to bring Amateur Radio to the notice of the educational authorities in the **Canterbury** area; they hope to be "on" in MCC, from the YHA in Canterbury.

A little tailpiece on the **Crawley** letter informs us that we did not print what they sent in August, and in September we got all the dates wrong—but this time they have managed to get in ahead of the deadline, and save us all the guesswork—it is to be an informal on October 11 (details from G3FRV), while the main session is slated for the 25th, when they meet G3EDD, Brian Armstrong, at Trinity Congregational Church Hall, Ifield, commencing at eight, to hear him talk on VHF.

Newspaper publicity is always a good thing, if it is of the right sort. Recently, **Harlow** shined in the report in the local paper about their first YL licensee, G8BBQ, who was featured over almost a full page. No doubt the membership, who have Hq. at Mark Hall Barn, will show a healthy increase each Tuesday evening as a result. Similarly, **Northern Heights**, who ran a station for the recent Jamboree-on-the-Air in conjunction with the Keighley Scouts, received a fine write-up in the *Keighley News;* a pity that, as their own local Troop was not in the least bit interested, they had to travel 20 miles to operate! For October, the 11th is set aside for a talk on Hi-Fi and Tape recording, and on the 25th, G6LD will explain SSB. November 6 is down for a visit to a local Brewery, to which the lads are all looking forward.

Cornish have their own publicity by way of their *Cornish Link*, which tells us that the October main meeting, at the SWEB Clubroom, Pool, Camborne, which comes off on October 5, is to be addressed by G3OFN, who will talk about the History and Development of Aerials.

Now to **Midland**, who, appropriately enough, meet in the Midland Institute. They have the TV section of the group in action on the 17th, when it is hoped to put on a demonstration of Amateur TV.

Halls Crost is the venue for the **Stratford** lads, it having proved to be very popular in the past; on October 6 and 20, there are "at homes," with the former devoted to a lecture on the Electron Microscope and the latter to Raynet. In addition, they are to travel to Coventry on the 13th, to hear a session on Electronic Thinking, given by Swanco Ltd. (Computery, one would imagine.)

Nice to hear again from **Lothians**, who will have a description of "Lighthouse Radio," from GM3VBB on the 12th, followed by a visitors night on the 26th, when they hope to entertain members of other clubs. These meetings are both to be held in the Board Room, YMCA, 14 South St. Andrew Street, Edinburgh, 2, with the kick-off for 7.30 p.m.

October 18, at Lindfield Primary School, near Haywards Heath, is the date and venue of the informal meeting of the **Mid-Sussex** crowd, who are to be addressed on the topic of the Design and Protection of Solid State Power Supplies, by the Hon. Sec. Earlier in the month, on the 4th, the formal meeting will have G3TR to talk about HF aerial systems.

* * *

Due to various circumstances outside their control, **Civil Service** were not able, at the time of writing, to advise us of their programme, but it is possible to say that it is all settled, and should be very much to the taste of the membership. It is suggested that anyone interested

should drop a line to G3KGM, as in the Panel on p.508.

First and third Friday is reserved for anyone who is a member of the **Purley** group, the venue being the Railwaymen's Hall, 58 Whytecliffe Road, Purley; the first session for October is a Natter Nite, and the latter a Mammoth Junk Sale(!)

Brighton Technical College A.R.S. have not written in for some months, but are now very much on the active list; however, all the members will be circulated with programme details as soon as they are known, owing to the need to sort out the timetables of the College staff before a date is finalised. Contact the Hon. Sec.—*see* Panel.

All the rewiring and renovations to the Club Shack having now been completed and G3CMH put back on the air, regular Wednesday evening sessions are once again the rule for the **Yeovil** chaps. They have Hq. at the Youth Centre, 31 The Park, Yeovil, and would welcome new members. As to the programme, there is a slide-show by the kind help of W1QCO, a joint evening with the lads of the South Dorset RS, to which other groups are also cordially invited, at which a demonstration of Heathkit equipment will be given, and various other things of interest. The Heathkit evening, for which a small charge will be made to cover the cost of refreshments, is arranged for October 27 at Hq.

Most months this column sees many club newsletters, and very enjoyable they are to read; but it is only occasionally that one comes across a really thought-provoking item, such as the editorial this time in the **Reigate** *Feedback*, on the topic of the less-enthusiastic member. It also tells us that they have somewhat of a feast in store for the meeting due on Wednesday, October 11, when they are to hear Charlie Newton, G2FKZ, talking on Meteorology and VHF—a subject on which he is a master.

Farther North is **Leeds**, who are once again active, with a session on Earths arranged for October 11, and a Junk Sale for the 25th. Venue for these is the Hq. at Swarthmore Adult Education Centre, 4 Woodhouse Square, Leeds, 3. Near at hand physically, and next on the clip is **Wakefield**, who have at last managed to get the callsign of their heart's desire, after a long wait—namely G3WRS. Like Yeovil, they have a home at the local Youth Centre, in Zetland St, Wakefield, where they are to enjoy a lecture on October 10 by two of their lads who recently went on a trip to Luxembourg.

A short note from **Leicester** this month advises that member Alan Conway has just become the youngest holder of a full licence in the City and County of Leicester, with G3WQL—a bit of a fistful for a CW operator, but congratulations all the same, not only to Alan but to the unmentioned lads who must have played a part in bringing it off. For the more mundane details of this thriving group we must recommend a call to the Hon. Sec.—*see* Panel.

Friday, October 13 is not in any way feared by the **Bromsgrove** chaps, it is clear, as they have chosen this as the date for their Junk Sale, at the Co-op Hall, Bromsgrove—but who could miss with the safest event of all on the Club calendar!

[*Cont'd on p.508*

MCC—TWENTY-SECOND ANNUAL TOP BAND CLUB TRANSMITTING CONTEST

RULES

1. ***Duration:*** Saturday, November 11 and Sunday, November 12; on both days between the hours of 1700 and 2100 GMT (eight operating hours in all).
2. ***Frequency and Power:*** All contacts to be made in the 1800-2000 kc band, using CW only, with a power input not exceeding 10 watts to the final stage. All reasonable precautions will be taken to avoid interference to other services using the band.
3. ***Call Signs:*** Where a Club has its own transmitting licence and callsign, that callsign is to be used. Clubs without their own call may nominate a member's station as their official entry.
4. ***Calling:*** Clubs will call " CQ MCC," using the " three times three " procedure. Infringement of this rule by the use of long CQ calls may entail disqualification.
5. ***Scoring:*** Other Club stations may be worked on each of the two days, and these contacts will count for three points each time. Non-club stations may be worked once only, and will count for one point only. Inter-Club contacts will take the form of an exchange of six-character groups comprising RST and the Club identification letters. (*See* p.507.)
6. ***Non-Club Contacts:*** Contacts with non-Club stations, counting for one point, will take the form of logging the RST and the QTH of the other station. The Club's own QTH, not the identification letters, should be sent to complete the QSO.
7. ***Logs:*** Contest logs are to be legibly set out as follows: One side only of quarto or foolscap sheets should be ruled into eight columns with *name and callsign of Club station on each sheet*, headed thus: Col. 1, *Date and Time.* Col. 2, *Callsign of station worked.* Col. 3, *Outgoing six-character group.* Col. 4, *Incoming six-character group.* Col. 5, *RST outgoing* (to a non-Club station). Col. 6, *RST Incoming* (from a non-Club station). Col. 7, QTH of Non-Club station. Col. 8, *Points claimed* for contact. Col. 8 is to be totalled at the foot of each page, and the running totals brought forward. The last page of the log should contain the following summary:

   Total score for Club contacts at three points per contact; this figure then to be multiplied by the Zone Multiplier (*see* p.507), *e.g.* a station in the GW Zone making 150 contacts would give the figure 450 and then apply the Zone Multiplier of 1·1, giving a total Club score of 495; *add* the total of non-Club contacts; total score. Add a declaration that the station was operated in accordance with the Rules and spirit of the Contest. Comments on the equipment, the number of operators, experiences, and impressions are invited, and should be added at the end of the Log.
8. Any Club station radiating a note consistently worse than T9 will be liable to disqualification.
9. Logs, addressed to " Club Secretary," SHORT WAVE MAGAZINE, BUCKINGHAM, must be posted to reach us not later than Friday, November 24, 1967. The Editor's decision on the results will be final, and will be published in the January, 1968 issue of SHORT WAVE MAGAZINE, due on December 29.

THE MCC ZONES

Although, under the rules, all Club contacts count for the same score of three points, and there is thus no need to know the Zone in which the station worked is located, it is necessary for each Club to know the Zone in which it is itself located, for the purpose of applying the multiplier to its own final score of Club contacts. The Zones are as follows:

GM Zone:	All Scottish counties.
Northern Zone:	Northumberland, Durham, Cumberland, Westmorland, Lancashire, and Yorkshire.
Midland Zone:	Cheshire, Derby, Shropshire, Stafford, Hereford, Worcester, Warwick, Nottingham, Lincoln, Leicester, Rutland, Northampton, Bedford, Huntingdon, Cambridge, Norfolk, Suffolk.
Southern Zone:	Somerset, Dorset, Gloucester, Wilts., Berks., Hants., Oxford, Bucks., Herts., Middlesex, Surrey, Sussex, Kent, Essex, London.
South-Western Zone:	Cornwall and Devon.
GW Zone:	All Welsh counties.
GI/GD Zone:	All GI counties and the Isle of Man.
GC Zone:	Channel Islands.

Scoring

The score for Club contacts only will be arrived at by counting three points per contact (irrespective of Zone) and then applying to the total the following multiplier:

GM Zone: 2·0
Northern Zone: 1·25
Midland and GW Zones: 1·1
South-Western Zone: 1·5
GI/GD Zone: 1·6
GC Zone: 1·3
Southern Zone: 1·0

IDENTIFICATION CODES FOR CLUBS IN "MCC"

A01	Acton, Brentford & Chiswick
A02	Addiscombe
A03	A.E.R.E. (Harwell)
A04	Ainsdale
A06	Ashton-under-Lyne
B01	Baden-Powell House
B02	Barry College of Further Education
B04	Basildon
B05	Basingstoke
B06	Bedford
B07	Bishops Stortford
B08	Blackpool & Fylde
B09	Bradford
B10	Brighton College of Technology
B11	Brighton Technical College
B12	Bristol
B17	Bromsgrove
B18	Bury & Rossendale
B19	Ballymena
C01	Cambridge
C02	Cambridge University
C03	Cardiff
C04	Chelmsford
C05	Chesham
C06	Chester
C07	Cheshunt
C08	Chiltern
C09	Chippenham
C10	Civil Service
C11	Clifton
C12	Conway Valley
C13	Cornish
C14	Cossor
C15	Coventry
C16	Crawley
C17	Cray Valley
C18	Crystal Palace
C19	Culceth
D01	Derby
D02	Dorking
D03	Dudley
D04	Durham City
D05	Dynamics RC, Coventry
E01	East Lancs.
E02	East Worcs.
E03	Echelford
E04	Edgware
F01	Fareham
F02	Farnborough
F03	Fawley
F04	Flint
F06	Fylingdales
G01	Glasgow University
G02	Glenrothes
G03	Grafton
G04	Greenford
G05	Greenock
G06	Guildford
G07	Guernsey
H01	Halifax
H02	Harlow
H03	Harrow
H04	Havering
H05	Hemel Hempstead
H06	Hereford
H08	Hull
I01	Ipswich
K01	Keele University
L01	Leeds
L02	Leicester
L03	Lichfield
L04	Liverpool
L05	Liverpool University
L06	Lossiemouth
L07	Lothians
L08	Luton
L09	Lowland Royal Signals
M01	Magnus
M02	Maidenhead
M03	Maidstone
M04	Mansfield
M05	Medway
M06	Melton Mowbray
M07	Mid-Herts.
M08	Midland
M09	Mid-Sussex
M10	Mid-Worcs.
N01	Nailsworth
N02	Newark
N03	Newham
N04	Norfolk
N05	Northampton
N06	Northern Heights
N07	North Kent
N08	North Liverpool
N09	Nottingham
N10	Nottingham University
N11	Nuneaton
P01	Paddington
P03	Peterborough
P04	Plymouth
P05	Port Talbot
P06	Preston
P07	Purley
R01	Racal
R03	Radio Club of Scotland
R04	Reading
R05	Reigate
R06	Rhyl
R07	Roding Boys
S01	St. Helens
S02	Salisbury
S03	Salop
S04	Saltash
S05	Scarborough
S06	Scunthorpe
S07	Shefford
S08	Silverthorn
S09	Skegness
S10	Southampton
S11	South Birmingham
S12	South Downs
S13	Southgate
S14	South London Mobile
S15	South Manchester
S16	Southport
S17	South Shields
S18	Spen Valley
S19	Stevenage
S20	Stockport
S21	Stoke-on-Trent
S22	Stourbridge
S23	Stratford-on-Avon
S24	Surrey
S25	Sutton and Cheam
S26	Sutton Coldfield
S27	Swindon
S28	South Bucks
S29	Simon Langton School
S30	STC, Harlow
T01	Thames Valley
T02	Torbay
V01	Verulam
W01	Wakefield
W03	Wessex
W04	West Kent
W05	Westmorland
W06	Wimbledon
W07	Wirral
W08	Wolverhampton
W09	Worcester
W10	Worthing
Y01	Yeovil
Y02	York
701	73SSB Society

(*NOTE:* This list includes all Clubs reporting to "The Month with the Clubs" during the past year. Other Clubs desiring to enter this year's event should write in, immediately, for identification codes, enclosing a stamped addressed envelope. Letters should be addressed "MCC," SHORT WAVE MAGAZINE, BUCKINGHAM.)

EXAMPLES FOR OPERATING

Coventry works Derby, sends 579C15; Derby replies 569D01. Or Racal works Paddington, receiving 589P01 and sending 589R01.

EXAMPLES FOR SCORING

Cornish (C13) in South-Western Zone makes 75 Club contacts and ten single-point (non-Club) QSOs. The score for Club Contacts is 75 x 3 (225) and the multiplier allowed is 1·5, bringing this up to 337. Total score is thus 337 plus 10 equals 347.

Radio Club of Scotland (R03) in GM Zone, makes 45 Club contacts and ten single-pointers. The score for Club contacts is 45 x 3 (135) and subject to a multiplier of 2, bringing it up to 270. Total score of 270 plus 10 equals 280.

Picture Sizes

Dorking seem to have well and truly killed the gremlins in that van of theirs—but, sad to say, they have killed the useful one that made the van boil every time it saw a pub at the top of a hill—shame! On a more serious tack, they query the method of producing photographs suitable for reproduction. Postcard or half-plate black-and-white prints with plenty of " bite " made on glossy paper, and preferably glazed, is about the form; the extra bit of bite is put in because the process of reproduction tends to flatten contrasts, so that a tendency to soot-and-whitewash reduces down to a very acceptable picture when it is reproduced. What we do *not* want are transparencies and minute negatives! The Dorking group get together on the second and fourth Tuesday of each month, and so the 10th is an informal at the " Wheatsheaf," with the formal on the 24th, programme for the evening not as yet finalised.

A previously advertised but postponed talk on printed circuits is the fare for **Maidenhead,** who have put this one back to October 2, while the informal session is on Tuesday 17th, both at the Victory Hall, Cox Green, Maidenhead.

* * *

Bristol mention that over the Bank Holiday weekend they were able to run a trip to an uncrowded beach, at the Mumbles, near Swansea, with a little mobile operation thrown in, albeit they found the Hifix and Loran beacons on Top Band rather strong. There are various things " in the pipeline " for the next few months, for details of which contact the Hon. Sec.

Four meetings in the month of October is the form at **Bradford;** October 3 is a lecture on Radio Control of Models by Mr. Boothroyd; on the 10th a visit, still to be finalised at the time of writing; the 17th is given over to a Tape-and-Slide lecture on basic valve circuits, and the month is nicely rounded off by a Surplus Equipment Sale.

From **Plymouth** we have a copy of their *QUA* which advises that they are to be found at Virginia House Settlement, near Breton Side Bus Station, every Tuesday. Alternate weeks are given over to a construction class. They went up on Dartmoor for the VHF Field Day, and seem to have had a whale of a time in spite of more than a fair share of Murphy's Law, in the way of broken tent-poles, high winds and water, water everywhere.

Names and Addresses of Club Secretaries reporting in this issue :

ACTON, BRENTFORD & CHISWICK: W. G. Dyer, G3GEH, 188 Gunnersbury Avenue, Acton, London, W.3.
ADDISCOMBE: S. E. Fuller, 116 Shirley Way, Croydon, CRO-8PE. (*01-777-1298*).
A.E.R.E. (HARWELL): V. J. Galpin, 46 Harcourt Road, Wantage, Berks.
A.R.M.S.: N. A. S. Fitch, G3FPK, 79 Murchison Road, London E.10.
BRADFORD: E. G. Barber, G3OTO, 63 Woodcot Avenue, Baildon, Yorks. (*Shipley 58269*).
BRIGHTON TECHNICAL COLLEGE: R. A. Bravery, G3SKI, 7 Copse Hill. Brighton, 5 (*506418*).
BRISTOL: E. J. Davis, G3SXY, 72 North View, Westbury Park, Bristol, 6.
BROMSGROVE: J. Dufrane, 44 Hazelton Road, Marlbrook, Bromsgrove, Worcs.
BURY & ROSSENDALE: A. Cooper, 411 Holcombe Road, Greenmount, nr. Bury.
CIVIL SERVICE: D. McLennan, G3KGM, 52 Pinewood Avenue, Sidcup Kent.
CORNISH: W. J. Gilbert, 7 Poltair Road, Penrhyn, Cornwall.
CRAWLEY: R. G. B. Vaughan, G3FRV, Tralee, 5 Filbert Crescent, Gossops Green, Crawley (*23359*), Sussex.
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. Uundedown, G3MBK, c/o J. Greenwell, G3AEZ, Eastfield, Henfold Hill, Beave Green, Dorking, Surrey. (*Newdigate 236*).
ECHELFORD: D. Walmsley, G3HZL, 153 Worple Road, Isleworth, Middlesex. (*POPesgrove 3239*).
FARNBOROUGH: D. G. Arigho, G3NVM, 6 Frensham Close, Yateley (*2174*), Camberley, Surrey.
GLENROTHES: E. H. Ross, GM3LWS, 24 Ettrick Way, Glenrothes, Fife.
GRAFTON: E. A. Rudolph, G3SIL, 29 Pangbourne Drive, Stanmore, Middlesex.
GUERNSEY: J. E. Dauncey, The Lodge, La Corbinerie, Overlands, St. Martin's, Guernsey, C.I.
GUILDFORD: A. Wilkes, Schiehallion, Hookley Lane, Elstead, Godalming, Surrey.
HARLOW: R. Brown, G3TOF, 177 Radburn Close, Harlow (*23517*), Essex.
HEREFORD: B. Edwards, G3RJB, 5 Powys Walk, Hereford.
LEEDS: M. Goldman, 8 Nunroyd Road, Leeds, 17. (*681871*).
LEICESTER: J. T. McAllister, 239 Sturdee Road, Eyres Monsell, Leicester. (*Wigston 6157*).
LOTHIANS: A. J. Masson, GM3PSP, 20 Merchiston Park, Edinburgh, 10.
MAIDENHEAD: E. C. Palmer, G3FVC, 37 Headington Road, Maidenhead, Berks.
MEDWAY: P. Carey, G3UXH, 29 Miskin Road, Hoo, Rochester, Kent.
MIDLAND: C. J. Haycock, G3JDJ, 29a, Wellington Road, Handworth, Birmingham 20.
MID-SUSSEX: E. J. Letts, G3RXJ, 87 Meadow Lane, Burgess Hill, Sussex.
MID-WARWICKSHIRE: M. Spencer, G3UOD, NBS 3rd Line, Royal Air Force, Gaydon, Warwickshire.
NORTHERN HEIGHTS: A. Robinson, G3MDW, Candy Cabin, Ogden, Halifax (*64329*).
PLYMOUTH: G. Clark, 19 Beverston Way, Widewell, Roborough, 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.
REIGATE: D. Thom, G3NKS, 12 Willow Road, Redhill, Surrey. (*Reigate 45033*).
SALOP: W. Lindsay-Smith, G3WNI, 22 Kingswood Crescent, Copthorne, Shrewsbury.
SALTASH: D. Bowers, 95 Grenfell Avenue, Saltash, Cornwall.
SHEFFORD: D. A. Pike, G3VMI, 11 Hazel Grove, Stotfold, Beds.
SIMON LANGTON BOYS SCHOOL, CANTERBURY: D. Bradford, G3LCK, Highfield, Long Hill, Chilham, Kent.
SKEGNESS: N. Hodgson, G2ABK, 26 Raithby Road, Hundleby, Spilsby, Lincs.
SOUTH BIRMINGHAM: A. Bishop, 40 Cecil Road, Birmingham, 29.
SOUTHGATE: A. Dutton, 77 South Lodge Drive, Southgate, London, N.14. (*LABurnum 3390*).
SOUTHPORT: N. K. Waring, G3WQP, 33 Chesnut Street, Southport, Lancs.
STOURBRIDGE: R. A. G. Macintosh, 50 Field Lane, Oldswinford, Stourbridge, Worcs.
STRATFORD-ON-AVON: G. Edinburgh, G3SDY, 7 Magdalen Close, Lower Quinton, Stratford-on-Avon.
SUTTON COLDFIELD: J. E. Symes, G3LNN, 20 Plantsbrook Road, Walmley, Sutton Coldfield, Warwickshire.
SWINDON: E. J. Andrews, G3JAP, 56 Windsor Road, Swindon (*21402*).
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.
WOLVERHAMPTON: J. P. H. Burden, 28 Coalway Road, Wolverhampton.
YEOVIL: D. L. McLean, G3NOF, 9 Cedar Grove, Yeovil, Somerset.
73 SSB SOCIETY: E. S. Ellis, G3LSF, 5 Woodmoss Lane, Bescar Lane, Scarisbrick, Ormskirk, Lancs.

Station of G3OGO, Malcolm Nisbet, 57 Haling Park Road, South Croydon, Surrey, who is employed by the BBC to compere their new World Service programme, called "World Radio Club" and designed to appeal to SWL's and those interested in DX reception. The Club's on-the-air schedule was given on p.291 of the July issue of "Short Wave Magazine."

Newsletter Note

The editorial comment in this month's *QAV*, from **Harwell,** discusses the rights and wrongs of sending copies of it to SHORT WAVE MAGAZINE—it seems some members think it is a waste of time, since with so many we get each month there would hardly be time to read them all. How very wrong this is! In fact, all of them are read from cover to cover by your scribe, and not only enjoyed, because it is a great help in compiling this piece to get a " feel " for the liveliness or otherwise of a group. Incidentally the current issue of *QAV* is the first for years not to have been produced by G2HIF—but G3HS, who appears to have turned this one out, is a worthy substitute indeed.

Talking still on the tack of Newsletters, one thinks immediately of the **A.R.M.S.** *Mobile News*. The July/August issue is one of the best to come across this desk for some time, by way of several articles on aerials and operation that really give the practical answers.

The beauties of the countryside are things to be shared as well as to be enjoyed; this seems to be the view of the **Acton, Brentford and Chiswick** crowd who are all taking their holiday slides with them to project at the session on October 17. The usual venue, of course, at 66 High Road, Chiswick, and visitors always welcome.

G3OTN is the speaker at the next **Echelford** meeting, on the subject of Transistor Manufacture, the date for this one being October 26. As for the November session, it is down for November 30 and will be addressed by Mr. J. R. Turner, of the GPO. Not surprisingly, the topic is to be Interference Detection, and it should attract a large crowd, and some visitors as well, to help Echelford meet their target of a membership of 80 by the end of their year.

October 13 and 27th are the dates for this month's meetings of the **Guildford** chaps, the latter being a Natter Nite, while the programme for the former was still to be resolved at the time of writing owing to a slight hiccup " in the system."

Devils for punishment are the **Southport** crowd; they have one visit, to the British Rail Signal Box at Edge Hill, on a date not mentioned, but otherwise all effort is to be devoted to raising *more* 50-foot masts.

October in **Salop** is AGM-time, on the 12th to be precise, at 7.30 sharp at the Old Post Office Hotel in Milk Street. Later in the month, on the 27th, there is to be a Dinner-Dance, at the Oak Hotel, Shrewsbury, at a charge of 20s. per head, to which they would be happy to entertain some visitors.

A new event will appear on the Mobile Scene next year if the **Westmorland** ideas come to fruition; seems that the Morecambe and the Ulverston groups are also involved, with the probable venue to be Morecambe. In the interim, meetings go on as usual, on the first and third Friday, at the Allen Technical College, Sandes Avenue, Kendal.

Another of the " regulars " to this piece is **Shefford,** who have supported a weekly meeting for years, and seem set to go on so doing for a long while yet, in spite of the fact that they are so located that getting lecturers must be extremely difficult. For October, the 5th is given over to a debate on questions posed in their recent Quiz; the 19th sees G3VMI on Elementary Radio Circuits, followed by G3UID on the design and construction of a Morse Monitor. The remaining evening, October 12, sees one of those famous Shefford Junk Sales, when visitors (with cash) are cordially invited.

October 5 is the date of the formal meeting of the **Cray Valley** group, at the Congregational Church Hall, Court Road, London S.E.9., when they are to hear a talk given by Electroniques. October 19, therefore, is the date for the informal, at All Saints' Church Hall, Bercta Road, New Eltham; visitors, of course being welcome in both cases.

Now to **Verulam,** where, most unusually we seem to be a little " out of phase " with the newsletter. However, we can say that they are a thriving, go-ahead crowd, and hold a monthly meeting at the Cavalier Hall, which

always has a first-class lecturer. In addition there is an informal, at Salisbury Hall, which is well worth a visit. For details, G3RXA is the chap to talk to—*see* Panel.

No slip-up with the **Wolverhampton** chaps—their session, on October 2, at Hq., Neachells Cottage, Stockwell Road, Tettenhall, is the all-important AGM.

Useful Test Item

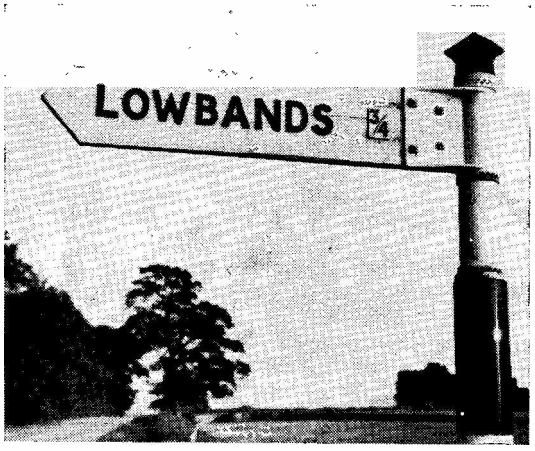
The front page of the **RAIBC** *Radial* is devoted to an Audio Field Strength Indicator, which enables any blind operator to tune up as accurately as a sighted amateur, on virtually any transmitter; a circuit diagram and notes will be supplied to any blind operator who wishes to get his own unit made up, or a ready-made version can be obtained from RNIB for the modest sum of 90s.

The organ of the **Saltash** crowd is *Tamar Pegasus*, and from it we gather that they assemble on alternate Fridays at Burraton Toc H Hall. Their recent Mobile Rally was quite a success, although weather was against them; however, it seems that a good time was enjoyed by all who made the journey—*see* report, " The Mobile Scene," September issue.

Having dealt with the formalities of enrolment and re-opening, **Grafton** kick off the autumn session with the AGM, which is to take place on October 6. A week later there is a practical evening, and on the 20th a Junk Sale. To round off the month, on the 27th they will be visited by G2MI to give a talk, the subject of which is not specified.

Every so often we have a note from **Skegness**, and the present one refers to their Autumn Junk Sale and Hamfest, which will be held at the usual venue, The Bull Hotel, Halton Road, Spilsby, on Friday, October 13, starting at 7 p.m. Those who have attended this one in the past will know that it is well worth the effort, and the small admission charge of 2s. 6d. to cover the expenses of running an extremely popular event with both locals and visitors.

Pressing on with the tour of the clubs, we next look at **Farnborough**, who advise that October 10 is the date, 310 Farnborough Road the venue, and " Basic Television " the subject, which will be dealt with by G3REL.



Not as you might think, a gimmick photograph—but a signpost you can see any time on the A.417 between Ledbury and Gloucester.

On August 17, G3NKL, chairman of the Southport Radio Society, was married to Miss Marjorie Hesketh—the best man was G3WQP, and this picture was taken by G3KXC.

Mid-Warwickshire are just in the process of shaking off the summer sloth, and as they say, they have a fine programme organised for the coming months. October 9 is reserved for a visit from G2YS, while on the 23rd a Tape Lecture on VHF Propagation (by Ed. Tilton, W1DHQ) will be played over.

It is always a pleasure to hear of a moribund group being revived, and this time the club concerned is the **Guernsey Radio and Electronics Society**—and they already have a membership of 65. Hq. is at The Lodge, La Corbinerie, Oberlands, St. Martins, Guernsey, Channel Islands. Let us hope that this revival is a permanent one, and to that end we wish them the best of luck with their efforts.

We were pleased to see from the **Crystal Palace** *Newsletter* that Stuart Yeomanson, G3UNF, is now at St. Christopher's Hospice at Sydenham, and capable of receiving visitors—this must indeed be welcome news to the group members; as for the October evening this is on Saturday, October 21, at Woodyates Road, S.E.12, when G3IIR and G3FZL combine forces to put on a Hi-Fi evening.

" Somewhere to meet " is a headache at one time or another to most groups, and **Medway** are at the moment scratching around; but it is understood that by the time this gets to print there may well be a solution to the problem. Thus, if anyone is contemplating hooking up with this lively crowd, a line to G3UXH seems to be indicated—*see* Panel, p.508.

Some members of Mansfield Amateur Radio Society—back row, left to right: G3VVE, G3DBF, G8HX, G3RZW; front row, SWL's Subczynski (ex-SP2VB), Sellors and G3TFU. Mansfield is one of those Clubs to have been re-activated fairly recently.

Up in the North again, at **Glenrothes,** they get together on the first Sunday and the third Wednesday in each month, at the local YMCA, commencing at 7.30. For the month of October there is a film (or slide) show, which comes up on the 2nd, followed by a Junk Sale on the 18th, in aid of the Club funds.

* * *

What should be an interesting evening for the younger element and a nostalgic one for the old-timers takes place on October 10 at the **Bury and Rossendale** Hq., the " Old Boar's Head," Bury. G3BN will reminisce on 40 years of Amateur Radio.

Sad to say **Sutton Coldfield** managed to miss the deadline last time, and so we have no news of the entertainment for October. However it is possible to say that there are two dates to be reserved in each month, with Hq. at the " Fox," Walmley, Sutton Coldfield. Judging by past events, this is a group well worth getting to know, easily done by contacting the Hon. Sec. at the address given in the Panel.

Swindon seem to have been taking advantage of the fine summer to spend time out-of-doors; so much so in fact that they have omitted to advise of their October activities—but once again a call to G3JAP will put that right.

The local Toc H Hall is the home of the **Addiscombe** Amateur Radio Club, at 158 Lower Addiscombe Road, Croydon, where they are to be found on the second and fourth Tuesday in each month; future plans include **a Junk** Sale, and lecture on a four-metre converter. For further details, ring the hon. secretary—*see* Panel.

One of the groups to go into recess in the summer is at **Southgate;** however, since the restart they have had a Junk Sale, and on October 12 they are to hear a lecture entitled " More about the Three-legged Monsters," which deals with the ins-and-outs of transistor circuit design, given by G3RVV.

The home of the **73 SSB Society** is 73 Avondale Road North, Southport and is being rapidly improved for Amateur Radio purposes, with a Cubical Quad aerial up for the HF bands and Inverted-Vees for 80 and 40 metres. There will also be transmitters for both AM and SSB available soon.

The absence of the **South Birmingham** *QSP* of late had been noted, and it was no surprise to find, when it did show up this month, that the reason was lack of support, in that no-one was prepared to do the hard work. However, although the problem has not yet been resolved, the fine result obtained from their NFD operation persuaded someone to push out a special issue—and a fine effort it is. As for the meetings, these are held at the Scouts' Hut, Pershore Road, Selly Park; the October affair is to be the Annual General Meeting, on the 18th.

And that seems to be about the story for this time. For the next issue, the deadline will be **Friday, October 6,** addressed, as ever, to " Club Secretary," SHORT WAVE MAGAZINE, BUCKINGHAM. Meanwhile, see you at the Show.

R.A.E. COURSE LISTINGS

Because by the time this appears, the winter session at Technical Colleges and Evening Institutes all over the country will be well under way, we shall *not* be publishing any further lists of centres locally where the R.A.E. Course (Subject No. 55 in the City & Guilds syllabus) can be taken—see p.371, August and p.441, September. If your locality is not named in either of those lists, enquire at the office of your Education Authority as to what may be available in your district—mentioning " Subject No. 55, City & Guilds, Radio Amateurs Examination." We have since been informed of courses, already started, at the following centres: Leicester Regional College of Technology; Medway College of Technology; Stafford College of Further Education; and the Weston-s-Mare Technical College. Enquiries should be made locally at these centres.

THE OTHER MAN'S STATION

G3UCZ

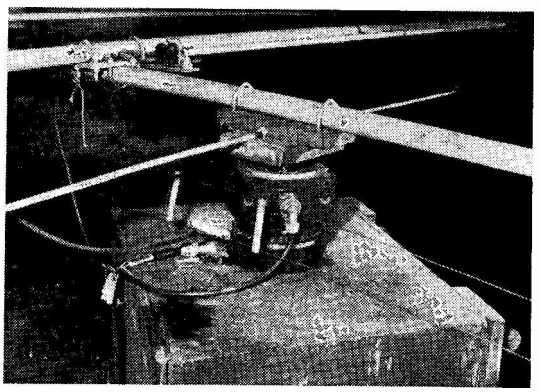
ALTHOUGH Kenneth Taunton, 170 Bradford Road, Stanningley, Pudsey, Yorkshire, has only been licensed, as G3UCZ, fairly recently, his interest in Amateur Radio goes back to school-days, in the early 1930's. The main operating interest is in the 10-15-20m. bands, though the LF bands are also worked.

Equipped with an end-fed long-wire—and it really is "long," 462 feet in fact!—also a home-constructed three-element rotary beam for 10 metres, using wire elements, operation on all bands 10-80m. is quite successful running only 30 watts input, AM/CW. In addition, G3UCZ has a beam for 15 metres, of the "plumber's delight" variety, which is particularly effective. Both beams are erected in the top storey of the house, with motorised control from the operating position in a ground-floor room—the driven end is seen in the lower picture.

On the receiving side, coverage of six bands is given by a double-conversion Radiovision "Commander"—no longer in production, and a very well-designed amateur band receiver which was years before its time—backed up by an HRO-MX, with a Codar PR-30X preselector also available.

For 160 metres, the Tx is a home-built job, capable of giving quite satisfactory results, while the main Tx, for the other bands, is a Chinese-copy of the K.W. "Vanguard." This transmitter, though only running 30 watts or so, works with a very efficient aerial for each band covered. In fact, G3UCZ counts himself fortunate in having such good antenna facilities.

As with so many others of us, time is always the factor, and in consequence as much of it as possible is spent in using the bands rather than in constructional projects. As regards activities locally, interest is centred on the Bradford Radio Society, of which G3UCZ is president for the current year.



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.

EI7BR, D. E. Fitzgerald, 114 Willow Park Avenue, Ballymun, Dublin, 11.

G3FMU, D. McDiarmid, Chesterfield Golf Club, Walton, Chesterfield, Derbyshire. (*re-issue*). (*Tel. Chesterfield 2035.*)

GD3VWN, R. C. Longworth, Ballaghaue, Kirk Andreas, Ramsey. (*Tel. Kirk Andreas 268.*)

G3WCQ, R. G. Bailey (*ex-G8AJY*), 43 Earlsdon Avenue South, Coventry, Warks. (*Tel. Coventry 73641.*)

G3WFK, J. Elliott, 14 Acacia Avenue, Denton, Manchester.

G3WGG, K. E. Wright, 24 Innings Drive, Pevensey Bay, Sussex.

G3WGQ, J. R. Hartley, 50 Frederick Street, Denton, Manchester, Lancs.

G3WJO, L. R. Bryant, 2 Broad Street, St. Columb (Major), Cornwall. (*Tel. St. Columb 393.*)

G3WLV, J. R. Bushby, 23 Beacon Road, East Gate Park Estate, Scarborough, Yorkshire.

G3WMR, F. J. P. Connor, 66 Coleraine Road, London, S.E.3.

GC3WMR, F. J. P. Connor, 7 Landfield Drive, St. Helier, Jersey.

G3WMN, E. J. Brice, c/o Spencer, 6 Watling Street, Towcester, Northants.

G3WPB, P. R. Smith, 76 Southfield Road, Hinckley, Leics.

G3WPL, A. Warburton, Melody, Nursery Close, South Wootton, Kings Lynn, Norfolk. (*Tel. Kings Lynn 4705.*)

G3WPP, D. C. H. Minett, 160 Bilford Road, Worcester, Worcs.

G3WPR, C. C. S. Richmond, 1 Grangeway Gardens, Redbridge, Ilford, Essex. (*Tel. 01-550 4732.*)

G3WPS, T. Wright, 2 Brickmill Road, Pudsey, Leeds, Yorkshire.

G3WPW, W. Moorcroft, 8 Kensington Place, Burnley, Lancs.

G3WPX, R. K. Rogers, 18 Maxwell Drive, Hazlemere, High Wycombe, Bucks.

G3WQA, H. Aldridge, 147 Butterthwaite Road, Sheffield, 5.

G3WQC, J. E. Baldwin, 12 Harefield Road, Maidenhead, Berks.

G3WQD, H. L. Rowe, 12-A Balgores Square, Gidea Park, Romford, Essex.

G3WQF, B. B. Charge, 144 Westward Deals, Kedington, Haverhill, Suffolk. (*Tel. Haverhill 2470.*)

G3WQG, D. F. Chalmers, 25 Willow Close, Flackwell Heath, High Wycombe, Bucks. (*Tel. Bourne End 22973.*)

G3WQN, L. Smith, 1 Stanton Road, Marden Estate, North Shields, Northumberland.

G3WQQ, K. Williams, 70 Langley Crescent, Woodingdean, Brighton, Sussex. (*Tel. Brighton 34177.*)

G3WQS, T. Jow, 37 Basegreen Avenue, Sheffield 12, Yorkshire.

G3WRK, G. Oakes, 45 Hamilton Road, Derby. *DE3 6RU.*

G3WRQ, F. E. G. Cox, 35 Thompson Place, Whitecross, Hereford.

G3WRW, D. R. Dedman, 37 Falmouth Road, Whitley Wood, Reading, Berks. (*Tel. Reading 883655.*)

G8BAN, G. E. Probets, 38 Horley Green Road, Claremount, Halifax, Yorkshire. (*Tel. Halifax 60023.*)

G8BAQ, B. Kneller, 59 Irving Place, Blackburn, Lancs. (*Tel. Blackburn 57292.*)

G8BBL, J. Tring, St. Anthony, Glenthorne Gardens, Sutton, Surrey.

G8BBW, M. C. D. Mann, Ashdown, Four Acres, Miles Lane, Cobham, Surrey.

CHANGE OF ADDRESS

DL2AH, J. T. Worrall, HQ 6 Inf. Bde and Sig. Sqdn., B.F.P.O.17.

G2DCF, J. P. Walker, 16 Himley Road, Clayton, Manchester 11, Lancs.

G3CDY, R. W. Roberts (*ex-GW3CDY*), 143 Meadow Way, The Firs, Hellesdon, Norwich, NOR.86-N.

G3JDP, A. B. Altschul, 136 Pennine Drive, London, N.W.2.

G3KPY, J. Pershouse (*9M2DQ*), 50 Brattle Wood, Sevenoaks, Kent.

G3MXO, D. V. Walters, 161 St. Saviours Road, Alum Rock, Birmingham, 8.

G3NRO, P. Gill, Barrats Stile, Park Lane, Bewdley, Worcs.

G3NRW, A. I. H. Wade, 11 Daubeney Close, Harlington, Dunstable, Beds.

G3OHL, D. S. White, 12 Alder Lea Close, Gilesgate Moor, Durham City.

G3ONR, B. Reynolds, Plot 7, Walnut Tree Estate, Turners Hill, Cheshunt, Herts.

G3OZT, R. A. E. German, 10 Beverley Road, Dibden Purlieu, Southampton. *SO4 5HS.*

GM3PGY, A. McEwen, 305 Keal Drive, Old Drumchapel, Glasgow, W.5. (*Tel. DRU. 1023.*)

G3PQE, J. Thorn, Jessamine House, Chapel Allerton, Axbridge, Somerset. (*Tel. Wedmore 270.*)

G3PYB, P. Blakeborough, Murphy's Rehearsal Rooms, 14-A Weston Street, Upper Norwood, London, S.E.19.

G3REP, R. E. Parkes, Flat 3, North Grove, 67 Abbey Road, Malvern, Worcs.

G3RUG, G. E. Twiss, 6 Bramway, Bramhall, Cheshire.

G3SBP, R. D. Gynn (*ex-VP2VD, G3SBP/KV4, 5N2RDG*), 111 Wetheral Drive, Stanmore, Middlesex. (*Tel. WORdsworth 0217.*)

G3VMT, T. J. Poole, Flat 4, Normanhurst, The Avenue, Crowthorne, Berks.

G3VRE, Chippenham and District Amateur Radio Club, c/o N. F. Cutter, 1 Fosseway Close, Colerne, Chippenham, Wilts. (*Tel. Box 664.*)

G3WBD, D. Tudor-Cole, 76 Green Drive, Rossall Beach, Cleveleys, Lancs. (*Tel. Cleveleys 5765.*)

G5CP, C. R. Plant, The Cottage, Gynn Lane, Milltown, Ashover, Derbyshire.

G6ACT/T, P. Blakeborough, Murphy's Rehearsal Rooms, 14-A Weston Street, Upper Norwood, London, S.E.19.

PHILOSOPHY OF QSL'ing

In the ordinary way, most keen radio amateurs start their on-the-air careers by paying very serious attention to the matter of QSL'ing. They send out their cards for all contacts, look out eagerly for the return-QSL's (which is when they often become a shade disillusioned) and finally reach a point where they become very sensitive on the whole subject of QSL'ing, *viz.* Why should I send cards for which I never get one back? Why do people promise to QSL, but don't? What is the point of this QSL'ing business, anyway?

There are no straight answers to any of these questions, which have been asked for at least 30 years. But the central fact remains that the QSL card has become one of the bricks from which the whole fabric of Amateur Radio has been built. Each generation of radio amateurs—and new AT-station licences are being issued every day, so that there is constantly a new infusion of interest—re-examines the QSL problem and reaches different conclusions. Some feel it their duty to QSL everything, and hope for the best in the way of returns. Others always keep a promise to QSL but never originate the process themselves. There are those who simply ignore QSL cards altogether, and perhaps never even have one of their own printed. A minority remain very punctilious about the whole business of sending and receiving cards—and these are not always the newly-licensed operators; many with senior callsigns have QSL'd everybody ever since they started, years ago.

But supposing one is not much interested in cards, what is one's duty in the matter of QSL'ing? What really should one do? The only suggestion we can make is always to feel it an obligation to respond to any card received for a logged contact. It is then up to the other man; the question of whether a card is to be sent (by him, in the first place) can be settled in the course of the QSO, on the understanding that when and if his card is received, it will be acknowledged. There is even an unofficial Q-Code group for this sort of process—*QSLL*, meaning " I will send you my card on receipt of yours."

If this principle could become generally accepted and understood (especially by the EU's on the HF bands!) we might in time be able to reduce the QSL traffic to wanted cards only.

ADDRESS TO NOTE

Enquiries on all AT-station licensing matters should be addressed to: Radio Services Dept., Radio Branch, (Amateur Licensing Section), Headquarters Building, G.P.O., St. Martin's-le-Grand, London, E.C.1. A useful pamphlet can be obtained on request, entitled *How to Become a Radio Amateur.*

SMALL ADVERTISEMENTS

(" SITUATIONS " AND " TRADE ")

9d. per word, minimum charge 12/-. No series discount. All charges payable with order. Insertions of radio interest only accepted. Add 25% for Bold Face (Heavy Type). No responsibility accepted for errors. Replies to Box Numbers should be addressed to The Short Wave Magazine, 55 Victoria Street, London, S.W.1.

JOB CHANCE

INTERESTING opening for radio amateur exists as Assistant RF Heating Engineer. Job requires some ability in general engineering workshop practice, including welding and silver-soldering, in addition to a knowledge of the construction of amateur-band transmitters. Associated with this work is a growing volume of transistor servicing. Training as necessary in any of these skills will be given. Please write, giving full details of experience, etc.—R. A. Moir, Personnel Manager, Weyburn Engineering Co., Ltd., Elstead, Godalming, Surrey.

TRADE

SINGLE-Copy orders for November issue, publishing October 27 (4s. post free) by Wednesday 25th.—Circulation Department, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

QSL Cards: Two-colour, attractive design, variable features, from £3 3s. per 1,000 (inclusive). Send foolscap s.a.e. for samples.—ARA Press, 46 Moat Avenue, Coundon, Coventry.

WANTED: First-class Motorised Caravan. SALE: Telecomm. UHF receiver. 300-1000 mc. 9 valves. AC mains, list £175, accept £150; also VHF version, 70-170 mc, accept £125. Both these receivers superb models, would exchange either for Eddystone 770R. Murphy high-power R/T system, cost £500, consisting as-new 25w. base station with two brand-new Rover transistor mobiles, all complete with crystals, cables, manuals and new aerials, accept £400. Deliver in London, Birmingham or Cardiff.—Page, G3HKV, Abbey Street, Crewkerne (2662), Somerset.

QSL CARDS: Attractive two-colour designs, 25s. per 100. Send s.a.e. for samples.—G3OYI, 16 Banks, Honley, Huddersfield, Yorkshire.

SPARES for AR88D and AR88LF receivers. Send s.a.e. for lists. HRO Coil Packs, 180 to 430 kc range, 6s. each, postage 4s. 6d.—A. J. Reynolds, 5 Headlands Way, Lingfield, Surrey.

GUARANTEED Valves: 956, 9001, EF91, 1s.; 6B8M, 6L7M, 2051, 955, 6AG5, 6AC7, 6AS6, 6BE6, 6AL5, ECC81, ECC82, 6AK5, Y65, VS110, 2s. 6d.; 6F6M, 6K7M, 6J5M, 6SJ7M, 954, 6X5, 5Z4G, 5U4, 6V6G, 6BA6, 53KU, 3s. 6d. 6N7M, 807, 6V6M, 2C51, 369A, 6AH6, 5Z4M, 6SC7, 5s.; 6B4G, 10s. Wire-ended silicon rectifiers, 800 p.i.v., 500 mA, guaranteed, 3s. Dummy Loads: 50-ohm 75w., 7s. 6d.; 200-ohm 25w., 2s. 6d.; 500-ohm 120w., 5s. RF chokes, 25 microH., 6d. Fifty-turn coil on ceramic former, 1-3/8in. diameter, 2s. Copies of VHF equipment circuits. Send for details and add post all items. Many other bits-'n-pieces in stock. Open all week.—Fish, G4MH. The Ham Radio Shop, 18 Town End, Golcar, Huddersfield (52653), Yorkshire.

In these columns, there is more paid Small Advertising of direct Radio Amateur interest than in any other similar periodical circulating in the U.K.

SMALL ADVERTISEMENTS, TRADE—*continued*

HUNDRED-PAGE Illustrated Catalogue No. 17 of Government and Manufacturers' electronic and mechanical surplus, including a completely new section covering the latest semiconductors and miniature components, with a credit voucher worth 2s. 6d. Send for your copy now, price 3s. post free. The reading alone is worth the money!—Arthur Sallis (Radio Control), Ltd., 93 North Road, Brighton, Sussex.

QSL Cards and Log Books, GPO approved, cheapest and best. Prompt delivery.—Samples from: Atkinson Bros., Printers, Looe, Cornwall.

FIVE TONS of Factory Clearance, Radio, TV and electrical components, in 15s. and 27s. 6d. mixed parcels, post free. Example: Resistors, condensers, potentiometers, speakers, coax, coils, fibre washers, valves, more than dozen different type tuning knobs, grommets, sleeving, IF cans, paxolin, wire, rectifiers, and lots of other items. It's Pot Luck! Post orders only.—P. L. Newton, 16 Shallcross Crescent, Hatfield, Herts.

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.

EXCHANGE: For a smaller and lighter Rx, an R.C.A. AR88D, unused, purchased new in Nov. '66 at cost £70. Receipt shown, and with manual, headphones and spare valves available.—Brooke, 120 Old East, Gravesend, Kent.

DONATION of £25 Wanted for local Orthopaedic Association in return for a mint JR-101 Rx, similar HE-30, purchased for member now silent key. Ask for details.—G3SCU, QTHR.

SALE: CR-150 Rx, with PSU and manual, coverage 2·0 to 60 mc, in good condition, £50. CR-100 receiver, battered but it works, and with manual, £10. Double-beam 'Scope, Type No. 1, Mk. II, WY0212, £10. Codar Preselector, £3. Green & Davis 144 mc converter, IF 30 mc, needs realigning but otherwise perfect, £10. All plus carriage or buyers collect (Devon).—Box No. 4543, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SELLING: Crystal calibrated wavemeter Type TE-149, covers 2·5 to 20 mc, direct calibration over 2·5 to 5·0 mc, with instruction manual, price £7 plus carriage. HRO Rx, with four GC coil-packs for 1·5 to 30 mc, plus PSU, £16, carriage extra. R.C.A. enclosed cabinet, 5ft. high, front tapped for 18in. panels by 22in., with rear door, offers? Home-built linear, with brand-new QY3-125, and 2000v. PSU, offers?—Bottomley, G6TZ, 129 Belgrade Square, Coventry, Warwickshire.

FOR SALE: K.W. Vanguard Tx, coverage 10-160m., £30. Also BC-453 Rx, with mains PSU, £3 10s.—Rumble, G3LSR, 18 Wihtred Road, Bapchild, Sittingbourne, Kent.

QTH For Sale, near Plymouth, in good residential area, comprising three bedrooms and the usual, with garden, garage and own drive-in, large workshop/shack, also including all-band trap dipole (in use); no TVI. Planning permission for beam. **Sale:** Geloso VFO and dial, Type 440 Tx modified for two metres, with PSU; Collaro tape transcription deck; Eddystone S.640 Rx. WANTED: Two-metre converter, SSB transceiver, AR88D Rx, or W.H.Y?—G3HPC, QTHR, or ring Plymouth 38284.

SMALL ADVERTISEMENTS, READERS—*continued*

DISPOSAL due to Bereavement: Lafayette HA-350 amateur communication receiver, coverage 10 to 80m. with 160m. addition, AM/CW/SSB, professionally built and aligned, in practically new condition. Aerial tuner and other (unidentified) accessories. New Heathkit transistor inter-com., Models X1-1U and X1c-1U. Other items include "Amateur Radio Handbook," DX and U.S.A. listings "Call Book," also charts magazines, manuals, etc. Will split. All as left by deceased, completely installed and working. Inspection and trial invited. Equipment and accessories all in excellent condition. Offered at £75. Letters only, pse.—Harris, 6 Strickland Avenue, Shadwell, Leeds 17, Yorkshire.

SALE: Unmodified BC-348 receiver, externally slightly rough but perfect internally, £7 10s. Another '348, less valves and generally rough but suitable spares or for rebuildings, 50s. Command Tx, 4·0 to 5·3 mc, complete at 40s. Another, coverage 3·0 to 4·0 mc, price 40s. All plus carriage. (North Wales).—Box No. 4552, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SELLING: **Excellent VHF QTH, 400ft. a.s.l.** Two-bedroom semi-detached bungalow, furnished, 4½ years old, modern decor, medium-sized garden, space for garage and cellar room, situated in small rural village of Marldon, 1½ miles from Paignton, South Devon. Good local bus service and close to shops, etc. Would make nice /A QTH or holiday-home investment. Low rates, £34 p.a. Reason for sale, emigrating. Price £3,950, freehold. Also offering **Complete 70-cm. A/TV Station,** comprising Tx capable 150w. input video and sound (4X150 PA), complete with PSU and modulators. Vidicon high-resolution camera with S.P.G. and two 14in. monitors, 19in. GPO rack, remote aerial rotator, with beams for 4m.-2m., 70 cm. and BBC-2 on mast. Rx for 70 cm., with tuners, two 70 cm. aerial pre-amplifiers, and loads of bits and pieces, including spare 4X150, DET-24, A.2521, etc. Set of 28 mc 9-transistor walkie-talkies. Two 150-watt spot-lights; microphones, stands and books. Price £120 the lot, or would sell with the house. Emigration forces this sale, too. Prefer buyer inspects (and collects) radio gear.—Reynolds, G6SAU/T, 11 Peters Crescent, Marldon, Paignton, South Devon. (Ring Paignton 43013, day).

WANTED: Copy "Practical Wireless" for November 1964.—Barville, 1 Rathgar Avenue, Ealing, London, W.13.

WANTED: TA-33Jr Tri-Band three-element beam. Must be in excellent condition. Full details and price, pse.—Kellow, Glenvale, St. Dominic, Callington, Cornwall.

OFFERS: Copies "Short Wave Magazine" November 1963-Feb. '66, RSGB "Bulletins" July 1959-December '65 (except for Feb. '63 and April '65). Carriage charges to be covered.—Woollett, G3RQJ, How Green Farm, Hever, Edenbridge, Kent. (Tel.: Four Elms 276).

SALE: Triple-conversion ex-Admiralty type Rx, covers 1·0 to 20 mc, octal-base valves, price £8 10s.—Debenham, 33 Tennyson Avenue, New Malden, Surrey. (Tel: 01-942 7241).

SELLING: Filter unit XF9A, 9 mc, in G3BDQ circuit, giving USB/LSB. including 7360, 12AX7, EF80, 12AU7 valves, £12. Frequency conversion section, for 15-160m., 6CL6 driver-output, plenty of space on chassis for trying out ideas, £4. New 6146 in tuned-grid linear, for 10-160m., with screen stabiliser, £5. Pair new 6HF5's in passive linear, £5. (All foregoing items less PSU's.) Home-built triple conversion receiver, coverage 10-160m., xtal controlled front-end and 3rd mixer, 1·8 to 2·3 mc tunable IF, channels 1620 and 85 kc fixed, with 12in. slide-rule scale, large Rx but solid, with PSU, price £20. All this gear in regular daily use. Send s.a.e. for further gen.—Hamer, G3LMQ, 7 Arundel Road, Cheylesmore, Coventry, Warwickshire.

SMALL ADVERTISEMENTS, READERS—*continued*

B.44's at £6. R.107, £8. Type 53 Tx, £30. Heat-sinks, suitable 2/OC16's, 2/OC28's, or similar; pieces **2in. x 7in.,** painted black with half-inch fins, **5s.** each. Transipack PSU, **12v. 9 amp.,** stabilised, **£9. Transistors OC71, 2s. each. Rubber Feet,** 1in. tall, ⅜in. diameter tapering to ½in., **3d.** each. Pse include post/carriage, any excess refunded.—Box No. 4544, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED: Eddystone EB-35 Receiver, with AC/PSU. Write stating price, age, general condition and where to be seen.—Gray, 16 Redcliffe Square, London, S.W.10.

FOR SALE: Eddystone EC-10 receiver, in mint condition, price £36 or near offer.—Mortlock, G3UGY, QTHR or ring 01-769 1639.

REQUIRED: Receiver such as HRO or AR88D, must be in excellent condition. Write with full details; all letters answered.—Pryse, 36 Hart Road, Byfleet, Weybridge, Surrey.

WANTED: All issues "QST" for years 1965-'67. Bases for 4CX250B, and suitable blower, Collins or Kokusai mechanical filter, 455 kc, 3 kc bandpass. Mains transformer for Hallicrafters SX-28. GDO and 'Scope. Test meter such as Heathkit V-7AU or similar valve voltmeter. Also good receiver at a reasonable price.—Morris, The Forge House, Church Enstone, Oxford. (Tel.: Enstone 357).

SALE: Mosley RV-4 Vertical Aerial, for 10 to 40 metres, in as-new condition, price £13 10s., plus carriage. Labgear Top Band Tx and PSU, £12, carriage extra.—Beech, G3PVL, 45 Blackgate Lane, Tarleton, Preston, Lancs. (Tel. Hesketh Bank 2855.)

WANTED: Crystal for 450 kc, Ch.43, or similar. FT-241A type preferred.—Bower, G3MKU, 82 Anson Road, Shepshed (2611), Lougborough, Leics.

WANTED: Transmitter AM/CW, for 10 to 80m., running 100-150 watts. Also KW-77 or similar first-class Rx; Geloso front-end converter; and Vibroplex bug-key. All these items to be in excellent and as-new condition.—Lavton, EI5AL, 26 Grattan Hill, Lower Road, Cork, Eire.

WANTED: Sphinx transmitter, pse state lowest price. For Sale: Pye Reporter rig, modified for 4 metres, working, price £6 15s. (Birmingham area).—Box No. 4545, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

ARE you looking forward to retirement with Amateur Radio? I believe that I have the ideal situation to offer. New, freehold and detached house, tastefully and completely furnished, with ¾-acre to rear, all overlooking sheltered harbour and the Atlantic. Sub-tropical garden in mild climate. Many extras including a cabin cruiser, boats, chalet and 1st class secluded 2½-acre seaside site. All services, inc. TV and reciprocal call available. No financial complications. Principals only. Offers over £8,900. Genuine, bona fide offer. Send for details, photographs, etc., to:—Broughton, EI5BK, Castletownberehaven, Co. Cork, Southern Ireland. (Tel. 68).

SSB STATION COMPLETE: Comprising K.W. Viceroy Mk III, with extra half-lattice filter; Dow-Key relay; low-pass filter; and KW-77 receiver with matching speaker. Price £165 the lot.—Jacobs, G3OGB, 41 Queenborough Gardens, Ilford, Essex. (Tel. CREscent 1697).

SALE: Heathkit DX-100U, in impeccable condition, £55. Heathkit SB-10U Sideband Adaptor, factory aligned and checked, as new, £25. (Prefer sale as pair). Also Heathkit Q-multiplier, £5; R.A.F. astro-compass, 30s.—Thexton, G3URE, 78 Greenfield Road, Brunton Park, Gosforth, Newcastle-on-Tyne 3, Northumberland. (Tel. Wideopen 3044).

FOR SALE: Codar A.T.5 with home-built mains PSU. £15. Modified HRO. mains PSU. with GC coil-packs for 1·7 mc to 30 mc. £15. Codar T.28, £12 10s.—Prince, G3VSI. 25 Wellesley Road, Wanstead, London, E.11. (Tel. 01-989 6926).

SMALL ADVERTISEMENTS. READERS—*continued*

WANTED: Tunable high and low pass filters, also band-pass filter for 21 mc. For Sale: Mosley V4-6 10-40m. trap vertical aerial, 6 months' use, any reasonable offer considered.—Hamilton, GI3VVY, 13 Abbeydale Crescent, Belfast 14, Northern Ireland.

NOVEMBER Issue, publishing Friday, October 27. Single-copy orders (4s. post free) to reach us by Wednesday 25th, to ensure posting Thursday 26th. —Circulation Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

EXCHANGE or SELL: Four-metre T.W. Communicator, Mk II, only 10 hours' use since new in June, price £60 or near offer, or would Exchange plus cash for KW-2000 with DC/PSU.—McCann, G3AZI, 105 Todd Lane North, Lostock Hall, Preston, Lancs.

WANTED: R.C.A. AR-8516L and R.216 receivers. Will part-exchange for any or all of the following: AR88D, fitted S-meter, £35; Hallicrafters S.27, £25; RCP-314 Valve Tester, £15; Signal Generator Type 106, £8. Two Philips Type GNE-510 marine Tx/Rx equipments, 10 crystals each set, one needing some attention—what offers? Cash adjustment either way. Will collect and deliver.—Hughes, Rock House, Flint Mountain, Flint, Flints, North Wales. (Tel: Northop 279).

WANTED: KW-2000 and its DC/PSU. Full details, please.—Box No. 4546, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: Cossor Type 339 double-beam 'scope, price £11, carriage paid.—Grant, GM3UKG, Easter Bogs Dairy Farm, Buckie, Banffshire, AB5 2EL, Scotland.

WANTED: Heathkit VF-1U VFO; mains PSU for B.44/2, or suitable transformer; also CW Tx for 4 metres and 160m. W.H.Y? (Eire).—Box No. 4547, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

OFFERING: Seven 4X150A's; one new Eimac valve-holder and one new Johnson valve-holder (both for 4X150's), also two new chimneys for 4X150's. One PLSD-22, one 4X125A. Two 2BPI CRT's, 2in. diameter. Heathkit Type OS-1 2¾in. 'scope, few hours' use only. Heathkit galvanised Tower with four new ragbolts. CDR AR-22 rotator and control box, new and unused (quantity of multicore cable to go with this if required). Prefer buyers to inspect and collect but will despatch carriage forward. All enquiries answered by return. Best offers for the whole or in part will be accepted. Equipment can be viewed by appointment with Norwich 23001.—Barnes, G3HXM, Wacton Common, Long Stratton, Norwich, Norfolk.

WANTED: DC/PSU, 12-volt, for use with KW-2000. Might consider one in faulty but repairable condition. Details and price.—McCann, G3AZI, 105 Todd Lane North, Lostock Hall, Preston, Lancs.

SALE: Panadaptor Type BC-1031B, with repair manual, £12. Pye Ranger transceiver, no RF xtals but otherwise complete, £5. Rack-mounting PSU, A.M. Type 3, looks rough but works OK, 20s. Valves: Two 4X250B, with bases, £3 each; two 813, 20s. each. Delivery by arrangement. (Herts. area).—Box No. 4550, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: Collins 75A-4 receiver, takes AM/CW/SSB. 2·1 and 4·0 kc filters SN2975, with manual unmodified and in good condition, £200. Heathkit SB-401 transmitter, in good condition and with all crystals, £130. Near offers considered for both. —McCarty, 1 Baden Road, Brighton 7, Sussex. (Ring Brighton 65132, 7·0-8·0 p.m.)

SALE: Eddystone EC-10 receiver, with PSU, practically unused.—Taylor, 9 Holland Park Road, London, W.14. (Tel. WEStern 0180).

SELLING: Receivers, HRO-MX, 1·7 to 30 mc, with PSU and pair Brown's phones, all in good condition, price £15; also an R.208, coverage 10 to 60 mc, not working, take £5.—James, 22 The Link, Houghton Regis, near Dunstable, Beds.

SMALL ADVERTISEMENTS, READERS—*continued*

MUST Sell: Heathkit Mohican receiver, used six months only by SWL recently departed. No RF damage to this Rx. Asking £25 but no reasonable offer refused, buyer to collect. Write.—Mrs. Wilding, 51 Lewis Street, Stoke-on-Trent, Staffs.

WANTED: The following crystals: 6866, 7186, and 8782·5 kc. Details and prices.—Robertson, 12 Hazel Close, Thetford Road, Mildenhall, Suffolk.

YL Insists that we need the money! Come and see my **Swan** Transceiver, relunctantly to be parted with for £199, prior to marriage. (Near offer considered, and H.P. arrangement may be possible).—Ring: Craven, 01-573 4541.

WANTED: Codar A.T.5 with mains PSU. Also a Class-D Wavemeter (must be OK all round).—Elvins, 40 Willow Road, Bromsgrove, Worcs.

SELLING: Two-metre Station, comprising Heathkit RG-1 with 2m. converter, £35; T.W.2 Tx, with matching (home built) AC/PSU, £20. Also Advance constant-voltage transformer, 240v. rated 1 kW, £12.—Trundle, G3TCG, 16 Stephens Crescent, Horndon-on-the-Hill, Essex.

OFFERED For Sale at £250: Complete SSB Station, consisting: The Sommerkamp F-Line, including FR-100B 10-160m. receiver, FL-200B 10-80m. transmitter, and FL-1000 Linear for 10-80m. In perfect condition, three months old and first cost over £335. (Lancs. area).—Box No. 4548, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SELLING: HRO-MX receiver, completely rebuilt and professionally realigned, with bandspread coil-packs and some GC (two BS coils need realignment), including PSU. Also BC-453 Rx, with conversion details. Price £25.—Kelley, 245 Kenton Road, Kenton, Harrow, Middlesex. (Tel. WORdsworth 5218, after 7.00 p.m.)

BARGAIN: First Fiver secures Type A Mk. III QRP Tx/Rx, in attaché case, complete with key, headphones and xtal for 7040 kc. All in good condition, giving a nice CW signal.—Pemberton, G2JY, 57 Tillotson Road, Sheffield 8, Yorkshire.

WANTED: Heathkit Q-Multiplier for RA-1 receiver. Also portable/mobile transistorised Rx for two metres, or Rx suitable as tunable IF/AF amplifier with transistor converters.—W.H.Y.? (Norfolk area).—Box No. 4551, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: Hallicrafters SX-110 receiver, amateur frequencies bandspread, complete with speaker and auto-transformer, all in mint condition, price £60 or near offer.—47 Dawnay Road, Great Bookham, Surrey. (Tel. Bookham 9-2357).

WANTED: Transceiver for my /A QTH, mode CW (A1) only with input power up to 150 watts on HF/LF bands, from AC mains. Must be a well-engineered job, with high stability in Rx and Tx (to give T9x note). The right price paid for worthy equipment in this category. Full details, please.—Box No. 4549, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

BUY Mobile Now—and take the winter to suppress your car! **Everything** you need and all commercial! **Codar** A.T.5 Tx, T.28 Rx, 12v. PSU and control unit; **CSE 160m. and 80m.** aerials, mobile microphone and speaker, £50 or near offer. **Filters: McCoy** 9 mc Silver Sentinel, with crystals, £12; **Kokusai** MF455-10K, £6; **Marconi** 465 kc, half-lattice, 2 kc and 500 c/s spacing, £3 the pair. **Receivers: AR88LF**, connections for S-meter, buyer collects or arranges despatch, only £25; **Hallicrafters** SX-140 receiver, with xtal calibrator, S-meter, variable selectivity, six bands 10m. to 80m. and 6m. (50 mc band), with circuit, for 230v. AC mains. £20. **Transistor** six amateur-band receiver, with **Electroniques** module tuner, IFA/SSB/1·6 mc, AF module, S-meter, Muirhead dial and speaker, in nice blue case, initial testing completed, and with all data, price £25.—Davidson, 25 Doonholm Road, Alloway, Ayr, Scotland.

SMALL ADVERTISEMENTS. READERS—*continued*

WANTED: Transmitter for 160m., AM/CW, with 240v. AC/PSU, must be compact and in perfect order. Pse state price and full details.—Elkes, G2FMP, 10 Chesterton Road, Burton-on-Trent, Staffs.

SMALL ADVERTISEMENTS for November issue (out on October 27) to reach us as soon as possible. Anything worth having is worth paying for—but there is no need to pay more than you have to if you draft your adv. carefully! Rate 3d. a word, using accepted abbreviations as shown in these columns, minimum charge 5s. For bold face, add 25%. Largest and most effective coverage of the U.K. radio amateur interest guaranteed.—Advertising Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SALE: Minimitter converter, mains/battery, as new, £14 or near offer. Canadian Marconi No. 9 Rx, 1·75 to 5 mc, with PSU, 60s. Marconi Wavemeter, 20 to 300 mc, with charts, £4. Red-blob ceramics, ·001 mF, four a shilling. Bush TV Rx, 9-inch, with ITV converter, 60s.—G3PHL, QTHR.

OFFERING: Complete Amateur Radio Station, comprising NC-98 receiver, Sprinx transmitter covering 20-40-80-160m. AM/SSB, KW-500 linear amplifier, Delta control unit, Vox operated, all in good working order, all-in at £125 or near offer.—Ring Powell, G3OQU, Kinver (Worcs.) 2642.

FOR SALE: Codar A.T.5 Tx, AC/PSU, with station control unit CC/40, DC/PSU, mobile switching unit 12R/C, at £27 10s. Also Star 550 amateur-band receiver, £27 10s.—or £50 the lot. B.44 Mk. II Rx, needs attention, £5.—Middleton, G3USP, 2 Blythe Road, Stafford.

SELLING: Heathkit RA-1 Rx, with calibrator unit, £23. B.46, £5. New Valves: 5B254/M, 7s.; QQV03-20A, 20s.; QQV06-40, 30s. (Kent area).—Box No. 4553, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

BEST Offer over £12 secures Mosley TA-32Jr. two-element rotary Tri-band beam, with 20ft. pole, nylon-bearing wall brackets, and 13yds. correct coax feeder cable. Also Eagle Audio Oscillator, used one hour only, cost £20, accept £15 or near offer. Best offer secures 32 issues "Short Wave Magazine" 1959-'63.—Brink, 2 Portugal Place, Cambridge.

REORGANISATION Releases: Sommerkamp FL-200B, used ten hours only, £110. Partly-built Tx, using Geleso 4/102 VFO, with microphone amplifier and 2/807, £7. Pye 8-watt radiogram chassis, including LW/MW/VHF radio, in working order, £5. Goodman's hi-fi 12in. speaker, £5 (two available). Garrard 4-speed auto-changer, £4. (Ayrshire).—Box No. 4554, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED: Marine radio-telephone, or receiver. Also Pye "Ranger," high-band Model FM8007; BC-611 walkie-talkie: and an AR88 cabinet. (Glamorgan).—Box No. 4555, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SALE: Hallicrafters SX-140, suitable AM/SSB, coverage 10-80m. + 6m. band, with S-meter and xtal calibrator, in new condition,, £20. One Morse record and player, 40s. Buyers collect. WANTED: Amateur Handbook. (London).—Box No. 4556, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: Minimitter mobile Tx, for 40-80-160m., with control box, £12. Also TR7 160m. mobile Rx, needs new RF coil, £3 10s. WANTED: Twelve-volt PSU for KW-2000A.—Lord, G3PHN, Newfield House, Moira, Burton-on-Trent, Staffs. (Tel. Swadlincote 7537.)

WANTED: Back numbers "Short Wave Magazine" for October, 1958, and April-May-June, 1959. Please state price and condition.—Chamberlain, G3VYU, 40 Elmfield Road, Peterborough.

SALE: R.1392 Rx and PSU, £4. Berec Rx, 30s. SU.750's, 20s. Valves at 2s. state wants.—Brooks, 5 Farrant House, Winstanley Road, London, S.W.11.

SMALL ADVERTISEMENTS, READERS—*continued*

SELLING: Collins 75S-3 Rx, no mods. and in mint condition, with carton, price £200. Mosley all-band mobile auto-whip, Model TM-5, cost $74, offers? Four 6HF5's, £4. Hallicrafters SX-17 speaker, 70s. Heathkit Balun, 60s. Walters pre-amplifier, £4. Cabinet for National HRO-60, with fittings, £5. OFFERS invited: New valves for R.C.A. 8516L. Also original Manuals for: Johnson Invader-200 Tx; Barker & Williamson 5100B and 51SB; Hallicrafters SX-101A, HA-2 and SX-28A; SCR-543A and SCR-299/A, B, C, D; National NCX-3, NC-300, HRO-60, NC-100; and LM-14 Frequency Meter. WANTED: Set of Collins 10-metre crystals. (Worcs.)—Box No. 4557, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SURPLUS CLEARANCE: TCS-12 Rx, with mains PSU, £10. R.209 receivers, one 6v. and one 12v., £10. Avometer Model-D, £5 10s. Cossor 1052 Oscilloscope, £20. CT.53 Signal Generator, with charts and circuitry, £13 10s. TS-87AP RF output meter, 50s. H.16 4-metre Rx, 35s. Valves: ECC35, OZ4, 3s.; 9001, 9D2, 1T4, 3A4, any six, 6s. Crystals: HC-6U type, 11·716 mc, 11·800 mc, 17·250 mc, 12s. 6d. Labgear wide-band multiplier, 25s. Handbooks: ARC-5 HF and LF Command equipment, 300 pages, 40s.; VHF Command equipment, 200 pages, 40s.; SCR-522, 200 pages, 40s.; CR-100, BC-312, 20s.; S.36, BC-640, AR88, 12s. 6d. Latest ex-Army microphones, with Plessey 12-way plug and phone jack, new, 25s.; used, 17s. 6d.; or less plug, 12s. 6d. Carriage extra all items.—Clarke, Copper Coin, Old Galgorm Road, Ballymena, Northern Ireland.

SELLING: Two-meter Transceiver, Hallicrafters SR-42, with AC/DC PSU's, mobile mount, stable VFO, 5-ele beam and halo, £80. Heath HO-10E, £25. Heath 10-10E, £35. Jones 10/100/1000 Wattmeter /Forward/Reflected Power, £25. Drake Q-Multiplier, with speaker, £10. Crystal calibrator, £5. Or take The Lot for £160.—Hern, G3NAC, 29 Gallaghers Mead, Andover, Hants.

FOR SALE: BC-221, charts, crystal and PSU, £14. Minimitter 3-band beam, 300-ohm feed or use Balun, £5. KW-Match SWR meter, 75-ohm, 60s. Eddystone 898 dial, as new, £4. Woden transformer, 750-0-750v. at 250 mA, plus 5v. 5A, 60s.; 5-25 Hy 250 mA swinging choke, 15s.; xformer 350-0-350v., 120 mA, plus heaters, 40s. Offers all items, and carriage extra.—G3UBL, 1 Conholt Road, Andover (2766), Hants.

SELLING: Lafayette HE-40 receiver, in as-new condition, £10. PCR-2 receiver, with mains PSU, needs slight attention, offers? Personal collection, or can deliver up to ten miles.—Dales, 204 Uxbridge Road, Feltham, Middlesex.

FOR SALE: Eddystone 504 receiver, £20. Radiovision "Commander" receiver, with amateur bandspread, £19. DST-100 Rx, with PSU, £12. Canadian 52 Set and PSU, £9. BC-348, chassis only, £4. National NC-190 Rx, bandspread, £50; T.W. two-metre converter, £5. Buyers collect.—Earnshaw, 104 Hunter Street, Middleton (5272), Manchester.

FOR SALE: KW-77 triple-conversion superhet amateur band receiver, coverage 10 to 160 metres, frequency calibrated, price £50. Also Joystick aerial, in very good condition, 40s. if buyer collects. (Rugby area).—Box No. 4560, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: K.W. Valiant Tx, coverage 10 to 160 metres, AM/CW, rated 60 watts, in good condition with AC/PSU, microphone and aerial c/o switch, price £30.—Marriott, G3VWC, 21 Thorley Hill, Bishops Stortford (4796), Herts.

SELLING: Pye two-metre transceiver, suitcase type, with crystals, 25 watts output, in excellent condition, price £12.—Culley, 17 Chilton Road, Ipswich, Suffolk.

WANTED: Wavemeter to cover 430 mc (70 cm.) band; also interested in other 70-centimetre gear.—W H Y.? All genuine offers answered.—Henshaw, G8BBO, 26 Randals Hill, Stevenage (55361), Herts.

SMALL ADVERTISEMENTS, READERS—*continued*

SALE: KW-76, £25. K.W. Valiant Tx, £25; companion Dependapac PSU, £10. Table top Tx for 10-80m. coverage, incorporating Geloso VFO and 6146 PA, £27. Top Band Tx, complete table-topper, £10. Home-built 160m. SSB Tx, with suitable PSU, £12 10s. Pair miniature 807's, 6v. heaters, new, at 30s.; pair ditto but with 12v. heaters, 30s. Also a pair of 813's, with bases, 70s. New SCR-522 Tx, with its 832's, 30s. (Kent).—Box No. 4558, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

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 £66 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.

SALE: Labgear LG.300 Tx, fine job for CW operation over 10 to 80m. amateur bands, with 75-watt PSU, price £30. (This Tx has 813 PA and can be run at 250w. input.) Collins TCS-12 Rx, with PSU, £10. Codar Q-Multiplier RQ-10, £5. Everything in very good condition. Buyer collects.—G3ILL, QTHR.

SALE: Eddystone 840C receiver, and K.W. Vanguard Mk. II Tx for 10-160m. Equipment hardly used, price £75 complete.—Gwinnett, High Cote, Sutton Valence (3151), Kent.

BALUN Coils, G3HZP design, 10 to 160 metres, 15s. each. Cores stacked and insulated, 10s. Includes post/packing.—James, G3HZP, 23 Rampton Road, Willingham, Cambs.

EXCHANGE: B2 Tx/Rx in original case, for Eddystone S.640, wanted for rebuilding, condition immaterial providing mechanically complete.—Ring Jackson, G3ASH, Basildon (Essex) 22907.

AS I AM Bound for GW, must sacrifice at give-away prices! Advance Type 71 Signal Generator, coverage 9 to 320 mc, with charts, £12 10s. Signal Generators Type CT.53, 9 to 300 mc, one calibrated at £10, one not, only £6. Plus post/carriage. Gear advertised p.454 September still for sale—no reasonable offer refused.—Tarr, G3PUR, 81 Rectory Gardens, Worthing, Sussex.

FOR SALE: Eddystone EC-10 Rx, with mains PSU, £38. WANTED: RF-27 Unit for 65-85 mc.—North, 3 Shirley Villas, Rawfolds, Cleckheaton, Yorkshire.

SALE: R.C.A. AR88D, £32. SSB Tx for Top Band, £10. Oscilloscope, £3. Avominor, £4. Offers for Woden UMØ multi-tap mod. xformer. Also various other transformers, chokes, valves and 200 microamp. meters.—Reader, 65 Dudley Road, Kingswinford (5924), Staffs.

SELL: CR-150 communications Rx, coverage 540 kc to 30 mc, with BFO, bandspread and S-meter, only 6 months old and in immaculate condition, cost me £21, accept £16, carriage paid.—Jones, 53 Northgate, Pontefract, Yorkshire.

SALE: As brand new, pair 9-transistor walkie-talkies on 28·25 mc (in our band), complete in their leather cases, cost £31, accepting £15.—G3RDG, QTHR. (Tel. 01-455 8831).

WANTED: **Five-foot Met. balloons,** or similar. **G3IGW Sale:** Eddystone S.750 Rx (VK5 heard on 160m. last DX season), first £45, or offers over £35. Withers TW2 two-metre Tx (worked YU by spor-E!), limited usage, £15. Two-metre de luxe converter, after G6JP design, with A.2599/A.2521 front-end, excellent low-noise performance for all modes including Oscar III DX satellite. IF band 24-26 mc, £10. Complete Minimitter mobile installation, comprising: Mobile Tx for 40-80-160m., £10; control box, £3; Transistor PSU, £8; Whip base mounting, £3; Whip for 160m., 20s.; or the /M gear complete for £25. Withers Topmobile Rx (reluctant to sell this beauty, may yet change mind!), as near mint condition, taking £15. Also an 813 at 20s., and Philips domestic radio (drifts!), £5.—Whitaker, G3IGW, Rose-Dene, Wood Lane, Hipperholme, Halifax, Yorkshire.

SMALL ADVERTISEMENTS, READERS—*continued*

FOR SALE: CR-100 receiver, low-noise front end with EF183, S-meter and noise limiter, in very good condition, price £15.—Wuille, G3SZM, 18 Patricia Avenue, Goring-by-Sea, Sussex. (Tel. Worthing 41810.)

IMPECUNIOUS Schoolboy requires 35 mc third-overtone crystal. Can you help?—Evans, Killyberry, Castledawson, Co. Derry, Northern Ireland.

SELLING: BC-620F Transceiver with PSU for 6-12-24v., 65s. ATU taking in 20 to 160 metres, 30s. Variometer, 10s. VHF mains 10-valve Rx, G.E.C., tuning 60 to 100 mc, less xtal, £5. VHF Type 7A Tx, G.E.C., coverage 30-131 mc, with modulator but less crystal, 70s. Carriage extra. — Raybould, 16 Brookbank Road, Gornal Wood, Dudley, Worcs.

BARGAIN at £100, an Eddystone EA-12 in excellent condition—or near offer considered. Sole reason for selling, bereavement.—Bartlett, GW5BI, 25 Partridge Road, Roath, Cardiff, South Wales.

SELLING: For £10 or nearest reasonable offer, an R.107 receiver in good working order. Can deliver in the West Riding.—Tong, 1 Alderton Crescent, Moortown, Leeds 17, Yorkshire.

WANTED: Copies "Short Wave Magazine" October '58 and April '59, for modification details TCS Tx, loan or buy. Also Class-D Wavemeter, in reasonable order, up to £3 paid.—Griffith, 16 St. Augustines Road, Wisbech, Cambs.

SALE: An American R.M.E. 4350A receiver, in mint condition and little used, £35 or near offer.—Baron, s.s. "American Importer," c/o U.S. Lines Company, Wellington Buildings, 7 The Strand, Liverpool.

EXCHANGE/SELL: NEV TV camera, not working but with tube and PSU, £15. BC-221, stabilised PSU, £12. Geloso tape recorder, £6—or Exchange for QQV06-40A valves and Lavoie UHF wavemeter. (Buyer to collect sales.)—Hoare, G6RZD/T, 9 Park Lane, Southwick, Sussex.

MUST SELL: Heathkit RA-1 Rx, with variable BFO, £28. Heathkit QPM-16, £5; also RF-1U, £10. All with manual and purchased 1967. Offers?—Kermode, 7 Saltburn Place, Bradford 9, Yorkshire. (Tel. Bradford 44936.)

SELLING: Mobile PSU Type HP-13, by Heathkit, new July '67 and very little used, £34. Also 6-ele Yagi two-metre J-Beam, 40s. Mosley trap dipole for 10-15-20m., 50s. Joystick, as new, £3.—G3UFQ, QTHR.

FOR SALE: Labgear LG.300 transmitter with rack-mounted Modulator and PSU's, price £50. Buyer inspects and collects.—Parsons, G3MIX, 96 Blackamoor Lane, Maidenhead (26723), Berks.

WANTED: R.216 Rx, with PSU, must be perfect. SALE: Latest correspondence course for R.A.E., in mint condition, cost £13, bargain at £7, including postage. (Glamorgan).—Box No. 4561, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

REQUIRED: On loan or purchase, circuitry and constructional notes for 10-100 watt 70 cm. Tx and PA. Also any information on Taylor 65B Signal Generator.—Scott, Manderston Stables, Duns, Berwickshire, Scotland.

GOING Portable, so selling AR88D in good condition, re-valved and aligned, price £30.—Haynes, 29 Walton Avenue, North Cheam, Surrey.

SALE: Gear for 4 metres, BCC mobile transceiver, HP-16B base, transceiver L.98U, with new crystals, £8. Two TBY-8 transceivers, 3 to 10 metres, £4. Dynamotor PSU42, 12v., giving 250v./350v. DC, 20s. T.1403 transmitter, large steel cabinet, 10s. Variable transformer, 110-240v., rated 5 kW, 20s.—Ring Jackson, G3CDE. (Tel. OGU3-5236).

SALE: KW-2000 with AC/PSU, K.W. low-pass filter and Shure microphone—new February '67, and perfect. Price £160.—Mavall, G3VPH, 9 Alexander Avenue, Droitwich, (3089), Worcs.

WANTED: To borrow or buy, copies "Short Wave Magazine" for April '58 and October '58.—Pettman, G3MLN, 17 Birchdale, Gerrards Cross (84230), Bucks.

OFFERING: Minimitter "Mercury" Tx, rated 150w., AM/CW/FM, coverage 10 to 80 metres, AC mains operation, in good condition and complete with microphone and handbook, £20 or near offer. Buyer to inspect and collect.—Partridge, 10 Southwick Avenue, Penhill, Swindon, Wilts.

FOR SALE: K.W. Vanguard Mk.II Tx, coverage 10 to 80m., xtal-mixer VFO, excellent condition, bargain at £35.—Ring 01-777 1579, after 7.0 p.m.

SELLING: Eddystone EA-12, unmarked and in mint condition, checked by makers, price £140. Buyer collects or pays carriage.—Haines, 12 Cemetery Road, Laceby, Grimsby, Lincs.

WANTED: Good commercial receiver, having coverage 500 kc to 30 mc, such as NC-190X, GC-1U, AR88D, or similar.—Clark, Onehouse Lodge, Stowmarket, Suffolk.

FOR SALE: R.C.A. AR88LF, cased, new valves, working FB, £30. AR88 cabinet, 70s. HRO-MX, nine GC coils, BS for 10 and 80m., with PSU, £22-10s. AVO Valve Tester, takes modern bases, £7. Regulated PSU, input 110v., output variable to 500v. at 500 mA, rack size, £7-10s.; auto-xformer to suit, 50s. Marconi Sig. Gen. No. 2, Mk.I, 4-100 mc, no charts, offers? Taylor Type 60 Sig. Gen., 100 kc to 45 mc, £4. Thordarson multi-ratio mod. xformer, rated 125w., £4. (All foregoing items on inspect-and-collect basis.) Also 3in. Magslip Tx, Mk.II, 20s. Parmeko xformer, 250v. in, output 4v. at 2·2A, insulated to 6 kV, 40s. Carpenter Relay Type 3G2, 30s.; two bases at 10s. Two QQV06-40A, used, 25s. each; base, 10s. Two 100-cycle audio filters, CR-100 type, 20s. each. Xformer, 250v. in, output 110v., 100 VA, 20s. Set of three xtal filters, ex-CR150, 100 kc-106 kc, multi-crystal 5-section, ideal for SSB or receiver, offers? Many capacitors, variable and mica, also transformers, chokes, etc. Tx for 80/160m., with modulator, similar Codar A.T.5, finished but not cased, offers? Tx for two metres, with modulator (2/6BW6) and 2E26 final, in cabinet, with PSU and control unit, offers around £10. Volumes "Short Wave Magazine" 1959-'67, most years complete; also RSGB "Bulletins," 20s. per volume. Please add postage on these items.—Trumper, G3PPM, 36 Shelley Drive, Bletchley (2894), Bucks.

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COLLECTOR'S Piece Portable Wireless Receiver, vintage 1922, made by B.T.H. Co. of Rugby, cased in mahogany, together with instruction booklet, requires headphones and accumulator/batteries. Offers invited.—Evans, 14 Boscastle Road, Parliament Hill Fields, London, N.W.5.

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