

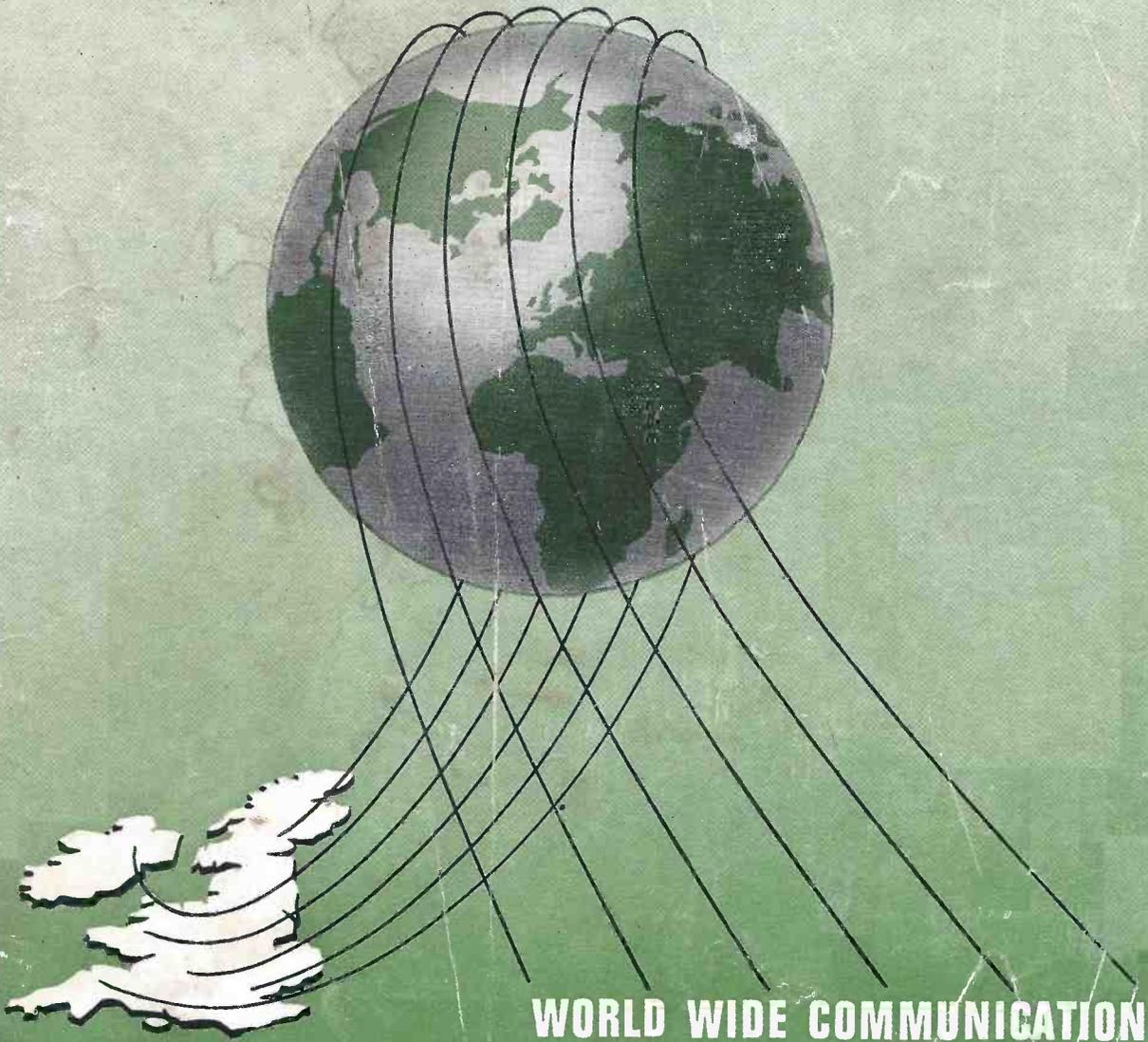
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The
SHORT WAVE
Magazine

VOL. XXVIII

SEPTEMBER, 1970

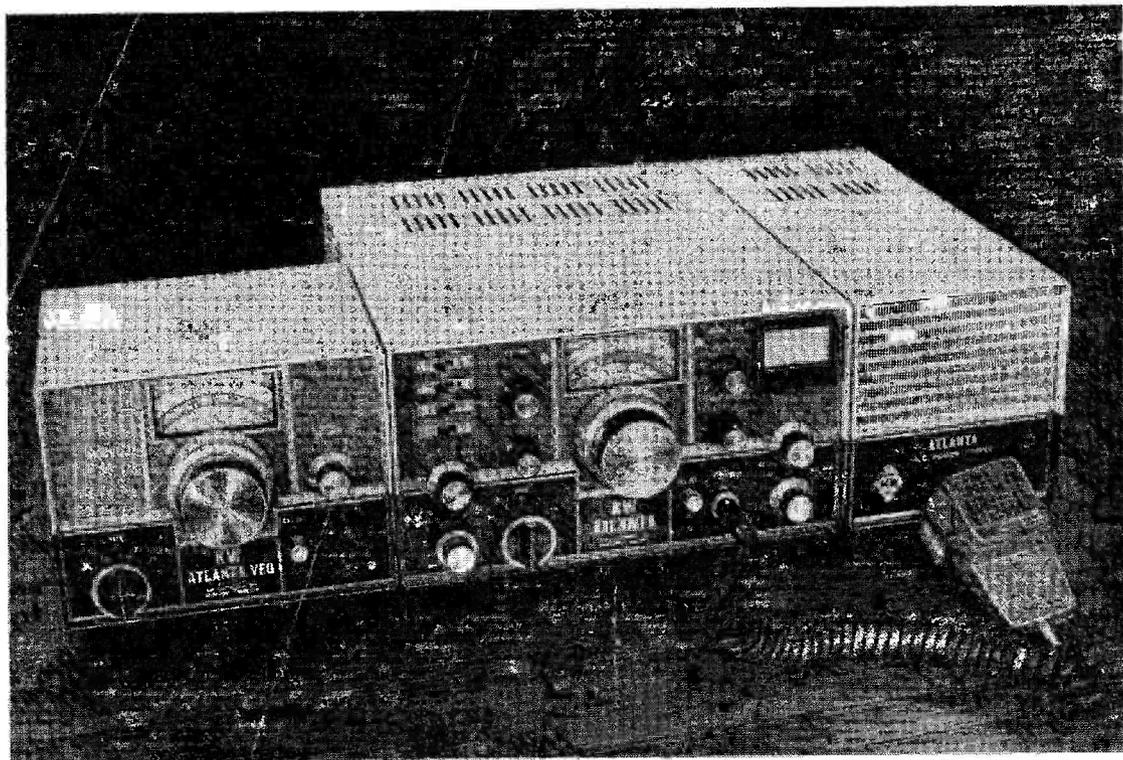
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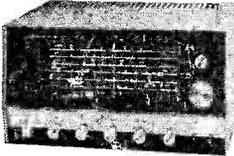


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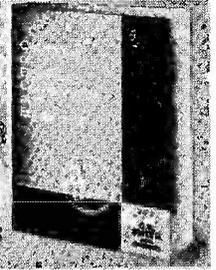


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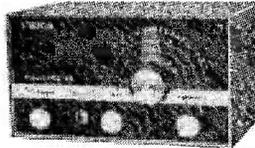
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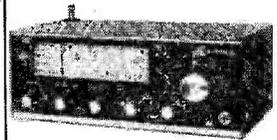
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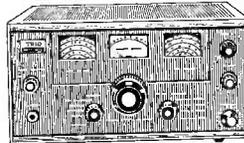
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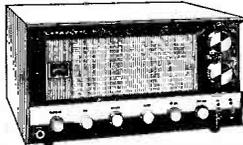
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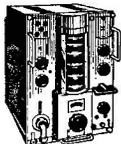


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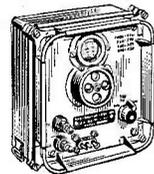
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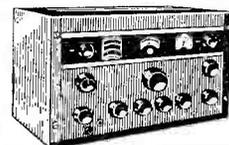
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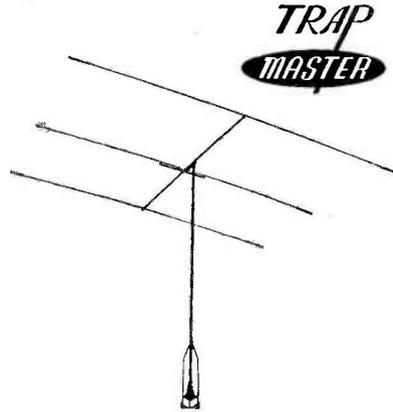
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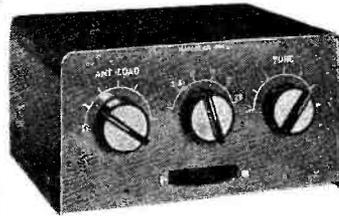
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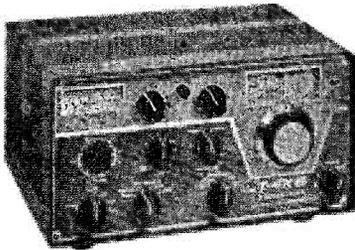
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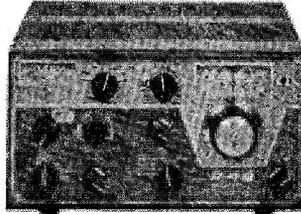
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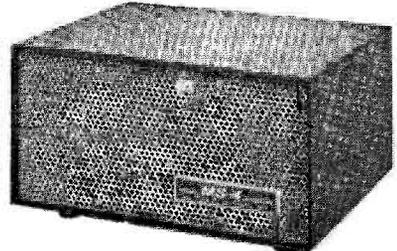
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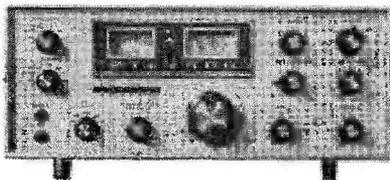
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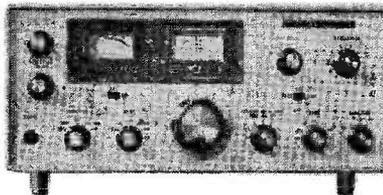
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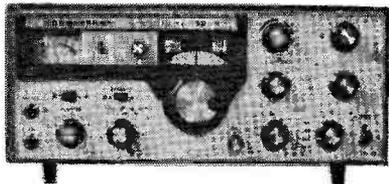
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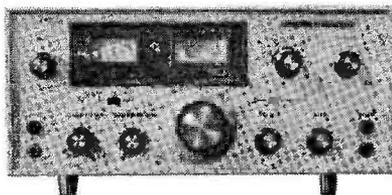
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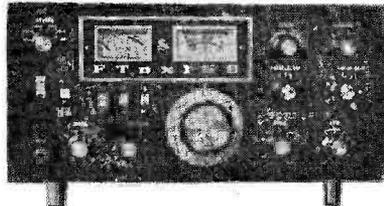
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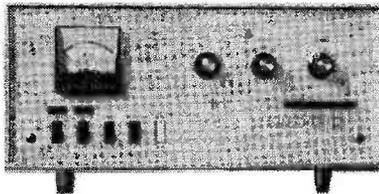
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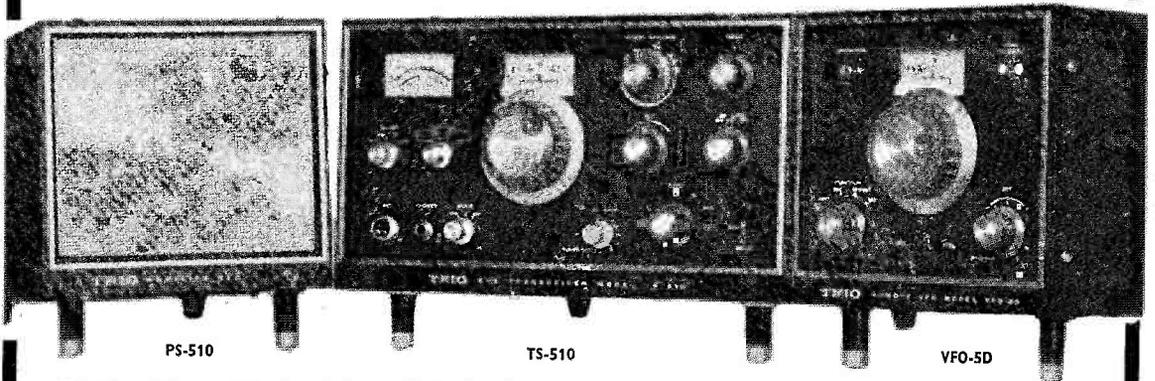
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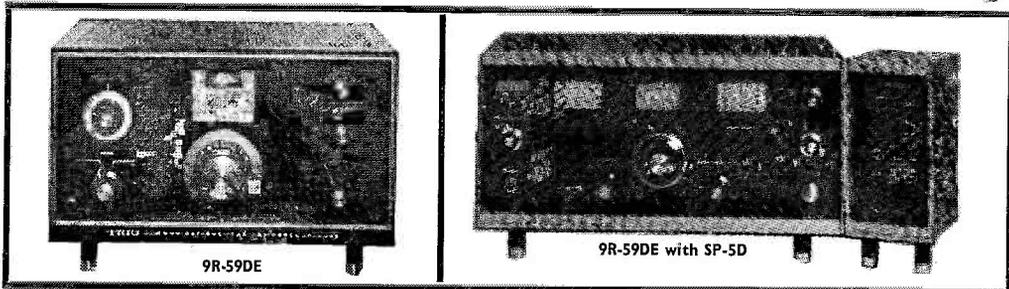
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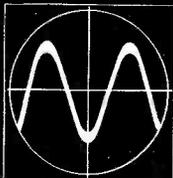


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E D I T O R I A L

Unrealistic Those who may have heard the BBC's "World This Week-End" on Radio 4 on August 9—a Sunday lunch-time news programme which is said to have millions of regular listeners—cannot fail to have been dismayed by the item purporting to represent Amateur Radio. Treated with a fatuity that must have infuriated any holder of an AT-station licence who heard it, they pulled out two cuts from that old Hancock piece about radio amateur operating (admittedly, quite funny in its own way) and made great play with how "the hams' own satellite circled the earth saying 'hi-hi'"—and much else in the same vein, even to the extent of suggesting that all U.K. amateurs were meeting that day at Woburn to exchange reminiscences! There was also the usual streak of namby-pambyism, about what happened (on that one occasion years ago) during the East Coast floods, and the sob-stuff angle on making friends across the world. There was even the fatuous suggestion that all you need is "£200 and a soldering-iron" to become (of course!) "a radio ham"—this enlightening piece being apropos a particularly inept group known as the "BBC World Radio Club" (which, fortunately for us all, is confined to the Overseas Service).

The two amateurs actually interviewed did their best but what they had to say was treated with a sort of patronising facetiousness which obscured the points they were trying to make. It well illustrates the point we have so often made: Never give interviews to the BBC or the Press about Amateur Radio unless you are satisfied with how the material is going to be presented.

Nothing was said about the fact that to get a licence amateurs have to pass exams.—that Amateur Radio has a great and very important educative influence among the youth of the country—that the genesis of the BBC itself is directly traceable to the pioneering work of radio amateurs—that many of its senior engineers of those days held amateur licences (as do a large number at the present time)—that the radio amateurs of this country made a considerable, direct and personal contribution, of a value out of all proportion to their numbers, to the technical branches of the Services during Hitler's War—and that at this moment the 15,000+ licensed U.K. amateurs constitute an important body of people who, collectively, are very well versed in electronics and the arts of radio communication.

* * * *

Of course, we must expect most folk not to understand Amateur Radio, and must take any fun poked at us in good part. But to have Amateur Radio misrepresented in such an idiotic way (at a time when we are so vulnerable to pressures on frequency space) by a body like the BBC is quite a different matter. It may well be that now being what is known in journalistic circles as the "silly season," this was the BBC's contribution.

But it is a pity it had to be made on such a subject in the course of what is normally an interesting and well-balanced programme, with a large listening audience.

Austin Forster,
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ALL-TRANSISTOR Tx FOR TOP BAND QRP

D. R. FIRTH (G3WLT)

This article will be of great interest to all who dabble with transistors and like the idea of a real frequency variable low-power phone transmitter for local working—yet capable of giving surprising results over much greater distances. Our contributor has produced, by experiment, a sound circuit design which is easy to construct while requiring nothing exceptional in the way of parts. Actual results in any given location will, of course, depend on the sort of aerial available and the manner of its coupling to the PA.—Editor.

THE use of very low power is not new and incredible DX has been worked, especially on the higher frequencies, with fractions of a watt. The first QSO with G3DAA, in which we blasted each other with ten watts across only a thousand yards, showed G3WLT the need for QRP in very local contacts. In fact, the next sked was kept with a crystal oscillator on CW, running only 25 mA. From this beginning grew the idea of a Phone TTx.

In recent years, some neat crystal-controlled circuits have been published for the VHF bands but very little has been said about how far a modulated milliwatt signal will go on Top Band. CW QRP has been used many times on 160 metres—but to net with a VFO, to modulate fully and to be able to keep up local contacts, presented a challenge. The rig described here uses only six transistors of readily-obtainable p.n.p. types. It is about as simple and as cheap a way of getting one's voice on the air as could possibly be wished. The design is offered in the hope of attracting others to experiment with QRP and transistors.

Results

These are quoted now, before readers flip over to the next article. Designed for local use, the rig is operated regularly and is well known in the Torbay area. The simple long-wire antenna radiates the signal surprisingly far. With 150 mW input to the emitter of Tr3, the signal has been copied RS 5/7 at 50 miles. The receiving station made a tape recording and played it back to the rest of the net. A report of 59 + 10 dB on the S-meter was given at six miles but 5/8 is more usual up to 15 miles. 100% modulation has been checked on a 'scope and is achieved by the balanced double-emitter method described. The waveform is smooth without clipping carrier on audio peaks.

One afternoon, a mobile calling CQ was answered. The usual exchange of report and QTH followed and we found ourselves some 40 miles apart. Later in the QSO, the Milliwatter's power was admitted. The sheer disbelief at the other end made all the struggles over this

rig seem worth while! At G3WLT there is a stereogrant with a green panel lamp; the bulb is rated 0.6 watt. How a current one sixth of that amount can energise a distant receiver, passes understanding. It is also a reminder of the widespread effects of interference from small powers of radiated harmonics. Even the 12 mW oscillator of this rig could travel if it reached the antenna.

Circuit Notes

Values are not critical, except for certain capacitors in tuned circuits, but current readings quoted represent

Table of Values

Figs. 1-3. Circuitry of the Milliwatter Tx.

C1 = 100 μ F, var.	R3, R6 = 2,200 ohms
C2 = 30 μ F, preset	R4, R9,
C3, C4 = 300 μ F, s/m	R19 = 470 ohms
C5 = .0027 μ F, s/m	R7, R18,
C6, C10,	R21 = 1,000 ohms
C13, C15,	R8 = 1,200 ohms
C17 = .05 μ F, cer.	R10 = 150 ohms
C11 = .002 μ F, s/m	R13 = 47,000 ohms
C7, C8,	R14 = 5,600 ohms
C9, C12 = .01 μ F, cer.	R15 = 22,000 ohms
C14 = 500 μ F, var.	R17 = 220 ohms
C16 = 10 μ F, elect.	R22 = 47 ohms
C18, C19,	Tr1,
C21 = 25 μ F, elect.	Tr2,
C20 = 100 μ F, elect.	Tr3 = AF116, or AF117
C22 = 50 μ F, elect.	Tr4,
C23 = 100-200 μ F, var.	Tr5 = Radiospares
R1 = 4,700 ohms	2GT174, or
R2, R5,	similar
R11, R12,	Tr6 = OC76, or similar
R16, R20 = 10,000 ohms	

TABLE OF COIL DATA

L1—75 turns 28g. enam. on plastic former, say, 2in. long x $\frac{1}{16}$ in. dia. (e.g. NHS 10 ml disposable syringe cut to length).

L2—12 turns 28g. enam. over cold end L3.

L3—70 turns as L1, with tap at 25t from cold end.

L4—Five turns 14g. enam., link winding about quarter-way up L5 from cold end.

L5—40 turns 14g. enam. on 2½ in. diameter plastic former (e.g. liquid-soap bottle) with tappings at 5, 10, 20, 30 turns, or more frequently as convenient.

T1—Transformer, transistor driver type, with split secondary. Radiospares, 3:1:1.

Notes: Resistors all rated ½-watt. RFC1, RFC2, to be BC Rx type. For Tr1-3, AF117 works as well. For Tr4, Tr5, any similar high-gain audio type suitable. ATU coil L5 converts easily to other L/C configurations. For T1, any audio transformer would do with similar ratios. For PSU use 2/PP1 batteries in series to give 12 volts.

REFERENCES:

- G3SRY, "TTx for Top Band Mobile," *Short Wave Magazine*, August 1965.
 G6GR, "Simplified TTx for LF Bands," *Short Wave Magazine*, September 1965.
 G3MXT, "QRP Transceiver for Four Metres," *Short Wave Magazine*, October 1967.
 G3ZCZ, "QRP Transceiver for Two Metres," May 1970.

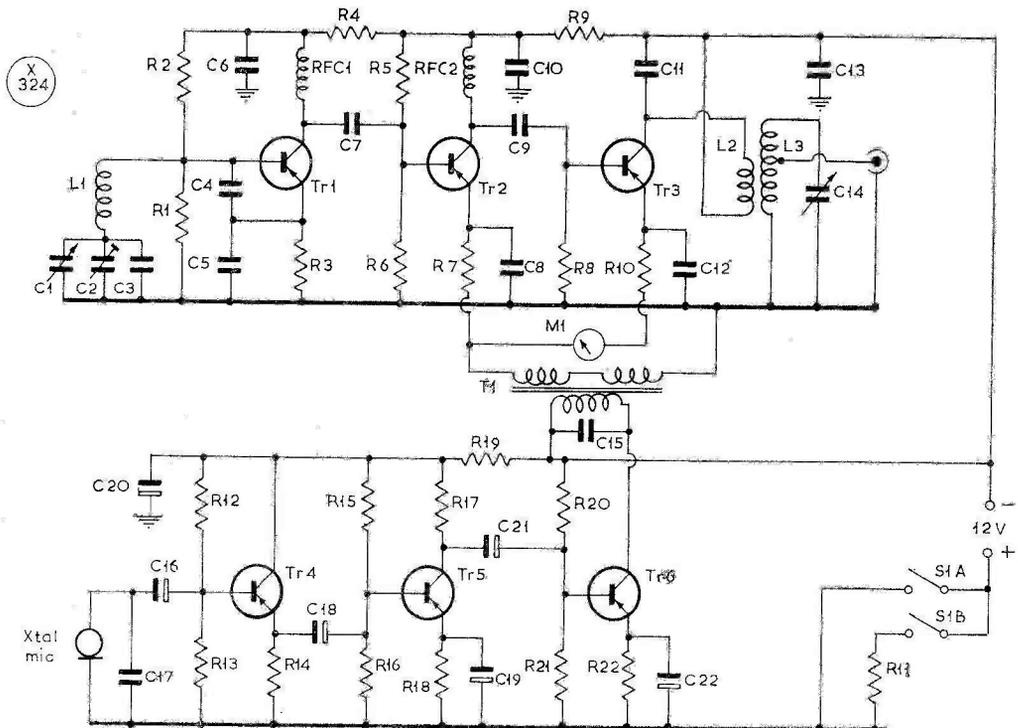


Fig. 1

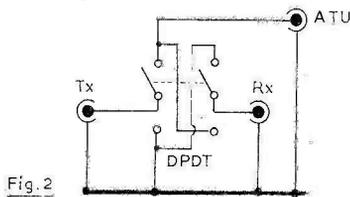


Fig. 2

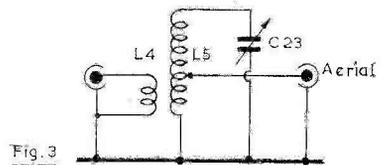


Fig. 3

Figs. 1, 2, 3. Circuitry complete of the Milliwatt Six.

the ones most likely to produce good results, found after much trial and error.

The Oscillator: Much time was spent, looking for one capable of giving drive. Lots were tried out, some were very complicated and stable, but had no drive. The present one, modified from Clapp, is stable enough for doubling to 3.6 MHz and yet has plenty of push. As C1 covers less than the whole band, C2 is provided the adjust coverage. If either C3 or C5 is too small, the circuit becomes unstable with sub-harmonics (see diagram, Fig. 1).

The driver stage is a simple gain circuit. RFC1 could be replaced by a doubler coil for 3.6 MHz. There is enough RF drive to give 1/2-watt in the PA from a suitable transistor.

The Power Amplifier: This runs in Class-C as, without drive from the preceding stage, there is no standing current. Output via C9 pulses Tr3 at the operating

frequency and as the PA meter only measures the average DC through the emitter, the short conducting phase of the cycle gives a high efficiency ratio of input to RF output. The AF116 will take up to 1/2-watt but stability suffers and one tends to lose the transistor easily. R10 and the resistance of the T1 secondary limit the input to Tr3 to a safe level. C11 is vital to good performance; forming with L2 a broad-tuned circuit, it favours output at 1.8 to 2.0 MHz and improves the current dip at resonance of the PA tank coil.

The Modulator: A Class-B audio amplifier produces maximum gain from a crystal microphone. The use of an emitter-follower with Tr4 gives a much better voice response than any other arrangement. Performance suffers if one tries to run Tr6 any harder, while increasing the output of Tr3 only results in an under-modulated signal. C15 and C17 shunt stray RF pickup out of the audio module, as well as cutting down excess top

response at the audio frequencies. On the air, the signal has been described as "very pleasant."

Modulation is applied through the emitters of Tr2 and Tr3. The emitter leads join a common "platform" on the diagram, which connects to the combined secondaries of the driver transformer T1, before return to chassis. On no account should the two bypass capacitors C8 and C12 be omitted, so that it is evident that only the direct current to each emitter is subject to modulating forces. This "balanced emitter" system was evolved after a depressing series of failures with conventional methods. As in valve practice, one can modulate the high rail with an audio transformer; this is often done with transistors and preceding driver stages can be included in the negative rail that is modulated. Even so, this was found to be too inefficient for the Milliwatter, with a tendency to compress the signal on audio peaks. One author states that the modulator should run at twice the power of the PA. Direct modulation of Tr3 by an audio transistor in the emitter lead is possible but would need more complicated circuitry and a higher voltage across the two transistors in series.

A simpler way is to use one secondary of a driver-type transformer in the emitter lead. This when tried out, gave good quality, but less than 100% modulation. With both secondaries, one to each emitter, the signal is rough as Tr2 is receiving too much audio power. In the final arrangement, the audio drive is shared between the two stages according to their different needs in terms of current. Matching, through the driver transformer, seems to be just right, but of course any transformer of similar ratio and single secondary could be used instead.

Switching

Basic transmit/receive arrangements are illustrated in Fig. 2, using a double-pole switch. This is serviceable, but constructors will probably wish to incorporate their own ideas. When netting with the switch at "receive," the PA is de-tuned and much of the output shunted to chassis. This may be enough to protect the Rx, although the Codar T28 at G3WLT can stand the full output on its AGC without blowing the front end. One cannot net well on the VFO alone, because removal of the driver stage load alters the VFO frequency. S1B and the resistor are offered as an alternative by dropping the total current through the Tx.

Construction and Setting Up

One can use any favourite method of building. The original rig was made breadboard fashion, with each stage soldered to a tag-strip, screwed to a board and tested. This way, alterations to components were easy—and there were many! At this frequency, length of lead is not important and screening needs only to separate the oscillator coil from the PA tank coil.

The oscillator Tr1 runs 1½ mA initially, and the note can be heard on the station Rx. There should be no other side-tones anywhere on the band, but a strong overtone harmonic should, however, appear on the correct part of the 3-6 MHz band. Current readings are always taken in the emitter leads. When the driver stage is connected up, the current to Tr1 falls to 1 mA. Tr2 runs at 2 mA when loaded into the final stage, and 2½ mA unloaded, but driven by the oscillator.

The PA matches the modulator best when its current is limited to 15 mA. A value of R10 should be chosen, with the resistance of the mod. T1 secondary, that brings up the correct current. A meter to read 30 mA at full deflection is convenient for the PA. With tank coil and ATU resonated, there is a dip, up to half the off-resonance current. With the ATU correctly loaded by the aerial, the dip at resonance almost vanishes.

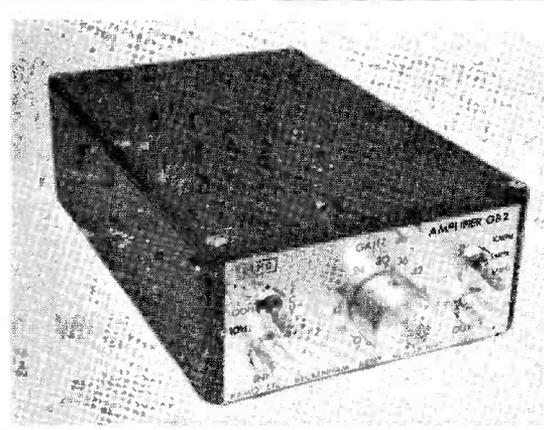
The simple parallel-tuned ATU is shown in Fig. 3, link-coupled to the Tx. The antenna used in tests was a long-wire, 90 feet at about 20 feet above ground, on the lowest tapping of the ATU. The nearer the wire approaches a half-wave, the higher up the ATU coil it is tapped in. Some kind of sensitive RF meter is essential for accurate tuning up of the whole system, to register maximum RF current up the wire.

The Tx coils were wound on N.H.S. 10ml disposable syringes, cut to length. These have flanges which can be drilled for mounting. Plastic adhesive tape was wound, sticky side outwards to secure the windings. A second layer of tape, over the windings, holds them in place as well as providing insulation for a second link coil. The ATU coil was wound on a plastic soap bottle, 2½ inches in diameter. Plastic junction strips make a very convenient means of altering the ATU to other arrangements of L and C, and changing tapings.

Current readings for the modulator are similar to those for Trs 1, 2 and 3. A slight increase of current is seen in Tr5 when the mike is in use, (from about 2 to 2½ mA). Tr6 runs at 12 to 15 mA, but the emitter current falls on speaking at the mike. This fall is converted into a positive rise in the emitter current of Tr3.

Acknowledgements

It would have been impossible to build and test this rig without help. As soon as the first signals appeared, all operators showed great interest and gave unfailing encouragement to the project. The writer would like to thank especially G3DAA, with G3LYB, G3LKJ and all in the Torbay "net," who have been so patient in reporting a microsignal.



The Kemo GB/2 is a general-purpose low-noise amplifier giving 60 dB of gain in 6 dB steps. Impedances are: Input 100K and output 10 ohms, and frequency response 1 Hz to 1 MHz, incorporating high- and low-frequency cut-off facilities. Transistorised, power is from 2/PP7 batteries and size only 7½ × 4½ × 2½ in.

BASIC TWO-METRE TRANSMITTER

FOUR-STAGE THREE-VALVE DESIGN FOR MEDIUM POWER

N. E. EVANS (G18BDR)

This approach to the matter of a Tx for Two will appeal to those who, though experienced constructors of amateur-band equipment, have not yet been on VHF but have thoughts about trying it. Nothing special is called for in the way of parts and by using readily-obtainable types of valve a reasonable RF power output is possible with the minimum of expense.—Editor.

AN AM phone transmitter running 30 watts or so on the two-metre band can prove to be very useful, being more than adequate for local working and capable of giving the odd DX QSO under good conditions. In the Tx described here, the PA input was therefore set at 30w. maximum, anode-and-screen modulated by a pair of EL84's. The RF section and modulator are both on the same chassis, with send-receive switching also incorporated.

The Modulator

The modulator actually used came from a design by G3TYJ in SHORT WAVE MAGAZINE for December 1967, and aspiring constructors are referred to this original article for the circuit details. The only major difference is the use of an ex-Marconi H16 mod. transformer (to match the modulator to the PA) instead of the UM1 suggested. If, however, you happen to have a 20w. modulator in the shack then try it once the RF section is perking properly, remembering that what isn't supposed to be right in theory often works in practice!

The RF Section

The circuit for this is given on p.403 and is fairly straightforward. V1A is an harmonic-type oscillator, giving 24 MHz output from an 8 MHz crystal. The harmonic circuit is employed because, since one side of the crystal is earthed, long leads can be taken from the crystal selector switch S1, mounted on the front panel, to the 3 crystals on the rear of the main chassis. (The more usual overtone oscillator encountered in VHF transmitters, e.g., the Squier, will not tolerate long crystal leads.) V1B is a frequency tripler to 72 MHz, its output being fed to V2, a doubler to 144 MHz. V2 is also the PA driver, the 144 MHz output from its anode circuit being link-coupled to the grid-circuit of the PA, V3. A further link L8 takes the RF output from the PA anode circuit direct to the aerial change-over relay RLA. Note that values given for R9 and R11 are those for a PA input of 30 watts. If a higher input is contemplated, these resistors will probably need adjustment.

In this Tx a net facility is provided: Closing Sx (see Fig. 1) applies HT to the exciter section, V1 and V2, only, so that 144 MHz output from V2 is easily picked up

on an adjacent 2m. Rx, enabling the Tx frequency to be obtained. Sx can be an ordinary SPST.

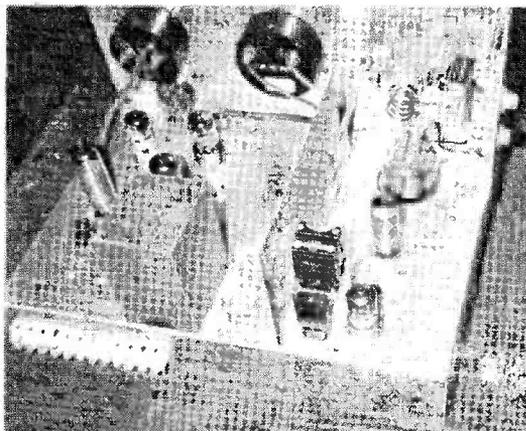
The PSU

This is remote from the main transmitter, multi-way cable being used to connect the two units. A single 300v. 150 mA transformer powers the RF section, but two separate supplies may be used for the exciter and PA if desired. (Note: As the actual current drain is about 150-160 mA, the 150 mA xformer used was *not* one of the cheap-and-cheerful variety!) The relay supply is also conventional—not much in the way of smoothing is used, but the relays hold OK. The PSU is as in Fig. 2; a suitable supply for the modulator was included in the original article by G3TYJ (see earlier).

Switching

Complete send-receive switching is controlled by a single toggle switch S4 mounted on the front panel. On "transmit" both RLA and RLB are energised. RLA is the aerial change-over relay—this should really be a coaxial type, but one of the miniature open kind (obtained as surplus) does the job well. RLB is the HT control relay, again a surplus item. On "transmit" this switches on the RF section and modulator and, if an extra set of contacts is available on the particular relay used, these may be used to mute the receiver. If sparking at the contacts occurs, a 0.1 μ F 1,000v. (DC wkg.) condenser across them should stop it.

[over



Upper-chassis view of the two-metre Tx by G18BDR, with the RF section to the right of the screen.

Metering

M1 and M2 are mounted on the front panel of the transmitter—M1 measures the total current, *i.e.*, anode and screen, to the PA, V3, but it may of course be re-wired to measure anode current only. M2 reads the anode current of the modulator power-amplifier. During alignment of the RF section the ability to monitor grid-current in the multiplier and PA stages is essential. This is done in the multiplier stages by temporarily breaking the grid returns of V1b and V2 — see Fig. 1 — and inserting a 0.3 mA meter (with its +ve terminal to chassis). In the PA stage, however, the grid return need not be broken—the ceramic feedthrough capacitor FT3 acts as a test-point terminal, a 0.3v. DC meter being connected between this and the chassis, *i.e.*, the voltmeter is effectively across the 1,000-ohm resistor R10. The reading in volts obtained is then numerically equal to the current in mA flowing in the grid circuit, as consideration of Ohm's Law will show!

Construction

The transmitter is built on an easily obtainable 13in. × 9in. × 2½in. 18g. aluminium chassis, with panel, screens, etc., made from 18g. sheeting. Two screens are used (*see* Fig. 3), one above and one below chassis. They effectively separate the RF and modulator sections, and so help keep RF energy out of the AF pre-amp. A grommet in the under-chassis screen allows the passage of power leads from the HT control relay, mounted in the modulator section of the chassis, to the RF section. The above should help identify where everything is in the photograph.

Once again reference is made to the original article on the modulator for the finer points of its construction. But reference here must be made to the subject of keeping RF out! HT leads should be by-passed with 0.001 μ F disc ceramics and heaters also—*each valve* must have its heaters by-passed *at the valve base*. Connections to the AF pre-amp. should be as short as possible, and it is as well to use a microphone with a screened lead.

Moving on now to the RF section, the whole secret here is in keeping any leads carrying RF short, and making sure that leads *not* supposed to carry it are well

Table of Values

Fig. 1. Circuit of the Two-Metre Tx.

C1 = 33 μ F silver mica	R1, R4 = 47,000 ohms
C2 = 22 μ F silver mica	R2, R7 = 15,000 ohms
C3, C4, C5, C9, C11, C14, C15, C16 = .001 μ F disc ceramic	R3 = 4,700 ohms
C6 = 47 μ F silver mica	R5 = 3,300 ohms, 1w.
C7 = 3-30 μ F trimmer	R6 = 68,000 ohms
C8 = 22 μ F silver mica	R8 = 68 ohms
C10 = 2-8 μ F trimmer	R9 = 22,000 ohms
C12 = 25 + 25 μ F variable (Jackson)	R10 = 1,000 ohms
C13 = 50 μ F variable (Jackson)	R11 = 4,700 ohms 1w.
FT1, FT2, FT3 = .001 μ F ceramic feedthroughs	S1 = Single-pole, 3-way
	Sx = <i>see text</i>
	RLA, RLB = Relays, <i>see text</i>
	X1, X2, X3 = Xtals, 8 MHz
	T1 = Mod. xformer (<i>see text</i>)
	M1 = 0-150 mA, f.s.d.
	M2 = 0-100 mA, f.s.d.
	V1 = 12AT7
	V2 = 5763
	V3 = QQV03-20A

TABLE OF COIL DATA

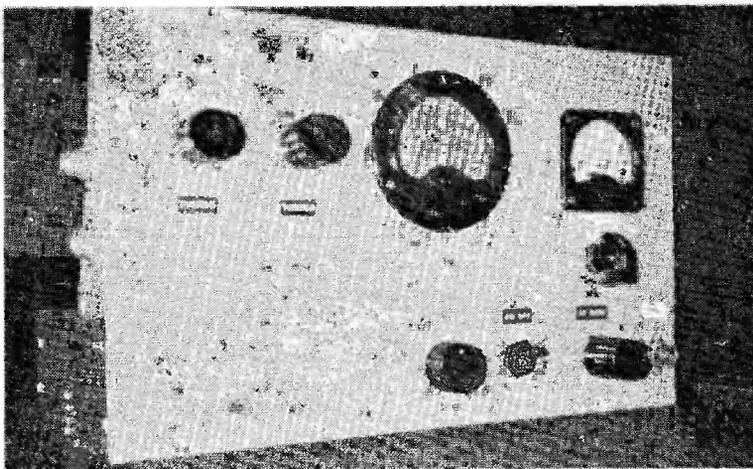
L1 — 26t. 28g. enam. on a ½in. slug tuned former.
L2 — 4t. 22g. enam. ½in. diam. ½in. long.
L3 — 2t. 20g. enam. spaced wire diam.
L4 — 2t. 22g. (p.v.c.) ½in. diam. interwound with L3.
L5 — 2t. 22g. (p.v.c.) ½in. diam. at centre of L6.
L6 — 5t. 18g. enam. ½in. diam. 1in. long, centre tapped.
L7 — 4t. 16g. enam. ½in. diam. 1in. long, centre tapped.
L8 — 2t. 22g. (p.v.c.).
RFC — About 20in. of 28g. enam. on 100K 1-w. resistor body.

Note: All resistors rated ½-w. except where stated.

by-passed with the usual .001 μ F discs with leads as short as possible (*see* Fig. 1). The mechanical layout of the exciter is obvious from Figs. 4 and 5—but the PA is slightly more complicated—*see* pp. 404-405.

Conforming to usual practice, the PA valve-holder is counter-sunk, using tapped al. pillars, so that the internal screen of the QQV03-20A is level with the chassis. Before mounting the PA tuning capacitor on the front

Front view of the G18BDR Tx. The PA tune and load controls are at upper left; the xtal selector switch below M2 (*see* circuit Fig. 1); and lower panel controls are, left to right, tune on freq., send-receive and AF gain, with the mic. input socket at far right.



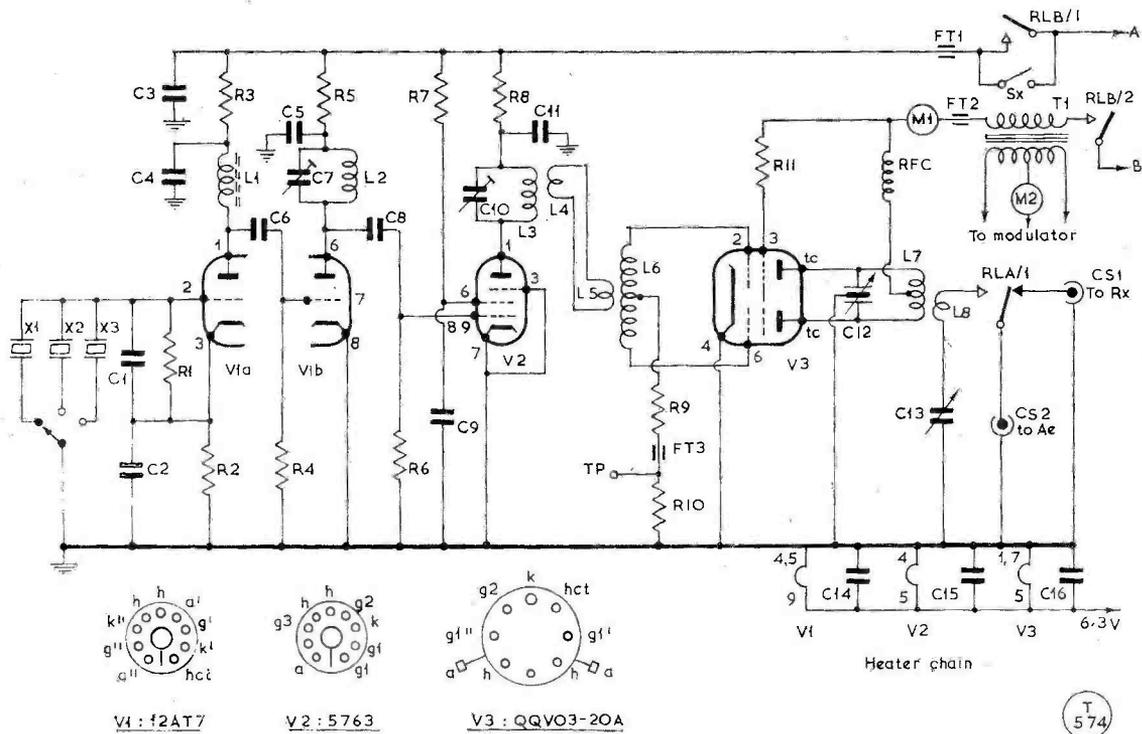


FIG. 1

Fig. 1. Circuit of the Two-Metre Transmitter.

panel, L7 is soldered to it, as are the flying leads which will connect it to the anode pins of the PA valve. At the same time RFC is fitted to L7, its spacing from the coil not being more than half-an-inch; the anode HT lead passes through the chassis *via* a small grommet.

Note that the flying leads from the PA tuned circuit are of stout copper braiding, and if the "proper" clips are not available for connecting these leads to the anode pins of the '3-20A, then two sections cut from a connecting strip will be found to do the job just as well. The aerial change-over relay should now be bolted to a small length of perspex, and this in turn supported by two al. pillars mounted on the front panel. At the same time the side-panel (Fig. 6) is made up and mounted, holes having been drilled in it beforehand for the two coax sockets. (Two different types of socket were used by the author to

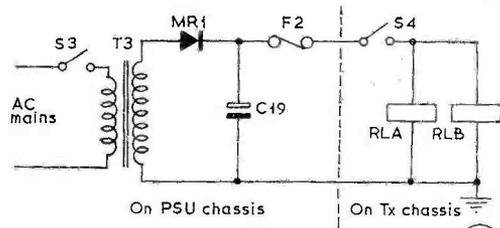
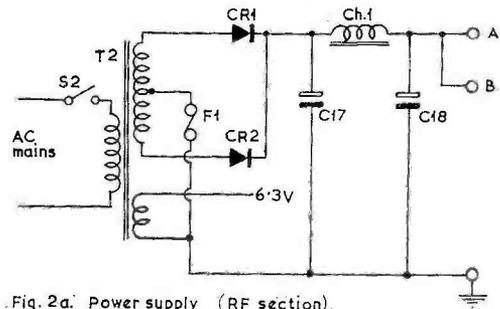


Fig. 2. PSU sections for the GI8BDR transmitter.

Table of Values

Fig. 2A/B. PSU for the Two-Metre Tx.

- | | |
|---|------------------------------|
| C17, C18 = 16 μ F 450v. wkg. | Ch1 = 10 Hy 200 mA |
| C19 = 50 μ F 25v. wkg. | T2 = 325-0-325v. |
| F1 = 250 mA fuse | 150 mA, 6.3v. |
| F2 = 3A fuse | secs. |
| CR1, CR2 = BY100 or equivalent | T3 = 12v. 3A CRT transformer |
| MR1 = 12v. 3A metal rectifier (e.g. ex-battery charger) | S2, S3, S4 = SPST toggle |

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avoid accidentally interchanging the Rx input and aerial cables.) The addition of C13, the link L8, and a few pieces of coax cable for connections to RLA complete the PA assembly.

Lining Up

This is where the fun really starts! The modulator is fairly straightforward, and no trouble should be experienced in getting it going: a watt-meter would, however, be a handy item to have around for final testing.

The RF section is best tested stage by stage, a GDO being essential, first to adjust each tuned circuit to its approximate operating frequency. Starting with the oscillator, each stage is peaked to give maximum grid-drive to the stage following. The final situation regarding grid currents (with HT applied to V1 and V2 only) should be as follows: V1B, 1.0 mA; V2, 0.6 mA; and V3, 2.0-2.5 mA.

At least 2 mA of drive to the PA must be obtained; this should be easily effected but the link L4/L5 and L6 (which, with the internal capacitance of V3, is self-resonant at 145 MHz) will need adjustment.

Note that under no circumstances must HT be applied to the PA until the specified amount of grid drive is attained, otherwise V3 will draw an anode current greatly in excess of its usual rating. Also the PA must always be provided with some suitable load when switched on; this may be the station aerial or, for test purposes, an artificial aerial consisting of a 12v. car bulb (rated at about 20w.) connected *via* a short length of coax cable to the Tx output.

With such a load connected and drive established, the

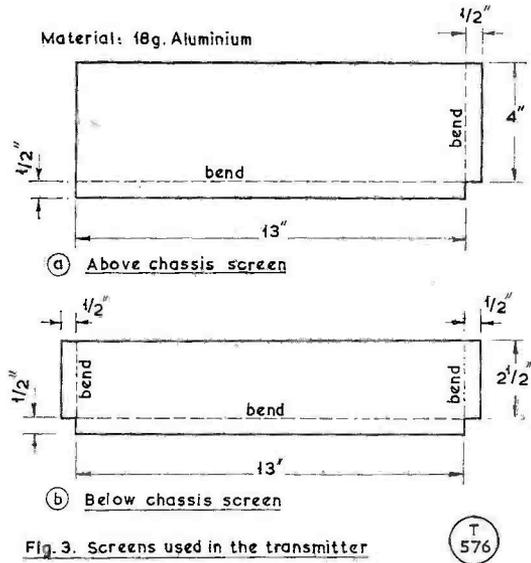


Fig. 3. Screens used in the transmitter

Fig 3. Chassis constructional details.

PA is ready for testing and HT may be applied. As quickly as possible C12 should be adjusted to give a pronounced dip in PA current, and at this point the lamp load should begin to light—note that minimum PA

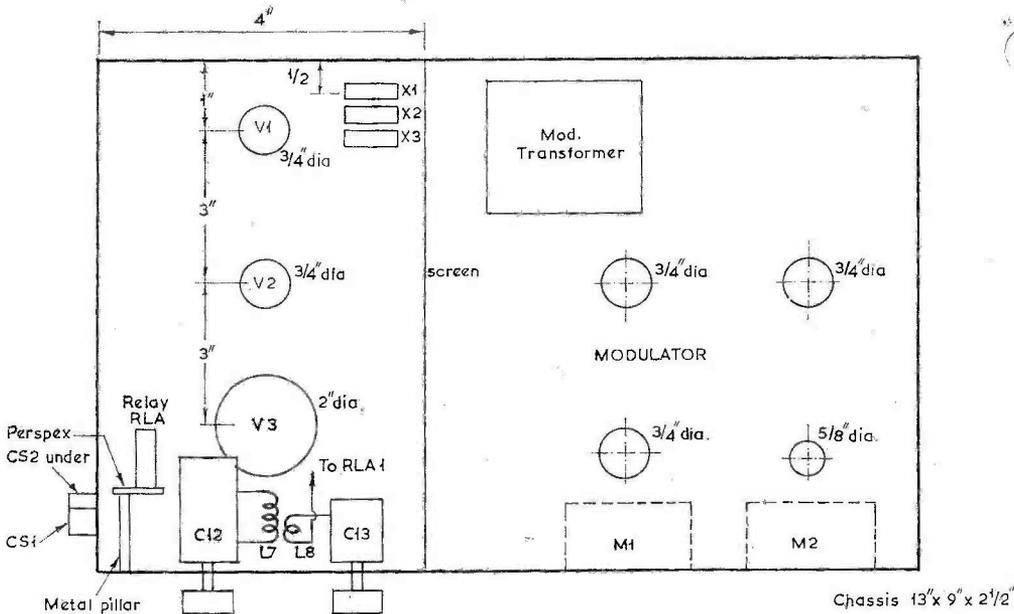


Fig. 4. Layout above chassis

Fig. 4. Layout of the G18BDR Tx above chassis.

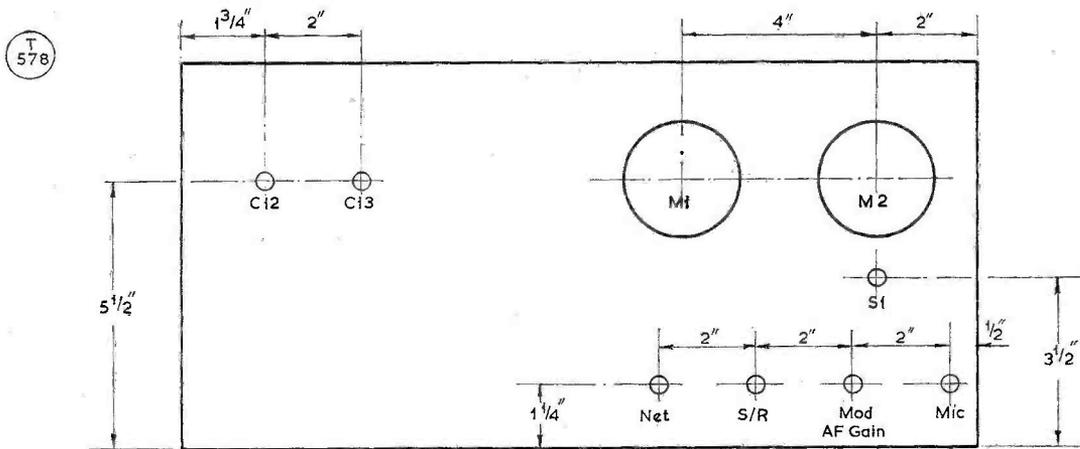


Fig. 5 Front panel drilling

Fig. 5. Front panel drilling plan, on a face of 13 x 8 in. 18g. aluminium sheet. Holes are 1/8 in. dia. for normal controls. Other holes are cut to suit components used.

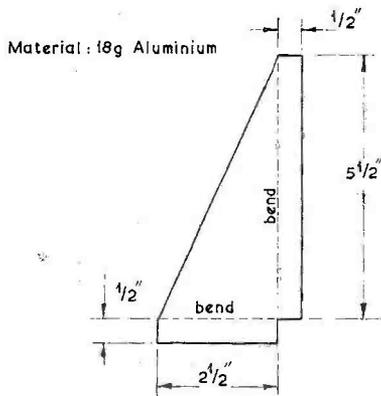


Fig. 6. Side bracket

Fig. 6. Bracket detail for the chassis-panel arrangement, the aerial and Rx sockets being mounted where convenient. Positions will depend on the size and placement of the aerial relay and other parts.

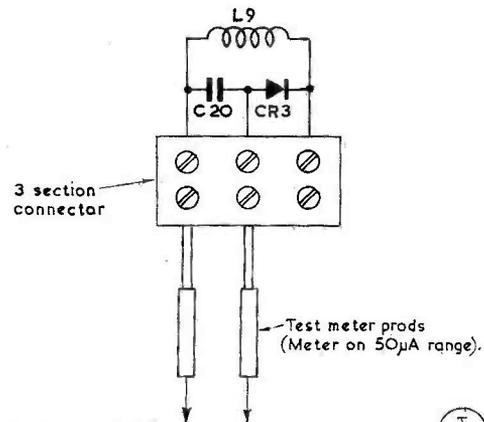


Fig. 7. RF Sniffer

Fig. 7. The RF sniffer device (see text). L9 is 12 turns of 22g. wound to 1/8 in. diameter and 1 in. long. CR3 can be an OA81, and C20 .001 µF disc ceramic.

current does not always correspond exactly with maximum RF output. It should now be possible, by adjustment of L8 and C13, to peak the RF output as indicated by the lamp load. M1 should be reading about 100 mA, i.e., allowing for screen current, PA input will be about 27w. An absorption wavemeter or Lecher-wire system must now be used to ensure that the Tx output is "clean," i.e., no spuri; the final frequency should of course be times 18 the crystal freq., but a check should be made using a receiver and crystal calibrator since a change in freq. often occurs with Xtal ageing. (Remember, 1 kHz out on the fundamental means 18 kHz on two metres.)

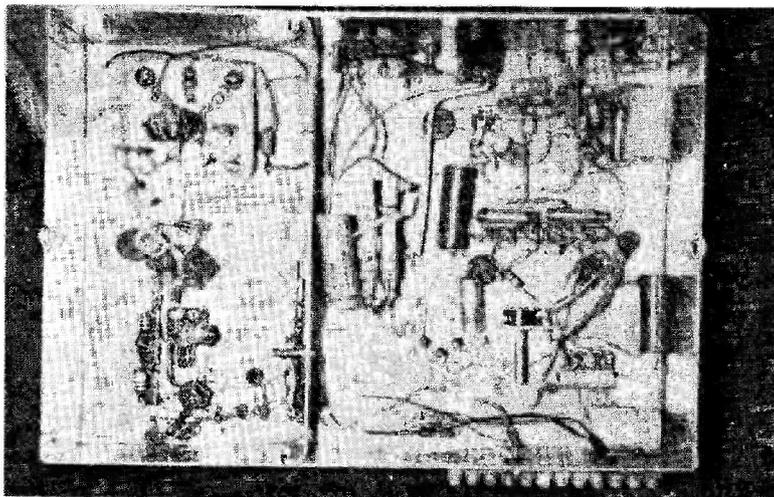
Modulation may now be set roughly to its correct value by advancing the mod. gain control slowly, while

speaking in a normal voice into the microphone and monitoring the signal on the station Rx. A point should be found where the speech sounds fairly clear, and the lamp load brightens on speech-peaks. (A better idea of mod. depth and quality will be obtained from reports received over the air from distant stations.)

A two-metre aerial is now connected in place of the lamp and PA tuning carried out as before. Note that re-tuning is necessary, since the reactance of the artificial load usually differs greatly from the 75-ohm impedance of a standard two-metre Yagi beam.

If an SWR meter is available, it should be connected in the feeder to the aerial and the Tx PA tuned until maximum RF is actually observed going out. The RF

Underneath the chassis of the G18BDR two-metre Tx, with the RF section wiring to the left.



sniffer shown in Fig. 7 may, however, be useful if no SWR meter can be begged or borrowed! This little device, used in conjunction with a 50 μ A meter, forms a fairly sensitive RF field-strength meter which can be used to peak the PA, in addition to being an aid to the peaking of other tuned circuits in the transmitter.

Keying

For CW operation the PA screen HT feed is best

keyed, using a relay to prevent HT appearing at the key contacts. Also the modulator HT should be switched off and the secondary of the mod. transformer short-circuited to prevent damage to it during keying.

In conclusion, the author hopes that this article is of interest to those HF-band operators who have not yet tried VHF, and who would like to have a go on two metres. And when you do come on Two, how about beaming towards GI-land once in a while?

MORE ON CLAPP VFO DESIGN

ANOTHER MATHEMATICAL APPROACH

M. A. SANDYS (G3BGJ)

AMATEUR circuit designers who believe in enlisting the aid of mathematics will have read with interest the article by G3XNM in *SHORT WAVE MAGAZINE* for June 1970 on the problem of bandspreading the Clapp VFO. They may be interested, therefore, in the alternative approach used by the writer, which reverses the procedure suggested by G3XNM.

Capacity Calculations

G3XNM uses a graphical method of determining the value of the series-capacity C_s (see Fig. 1) which suits a particular bandspread capacitor. Rather than design the circuit around the bandspread capacitor, the writer prefers to assign a value to C_s and then determine the bandspread capacity C_b which gives the required frequency variation. The fact that the bandspread capacity may not come out as a standard value need not impose any limitation on the method, since any required capacity swing can be realised by using a larger variable with a capacitor in series to restrict its variation.

The basic tuned circuit of the Clapp VFO is given in Fig. 1. C_p is the effective capacity of C1 and C2 in series; C_b the effective capacity swing of the tuning condenser C_v in series with the pre-set C. Typical values for 3.5 MHz are .001 μ F for C_1 and C_2 , 50 μ μ F for C_s (would normally consist of a fixed capacitor shunted by a small trimmer). On the value of C_s , the *Radio Communication Handbook* states that the ratio of C_p to C_s should be as high as possible consistent with reliable operation. As long as this condition holds (C_p much greater than C_s) the following expression for the bandspread capacity C_b gives accurate results:

$$C_b = \frac{C_p \times C_s \times K}{C_p - C_s - C_s \times K}$$

$$\text{where } K = \frac{f_H^2}{f_L^2} - 1$$

f_H being the higher band limit and f_L the lower band limit.

For example, suppose the oscillator is to cover 3.5 to 3.8 MHz ($K = .176$) with $C_p = 500 \mu\mu$ F and $C_s = 60 \mu\mu$ F.

Then,

$$C_b = \frac{500 \times 60 \times .176}{500 - 60 - 60 \times .176}$$

$$= \frac{5280}{430}$$

$$= \text{approx. } 12 \mu\mu\text{F}$$

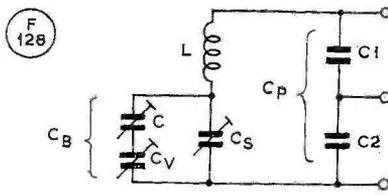


Fig. 1. The basic tuned circuit for the Clapp oscillator. Simple formulae allow the values of C and Cs to be worked out—see text. The pre-set series capacitor C is then adjusted until the tuning condenser Cv gives the required bandspread.

The value of $12 \mu\mu\text{F}$ is, of course, the *capacity swing* that must occur. Even if a capacitor having a known swing of $12 \mu\mu\text{F}$ is available, it is preferable to use a larger variable and restrict its variation by a series pre-set. The range of values which C_B can assume as the setting of the pre-set is varied permits a generous margin of error in the value of components, a decided advantage if using a fixed coil, inductance of which is estimated by a simple formula. A rough guide when selecting the tuning capacitor C_V is to make it not less than twice C_B .

When determining the value of the series capacity C which must be placed in series with the tuning variable C_V to give the desired swing, the minimum and maximum capacity of the tuning capacitor must be taken into account. The value C of the series capacity is given with sufficient accuracy by

$$C = \frac{C_{\text{MAX}} (C_{\text{MIN}} + C_B)}{C_{\text{MAX}} - (C_{\text{MIN}} + C_B)}$$

The value actually errs on the high side, which is all to the good, since it means some extra coverage at each end of the band. Nevertheless, to ensure that C_B can assume a wide range of values, the pre-set should have a maximum capacity somewhat larger than the value indicated by C. Alternatively, if less than 180° of bandspread is acceptable, a fixed capacitor which comes close to the value of C may be used. (It should be lightly soldered in at first as the next available size may give better results!)

Suppose, for example, that a 5-50 $\mu\mu\text{F}$ tuning capacitor is chosen, then

$$C = \frac{50 (5 + 12)}{50 - (5 + 12)} = \frac{850}{33} = \text{approx. } 26 \mu\mu\text{F}$$

Another 5-50 $\mu\mu\text{F}$ variable could be used for C. When set at 5 $\mu\mu\text{F}$ the swing of C_B is 2 $\mu\mu\text{F}$; when set at 50 $\mu\mu\text{F}$ the swing is 20 $\mu\mu\text{F}$. Exact bandspread cannot fail to be obtained with such ample tolerance on each side of the design figure of 12 $\mu\mu\text{F}$.

The Coil

The inductance is found in the same way as in the G3NXM article—that is, by working out the value of L which resonates at f_H (3.8 MHz) with C_P and C_S in series (54 $\mu\mu\text{F}$). It works out at approx. 32 μH . If a suitable

Table 1

f_L	f_H	K	Output Frequency Ranges
1.75	2.0	.3	1.75—2.0 3.5 — 4.0
3.5	3.588	.05	7.0 — 7.17 14.0 —14.35 21.0 —21.53
3.5	3.713	.125	28.0 —29.7

Table 1. Some useful values for K when designing a Clapp VFO for an HF transmitter; see text and formulae. The output frequency ranges obtainable by multiplication are also shown.

slug-tuned coil is to be used for L the design is now complete. It is the writer's experience, however, that an iron-cored coil in a transmitter VFO is not conducive to a T9 note. Should it be decided to wind a coil, the text books quote a number of expressions which allow the inductance to be estimated with varying degrees of precision. For instance, the well known formula for single layer coils (see *Radio Designer's Handbook*)

$$L = \frac{r^2 N^2}{9r + 10l}$$

gives an accuracy of 1% as long as the diameter is less than three times the length. This order of accuracy is adequate for the present application. A more useful form can be obtained, however, by expressing the length as the number of turns divided by the turns per inch and solving for N. It then becomes

$$N = \frac{5L}{r^2 T} \left\{ 1 + \sqrt{1 + \frac{36T^2 r^3}{100L}} \right\}$$

where N = No of turns,
L = Inductance in μH ,
r = Radius in inches,
T = Turns per inch.

Suppose that the coil (inductance 32 μH) is to be close-wound with 26g. enamelled copper wire (T = approx. 50) on a 1-inch diameter former ($r = \frac{1}{2}$).

$$N = 12.8 (1 + \sqrt{1 + 3.5}) = 40 \text{ turns.}$$

Setting Up

Set C to half-mesh. With C_V set at maximum capacity tune to the lower band edge on C_S . Swing C_V to minimum capacity and note the frequency. If the bandspread is insufficient increase C; if too great reduce C. A slight adjustment to C_S will be necessary after each band edge check.

One advantage of this design procedure is that having tabulated the values of K for the frequency ranges under consideration, the circuit values to give correct coverage may be arrived at with a minimum of arithmetic. Some useful values of K for transmitter applications are given in Table 1.

Acknowledgement is due to G3XNM for stimulating the writer to present his own method for critical scrutiny.

LINEAR RF AMMETER

USEFUL PRACTICAL DESIGN

I. E. HILL (G6HL)

HOT-WIRE and thermo-couple RF ammeters suffer the disadvantage of having non-linear scales. If they are used to indicate RF in a feeder of known impedance this is not too much of a problem as a meter can be selected having an open scale in the region of the current value appropriate to the application. For example, a 50-ohm feeder correctly terminated will show 1 amp for 50 watts and 2 amps for 200 watts input. Readings of 0.1-5 or 0.2-5 amps would be satisfactory maximum scale reading for suitable ammeters in each case and indication would occur in the open sector of the scale.

Used in the aerial itself—as in the case of a long-wire or in tuned feeders—the story is quite different, because readings can vary from little or *nil* at a voltage node to several amps at a current node, and (just to confuse the issue) the nodes will change with frequency. Thermo-couple meters are fairly easy to obtain and cheap on the surplus market but changing meters for different conditions is a nuisance. Also, they are very easily ruined by overload; probably more hot wire and thermo-couple ammeters finish their lives from an overload than in any other way.

A RF ammeter having a linear or near linear scale and not so susceptible to overload failure is an attractive and useful item to have around the shack.

The Answer

The unit offered is built into a $4\frac{5}{8} \times 2\frac{1}{4} \times 7\frac{3}{8}$ in. Eddystone diecast box, the RF being sampled on the very short junction wire between two adjacent coaxial sockets. The junction wire passes through the centre of a ferrite core FX3014, or similar, wound with 22 turns of 28g. enamelled wire. Suitable insulating sleeving is slipped over the junction wire to locate it in position and provide insulation from the pick-up coil. The whole coil is treated with insulating varnish or fixative.

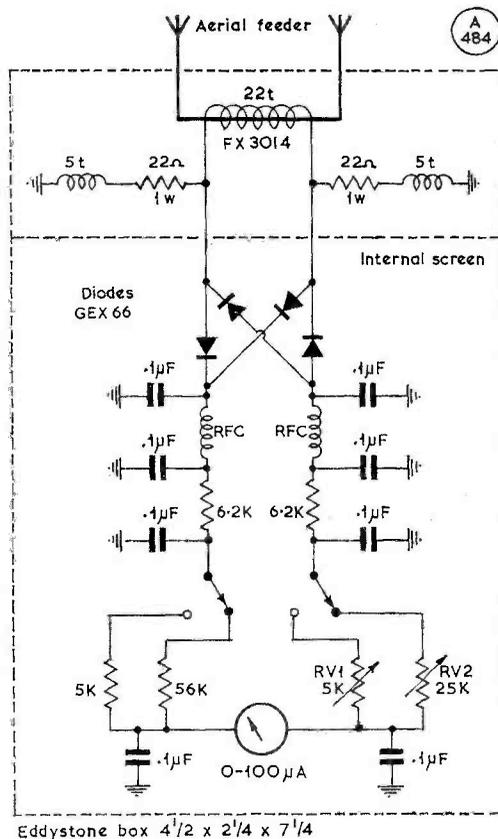
The pick-up coil is earthed through matched 22-ohm 1-watt composition resistors, each in series with five turns of No. 28g. enamelled wound on the resistor casing. The pick-up coil is also connected to the input of a bridge rectifier, using signal diodes (GEX66 or similar will do), with the output decoupled to earth and fed through suitable fixed and adjustable resistors to the indicating meter.

Linearity Factor

Linearity will be improved if a fairly high value of series resistance is incorporated and this dictates use of a low-current microammeter. A large scale instrument having 100 μ A full-scale deflection happened to be available and its linear scale was marked "0 to 3" and "0 to 10." By changing the 0 to 10 scale to read 0 to 1.0 two very useful ranges were available, either selectable at the throw of a switch.

Little need be said about construction; the circuit diagram is straightforward and can be taken for layout.

Calibration can be undertaken by connecting the meter to an RF source with an RF ammeter of known



calibration and suitable range in series (dummy load). Adjust RF current to a value giving half-scale reading on both meters. The series resistor RV1 or RV2 is then adjusted until the meter under calibration reads the same as the reference meter. Check at other current values and settle for an average of mid-scale readings.

The attractive features of this meter are that the scale is near-enough linear and that the same design can be used for quite low maximum current up to anything likely to be encountered in an amateur station. Disadvantage is that it will operate only at RF and there will be some variation in calibration between 1.8 and 30 MHz—but one can't have everything. The model described reads easily to .02 amperes on the 0-1 amp scale. As .02 amps into a 50-ohm load is only 20 milliwatts, the meter is usable for checking RF output from even a flea power exciter. On a 0-1 amp thermo-couple meter the lowest reading is about 0.1 amp and the lower scale is cramped.

In this application the indicating meter has been built into the box but there is no reason why it should not be remotely located. Some additional RF filtering may be necessary in the screened lead and the meter itself must be calibrated with all extension leads connected, but no other precautions are necessary. In the diagram, resistor values are for an 0-100 μ A instrument and scale readings 0-1 and 0-3 amps.

THE MOBILE SCENE

REFLECTIONS ON THE SCENE— SOME REPORTS AND PICTURES

WITH the Rally Season drawing to its end for this year, there is no doubt that most of the advertised events have again been very successful. A Mobile Rally on a Sunday, within reasonable motoring distance, is an occasion for a family outing, with the prospect—as Rallies are nowadays organised—of an interesting few hours for the whole family. When, about 15 years ago, we first started the reporting of Mobile Rallies, and encouraged their development by consistent and considerable coverage in these pages, the emphasis tended to be on equipment and results—what gear the /M's were using and how it was installed and operated.

As things are today, no Mobile Rally can hope to succeed unless it is made a family occasion. The technical side is (almost) a secondary consideration. Another attraction for any Rally must be the availability of "second-hand surplus," whatever it may be called and however it is purveyed.

At this distance of time in the U.K. mobile context, it should not be forgotten that what made mobile working a practical possibility in the first place was the availability

of the ex-Govt. surplus item known as the "Equipment ZC1 Mk. II"—a pretty heavy load of what would now be regarded as junk, which could be set up on the back seat and made to radiate a tolerable signal on 160 metres with the vehicle in motion—indeed, the fact that most of today's mobile working in the U.K. is on Top Band can be traced directly to this early influence of the ZC1 Mk. II. It might almost be described as a malign influence—because in fact of all our bands, 160m. is technically the least suitable for mobile working. (In almost any other country in the world, mobile on 160m. is practically unknown.) Ten metres would be much better (all you need is an 8ft. stalk working as a GP against the car body, the whole being resonant at the frequency), though any HF band from 7 MHz up should enable one to work the world. In fact, some of our /M's do just that, while snoring along the M.1, or wherever.

But you have to be where the action is. So far as the U.K. is concerned, the two bands most used by /M's are Top Band and two metres, undoubtedly because it is on these bands that one can get short-haul contacts at good signal levels. But neither will give the sort of interesting DX possible on the HF bands.

There were, at the latest count, 2859 U.K. amateurs licensed for mobile working, of whom less than 300 would be on the VHF bands.

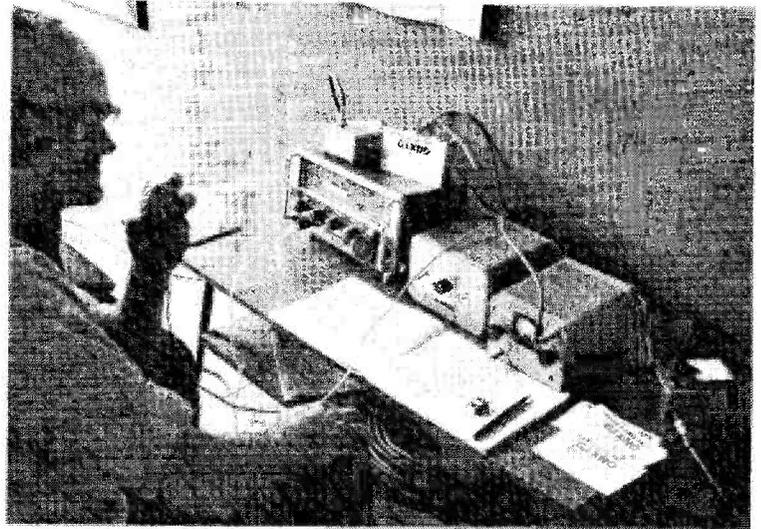
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Worcester & District Amateur Radio Club's annual Mobile Rally at Upton-on-Severn, Worcs., on July 12



The interesting stand put on by Derwent Radio of Scarborough—Desmond Wood, G3HKO and wife Anne—as one of the trade displays at the recent Northern Mobile Rally. They showed a wide range of amateur-band equipment, including the sought-after ancillary items.

For the Northern Mobile Rally, the four-metre talk-in station signed G3XNO, which is the callsign of the Otley Radio Club, who provided the amateur-band communication facilities for the occasion.



The organising committee for the very successful Scarborough Amateur Radio Society Rally on July 19 consisted of, left to right: SWL Buckle, G3VAN, G3HFW, SWL Cammish and G8KU.

was opened by G8ML of Cheltenham. As in previous years for this occasion, the Wx was excellent. Some 900 people turned up, including about 350 mobiles—a very good figure having regard to the geographical location. They had no less than nine good trade stands on the ground, enjoying (so we are told) a pleasant and profitable day. There is no doubt about how the real business is done on these occasions. There were also field sports, a rifle range and a fancy-dress competition—this was where the children and the distaff side were entertained. During the afternoon, in spite of somewhat gusty conditions the local Kidderminster Model-Aero Club gave a magnificent display of radio-controlled flying, marred only by a spectacular crash of one of their aircraft. It is reported that though “the gear was saved, the aircraft was fundamentally altered.”



“ . . . four gallons of 95 octane, pint of SAE 20— and pull the whip out another couple of inches, would you, please . . . ”

On July 19, the Scarborough Amateur Radio Society

For the Scarborough Mobile Rally, the 80m. talk-in was provided by the mobile installation in the car of G3HFW with, in this picture, G3PEJ operating. Three actual 80m. mobiles were worked.



laid on their Mobile Rally at the local Burniston Barracks, which is also a Royal Signals training centre. The date coincided with the 50th anniversary of the Corps of Signals, and many old friendships were renewed on this occasion. The Club is reported to have done very well financially out of what was a most successful event, which is going to enable them to go ahead with their Club two-metre converter project.

Their talk-in stations on 160m., 80m. and 2m. were assisted by out-stations working the callers at distance and then handing them over to the locals for the actual talk-in—an intelligent way of setting up this sort of a communications exercise. They also had on the air G3CIO/A, with a KW-2000A and a KW-600 Linear, to work DX far and wide on the HF bands. An interesting side-show was the RTTY working with the R. Signals Hq. station at Blandford, Dorset.

MOBILE RALLY CALENDAR

August 30: Preston Amateur Radio Society Mobile Rally at Kimberley Barracks, Deepdale, Preston, Lancs. (adjacent Preston North End football ground), with local signposting, opening at 10.0 a.m. Talk-in on Top Band (G3KUE/A) and two metres (G3YJM/A). Refreshments available, also licensed bar. Commission sale of surplus gear (bring your own). Free admission and ample parking space.—G. Windsor, 26 St. Gregory's Road, Deepdale, Preston, Lancs.

September 19: (Saturday). Scottish Mobile Rally at David Livingstone Memorial, Blantyre, Lanarkshire, 10 miles south-east of Glasgow, easily reached from the South via the A.74 and M.74 motorway. Refresh-

ments available on site, charge for parking includes admission to the Memorial museum. Rally will feature trade show, radio-controlled model demonstration and various competitions. Talk-in on 2-4-80-160m., opening at 10.0 a.m. Enquiries and information: G. A. Hunter, GM3ULP, The Bungalow, Bromside Braes, Camp Road, Motherwell, Lanarkshire.

September 20: Peterborough Mobile Rally, at Walton Senior School, Mountsteven Avenue, Peterborough, 2.0-5.0 p.m. Plenty of parking space. Everything under cover, including the giant surplus sale, so bring all your unwanted gear. There will be trade stalls, entertainment for the distaff side and harmonics, and refreshments available. Talk-in on Top Band, and two metres.—D. Byrne, G3KPO, Jersey House, Eye, Peterborough.

September 27: Harlow & District Amateur Radio Society's Mobile Rally (and their 21st birthday occasion) at Magdalene Laver Village Hall, near Harlow New Town, Essex. There will be all the usual attractions, with talk-in on 160m., 10m. and 2m., signing G6UT/A, on the air from 0930 clock. Ample parking space, and a map of the area, showing the approaches, can be obtained on application (include an s.a.e., please), with full details of the event, from: B. G. Capper, G8CUA, 124 Peterswood, Harlow, Essex.

With the close of the Season, we shall be publishing no more on the Mobile Rally front till next year—except for such reports and pictures as we can use in the next two issues.

Our regular Book Lists include all titles of general Amateur Radio interest and cover the whole field for specialised texts.

● ● ● **SWL** ● ● ●SHORT WAVE LISTENER
FEATURE

DISCUSSING RECEIVER DESIGN—

MORE ABOUT THE NEW HPX TABLES—NOTES AND QUERIES—

NEWS AND VIEWS FROM READERS

—FINAL APPEARANCE, OLD HPX LADDER

By *Justin Cooper*

ONE of the oddities about the SWL game, from where your old J.C. sits, is the way trends in SWL activities become noticeable. A few months ago it was gadget-building; occasionally a crop of letters indicate people taking up Morse seriously; then, though all too rarely, receiver construction is the "in" thing. However, as far as the latter aspect goes, all too often the outline the builder sketches out in his letter makes it oh! so painfully clear that he is not only well out of date on receiver techniques, but that there is little or no understanding of the basic principles. Whether the box will use valves or transistors is hardly relevant when deciding where the gain shall be distributed, and how the fundamental problems are attacked. Once the principles are mapped out properly one can go on to the consideration as to whether to use valves, transistors, FETs, or integrated circuits.

Let's take a quick look at some of these basic factors, even if it does mean that a few letters will have to be left out of the piece this time.

In the first place, one can say that the amount of gain required of the receiver is enough to amplify a signal of, say, 0.1 microvolt to a level of voltage large enough to drive the output stage to the full output desired. One does not need much more, to allow for age deterioration, and one does not want less, because if there is not enough to amplify the weakest signal that can be heard to an acceptable level, the receiver will appear to be lacking sensitivity on all but the very best aerials. This sets the total gain as roughly 140 dB from the grid of the first valve to the grid of the output stage.

Secondly, in order to avoid cross-modulation we have to limit the gain ahead of the main cause of cross-mod.—the mixer—to as low a level as may be consistent with over-riding the mixer noise by the weakest signal that can be heard. In pre-war days, one used a couple of gainy RF stages—as in the HRO, for example—in order to achieve this. However, since the war, mixer valves have been improved so much that there is no real justification for an RF stage at all, at least as far as cross-modulation or gain are concerned.

Thirdly, in days gone by it was only possible to get the sort of selectivity one needed by double-conversion down to as low as, for example, 85 or even 50 kHz. This meant that one had two mixers, an IF stage, and maybe a couple of RF stages, in front of the main selectivity at 85 kHz, each one making a significant contribution by way of gain, and each one wide open to any big signals

up the other end of the band. These drove the early stages into cross-modulation, which appeared to the second IF stages as noises *within the IF passband*; and once those noises had been generated within the receiver and fed through the selective chain, they appeared in the output.

Clearly, the answer is to use the best possible first mixer stage, *no* RF stage, and a crystal filter between the aerial and the first mixer, with the gain all concentrated behind the filter. This way, the big signal which caused the cross-modulation would never get through to wreak havoc. This is the *perfect* solution. But until recent years one has not come very close to achieving it. It is in any case just not achievable for the operator who wants to tune the band, and not just peep at one spot frequency. Thus, the ideal compromise today is to use a very low-gain RF stage in front of a very quiet mixer, feeding straight into a crystal filter at a high IF such as, for example, 9 MHz—a frequency for which at least two makers produce IF block filters for the amateur market which are quite good enough to generate, let alone receive, SSB. Out of the after-end of the filter to an IF amplifier of quite wide band-width with enough gain to make sure that the minimum signal we postulated earlier will be detected cleanly in the detector stage, but at a low enough level not to risk the BFO injection being swamped. The remaining gain is in the AF stages, and is enough to make up the insertion loss of the detector, if any, plus enough to bring the total up to our design figure of 140 dB for the whole receiver.

Now, as to the components. Obviously, the RF stage must be either a valve or a FET—*never* a bipolar transistor. On balance, J.C. would be inclined to plump for a valve, probably a nuvistor. The mixer could well be a 7360 as a balanced mixer, fed with a balanced oscillator voltage. The IF and AF stages, the AGC control, and the oscillators could all be integrated circuits for preference, right up to the last stage—and maybe, soon, even there.

The oscillators for such a receiver *must* be stable, and, more important still, they must have no spurious-frequency outputs. Possibly the best solution is to build up a Wadley triple-mix style frequency synthesizer, and take great care with screening to ensure that no RF can get out by stray leakage—which means the synthesizer going on a separate chassis from the receiver. G3KFE wrote just such a synthesizer into his article in the December 1966 issue of *SHORT WAVE MAGAZINE*.

to choose from, from a Top Band quarter-wave outside, through a brace of quarter-waves for Twenty and another pair for Fifteen all up in the attic, the chosen one being coupled to the appropriate terminal of the CR-70A receiver. One was deleted from his list; a RH5HBC, heard on Ten, which he himself had doubts about, although his other queries are all good.

Another very nicely laid-out list comes from *Rochford, Essex*, the home of *J. R. Cowan*. Such well-prepared offerings enormously ease the load at this end in checking and are always appreciated. SWL Cowan wonders how people manage to cover the expense of sending out QSL's to stations all over the world, when one adds up the cost of airmail, plus return postage or IRC's, not to mention the first cost of the card. A good point, this. J.C.'s approach to this is fairly simple, in that he only sends out cards through the Bureau unless there is some good and sufficient reason for a direct QSL. Such a reason could be that we particularly want the card in question, or that we know we are dealing with a country where the bureau service is hamstrung by non-delivery of incoming cards which are stolen in transit for the stamps—yes, it does happen!—or that we are dealing with a station who has a QSL manager who does not handle cards from the Bureau, for some reason. The whole problem here is that the W's are numerically by far the biggest country in the Amateur Radio sense, but—they have *no outgoing Bureau* as it is known here and in pretty well every other country in the world. What outgoing Bureau services there are in U.S.A. are all operated by private individuals. The only nationwide Bureau they have, run by ARRL, deals purely with the incoming stuff.

A 16-valve homebrew double-conversion receiver is in use by *A. P. Whittaker (London, S.E.2)* along with a "V" formation of long wires. At the time he wrote he had just been away to Folkestone, where, with a mere 33-footer, the receiver logged 44 countries in all continents over about 13 hours of operating.

As yet, *C. Deacon (East Ham)* is existing on a borrowed CR-100 which he hopes to be able to continue using for a while so as to be able to rise from his initial 256 prefixes. Chris, surprisingly enough, queries the 5VZWT and similar calls. They are perfectly genuine; the 5V prefix is allocated to Togo and the Z could have been a mistake in the first instance which has been perpetuated in later callsign allocations in Togo. A rather similar situation can be said to arise in the case of the call 8QAYL—her "home" callsign is, of course 4S7YL, but the 8QAYL one she uses in the Maldives is just as genuine.

The next on the pile of first entries is from *P. Batt (Littleborough)* who comes in with 574, mostly picked out on 21 or 14 MHz—the QRM is a bit too fierce on the LF bands for his PCR-3 receiver, which now is modified to take Sideband. Various aeriels have been offered to it over the past three years, and the arrangement at present is a 120-foot wire in a horizontal Vee formation, fed by coax and an ATU to the receiver.

Finally we come to *J. Law (Stonehaven)* with 253 Phone prefixes all nicely listed up; this list includes more than usual of the "rare" prefixes. The only slip that the writer can see is in claiming K6JGS/KHO as a K6 instead of the more correct HK0—an error which

leaves his total exactly where it was!

The New Tables

Not unexpectedly, our change in the rules of the game has come in for quite a lot of comment, both for and against, and—even more predictably!—has been misunderstood here and there. Let's try and clear things up a little. *New* prefixes can only be claimed when they have been notified in this piece—but, if you have a copy of our new Prefix List and you heard 5VZDB, since you know he is in Togo and p.7 of the list shows 5V as being allocated to Togo, this, therefore, is *not* a "new" one. But a prefix that crops up suddenly and is out of the normal line—like the "TC" the TA's are using at the time of writing, or the 4N and YT calls the YU's are now with for a brief period, are most definitely to be held till notified. It's a game of wits, really—you prove to us that the prefix in question appears anywhere in the Prefix List or in any of the succeeding lists of prefixes which will appear with this piece, and you can score him—if you don't, and he does not appear in a later list, you can't claim him, or if you do, we will scratch it out of your list.

Secondly, the All-Time Post War list starts at 500—which means that if your A-T.P.W. score is 550 you stand at 550 in the list and *not* as a lot of people seemed to think, at 50. And while it is fair comment that there are quite a few prefixes which are no longer about, let us be quite certain that no SWL as yet has ever come near to a total which puts him in the position of having heard all the current ones, let alone the ones which have fallen by the wayside. Thus, there is no justification in the comment that "the old-timers have an unfair advantage." Likewise, there is nothing in the suggestion that 200 since January 1 is impossible—any reasonable listener can sort himself out 200 in a weekend of concentrated effort, let alone a year!

Changing our bias a little, although still with prefixes, one has with regret to refuse LI2B and LI3A as amateur calls, even though they were in the bands and operated, at least at the land-based end, by amateurs. However, one has not as yet heard of any QSO's with amateurs other than the traffic between the two stations mentioned. This clears up the point raised by *A. Judge (Bishops Stortford)*, the chap who, as already related, surprised John Fitzgerald.

Also from *Bishops Stortford* is *D. J. Browning*, who is rather cross with poor old J.C. for knocking out his "KJ8" last time; the snag being that he wrote it down as RJ8JBR! Sorry, Doug, but the resemblance of the capital K and R in your handwriting fooled us. You'll just have to write it more clearly!

For most of his time, *H. M. Graham (Harefield)* has been down on the LF bands, thanks to his interest in the HAB game. H.M.G., like many others among the old-timers, is scratching around in his old logs to see what ever there is to be added—but like the rest of us, finds that old log-books have a habit of going missing when wanted! Back to prefixes, where the ZA affair crops up. As previously explained that "ZA1AB" was almost certainly a phoney—but the same may not be true of the OH2BH/ZA operation. One hopes that of the 38 U.K. stations known to have worked him, someone comes forward with a QSL and sets everyone's mind at

rest. Still to come from Albania is the DL7FT foray which should appear with Sideband on 20 and 15 metres over the period September 22-25. DØUJ/ZA was understood to have been abortive as the transceiver had to be left at the Border with Customs; but *Bernard Hughes (Worcester)* heard a signal like him on June 22 on Fifteen—possibly a phoney.

Another phoney was "PF1SF," heard one Saturday morning, on Twenty, by *R. Pepper (Bradford)*, who also had quite an interesting time attacking on the /M operation front, with the help of a Heathkit receiver while he was at a Scout camp.

S. R. Head (Birmingham) seems to have been out of luck—after he had scratched around for quite a while looking for the fault in the receiver, he had no sooner rectified it than the winds came and carried away his aerial. Stephen wants to know if all prefixes must be heard after January 1—the answer is *Yes* for the main table and *No* for the All-time, naturally.

If you are climbing up the 1970 Ladder, and come to close on 500 prefixes, then you can add to your total for 1970 the others which were amassed before 1970 to make an All-Time entry—indeed, there is no reason at all why one should not have an entry in both tables simultaneously if you have suitable figures, and providing you make it *clear* what your totals and lists are for. This should resolve the problem worrying *R. Nicholls (Narborough)* who, incidentally, is one of the very few who dislikes the HPX changes. Bob would like to see something more directly competitive, such as the total of prefixes in a specified time, or on a specified band. This is not really fair—it would involve even more labour at this end, and in any case, what is more important, it is not possible to choose a time or fix a band to suit even most people—we know, we had this very same problem with the SLP's ("Set Listening Periods") of earlier years.

Congratulations to *N. Crampton (Romford)*, who is quite inactive, thanks to the problems which crop up when you start to think of getting married—but when the deed is done he hopes to get back on the bands, if she'll let him off the paintbrush for a few minutes!

Talking of "She" brings us to the next letter, from *Shelagh and John Singleton (Hull)*. It sounds as though Shelagh has put John to shame with her keenness, and as a result she is rapidly overhauling him in the Ladder.

General Chat

Summer weather has cut into the radio time of *G. Dover (Nottingham)*, not to mention end-of-term activities and holidays, all of which have combined to slow his otherwise somewhat meteoric rise up the Table to a mere gallop! Another holding factor still to come is a list of receiver improvements which are to be embodied during the holidays.

Irwin Brown (Newtonabbey, Co. Antrim) wants to know the whys and wherefores of the difference between a Q-Multiplier and a Preselector. Easy. The Q-Multiplier added to the IF strip of the receiver will give an improvement in *selectivity*, the ability to separate a signal from another one right alongside. The preselector, on the other hand, is an onboard unit which takes the signal from the aerial or ATU and *amplifies it before* passing it on to the receiver. This helps if the receiver is somewhat

SWL • • • • •

continued

insensitive, but needs to be driven with such care to avoid cross-modulation that generally it is worse than useless, and can even result in *loss* of signals in cross-modulation noises.

Those BC stations in the 14 MHz amateur band worry *P. Oliver (Mansfield)*, not to mention the ginks who will persist in winding up their AF gain controls to the point where they lose intelligibility and splatter all over the band. Phillip does not say what his receiver is, but one suspects he is suffering from images as well as the in-band stuff.

J. Williams (Wrexham) was quite pleased when he read about the All-time Post War Ladder, as he can go right back to KDKA and Koenigswusterhausen days. However, the smile only lasted until he realised that in the various moves that have taken place since the War, the old log-books have been "ditched." Hard luck, John!

C. J. A. Morgan (Wallsend) is a stickler for form; he wants to know whether a transfer from the 1970 to the A-T.P.W. must be accompanied by a complete new list of prefixes. This must, one thinks, be largely a matter of conscience; to do a thorough check at the time when one wants to make the transfer and weed out any double claims or other minor errors that might have slipped through is obviously a good thing; but on the other hand one would not want to be rigid on the point to the extent of making it a firm rule. So many of the lists that come in—such as Charles's own, for instance—are so clear, and carefully double-checked, that one would take them into the new table without more than the usual scrutiny. However, one gets an occasional customer who has a list which contains errors almost as a matter of form, and from these chaps we would probably ask for a complete new list.

Whatever would a coax socket marked COM.OSC do on a Marconi HR 110 receiver, asks *N. Askew (Coventry)*. Blowed if I know, says J.C. in return—but he has a suspicion that it probably enables more than one receiver to be run from a common oscillator for diversity reception or other similar purposes.

A. Watson (Dartford), the man who once publicly claimed that J.C. did not exist (!) has come a long way in SWL'ing, and now has a KW-2000A and a KW trap dipole at 30 feet for his gear, ready for the great day when he passes the Morse Test and can start to use the full potential of the rig.

T. Hague (Meopham) has some more information to offer on the pirate who deliberately jams various stations, using a recording of a commercial jammer, when they come on for their regular morning net. Tim has changed his receiver, and is now in the throes of a 2-metre converter project.

Having been persuaded to buy a pup, *R. Carter (Blackburn)* now finds he has to be taking it for a walk just at the times when he used to be listening. As if that were not bad enough, all the trailing wires have had to be dealt with as well.

Congratulations to *B. McCombe (Peterborough)* who is now G3ZJW, and already putting his call and rig to good use, not to mention propagating the gospel to a budding SWL in the Oakham, Rutland, area. Good Show!

One does not often hear of a chap who has passed Morse but is in trouble with R.A.E.; however this is the fate of *J. Lee (Nuneaton)*, but all is not lost since G3YTW is still plugging away at him in the hopes that it will be a case of success in the end.

G3KFE, in CDXN last month, dealt with the question of the use of /MM and /MA by the Maritime Mobile chaps. G3PJY/MM has come along with a letter which tallies with G3KFE's remarks, but adds a point of interest in that the /MM operator has to watch his step when operating in the territorial waters of another country, so as not to offend *their* local regulations. Thus the op. has to go delving into the ample volumes of the *Admiralty List of Radio Signals* to find the correct answers. Thanks, Ray, for the info on the point.

Most of us have aerial problems, one way and another, and *K. C. Webb (Slough)* is no exception, being confined to the loft-space and interested in the LF bands. However, surveys are being made of the situation, with lots of help from G3NR, with a view to "doing something about it" soon.

D. Rodgers (Bolton) finds the going a bit uneven with nothing new for hours then three new ones in a matter of minutes; however, Dennis likes the 80-metre DX Net, but like all other fair-minded folk, deplors the activities of the chaps who try quite deliberately to bust up any attempts at DX working.

Talking of bad operators, *H. Alford (Burnham-on-Sea)* echoes the plaint last month about gabbled and garbled callsigns—the Go-Go Brigade!—which have led to many wasted hours of listening for a callsign.

Since last we heard from him, *S. Culnane (Northwood)* has moved home; he has found the new site to be very good for VHF, and so has pretty well completely lost

interest in the other stuff. One must add that his dual-gate MOSFET converter has been given the once-over by the old maestro himself, G3HBW, so small wonder Steve has lost interest in the lower frequency bands! Still, he has one of the best possible mentors, at that.

E. Parker (Hove) has a B.40, fed through an ATU from a 120-foot wire sloping down from 30 feet to 20ft. at t'other end, which seems to be fairly omni-directional in its response. Incidentally, Ernie is on the lookout for a B.40 handbook, or at least the full alignment data, as his box seems to be a little "off" on one or two bands, with annoying little chirrups where there shouldn't be. If anyone can help—sell or loan—please contact Ernie at 50 Sherbourne Close, Hove, BN3-8BE.

Already we have two chaps from the Bishops Stortford area in the piece, and now comes one from nearby *Saffron Walden*, namely *P. J. Starling*. P.J.S. has a good deal to say about the pirates that fester around the bands with dirty signals and foul mouths, some of which are utterly sickening in their sheer oafishness. Agreed, but we are pleased to report that SWL Starling has not been deterred from taking R.A.E. by the piracy, and is now awaiting the results of his efforts last May.

Now to *R. Bagwell (Camberley)* who has had his time for listening considerably eroded by his Tech. Coll. exams and his girl-friend—shame on you, Bob! However, like SWL Starling, he is listening for the postman's feet each morning, until the R.A.E. results-slip falls on the mat. Both lads should be all right, providing enough joss-sticks were sacrificed!

And that about wipes out our space allocation for this time. All the entries for the Tables have been taken in, and the new card-index started ready for the November 1970 and All-Time entries, thanks to those chaps who "primed the pump" last time by putting in entries.

Deadline

For next time, the deadline will be **September 14**, addressed, as always, to "SWL," SHORT WAVE MAGAZINE, BUCKINGHAM. Till then, 73, *de J.C.*

A picture more interesting than it may seem—the engine is one of the smart little locos on the privately-operated Welshpool-Llanfair Light Railway, and the occasion the annual outing of the Stourbridge & District Amateur Radio Society on July 4. On the right are the chaps erecting the aerial for the base-station, which signed G6OI/P. Many interesting contacts were made all over the U.K. on 7/3.5 MHz phone, for which the QSL card includes a photograph supplied by the owners of the Railway.



COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

BEFORE getting deeply into the story of the month's doings, a reminder to the Top Band chaps to be there for MDT, our Daylight Test on September 13, 1000 to 1700 clock. Come on with whatever is your preferred mode, and see what you can work over the 100-mile mark. For ourselves, if enough enthusiasts can let us know what they made of it by the following morning, we will have a quick run-down in October, with full coverage in the November issue.

This is, of course, the season for holidays, which means that quite a lot of mail has come from unexpected places. Holidays often mean mobilising, and in this context your scribe had a rather unpleasant experience recently. He was driving along, operating, listening and calling CQ, when he became aware of a sensation in, as it were, the seat of his pants. Stopping the car and looking below revealed that the nearside front tyre had developed a carbuncle about the size of a fist, half on the tread and half on the sidewall. Clearly this had become audible before ever it got to the stage where it could be felt through the body; and so for some miles we had been driving on a dangerous tyre without knowing it, simply because the mobile rig drowned out the car noise. Not a nice situation!

The General Picture

Rather what one would expect for a July when the sunspot count is on the wane and a change to "British summer" weather is on us—in other words, scratch around for DX on one band or other, or give it best and mow the lawn. On occasions the static has been up to S9 on the LF bands; Ten occasionally opening in a North-South direction, Fifteen spotty; and the bulk of the DX traffic carried on Twenty and Forty.

Let us first take a look at *Eighty*, where the night-owls go to find places to work. W6AM (Long Beach) managed a 229 from KM6DU /KH6, and a 339 with VS6AA to

keep his hand in at the weak-signal reading game; the former one he cleaned up on properly with contacts on all five bands.

G2DC (Ringwood) reckons it is too early in the season to pick up much on 80m.—although he has checked it pretty regularly late at night and early in the morning, nothing of any great interest in our context was found.

Just to show his versatility, G3YXM (Leicester), tried a look at both *Eighty and Two*—but he rapidly made his way back to the more familiar environs of Top Band,

when he heard what was going on! GM3YOR (Kirkcaldy) is made of sterner stuff, and having projected his ten watts on to the band, he stuck it out and for his pains raised sundry Europeans.

G2HKU (Sheppey) usually reports one or two contacts on *Eighty*, and this time he was amused by working OY7JD, who had been calling CQ with no takers—so Ted tried a call on his behalf and scared up quite a few!

Forty Metres

As usual, a band capable of surprising feats—provided one has the



In our May 1970 issue G3WVD (H. Moore, 269 Leeds Road, Ilkley, Yorkshire) was featured as "The Other Man's Station." Here is another view of this extensive and well-fitted amateur installation.

philosophic attitude which does not complain at losing every other QSO over some S9 Klot's chirpy CQ right on top of the DX or, at the other end of the band, finding a little slot in among all the commercial noises.

What is local QRM to us in England is often DX to some other part of the world. W6AM demonstrates this with a list that starts with KM6DU/KH6 and then goes on to various Gus Browning stops, e.g., AC9A/BR, AC8A/MM, 3B6CP, VQ9A/F, ending with VK9DR, all at 599.

As G2DC so rightly says, *Forty* is pretty hopeless during the early evenings, but around 0200 things change very much for the better for a couple of hours in a Westward direction. Jack picked up a couple of new ones for certain in HI8MM and HP8C, not to mention CO2VQ, W1-6, W8-Ø and VE1-4. One contact was made over which a large question-mark lies, namely HJ3C—he was buried under a horde of W's all calling him before Jack could copy the QTH information. Anyone know anything about this one?

A couple of late evening events in the life of G2HKU were QSO's with EP2TW and UL7GW, SSB and CW respectively, which reduced the monotony of alternating between work, gardening and sleeping! G2NJ (Peterborough) keeps his ears open for the /MM ones, and was interested to work G2JL/MM, who was on his yacht 63 miles from Falmouth.

News of Top Band

As a starter, there are three letters discussing contests on the band. The first is from the secretary of the Tyneside Club, who says that on September 12, between 1800 and 2200z, they will be having a contest for Club members—clearly this should mean that stations who are still looking for Northumberland ought to be able to notch up a new one.

Results of the Grafton Contest back in April are now to hand. It will be recalled that this one was spread over three weekends, one each for AM, CW and SSB. Looking at the results, it is noticeable that not one entry played in all three sections. G3RX was the best of the members with scores of 19 (CW) and 49 (SSB) for a total of 68. The non-members transmitting section shows GM3WDF/P as winners, with 76 CW points and 102 SSB against

G3VRW's 138 for runner-up. G3ZDY won the AM section, and GM3WDF/P took both the CW and the SSB section awards as well as his overall win.

Now to the Bristol Contest: This one is strictly Top Band CW only, which is down for 0900-1100z and 1700-1900z on October 4. Send an s.a.e. to G3SWK for a full copy of the rules, at 21 Dickensons Grove, Congresbury, Bristol.

G3PLL writes to advise that, having put ZB2AO, 5R8AO, and G13PLL behind him, he is now in the process of setting up from his latest spot, Oakham in Rutland, and should be on all the bands by the time this appears in print. Incidentally, Dick says that if anyone is still outstanding a QSL card from his previous activities, he will do the needful.

One CQ at 1624z, on 1830 kHz,

netted G3VFA (Broadstairs) no less than three PAØ's in return, in the shape of PAØPN, PAØSS, and PAØDS. George points out that as the Dutch segment is only 10 kHz wide, with DHJ smack in the middle, any reference to QRM by us is purely relative, and cannot compare with their problem!

This is probably the reason why G3ZCC (Chingford) was amused to hear PAØPN calling his head off and getting no takers on at least one occasion. Mick is still using AM, but seems to do far better with it than most operators; probably this is due to his ability to net accurately, so the Sidebanders don't know he has AM until he mentions it, as compared with so many AM stations that cannot be netted with certainty to much under 1 kHz of a station they wish to call.

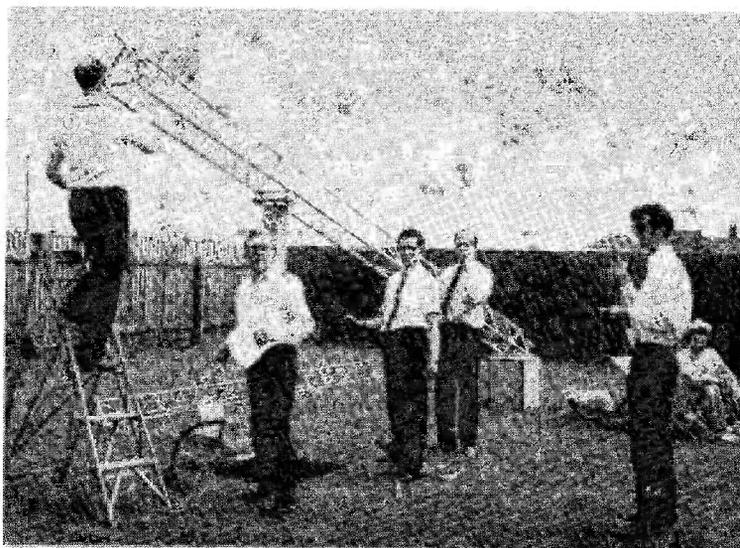
SIX-BAND DX TABLE

(All-Time Post War)

Station	Countries	28 MHz	21 MHz	14 MHz	7 MHz	3.5 MHz	1.8 MHz
W6AM	349	148	159	349	143	118	7
G2DC	338	179	310	329	169	116	20
G3IGW	211	128	153	168	131	105	47
G3DO	339	212	249	332	90	83	9
G3WTV	196	125	134	157	70	74	—
G3PQF	162	105	47	100	84	65	13
G3NOF	319	198	224	308	38	60	4
G3XBY	167	110	124	107	74	57	8
G3KMA	258	198	190	189	131	55	11
9H1BL	189	115	125	140	66	54	8
G4RS	194	82	114	124	55	41	13
G3YDX	131	69	77	47	54	39	9
G3LZQ	265	140	156	215	72	38	8
G3VPS	144	49	48	122	60	38	14
G3RJB	176	76	59	163	60	37	8
G3WPO	105	36	24	66	49	31	24
G3XAP	11	44	46	46	60	30	13
G3VLX	51	7	12	20	7	27	19

Note: Placings this month are based on the "3.5 MHz" Column. Claims must be made at least every three months to retain a place.

Getting it into position—a 40ft. Western Electronics "Versatower" going up for old-timer G2FT (Mablethorpe, Lincs.) second from left in this picture. Assisting him were G3THX (on steps), G3MWV, G3NMY and G8DDP. The "Versatower" now carries a 6/6 for two metres and a 3-ele HF band array. G2FT at his new QTH is only a couple of fields away from the Post Office Coast Station GKZ, Humber Radio—making things a bit difficult for him on 80m. But he works the other bands quite successfully



A gentle rocket for our errors with his callsign comes in from GM3NNU (Bonnybridge), along with a mention that the chaps who, like your conductor, lack Inverness-shire, should keep an alert ear out for GM3YXU who is in that county.

Our comment last time out about the pruning-hook resulted in a retaliatory letter from G3YPM (Swanage), who has gone through his counties worked - and - confirmed collection ready for an entry in the main Table. He says Swanage seems to be chock-full of licensed amateurs and SWL's on holiday, with the result that he has personal QSO's on an average twice a week through the season.

Another of the Swanage crew is G3YPT, who is of course engaged in a healthy battle with G3YPM, although for much of July he was occupied fully with modifications to the radiating system, both in the air and underground, with a view to improving getaway. Paul mentions that often he comes up and calls CQ around tea-time but rarely gets a customer, even though when he does it is usually well over the 100 miles.

At GI3WSS (Holywood), the trend seems to have been to spend more time on 80 and 40 metres, because of the high level of static, but Cyril does mention contacts with GM3SSB/P for Nairn and GB2GW in Brecknock for a couple of new ones on 160m. phone. Possibly more important to Cyril was the arrival of QSL's from DL9KRA to give him

his 14th confirmed country on Top Band; and the biggest frustration hearing and calling ZB2AA at 559 and not being able to raise him.

Since he knows he is to be axed from the table shortly, GM3YOR has written in a short note to bring his scores up to the last minute. Drew has not been very active of late, what between the examination run-up, holidays and static. The lay-off seems to have also affected his "Midas touch" as his calls to several wanted stations of late have failed to produce the goods.

G3YXM (Leicester) is distinctly bolshie at the moment, and people working him are noting a slight loss of signal—some utter offender snipped a hundred feet off one leg of Dave's monster centre-fed $\frac{3}{4}$ -wave aerial, which has done funny things to the feed impedance and the radiation (when we say funny, we mean funny *curious*, not funny ha-ha!).

Yet another to mention static is G2HKU, who managed to raise GB2GW for Brecon in spite of a standing S8 reading on his S-meter. Another contact for Ted was, of course, his regular chat with PAØPN—both QSO's using SSB.

As for your poor old conductor, he remains an absentee from Top Band—the longest absence from the band since he was first licensed—but is threatening, if all else fails, to return and work some more stations, provided his static killer shows some

signs of working.

Comments

G2FUX (Ringwood) is off soon on a longish trip; to ZS from September 2-25; VK October 5 till December 8; ZL December 14 till January 21, 1971, followed by W from February 14 until some time in April or May. All the permissions have been applied for, but none of the calls were known for certain at the time of Frank's letter. G2FUX's responsibilities as far as the Ockendon Award is concerned will be handled from his home address by his daughter; this leaves the Ex-G problems, and these will be taken over *pro tem.* by G8FG at 235 Station Road, West Moors, Dorset.

A few words on the subject of aerial reliability come from a wise old owl in the form of G2DC, also of Ringwood, who has just had his Quad down for checking over, a routine he goes through every couple of years. A few coats of varnish, and some grease on the nuts and bolts and up it goes for yet another couple of years—it has already done eight, and shows no signs of deterioration. A good point this, when it is considered that gravity could finish what neglect might have started.

Last time out we printed G3NOF's list of QSL managers and addresses, including one for M1B. A letter from SWL Spry of Boston Spa points out that WA3HUP handles M1B's cards, and that the phoney "M1B" who

gives out IIMKN as the place for the cards has actually had the cheek to call WA3HUP—but when challenged he seemed to pull the big switch and has not been heard of since.

The Mayflower '70 award is now subject to different conditions. To get it, work any five stations in the county of Devon, or any five of the committee controlling the Fund (namely, G8QQ, G2YM, G3WOB, G3PKO, G3WDQ, EI5M and G3VUC himself) or any combination of these to the total of five stations. No cards required, just a certified log extract, plus 8s. 6d. SWL's are also eligible.

G3SPI, secretary of the Plymouth Club, reports on the efforts of GB2USA, their special-activity in connection with Mayflower '70. They ran a KW-2000B and a TA33, the four weeks of operation ending on August 15. Applications for the commemorative certificate should be sent to G3SPI, *QTHR*, and not to G3KFN who was previously mentioned; any applications which may have already been sent to the latter should be renewed to G3SPI. There may, we understand, be some delay in handling the certificates and getting them out to the recipients.

An expedition to Lundy Island, in the Bristol Channel, by an R.A.F. ARS group is scheduled for September 22-29, under call sign GB3LI, running SSB on all HF bands. The QSL's for the occasion will be handled by G3TPY, *QTHR*, with G3YUN as

**"FIRST-YEAR-OF-OPERATION"
LADDER**

Top Band Only

Phone/CW Place of Honour: G3YMH, 89/16

Call sign	Date Licensed	Counties	Countries
G3YXM	14/11/69	86	14
G3YPM	20/8/69	81	15
G3ZDY	21/2/70	81	11
G3YPT	20/8/69	70	14
G3ZCC	12/3/70	52	8
GM3ZDH	24/3/70	36	5

CW Only Place of Honour: GM3YOR, 80/10

Call sign	Date Licensed	Counties	Countries
G3YPT	20/8/69	64	14
G3ZCC	12/3/70	31	6
GM3ZDH	24/3/70	28	5
G3YXM	14/11/69	15	8

A first entry to this Table must contain a statement of the date of first licensing or of commencing operations.

Reporting the HF Bands

leader of the party. It will depend on the Wx (to get the gear landed) whether they will be able to keep to these exact dates.

DX Snippets

The Gus Browning tour continues; at the third week of July he was reported at Blenheim Reef, and moved to Chagos for three days, then on to Aldabra, followed by another spell at Geysir Bank; at the time of writing he was understood to be going on to FR7/J, followed by FR7/G, and then home. Rumour suggests he may well join the proposed CE0X and CE0Z sorties which are down for next November.

Looking at the ZA picture, it is understood that OH2BH/ZA made a total of 868 QSO's with 52 countries during their 8½ hours operation before the authorities shut them down, the rig being an HW-32 supplied to them by WA5REU. Looking onwards to the DL7FT try at this country, G2DC reports Frank as saying that the main reason why permissions have not been granted for so long is that all the applications have been sent to the wrong place and have ended up in the wastebasket of some minor official who has not a clue as to what it is all about. Let us hope DL7FT is right in his assumption and that when he gets to Albania ZA is well and truly put on the map, if only to reduce the enthusiasm of these piratical inventors of ZA signals who plague Twenty in particular.

When this reaches you, there will still be time to find and work ZF1—probably the call will be ZF1ML, and the operators behind the signal K9QFZ, and K9RJP. It is intended to try and concentrate efforts on to the LF bands so as to help the 5BDXCC merchants to bring up their totals on *Forty* and *Eighty*, albeit they will not neglect the other bands. The spot to look for is about 5 kHz inside the U.S. band-segments, announcing where they will be

listening for replies; most of the operation will be split-frequency, but some transceive time will be allocated. Cards to K9QFZ, Melvin Lehman, 3951 Albion, Lincolnwood, Illinois, 60645, accompanied by an s.a.e. or addressed envelope plus IRC's.

It is fairly well-known that the International DX Association has been instrumental in getting gear to operators in remote spots, the officers being WA5REU, W3DJZ, K3RLY, and PY2PE; the membership subscription is two dollars a year, sent to the treasurer, K3RLY, and by so doing you are helping to finance their programme of getting the DX on to the bands.

XEIRV is none other than our old friend GW3ALE and long-time member of the Grafton Radio Club, who has been worked on Twenty CW around 0430z. A couple of CW YL's in ZL4GR, Myrtle, and 5X5MP in Kampala, giving name as Sverre and QSL address as *via* LA8ML (which in fact is her home call); both have nice signals. On the other hand the CDXN brickbat-of-the-month goes to TA3OZ with a real rock-crusher of a signal which was charitably recorded as T2, his frequency at the time being centred around 21030—it could not be measured any closer than that! As joint holder of this new award—we only thought of it a minute ago!—we would place the UK1 station who baffled all attempts at reading his CW until it was realised that he had a T9x signal on two frequencies and was jumping erratically from one to the other. Two receivers, one on each of his frequencies, yielded perfect copy!

On a more personal plane of DX comes the sad story of a near neighbour who has recently moved away; when he was all but ready to go, he and G3KFE were having a farewell tankard of ale. The neighbour was twitting your conductor that the only reason for moving was to put as much DX as possible between his TV and the G3KFE aerials. Imagine his

surprise, on moving in, when what he had taken to be the next-door TV aerial started to rotate, and his TV picture departed the screen. At least his old neighbour only carved up his TV when he had not tuned the RF stage up properly!

The HF Bands

Making a start with Ten, where your G3KFE has sadly to report that, in spite of a daily check, he has not once managed to find it alive, albeit he has come near enough just to hear it going out.

Bringing his Six-Band Table entry up-to-date, G3DO (Four Oaks) notes a few new countries on all three HF allocations, with Ten giving F0VQ /FC, and M1AP.

His regular checks revealed nothing of any interest on Ten to G3NOF, who heard a few openings to Europe and Africa in the early afternoons, mostly in the 9J2 direction. The only QSO's mentioned were with 4N2BR and PY5YC.

A similarly pessimistic view of the band is taken by G2DC who found that things fell off rapidly through the period, with only Europeans worked apart from VQ9/A/A, AX8HA and 9J2TL.

W6AM does not comment on band conditions in his letter, but it is significant that even with his aerial farm to help take advantage of the slightest lift in conditions, the only 28 MHz QSO in the list was with KM6DU /KH6, who gave a RS 56 report only;

and it is pretty clear that W6AM was quite definitely intent on making a five-bander of it with Kure, and so had to turn the trick on Ten.

On Twenty Metres

Skipping Fifteen for a moment we come to the old faithful, which seems to be groaning at its poor performance, to judge by the funny noises that emanate from the speaker on occasions. However, like Forty, it is rare that *Twenty* is checked and found quite dead.

For G3KFE much of the period has been spent, once again, in a voluntary SWL watch on the band, this time mainly because of the need to evaluate a new aerial system and its effect on the receiver. However, there has usually been pay-dust on one mode or another.

"Variable," just about sums up G3NOF's view of Twenty. On some mornings the VK's have been heard till as late as 0900, while on others they have gone by 0800, as indeed the W6 path has varied in the same way. Around 1000 there were a few Pacific stations, and at 1100 the KL's have been out in strength on some days. In the early evenings have come, among the EU's, the odd VU or HS callsign. Gotaways included EA9AA, KP6AL and KS6CY, but Don made his number with ET3DS, HP8C (Contadora Is.), HS4ADB, K6UNT/KL7, KJ6CF, KH6FF, KL7's, VU2VAE, WB0BSW/VE8, ZD7SD, 4N2BR, 4N2HV, 4N2KO

and 4N2SO (all on the Dalmation Is-
tours), 6W8DY, 6Y5SR and 7Z3AB.

G2NJ seems to have deserted Top Band in favour of 80-40-20m., where he lies in wait for the /MM callsigns to add to his collection; this time it was K2UME/MM who gave his location as "somewhere in Region 2"—one trusts he was not aground!

W6AM worked the 4N2 chaps on Bolta Is. in the Adriatic, when they were signing 4N2SO, also WB8GMA /KH6 on Kure, AC9A/BR, FK8BG, VP9BY, AC8/A/MM, when Gus was *en route* to Bleinheim, KC6JC, all on CW. Also HP8C, AC9A/BR and KC6JC with SSB.

For G2DC this was probably the most interesting band, as he checks it around the time when the Europeans are going off to work and the W6/W7 contingent to bed, which leaves it nicely clear to the DX for a bit—say around 0700 to 0830z as the area. However, although it is, as ever choc-a-bloc with Europeans and QRM during most of the daylight hours, the DX is nearly always to be heard provided one can read it through the top layers of QRM. Jack used his CW to good effect on AC9A/BR, HI8DAF, KC6CT, KZ5DI, KL7MF, KH6IF, KH6AG, VQ9/A/C, UW0UF, XE1NMF, VK2-7, ZL1-4, VE1-3 and all the W call areas.

At G2HKU SSB yielded W7HKI, K0BLT (Nebraska, at 0221z), and AX3PA, while a little CW practice resulted in the booking-in of 6Y5SR, who should, incidentally, be on leave



DON'T FORGET MDT
Next "Magazine Daylight
Test" on Top Band, CW or
Phone, Sunday, September 13,
1000-1700 BST. Call "CQ
MDT" and look for stations
over the 100-mile mark.
Report any such contacts, with
time, RST and QTH, as soon
as possible after the Test.

Bob Snyder, who gets around the world in the DX context, now signs LARAD, but he is just as well known as 9V1LP, W0GTA/8F4 and other interesting and exotic callsigns. We don't know the identity of the lady in the background but assume she is part of the decor!

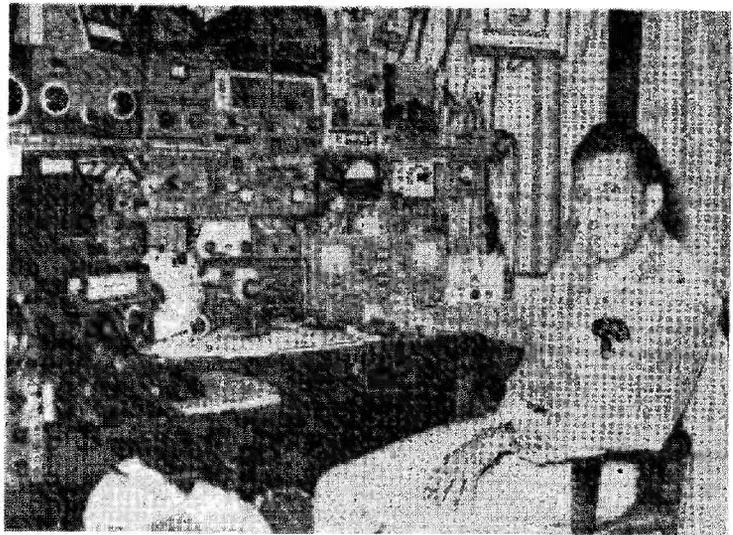
by the time this is in print.

G3DO has only one QSO to report on Twenty, but he is quite pleased to find a new all-time country in the shape of OH2BH/ZA.

Fifteen Metres

By this time long-time readers of this piece are probably thinking that we have either clean forgotten the band, or, on the other hand, that some earth-shattering event had occurred on it. No, gentle readers, nothing of the sort—it's just the first time we have ever put it right on the end.

Until he went even further northwards, GM3JDR was always the 21 MHz specialist. This time we have a successor in the form of G3ZAY, who goes one stage further in specialisation and is "one band, one mode." Martin has a long list to offer, including VE7UBC, VE7CK, VE8YL, VS6BE, VS5PH, XW8DM, XW8DS, XW8DG, KG6AAY, KG6ASP, KH6HV, KA2KS, VQ8CZ, VQ9E, FR7ZW, 9N1MM, 9V1OX,



WB2OZW, Paul Atkins, 56 Ormsay Street, Park Ridge, N.J. 07656, is in the exclusive U.S. extra-class licence category. He has plenty of fine equipment and operates on all bands 10-160m.—he is one of the East Coast W's who has worked Europe on Top Band under the American 100-watt power limitation for 160 metres. An extensive aerial system includes about 1,000 feet of buried copper wire for radials. He uses a keyer unit somewhat on the lines of that now being described by G3MNO in "Short Wave Magazine." A member of F.O.C., Paul likes to work phone as well as CW—"both sides of the fence," as he puts it—and was licensed in 1964, obtaining his extra-class rating in 1967.

TOP BAND COUNTIES LADDER

Station	Confirmed	Worked
<i>Phone and CW</i>		
G2NJ	98	98
G2HKU	98	98
G13WSS	96	97
G3WPO	95	98
G3VLX	95	98
G3XTJ	92	97
G8HX	86	89
G3XDY	83	96
G3KFE	58	78
G3LXD	46	78
<i>Phone only</i>		
G2NJ	98	98
G3WPO	91	98
G3VGB	91	97
G3PQF	88	98
G3XTJ	78	92
G3XDY	61	87
G13WSS	60	70

(Failure to report for three months entails deletion from this Table. Claims may be made at any time. Six months of "Nil" reports will also result in deletion.)

9K2BF, AX9AC (Papua), HS1ACW, ZD3D, TU2CS, FL8RC, 5A5TH, 5H3JR, 5K3LB, 5B4ES, 5J3CC, HP8C, HC2CV, PZ5RK, KZSAM, VP2KN, OA4LM, 9M2EK, 9V1PP, 7Q7BC and 7Z3AB. All these hooked, but still there was the odd one that got away, among which we can list VR2EK, VR1L, HC8RS, KS6DH, KH6TD and KR6AU. The G3ZAY set-up in Petts Wood certainly seems to do the trick!

For G3DO it is usually a case of reporting in only with the new ones, and tradition is followed this time, with KM6DT, KS6DH and ACØA/G the mentioned contacts.

Conditions showed a slight improvement during the month, in the view of G2DC, particularly in the evenings after about 1800z, when the Far East, Africa, and both halves of America are there for the taking. However, on about two days a week one finds the situation to be that only Europeans and the eternal JA's are to be heard. CW QSO's were made with AC9A/BR, CO2BB, CR7IZ, hordes of JA's, KH6GF, MP4BIR, MP4BFO, MP4TDA, PZ1AP, UM8AD, UL7FD, TU2BW, TA3OZ, VS9MZ, VK4YP, VU2OLK, VQ9/A/A, ZD8JK, ZS6D, ZM2GH,

6W8GE and 7Q7AA.

Still on *Fifteen*, W6AM seems to have made the odd foray apart from his 5BDXCC contacts. XW8BP, CX3AN and KM6DU/KH6 have been the high-spots of the month with him, all on CW.

A very patchy band, is the opinion of G3NOF, who found it to go from one extreme to the other at times. Some days the JA's have been in by 1000, with Pacific openings a little later; W's from 1100 until a fade-out around 1400, returning in the early evening; and then continuing to 2300 or sometimes even into the small hours. Gotaways included JY1, KS6DH, HL9KH, VR1L, XW8BX, 5VZWT, but Don did better with EP2BQ, ET3DS, FL8MB, G3BLE /MM off West Africa, KR6JU, TJ1AW, ZC4IK, ZD8H, ZS1J, ZS1KZ and 5Z4MO.

Sending the Cards

First you need to know where to address them, and to help G3NOF offers the following: VU2VAE to K2UOP; TJ1AW to K4ZCP; 4N's, all to YU3NEG; KA9JA, to WA1JVA; ET3DS, to VE3DLC; ZD8H, to KØETY; VR1L to W6NJU; 5VZWT to W4SPX;

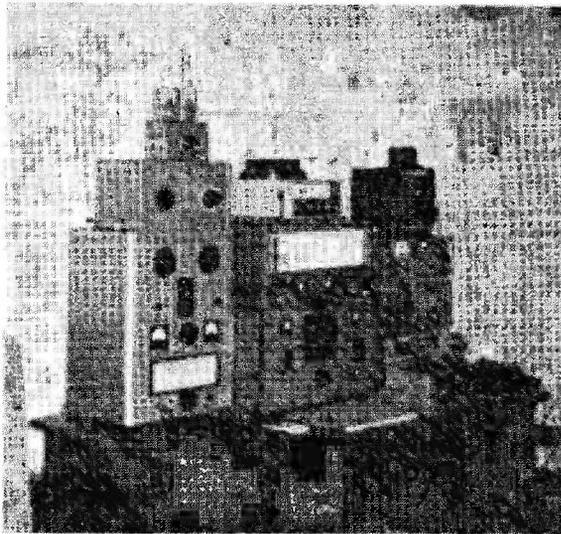
K6UNT/KL7 to Box 487, Point Lay, Fairbanks, Alaska 99701; FL8MB to P.O. Box 49, Djibouti—the latter will have gone QRT by the time this is in print and returning to France permanently.

To add to the G3NOF collection comes W6AM, who offers *WB8GMA* /*KH6* to *KM6CE*; *HP8C*, to *HP1AA*; *FK8BG* via *W5IXQ*; *XW8BP* via *DL7FT*; *KC6JC* to *W2RDD*; *VK9DR* to *W2GHK*. Thanks for the information to W6AM and G3NOF.

Close-Down

And so we come to the end of a review of a hot, sticky, humid month where anything less than an air-conditioned and cooled shack was intolerable. However, soon we should be seeing the first signs of the lift to autumnal conditions, and in the weather shortly after that—but *not* until G3KFE has had his holiday!

Anyway, the deadline for next time is first post on **September 7**, addressed as always to "CDXN," SHORT WAVE MAGAZINE, BUCKINGHAM. Till then, *73 es DX*.



Station of Arthur Edwards, G6XJ (The Anchorage, Livermead Headland, Torquay, Devon), well known in the Amateur Radio world as the chief executive of Eddystone Radio until his retirement two years ago—see p.115, April 1968, "Short Wave Magazine." Always interested mainly in CW/DX on the HF bands, basically his gear consists of a professionally-designed and built all-band CW Tx, Eddystone EA-12 and EC-10 receivers (what else!) and sundry other items such as a BC-221 and a Solent D/F Rx. The main aerial at G6XJ is a long-wire aligned for VK/ZL, and he has a clear take-off across Torbay.

J-O-T-A, October 17-18

Following is the first list of U.K. stations to be on specially for the Jamboree-on-the-Air, the 13th in the series, over the weekend October 17/18. This has now become an international event of world-wide interest in the Amateur Radio context. It is *not* a contest but simply a QSO Party, the object of which is to put Scouts and Scout Groups in touch with one another through the medium of Amateur Radio.

Any AT-station operator willing to assist and able to entertain a party of local Scouts while he is on the air for the event will find that they would be very grateful to have an invitation. Contact can usually be arranged through the local newspaper if the Scout authorities in the district are not known.

The organiser for J-O-T-A is Leslie Mitchell, G3BHK, 28 Darwall Drive, Ascot, Berks.—and it was he who, years ago, conceived the idea of getting Scouts together over the air by Amateur Radio.

For our final J-O-T-A list, to appear in the next issue, we should have notifications—addressed "JOTA," SHORT WAVE MAGAZINE, BUCKINGHAM—not later than **Monday, September 7**. It will not be possible to include any received after this date.

EI2CBS: To represent the 2nd Cavan Troop, Cavan, Eire, operating SSB on all bands 10-80m., and on the air for the duration.

GB3ANT: At the Mosley Antenna Site, Rackheath Airfield, Norwich, representing Norwich Scout units and Guides. Operation will be on all bands 10-160m., with simultaneous working on two bands throughout the Jamboree period.

GB3BW: Representing the Eastbourne & District Scout Association, signing the same call on all bands from Top to Two, for the whole weekend.

GB3CUS: To represent the 8th Carlisle (Upperby) Scouts, running AM/CW/SSB on all bands 10-160m.

GB3FES: For the 1st Edgware Scouts, at their Hq., Summit Close, on all bands 10-160m. and two metres. Organised by the Edgware & District Radio Society.

GB3RES: Put on by the Cray Valley Radio Society for the Royal Eltham District Scouts at their QTH in London, E.9, running all bands Top to Ten.

GB3SSS: For the Solihull School Scout Group, station to be provided by the Solihull Amateur Radio Society (operators G3PYR, G3XIP, G3VPE) working SSB on 80-160m. and 10-20m.

G3TZR: To represent the 1st Allerton (Liverpool) Scouts, running AM/CW/SSB on all bands Ten to Top.

G4BP/A: Operated by the Scarborough Amateur Radio Society for the 1st Scarborough Scout Group. Station will be located in the most modern Scout Hq. in the North of England, with every facility and amenity. All bands 10-160m. will be worked, with appropriate antennae systems, using CW/SSB, with a team of operators available for the whole weekend.

In most cases, specially designed QSL cards will be sent out to confirm all contacts, both by U.K. stations and the DX. As this is the 13th Jamboree Year, there must by now be some amateurs and SWL's with a pretty unique collection of J-O-T-A QSL cards.

VHF BANDS

A. H. DORMER, G3DAH

PROPAGATION has been very "curate's egg" this month. From the July 144 MHz contest onwards, the axis of best propagation has oscillated between North/South and East/West, although without any sustained DX in either direction. The early days of July favoured propagation to the South, with the French stations down as far as Paris being at good strength in the Home Counties, and workable in the Midlands. Sunday, July 12, saw HB9AEN/P with a terrific signal on AM, and the French stations good for the next few days, although the lift was very localised, as PA and ON were neither particularly numerous nor strong. By mid-July, contacts North/South were being made fairly easily, and this state of affairs persisted until around the 23rd, when West Country and GW stations were again heard well — GW8BRC/P (Merioneth), G3CLW (Paignton) and G3PBV (Bovey Tracy) being particularly good.

This sort of variable pattern, with occasional short-lived lifts, remained typical of the period. Mention may be made of the reception of GB3ANG over the weekend of August 1/2, when the signal was RST 549 in Herne Bay for hours on end, with the Durham beacon well up on that.

G8BCL in Halifax was very strong at that time, but little other activity was noted. Sunday morning, August 2, saw an unusually fine crop of ON's, all at 59+ in the South, but again, few PA or F. All very local stuff! Propagation on 70 cm. was good over that weekend, but, need it be said, there was only derisory activity.

August 5 saw a two-metre opening to Scandinavia and Northern Germany in the late evening, with OZ9SW and DC6BW specially strong signals on the SSB channel, and on August 12, HB9ADJ/P, from the Le Chasseron site in QRA DG13b, was busy working GC on 145.41 MHz until quite late in the evening.

The G3VER expedition to the Northern counties was heard at adequate, five and sixish, strength throughout their trip in mid-August, and a report on their activities, with comments on operations, and conditions generally, will appear later.

Apart from the comments above on 70 cm. activity, there seems to be little to be said about either that band or 70 MHz, which, after the excitement of the ZB, VE/TF and 9H1 openings, remains quiet.

Contests

Two-Metre SSB: Propagation was good, and activity high, during the SSB contest of August 10, but both appeared to be confined, very largely, to the U.K. Certainly, there were a few PAØ's to be heard, but signal strengths were generally low. The DL's, who had been warned of the date of the event, were not to be heard, and the usual French stations, F1CF and F9FT, did not appear to be about, possibly because August is the holiday month in France. Of the GW's, '3FSP and '3BA/P (in Montgomery), were good signals for most of the time, and early on in the event, G3GZJ (Redruth) and G3PBV (Exeter) were very fine copy, although they had dropped down quite a bit by the end. From the North, G3AOS in Ringway was a whale of a signal in the South, with G3VYB in Prescott and G3XMG in Liverpool running him close when the QSB permitted. From the far North, GM was worked by several Midlands operators. As usual, G8BBB (Ely) was

knocking up a very good score, as was G3BHW (Margate).

The rapidly increasing numbers of British stations using this particular mode of transmission justifies the extension of the duration of the contest from the one hour of the early events to the three hours of this one. There is no question these days of having worked everyone early on and having to scratch around for contacts for the last hour or so. Activity was high, right up to 2200z. In conversation with participants afterwards, there did appear to be a case, though, for starting later and finishing later—9 p.m. to midnight was suggested by several—to give a chance to those unhappy souls who are still suffering with the TVI bogey. The 70 MHz events seem to be geared to this aspect these days, and come to that, what about having the SSB fixed-station contest on a Sunday morning anyway?

432 MHz Open: Unfortunately, this event clashed with the TV Convention at Cambridge, and in view of the numbers present there, it is not, perhaps, altogether surprising that activity seemed very low during the period. The poor propagation conditions did nothing to help the contestants, but they did highlight again the failure, be it by accident or design, of many operators to modulate the transmitter fully. For obvious reasons, no record was kept at G3DAH of the S5 carriers with the unreadable modulation, but there were far too many of them! A notable exception was G3NNG/P who, although rarely heard above S5, was readable down to 10 dB above noise.

70 MHz: For the four-metre contest over August 15-16 conditions were very poor indeed—it was that weekend of howling gales all over the country. It was not possible fairly to judge the level of activity but it would seem that anyone able to turn in a score based on 30 QSO's would be doing very well.

Forthcoming Events: Forthcoming events are: VHF/NFD, IARU Region 1 and the VHF/UHF Listener contests over the weekend of September 5/6, and the new IARU Region 1 UHF/SHF contest for transmitting amateurs as well as for listeners over the weekend of October 3/4.

VHFCC Awards

Certificate No. 70 for two metres goes to Ralph Veale, G8CJO. His QTH in Bristol, which he shares with his son Peter, G8CJR, is 130ft. a.s.l., and houses the home-built Tx with the 6146 in the PA and the 35 watts DC input. The 6-ele beam is at 23ft. The IF strip is an AR88 which is preceded by a home-constructed FET converter with a BF180 pre-amp. Two portable transmitters are also available, running 8 and 18 watts input to a halo, or a four-element beam made from a discarded TV aerial. Gear for 70 cm. is available, but a high power rig is in course of construction, and this should help to bring in the contacts to a site which is not all that good from a VHF/UHF point of view. Ralph was first licensed in February, 1969, and it took 125 contacts and many s.a.e.'s. before the 100 cards for the VHFCC Award became available. He claims that his biggest disappointment is that he has never mastered CW and now feels that he has left it too late. He wishes that he had taken up this time-consuming, money-absorbing, frustrating but fascinating hobby many years ago, although his wife does not, apparently, entirely agree with that sentiment!

Mick O'Donnell, G8CCV, whose home QTH is given in the *Call Book* as Didcot, Berks., but who writes from H.M.S. *Jufair* in BFPO 63, gains Certificate No. 71 for operation on two metres during spells of leave. The call was issued in October 1969, but the log shows that the station was QRV for only 85 days between then and now. The transmitter runs 36 watts DC input to a QQV06-40A, and the receiving side has been mostly home-built gear of various forms, although the Heathkit RA1 is now in use. The antenna is an 8-element beam. Mick reports the QSL return rate to be about 40%. He hopes to operate /A from near High Wycombe, Bucks., when he returns to this country in October next.

G3SXX, of Lowestoft, gets Certificate No. 72 for operations on two metres. He had to work 248 stations before he got the 100 QSL cards! Since he was licensed, some two years ago, the rig has remained unchanged—a QQV03-10 at 18 watts DC input, modulated by a pair of

EL84's. The beam is a four-over-four slot at 25ft. Two receivers are in use, a home-built 11-valve job with a transistor converter, and a Lafayette HE-80. Work is due to start shortly on a transverter for two-metre SSB, and Ken will then have all modes on that band with VFO control.

In connection with these Awards, there *still* seems to be some doubt about the requirements in terms of QSL cards. *Applicants must have in their possession 100 QSL cards to confirm the 100 contacts listed in their claim. They will be asked to forward six, chosen completely at random, for verification purposes, and these will be returned after checking. Contacts must have been made from one location only—a mixture of /P, /M and Fixed will not be accepted.*

Cambridge Television Convention

The British Amateur Television Club held a Convention on amateur television in Churchill College, Cambridge, over the weekend of July 25/26, to mark the occasion of the 25th anniversary of the foundation of the B.A.T.C. The event was well attended, with about 80 members and their guests present for the official dinner on the Saturday night. A varied programme had been arranged, including a display of home-constructed, and some professional, equipment, visits to Pyes of Cambridge, and selected A/TV stations in the area, a series of short lectures, and some live TV from local amateurs as well as from a special OB Unit. In spite of an impassioned, prior plea by

THREE BAND ANNUAL VHF TABLE
January to December, 1970

Station	FOUR METRES		TWO METRES		70 CENTIMETRES		TOTAL pts.
	Counties	Countries	Counties	Countries	Counties	Countries	
G3OHH	44	6	48	5	16	2	121
G3DAH	18	2	67	14	14	5	118
G8ATS	—	—	53	10	29	8	100
G2JF	—	—	49	12	23	5	89
G2AXI	26	3	47	9	3	1	89
G3COJ	—	—	43	11	22	6	82
EI6AS	12	7	50	10	—	—	79
G8APZ	—	—	43	8	24	4	79
GD2HDZ	—	—	49	8	14	3	74
G8BKR	—	—	43	5	8	2	58
G15ALP	6	4	36	10	—	—	56
G3IAR	14	1	30	7	—	—	52
G3EKP	14	4	18	5	4	3	48
G3FIJ	—	—	37	5	1	1	44
G8BWW	—	—	35	6	—	—	41
G3ZIG	—	—	34	7	—	—	41
G8BHD	—	—	35	5	—	—	40
G8CCH	—	—	29	5	—	—	34
G8AUN	—	—	26	8	—	—	34

The Three Band Annual Tables show total claims to date from the year commencing January, 1970. Readers are reminded that claims should be sent as heretofore to: SHORT WAVE MAGAZINE, BUCKINGHAM. Summaries by band are given this month in separate Tables.

the organisers, the amount of home-constructed gear on display was disappointingly small, and much attention was necessarily centred on the black-and-white and colour displays by two well-known manufacturers. Your scribe spent some time observing the visitors drooling over these items, but not once did he hear anyone dare to enquire the price! The Portsmouth Polytechnic Students Union Radio, Television and Electronics Society, to give it its short title (!), was showing a Pye "Lynx" camera in operation with a Monitor Type 171. Although not at present active with on-the-air TV transmissions, they use the callsign G6PU on the HF bands, and will shortly be up on two metres and possibly 3 cm. also.

The demonstration of reception and transmission of amateur TV was very successful, and included a video tape from Ian Walters, G6KKD/T, who also introduced the programmes; a direct, off-the-air transmission from G6ADM/T (better known perhaps as G8BBB in Ely), which was unfortunately marred by failures of his local 50 Hz supply during the showing; a pretty hairy picture of Harry Neale, G6REH/T in Spalding, at the top of his home-constructed, 120ft. high tower, about which more anon, and an excellent "tour of the station" feature by Jeremy Royle, G3NOX/T, which included a relay of the signal from G2WJ/T, his father, at Dunmow. The OB from within Cambridge itself was well presented by Graham Shirville, G3VZV, operating as G6AEV/P. After the demonstration, visits were laid on to G8BBB, G3NOX and G8ADE.

The lectures—lecturettes might be a better term, as they were quite short—were given by Grant Dixon on Slow-Scan TV; by Mr. A. Crichtley on Integrated Circuits and their application in waveform generators for TV; and, finally, by Mr. M. P. Davies from the Ministry of Posts and Telecommunications, on Amateur Licensing, although in fact, the scope of his very interesting talk went beyond the rather narrow field suggested by the title, and gave his listeners an insight into what went on when multiple claims were received by the Ministry for the same portion of the radio spectrum. This

really got home when he went on to describe the careful monitoring of frequencies to check usage, so that where inadequate, or incorrect, operation was observed, reallocation could be considered. He did not actually use the words "Use or lose," but, by golly, that is what he meant!

All users of the 432 MHz band, should be very grateful to the A/TV boys, since it is their requirement for adequately spaced video and audio channels around 70 cm., that could prove to be a very important factor in our defence of the retention of that band for amateur purposes.

Don Reid, the p.r.o. and the committee under the presidency of G5IJ and chairmanship of G6LEE/T are to be congratulated on a very fine show.

German Prefixes

A recent spell of good conditions, when the German stations were coming in well, has prompted a reader to enquire if there is any logic behind the German Licensing System, of if, like our own, it just grew. The answer is that it is logical, and the key to it is as follows:

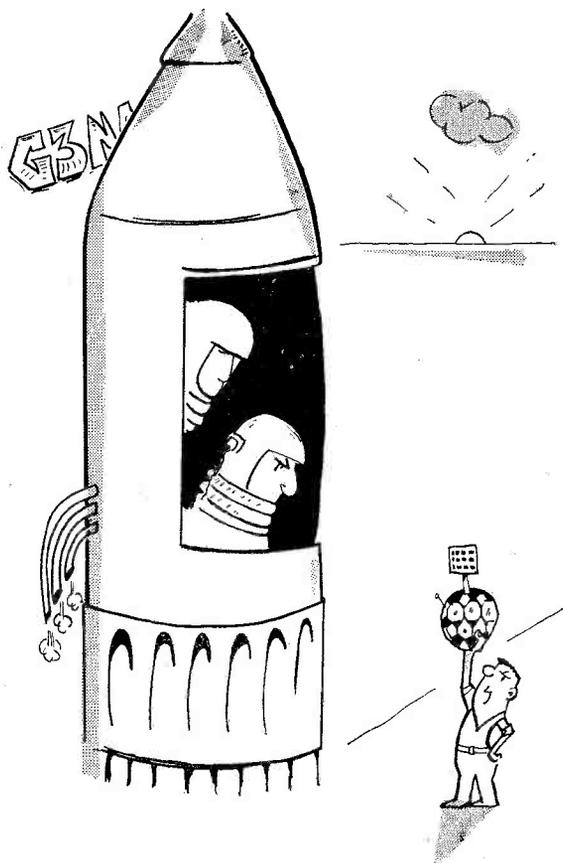
DC6-DC0 Operation on two metres only. Note that DC7 is West Berlin.

DJI-DJ0 } For operation on all bands. Note that DJ0 reserved for visitors, DL2 for U.K. troops, DL4 for U.S. troops, DL5 for French troops, DL7 West Berlin and DL0 Clubs.

DMI-DM9 East Germany.

SHF Gen

Operators looking for overseas contacts on 23 cm., may care to note that the following PA0 stations are known to be active on that band:



" . . . Please, mister, could you take this with you for the local club . . . "

WFO, KPO, DTL, KT, COB, DBQ, CRA, TMP, MAJ, JNH, MSH, TBE, TAB, WTE, KO, CJB, NJH, CJN and UNT. Equipment used by the Dutch amateurs is somewhat similar to that used in Britain at the present time. Most popular set-up is either a BAY66 or 2C39A to a colinear antenna or dish, and for reception, a converter with a 1N21D diode mixer, with or without a BFY90 amplifier. This set-up gives a noise factor of about 10 dB. While we are at it, ON4ZK and DL9LU are also reported active on 23 cm.

Great Antenna Mystery

Last month, a photograph was published of an unusual array of aerials for mobile use. (See p.361, August.) The owner of this unique specimen turns out to be none other than our old friend Roger Whitbread, G8AYN. The set-up is a J-Beam two-metre halo, and home-built halos for 70 cm. and 23 cm., the latter being just about the diameter of the old half-crown. It has not yet been in action on 23 cm., but a Pye "Ranger" generates the RF for Two, and also feeds a QQV07-50 tripler to 70 cm., giving about five watts output. Having now operated mobile on both bands, Roger reports that he finds little difference in signal strength, but that there is a significant reduction of flutter with the higher frequency. FET converters are used for reception, and the IF strip is an HA-600. A 24-volt inverter derives its input from two 12-volt batteries which are independent of the Mini Cooper's DC supply. The plot for the 23 cm. transmitter is to triple from 70 cm. with a BAY66. The chap who took the photo, at present unknown, may care to contact the Editor, when it is possible that he will hear something to his advantage.

Club Activity

Tyneside: The Tyneside Amateur Radio Society is organising a contest on Top Band and Two between 1800 and 2200z on Saturday, September 12. A high level of activity from Northumberland is promised.

Bucks.: The next meeting of the South Bucks. VHF Club is scheduled for September 1, when there will be a talk on the conversion of surplus VHF equipment. The meeting on

October 6 is noted as a talk on "Two Metres." Place—Bassetbury Manor, High Wycombe. Time 8 p.m.

Dunstable: The Dunstable Downs Radio Club venture in portable TV on July 17 went off very well indeed. Video on 70 cm. was transmitted using the callsign G6AFK/T with accompanying sound on two metres under the call G8AYB/P. The signals were sent over a three-mile path to the Club's meeting rooms in the centre of Dunstable itself, where about 45 persons watched the demonstration, some of whom appeared to have come from quite a way. The transmitter ran about 20 watts to a multibeam, and the camera and modulator were transistorised. This was the first occasion on which the Min. Post. authorities had agreed to portable A/TV operation, and even then there were certain restrictions on site movement, and the regular Club site on the top of the Dunstable Downs had to be used throughout the exercise. Clubs, or individuals for that matter, who would like to have a go at this sort of operation, might find it valuable to have a word with Graham Shirville, G3VZV, *QTHR*, who was in on this venture, as well as on the OB pictures during the B.A.T.C. Convention at Cambridge.

Sheffield: It is reported that a team at Sheffield University is setting up a monitoring system to check aurorae on VHF. The plan is to run a 7 kW e.r.p. transmitter in the Glasgow area, with the receiver at Sheffield. The frequency used will be of the order of 61 MHz, and the antenna a four-element Yagi beamed on 310°. It is hoped, by the four-metre enthusiasts, that the University Amateur Radio boys, G3UOS, have got on to this, and have established a procedure for letting users of that band know when something interesting is cooking.

Iceland—Canada on Four

A new reception record of 2,270 miles at 70 MHz has been set up by the achievement of VE2AIO in Montreal, who has copied, and recorded, the Icelandic beacon, TF3VHF, on 70-275 MHz. This was on July 26, 1970, between 0200 and 0221z. By courtesy of Don Hayter, G3JHM, relevant portions of the report received from VE2AIO are

ANNUAL TABLE — BAND SUMMARY
January - August, 1970

Station	TWO METRES		Total
	Countries	Countries	
G3DAH	67	14	81
G8ATS	53	10	63
G2JF	49	12	61
EI6AS	50	10	60
GD2HDZ	49	8	57
G2AXI	47	9	56
G3COJ	43	11	54
G3OHH	48	5	53
G8APZ	43	8	51
G8BKR	43	5	48
G15ALP	36	10	46
G3FIJ	37	5	42
G8BWW	35	6	41
G3ZIG	34	7	41
G8BHD	35	5	40
G8AUN	26	8	34
G8CCH	29	5	34
G3IAR	26	5	31
G3EKP	18	5	23

Station	FOUR METRES		Total
	Countries	Countries	
G3OHH	44	6	50
G2AXI	26	3	29
G3DAH	18	2	20
G3EKP	14	4	18
G3IAR	14	1	15
G15ALP	6	4	10

Station	SEVENTY CENTIMETRES		Total
	Countries	Countries	
G8ATS	29	8	37
G2JF	23	5	28
G3COJ	22	6	28
G8APZ	24	4	28
G3DAH	14	5	19
G3OHH	16	2	18
GD2HDZ	14	3	17
G8BKR	8	2	10
G3EKP	4	3	7
G2ZXI	3	1	4
G3FIJ	1	1	2

reproduced herewith.

"I copied the TF3VHF beacon at 70-275 MHz between 0200 and 0221 GMT on July 26, weakly but with solid copy of the signal. Considering the e.r.p. involved (*note:* This is about ten watts at the beacon, but half of that is radiated towards U.K. with the other half going towards Canada) it would have been a period during which a two-way contact 70-50 MHz between TF3EA and myself could have been made without any difficulty. I have part of the transmission on tape. The TF3VHF beacon was heard here also on July 25 between 0132 and 0145 GMT, but only in very weak bursts, and only the odd letter or part actually rising above the noise. I did not want to count this as a proper 'heard' report, as the signal was so very weak, and unless I had heard the solid signal on the 26th, I could have been mistaken about the July 25 signal, although I was pretty sure about its origin. Did a lot of side checks during the period of reception. (a) Signal was T9 with quite a bit of

QSB, and I believe flutter but rather difficult to be sure of this. (b) Best beam heading was along the Great Circle path from here to TF3. (c) No signal was heard at a more northerly bearing, *i.e.*, no auroral back scatter. Of course, with the TF3VHF beam pointing this way, it is doubtful, at the power levels that we can use, that I would hear side and backlobe signals reflected from the aurora on a back-scatter basis. (d) The frequency as close as I could measure with counter and auxiliary oscillator was within 100 Hz of 70-275 MHz. (e) No other 70 MHz signals were heard other than a weak carrier at 70-306 MHz . . . I feel very encouraged about the prospects of a cross-band 70/50 MHz contact over your way now, as the signal level from TF3VHF was quite frankly better than I had hoped."

Well, there it is, and in view of its importance, the foregoing comments have been printed *in toto*. Experts in this country also think that a contact VE/G on 70/50 MHz is on, so why should it not be with you? VE2AIO listens on 70-300 and 70-310 MHz after each 50 MHz transmission, and also checks 70-250 MHz on which frequency TF3EA operates. Best times are 0130 to 0300 GMT. If you want to get in touch and arrange a sked, the address is: 7 Parkland Avenue, Valois, P.Q., Canada.

Incidentally, the old reception record on 70 MHz was about 1,500 miles, and was held by ZB2BO, who recorded reception of GB3GM. Transmissions from Cyprus on this band have been heard in Rhodesia *via* the T-E propagation mechanism, but these were not amateur transmissions.

Magazine Daylight Test

For some years now SHORT WAVE MAGAZINE has been running the "Magazine Daylight Test" (MDT) on Top Band. Not only does this seem to be well supported, but some very interesting data have come from it. It would appear both logical and fruitful to extend this test to the two-metre band, and, possibly to the 70 cm. band also. Briefly, the idea is that a specific period is set aside on a nominated day, during which time operators should be looking for, and recording, contacts either phone or CW, at distances of over 100 miles.

On VHF, the QRA Locator should be given, since this system makes it particularly easy to check distances, as well as the usual logbook details. Where possible, it would be instructive if local temperatures and atmospheric pressures were noted at the same time, or failing that, at least a comment about the generally prevailing weather conditions. These logs would then be sent to SHORT WAVE MAGAZINE, and a report on the exercise would be published subsequently.

So—the date for the first two metre MDT is **Sunday, October 4**, time between 1100 and 1800 BST, and reports on the lines indicated to reach "VHF Bands," SHORT WAVE MAGAZINE, BUCKINGHAM, by Saturday, October 10, at the latest. A composite report will be prepared for publication in the November issue, which appears at the end of October.

Dinner Meetings

In days of yore, SHORT WAVE MAGAZINE organised what were then termed "Dinner Meetings" in various parts of the country. The idea was simply that a lot of VHF enthusiasts got together for a pint, a chat and some food, not necessarily in that order, at a convenient restaurant or hostelry, and a good time was had by all. For one reason or another, these occasions became fewer and fewer, and eventually ceased altogether. It is now proposed to revive them during next year, and arrangements will be made to hold these functions in London, Nottingham, Manchester, York, Cheltenham, Cardiff and elsewhere if warranted. They will be informal affairs, and will cost just enough to pay the bill, that is to say that they will be run on a non-profit-making basis. The only criterion for attendance is an interest in matters VHF. Obviously, some local advice on the choice of a suitable spot for the meeting, and help with the local arrangements would be most welcome to your scribe. Any volunteers?

"Son of Oscar"

AMSAT, the American Group who were responsible for the launch of the *Oscar V* amateur satellite, are actively engaged with the planning for a successor, which will bear the

name AMSAT OSCAR B, or AOB for short. The satellite will be of the repeater/transponder type, and it is proposed to use solar cells to supply the electrical energy for its lifetime of, it is hoped, one year.

QRO

It is sometimes overlooked that the old maxim of "If you can't hear 'em, you can't work 'em" is as true today as it ever was. With the advent on VHF of the high-power transmitter, and the high-gain stacked beams, an operator stands a much better chance of being heard at DX range than if he were running, typically, a 320A and a 4/4 slot. Unless, therefore, the receiving set-up is as good as it can be, either a lot of replies are going to be missed entirely, because not heard, or at best, many will be just above the noise level and very difficult copy, although the received report may be average to good. The DX potential of the station is decided not by the transmitted power alone, but by a combination of power, antenna gain and the performance of the receiver among other factors. So when the power is doubled, the modulator power requirements are increased, the DC power requirement is increased, and generally speaking, the load on the pocket is increased, and all for 3 dB gain! However, doubling the antenna will produce the same gain, usually at lower cost, and will improve reception as well. It could be the better answer!

News Items

Jeffery Bateman, G8DWD (Wellington, Kent), will shortly be on two metres with a QQV06-40A and an 8-element beam. He plans to operate on 70 cm., but the gear on that band is not yet complete. G8BHL has now moved from London to Queensborough, near Bradford, and although running only five watts on Two is putting a very good signal into the South. The gear is all-transistor, the PA being two 2N3632's modulated by two AD161/162's. The beam is 8-element at 55ft., and the QTH is 1100ft. a.s.l., which must account for some of the excellent results that Dave is getting.

G3WMR will be /P in Jersey from August 21 until after the September VHF contest. He will be running ten watts to an eight-element Yagi,

and will be on 144.45 MHz. As he proposes to use a site in the north of the Island, he should be readily workable from the south of England and, with luck, up into the Midlands. PA9LY/ON8KA conceals the identity of Dick Harrison, otherwise G3TMQ. He is at present working on the Continent, and will be for the next two-and-a-half years. He is with the European Space Research Organisation, and has recently moved from Belgium into Holland. He has just finished building a three-watt solid-state transmitter for Two, and with a FET converter and a four-element Yagi, has already worked the U.K. He will be looking for British stations

every evening and at weekends, and will be pleased to make skeds if requested to do so. The address is: Laan Van Ouderzorg 54, Leiderdorp.

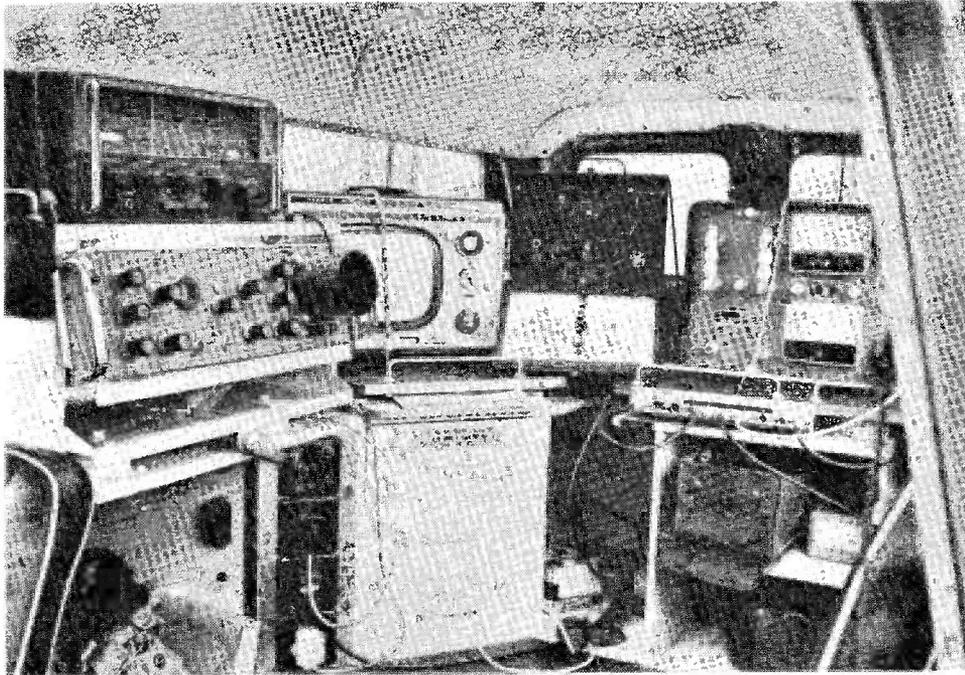
G8APZ of Hounslow, Middlesex, finds that operating on 70 cm. on Monday nights is a self-generating activity, and that calling CQ to an apparently empty band can sometimes produce four or five contacts. Ye Gods, what are we coming to when a station in London finds four or five contacts on what has been described as *Activity Night*, worthy of comment? If that is the general level of activity in the Great Metropolis, it is little wonder that your

scribe at his north-east Kent outpost counts himself fortunate if he gets four or five contacts a week on 70 cm. Perhaps "Inactivity Night" is a better description.

GD2HDZ has been heard on Two from the new QTH in Laxey, I.O.M., but it is too soon yet to decide if this is a better site than the old one.

Deadline

Deadline for the next issue is **September 5**. The address for claims, news and comment is "VHF Bands," SHORT WAVE MAGAZINE, BUCKINGHAM. Cheers for now, and 73 de G3DAH.



Inside a Post Office Radio Service monitoring and detector van, showing the array of equipment carried in the course of the Department's routine work—which includes checking on TVI, as well as detecting those unlicensed TV receivers! On the roof is a 5-element Yagi for general VHF reception. This view is looking towards the rear of the vehicle—the driving compartment is at lower left in this pose.

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

FURTHER R.A.E. COURSE ARRANGEMENTS

At most centres of instruction, courses on the Radio Amateur's Examination (Subject No. 55 in the City & Guilds of London Institute examination syllabus) will be starting in September. A list of centres as earlier notified appeared on p.366 of the August issue of SHORT WAVE MAGAZINE. Below is an additional listing.

Those interested in taking a course, and not finding in these lists one in their neighbourhood, should enquire at the nearest office of their local Education Authority as to where in the district there might be a course available—quoting "Subject No. 55, City & Guilds, Radio Amateur's Examination." The point is that many of these courses are not notified to us, but only advertised locally in the published brochures or literature of the Technical College or Evening Institute for the area.

Where no R.A.E. course exists, it is often possible (in the more populous centres) to get one organised by approaching the Principal of the local Technical College—several of the Clubs already do this. There is usually a stipulation about minimum numbers (12 or 15 persons to attend) and often a difficulty in finding a suitable lecturer. Most of the established R.A.E. courses have as lecturer qualified teachers who are themselves holder of an AT-station licence—obviously the most desirable arrangement.

Finally, there is no use asking *us* whether there is a course available in your district. We publish all the advice we can give and the information that we have. The proper source for further details is the local office of the Education Authority.

Birkenhead: At the Technical College, on Thursday evenings, enrolment Sept. 7-10. It is also proposed to run Morse classes at the Wirral Amateur Radio Society Hq. Enquiries to: A. Fisher, G3WSD, 34 Glenmore Road, Oxtou, Birkenhead.

Colchester: At the Technical College, Sheepen Road, starting at 6.30 p.m. on Sept. 29. Enrolment Sept. 14-16, or at first lecture meeting. Morse practice will be available on Wednesday evenings. Further information: F. R. Howe, G3FLJ, 29 Kingswood Road, Colchester.

Dudley: At the Technical College, on Wednesday evenings, enrolment commencing on Sept. 7. Course instructor will be J. R. Raby, G8RF.

Eastbourne: At the College of Further Education, St. Anne's Road, Wednesday and Thursday evenings, 7.0-9.0 p.m. Fee 60s., enrolment afternoons and evenings, Sept. 7-9, at the general office. Course lecturer P. Simmons, G3XUS.

Gosforth (Northumberland): At Gosforth Secondary Modern School, on Tuesdays 7.0-9.0 p.m., commencing Sept. 15 for 24 weeks. Fee 52s. for adults, 16s. for juniors. For full details apply at the School, or to E. Chicken, G3BIK, 21 Townsend Crescent, Kirkhill, Morpeth, Northumberland.

Grantham: At St. Hugh's Secondary School, Dysart Road, commencing on Sept. 28, 6.45 p.m. Enrolment and enquiries at the School, or at College of Further Education. Course instructor, A. Ellis, G3PJR.

Grimby: At the Adult Education Institute, Hereford Centre, Ely Road, on Monday evenings 7.0-9.0 p.m.,

enrolment same time Sept. 8-10, fee 48s., except for those in full-time education. Additional fee payable by all students wishing to take the Exam. at the Institute. Information: H. Watson, G3HTI, at the Centre.

Hemel Hempstead: At Dacorum College of Further Education, Marlowes, on Tuesday and Thursday evenings, 7.0-9.0 p.m., starting Sept. 15, with enrolment at the College Sept. 7-8. Further details from the course lecturer, C. Burke, G3VOZ, 30 Green Lane, Bovingdon, Hemel Hempstead, Herts. (Tel. Bovingdon 3300.)

Hull: Arranged by the Hull & District Amateur Radio Society, at the Club-Room, 592 Hessle Road, starting on Friday evening Sept. 4, and then every Friday evening. Course instructor J. Lawrence, G3PQY. Morse tuition also available. Apply Hon. Secretary, Hull & District A.R.S., 4 Chester Road, off Wold Road, Hull, HU5-5QE.

London (Acton): At the Technical College, High Street, on Wednesdays 6.30-9.00 p.m. starting Sept. 23. Enrolment Sept. 9-10 and Sept. 16, 6.15-8.15 p.m., in Room 8, Acton Technical College, opposite Town Hall. Course lecturer, W. G. Dyer, M.I.E.E., G3GEH.

London (Barking): At the Gascoigne Recreation Centre, Gascoigne School, Morley Road, on Tuesday evenings at 7.30 p.m., commencing on Sept. 22.

London (Borehamwood): At the College of Further Education, Elstree Way, on Wednesdays 7.0-9.15 p.m., starting Sept. 20, enrolment at the College all day Sept. 14-15. Course instructor, G. L. Benbow, G3HB.

London (Highgate): At Whittington School, Archway School Annex, Mondays 7.0-10.0 p.m., starting Sept. 21. Enrolment Sept. 14-18, fees as GLC scale for adult education. Course instructor, R. Smart, G3MCC.

London (Wembley): At Copland School, High Road, on Mondays 7.0-8.0 p.m. for Morse instruction, and 8.0-10.0 p.m. R.A.E. Theory, starting Sept. 21. Enrolment Sept. 15-17, from 7.0 p.m. Course instructor, A. Bayliss, B.Sc., G8PD.

Loughborough: At the Technical College, Radmoor, on Tuesdays, 6.0-7.0 p.m. (Morse) and 7.0-9.0 p.m. (R.A.E. Theory), commencing Sept. 15, fee for course £3 18s. 6d. Course instructor, D. R. Doughty, G3FLS.

Peterborough: At the Technical College, Eastfield Road, commencing mid-September, enrolment beginning of month. Details from the College office, or D. Byrne, G3KPO, Jersey House, Eye (351), Peterborough.

Plymouth: At the Polytechnic, on Monday and Wednesday evenings, starting mid-September. Details from D. M. Webber, G3ENX, 3 Shirburn Road, Crownhill, Plymouth, PL6-5PG. (Tel. Plymouth 73238.)

Princes Risborough: At the County Secondary School, Merton Road, on evenings Monday (theory) and Wednesday (practical), commencing Sept. 14 at 7.0 p.m. Enrolment Sept. 8-9, or at first session. Course instructor, R. E. Whiting, G3POF.

THE MONTH WITH THE CLUBS

By "Club Secretary"

(Deadline for October issue: September 4)

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

THIS is where we take a little space to remind you that the weekend for MCC is coming round again, and already several Clubs, in the course of their reports and general comments for this issue, have signified their intention to be in it once more. To get a high place in MCC, let alone be in the winning bracket for your Zone, does call for a degree of forethought and planning. Nobody has yet done well in this hottest of all Top Band contests by leaving everything till the last moment and taking a sort of slap-happy attitude towards it.

On the other hand, MCC is essentially fun, and there is no need to regard it as a life-or-death affair. Not only the operators, but all members of the Club should be encouraged to take some part. As we have explained before, there are several Clubs that, looking on MCC as training for CW operators in contest working, put on 2nd and even 3rd XI stations, with the idea of making the most of the opportunity.

Essentially, Clubs compete only with others in their own Zone, so there is also an element of the "local Derby" about it.

Rules and further details in the next issue—in the meantime, let's get on with the Club news.

* * *

Straight down the lists this time for us, noting with approval that some of the secretaries are keen enough to write from their holiday addresses so as to make sure the news is entered before the deadline. Thanks, chaps!

A.R.M.S. of course, are the folk who specialise in the /M interests. *Mobile News* this month has a rather interesting piece by G3BID on the resistive suppressor leads fitted to modern cars, and the legal position of owners who replace with ordinary unsuppressed leads when the ignition starts to play up. Quite a valuable bit of information to have if you have neighbours with unsuppressed cars plaguing your TV!

At **Farnborough** the chaps book the second and fourth Tuesdays in each month, at the Railway Enthusiasts' Club, 310 Farnborough Road, Farnborough, Hants. Visitors and potential new members are always very welcome.

Plymouth do not indicate their Hq. in the *Newsletter*. However, we see that they are at Hq. for the VHF/NFD briefing and a Brains Trust on September 1. The VHF event is over the weekend of September 5/6, and the lads will be operating in this contest from a site at Haytor Rocks. The following get-together is on September 15, again at Hq., and will be the "inquest" on the Field Day.

The letter detailing the **Solihull** goings-on came all the way from France, where the hon. sec. is at the time of writing taking his well-earned vacation. He says that the gang meet at The Manor House, High Street, Solihull, on September 15, to hear G8BYM discuss the 144 MHz VFO's and associated transmitters he has built. An extra "do" is a Social Evening on September 25, at the Huntsman Inn, Kempsey, Worcestershire—details from G3VPE, *QTHR*, on the latter effort.

G3GVU will be wielding the hammer when the **Kingston** lads have their Surplus Equipment Sale on September 9. If he does not succeed in flogging all the stuff, then the members can look forward to their democratic right to redress at the Annual General Meeting on October 14!

A new hon. secretary is required when the **Taunton** boys restart for the autumn session; the Annual General Meeting comes up for this, among other, purposes on September 25 at 7.30 sharp. The venue is County Control Hq., under the new County Hall building, Taunton.

Weekly on Tuesdays the **Rugby** crowd can be found at 10 Drury Lane, Rugby, their Hq. Details of the programme are not available at the time of writing.

Nunsfield House Community Association, Boulton Road, Alvaston, Derby, shelters under its wing an Amateur Radio group. They certainly take advantage of their facilities—September 4 for a Quiz, then VHF/NFD that weekend, followed by a Practice D/F Run, still on September 6; a Night-on-the-Air from Hq. on September 11; G3ALA giving a technical film show on the 18th; a Beginners Talk about the construction of components on 25th; and finally on the 30th there is a Quiz, jointly with the Derby club.

An interesting snippet in the *Newsletter* indicates that the **Mid-Sussex** crowd have gained permission to put up a 40-foot lattice tower at their Hq., Marle Place, from the landlords, and were waiting permission from the planning authorities for one of the several spots they have in mind. If that goes up, and a beam atop it, that alone will boost their attendances a bit! Both the September meetings are with G5RV involved; Louis is to lecture about the "Lincomplex" technique on the

MCC REMINDER

The 25th Annual Magazine Top Band Club Contest (MCC) takes place over weekend November 7/8. Rules and full details October issue.

10th, and on the 24th will be presiding over the disposal of lots of his surplus gear before he heads for VK9 later in the year. Marle Place is a Further Education Centre in Burgess Hill.

Near the northern boundary of Basingstoke is Popley Way, in which is Chineham House, home of the **Basingstoke lads**. Here they are to be found on the first and third Saturday of each month, starting at 7 p.m. The first Saturday is kept for Beginners and Constructors. This leaves them free to participate in VHF/NFD, and to have September 19 for the AGM.

* * *

The how and why of putting up aerials were looked at in August by the **Crystal Palace** group, with G3COX (a professional aerial engineer) and G3IIR doing the talking. On September 19 the talk will be on Receiver Alignment, by G3OOU. Kick-off at 8 p.m., at Emmanuel Church Hall, Barry Road, S.E.22.

G5PP takes the stand at **Midland** on September 15, to talk about the Linear Amplifier he built after his trip to USA. This one, to anyone who has heard G5PP and his eminently practical approach to the building of anything, will be a great attraction at the Midland Institute in Margaret Street, Birmingham.

Membership has fallen somewhat at **Exeter** during the year, and they are at the moment getting ready for a recruiting drive, to judge by the newsletter. They have Hq. at the YMCA, St. Davids Hill, Exeter, on the first Tuesday in each month. This gives them September 1, for a series of lectures on Test Equipment. It is hoped that members will bring along the items of home-brewed test-gear which they find most valuable. Looking forward to October 6, they have a lecture on Capacitors, and the making of them—a topic on which a good many professionals could do to bone on, with all the new varieties and applications appearing over the last few years.

The **Sheffield** chaps will be entertaining G4JW on September 22, at the **Crosse Scythes Hotel**, Totley. G4JW will be taking as his theme the working and uses of the National Society.

VHF/NFD is the first item on the **Dorking** programme; and it is also the second, on the following Tuesday, September 8, when the corpse will be reduced to bare bones by the "inquest committee." That leaves them with September 22, when the formal meeting of the month comes up, the details still being a little fluid at the moment of writing. All the "home" meetings are taken at the **Wheatsheaf** in Dorking.

A note for the possible visitors to **Chilterns**; the return to their old home having been rendered impossible by the demand for an exorbitant fee, the chaps are now getting together at the "Desborough Arms" in Desborough Road, High Wycombe, on the last Thursday in each month. September 24 will be the Annual General Meeting, and we believe that there are moves afoot to add an informal alternate get-together between the monthly dates already quoted.

This business of finding and retaining some suitable place in which one can assemble regularly, and entertain the lecturer fittingly, is always a bit of a problem—so we could well be envious of the **Bishops Stortford** crew, who have never known what it means to be without a venue. The **British Legion** are the "fairy godmother" to them, and give them the use of an upstairs room at the Legion

Club at the top of Windhill. This room is taken up every third Monday in the month, and there is normally a lecture or film-show or something of the sort each time, not to mention a bar down below, which is used both before and after the session of business.

Axe Vale are feeling a bit pleased with themselves at finding a permanent QTH in which to hold their meetings. This is at the **Axemouth Village Hall**, near Seaton in Devon. No doubt the hon. secretary is now in the throes of setting up a programme to suit—so to get the latest news contact him at the address in the Panel, opposite.

Interesting news from the **Hereford** chaps, who have lost no time in taking advantage of the permission to erect aerials granted to them. G3HVX was rapidly "elected" to go up and do a spot of climbing roofs, to get the first one up—this is just a foretaste of the aerial farm which is envisaged for the future.

Burraton Toc H Hall is the place to look for if you want to meet the **Saltash** boys. They have a **Grand Natter Nite** (!) on September 4, there, and on the 19th there will be definitely a talk, the subject probably being the **Tracking of Satellites**.

* * *

It is good to hear of a Club putting on a basic talk about **SSB**, which seems to be regarded as a closed book by so many chaps, even though it is so popular. September 10 sees the **Nottingham** group listening to G3IQM discussing the club transceiver project. This one is followed on September 17 by the hon. sec. who will be trying to explain to the doubters, by way of diagrams and chat, just why SSB is so much a superior mode of transmitting telephony—even if not as good as CW when it comes to conveying intelligence!

The ladies are invited to be present at the **Torbay** do on September 26, when the words are **Walter—Magic—Radio**. If you can understand that, you know what they are in for! Your conductor suspects that someone is going to charm a genie out of a **KW-2000!** As usual, go to Bath Lane, rear of 94 Belgrave Road, Torquay.

Oh! dear,—someone forgot the transmitter for the talk-in station which signed G3TAD—wonder who the member with the red face is? As if that were not enough, there was so much news to put in the issue of **Director** which is currently to hand that no room remained to give details of the **Bristol** September programme, for which we have to refer you to the hon. sec.—see Panel—who will be delighted to oblige with all the latest information.

There is quite a crowded month in prospect for the **South Manchester** lads. August 28 is down for a talk by G8DNQ on **Transistorised and Regulated Power** supplies, and on September 4 there is a **Night on the Air**. September 11 is the occasion for a **Junk Sale**, and on September 18 the chaps will be having a talk on the **Two-Metre Converter Project** which they have in hand. The September 25 date will not be at Hq., but at the site of the special-activity station which they are putting on at the "Scouting in the Seventies" exhibition at **Worthington Park**, Sale, Cheshire, signing GB3SSA. Normal "home" meetings are taken at the **Conservative Divisional Offices**, 449 Palatine Road, Northenden; there is also a VHF sub-section who hold regular evenings at the Club shack in **Greeba**, Shady Lane, Baguley, Manchester 23.

Now to **Hull**, where they will have it explained to them by SWL Carress that "An SWL Should Never Be Bored" on September 4. G3SSA takes over on the 11th to talk about the Mobile Rig, while G3OHT turns his attention to Modern Trends in Receivers on the 18th. This leaves September 25 for a Construction Night, and October 2 for an Open Evening. All these are, as always, at Hq., 592 Hessele Road, Hull.

It is quite a while since last we heard from the **Rhyl** crowd. Last month they had the AGM at the Mona Hotel in Market Street, where the regular get-togethers on the second Tuesday in each month will also be held. A Club call is to be taken out, and attention being turned to the possibilities of group participation in some of the contests; in addition the Club is on a sound footing, with a good programme extending quite a way ahead, a recruiting drive on the go, and general evidence of liveliness.

Such enthusiasm! The hon. sec. of **Coventry** took the trouble to send us a nice picture-postcard from his holiday retreat in Cromer to let us know that M. Kinsella is booked for a talk on Integrated Circuits on September

4, while September 11 is the only Night-on-the-Air this month. This is because September 18 is given over to G3UOL, who will talk about his trip to Andorra—"Twenty Metres up in the Pyrenees." This leaves September 25 for the all-important Annual General Meeting.

News of a new formation: The **George Kent Group**, who are based at Luton, intend to form a Radio Society, and G3DOT writes to ask that any employee of the firm who may be interested should contact either him or G3TLE, Roy Crawley, so that the extent of any possible support can be gauged. For the moment G3DOT's name and address have gone into the Panel, and we look forward to hearing that the affair has got off the ground successfully.

Each year, at about this time, we hear from the Radio Clubs of one or more of the Universities, as they attempt to make sure that all the newcomers are swept into the net. This time it is **Bristol**, where there is to be a function called "Freshers Squash" on September 30 at which they will have a demonstration station operating HF/SSB, and no doubt a squad of members armed with all the

Names and Addresses of Club Secretaries reporting in this issue:

- ACTON, BRENTFORD & CHISWICK: W. G. Dyer, G3GEH, 188 Gunnersbury Avenue, Acton, London, W.3.
 A.R.M.S.: N. A. S. Fitch, G3FPK, 40 Eskdale Gardens, Purley, Surrey, CR2-1EZ.
 AXE VALE: J. Cross, Coverdale, Woodmead Road, Lyme Regis, Dorset.
 BASINGSTOKE: P. Sterry, G3CBU, Ashley, Orchard Road, Salisbury Gardens, Basingstoke, Hants.
 BISHOPS STORTFORD: A. Stanley, G3WUR, 43 Havers Lane, Bishops Stortford (S7251).
 BRISTOL: E. J. Davies, G3XSY, 72 North View, Bristol (33284), BS6-7PZ.
 BRISTOL UNIVERSITY: C. G. Elliott, G8ADP, 148 Ashley Down Road, Bristol.
 BRITISH RAIL: R. V. New, 29 Little Dock Lane, Plymouth, Devon, PL5-2LZ.
 CHILTERN: R. A. Fowler, G3IQF, 85 Oxford Road, Marlow (6421), Bucks., SL7-2NP.
 CHIPPENHAM: P. Strand, G3UTO, 8 Brookwell Close, Chippenham (3723), Wilts.
 CORNISH: J. Farrar, G3UCQ, Elm Cottage, Ventonleague, Hayle.
 COVENTRY: C. Jaynes, 20 Belgrave Road, Wyken, Coventry.
 CRAWLEY: G. Bowden, G3BYR, 51 Leighlands, Pound Hill, Crawley, Sussex.
 CRAY VALLEY: D. MacLennan, G3KGM, 52 Pinewood Avenue, Sidcup, Kent (01-300 0767).
 CRYSTAL PALACE: G. M. C. Stone, G3FZL, 11 Liphook Crescent, London, SE.23 (01-699 6940).
 DERBY (Nunsfield House): N. J. Gregory, G3LCV, 21 Back Lane, Chellaston (3516), Derby.
 DORKING: R. Greenwood, G3LBA, 8 Deacon Close, Downside, Cobham (2628), Surrey.
 EAST WORCS.: R. J. Mutton, G3EVT, Summerhayes, Mill Lane, Alcester (2041).
 ECHELFORD: R. Hewes, G3TDR, 24 Brightside Avenue, Laleham-on-Thames, Middlesex (Staines 56513).
 EXETER: G. Wheatcroft, G3HMY, 27 Lower Wear Road, Countess Wear, Exeter, Devon, EX2-7BQ.
 FAREHAM: G. G. Bulleymont, G3XIV, 42 The Fairway, Portchester, Fareham, Hants.
 FARNBOROUGH: A. L. Stretton, G8BVM, 10 Sinhurst Road, Camberley (22867), Surrey.
 GEORGE KENT: J. Allen, G3DOT, 77 Rosslyn Crescent, Luton, Beds. (projected).
 HARROW: R. H. Medcraft, G3JVM, 134 Dulverton Road, Ruislip Manor, Ruislip (38726), Middx., HA4-9AG.
 HEREFORD: S. Jesson, 181 Kings Acre Road, Hereford (3237).
 HULL: Mrs. M. E. Longson, 4 Chester Road, Wold Road, Hull, HU5-5QE.
 KINGSTON: R. S. Babbs, G3GVU, 28 Grove Lane, Kingston-on-Thames (2801).
 LINCOLN: D. O'Connor, 61 Steep Hill, Lincoln (24113).
 LOTHIAN: D. E. Ferguson, G83YMX, 1 Braidburn Crescent, Edinburgh, EH10-6EL.
 MIDLAND: H. L. Bate, G8AMD, 88 Darnick Road, Sutton Coldfield, Warwickshire.
 MID-SUSSEX: E. J. Letts, G3RXJ, 87 Meadow Lane, Burgess Hill (3552), Sussex.
 MID-WARWICKSHIRE: K. J. Young, G3ZCG, 56 Chapel Street, Bishops Itchington, Nr. Leamington Spa (Harbury Wells 273).
 NORTH DEVON: H. G. Hughes, G4CG, Crinnis, High Wall, Sticklepath, Barnstaple, Devon.
 NORTHERN HEIGHTS: A. Robinson, G3MDW, Candy Cabin, Ogden, Halifax (44329).
 NORTH KENT: A. Watt, G3WZJ, 67 Glenhurst Avenue, Bexley (CY-22564).
 NORTHUMBRIA: J. Temple, G3XAI, 4 Coquetdale Place, Bedlington, Northumberland.
 NOTTINGHAM: M. Harris, G3VUI, 20 Durham Crescent, Bulwell, Nottingham, NG6-9AH.
 PETERBOROUGH: D. Byrne, G3KPO, Jersey House, Eye (351), Peterborough.
 PLYMOUTH: J. Dawe, G3SPI, 345 Crownhill Road, Plymouth (31055), PL5-2LL.
 PURLEY: A. Frost, G3FTQ, 62 Gonville Road, Thornton Heath, Surrey, CR4-6DB.
 R.A.I.B.C.: Mrs. Frances Woolley, G3LWY, 331 Wigan Lane, Wigan, Lancs.
 RHYL: T. Hewitt, GW3YFD, 15 Knights Green, Flint, CH6-5DE.
 ROYAL NAVY: R/S A. Walker, H.M.S. Mercury, Leydene, Petersfield, Hants.
 RUGBY: J. L. Wood, G3YQC, 73 Hillmorton Road, Rugby, Warwickshire.
 SALTASH: J. A. Ennis, G3XWA, 19 Coombe Road, Saltash, Cornwall, PL12-4ER.
 SHEFFIELD: G. Easton, G3JMV, 46 High Storrs Crescent, Sheffield (64370), S11-7JY.
 SILVERTHORN: A. Mitchell, G3YJZ, 6 South Road, London, E.9 (01-804 8074).
 SOLIHULL: H. D. L. Clark, G3YOY, 18 Marsland Road, Olton, Solihull, Warwickshire (021-706 0485).
 SOUTHDOWN: P. Simmons, G3XUS, 62 Lawes Avenue, Newhaven, Sussex.
 SOUTHGATE: A. Hydes, G3XSV, 6 Glenbrook North, Cotswold Way, Enfield, Middlesex (01-363 8747).
 SOUTH MANCHESTER: D. Holland, G3WFT, 7 Alcester Road, Sale, Cheshire, M33-3GW.
 TAUNTON: P. Jones, G3WPJ, Chilton Street, Bridgwater, Somerset.
 THANET: R. Trull, G3RA, 1 Approach Road, Broadstairs, Kent.
 TORBAY: Mrs. G. L. Western, G3NQD, 110 Truro Avenue, Hele, Torquay.
 TYNESIDE: C. J. A. Morgan, 4 Park Villas, The Green, Wallsend (624989), Northumberland.
 VERULAM: W. C. Dennis, G3NCK, Colney Heath Lane, St. Albans, Herts.
 WIRRAL: J. Share, G3OKA, 21 Curlender Close, Bidston, Birkenhead, L41-7BN.
 YORK: J. Rainbow, G8BOK, 14 Temple Road, Bishopthorpe, York, YO2-1QN.

necessary to charm the newcomers into joining the ranks. Normal meetings are held on Saturday afternoons at Royal Fort, Tyndall Avenue, Bristol where, with their own G3KAC and G8CXH calls, they are active on all bands between 1.8 and 1296 MHz.

Any visitors intending to turn up at a **Wirral DX Association** meeting should make contact with the hon. secretary first, as this crew get together at members' homes each month, the venue therefore varying each time—not to mention the amount of space available for the lads. In September they have, as usual, the last Thursday in the month, when they will be entertaining G2AMV.

During the holiday months, the **Mid-Warwickshire** crowd do not hold formal meetings, but the clubroom is open as usual with all its facilities, each Monday evening. Hq., incidentally, is at 28 Hamilton Terrace, Leamington Spa.

Now to **Cornish**, where the main meeting is held on the first Thursday in each month at the S.W. E.B. Clubroom, Poole, Camborne, as well as various meetings of sub-groups around the county, in their efforts to give Club coverage over the whole of their far-flung area. For all the details of this very active group, contact G3UCQ, address as Panel, p.433.

The **Peterborough** chaps have an ideal site at Alwalton for their summer activities, which provide, in addition to Amateur Radio, such attractions as fishing, sailing (with or without engine assistance), or just lazing in the sun—what more could a member want? Details, as always, from G3KPO, as in Panel.

A group with a common interest apart from Amateur Radio is the **Royal Navy ARS**, who have just got through one of the big events of the year, namely their participation in the Show, where they hoped to meet as many members as possible, as well as roping in a few more to add to the 260-odd already on the books. Quite apart from the *Newsletter* this is a group well worth joining for the service it offers to the naval type, whether serving or retired.

Up at **York** they have meetings every Thursday in the British Legion, 61 Micklegate, York. Advance warning is given in the note this month of the Annual Dinner at the Granby Lodge Hotel, Scarcroft Road, York, details of which are obtainable from the hon. secretary at the same time as he is giving you the gen on the Club itself.

A change of secretary is noted for **Southdown**, as a result of the recent AGM. For September, the chaps are trying, as an experiment, running the meeting in the open air at the site of the club shack in the wilds of Bushey Wood, Hailsham, Sussex, where they would be delighted to welcome any visitors; however, as the spot is a little difficult to find, contact G3XUS (see Panel) first for directions. It will be bangers-and-beer, round the camp-fire if fine, in the main Scout Hut if wet.

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The hon. sec. of **Fareham** has not written in so much of late, as during the summer months the programme has been generated very much on a hand-to-mouth basis at the last moment. However, they are now all set up to go with firm activities for every Sunday evening right through to the end of March next year—not only booked but *confirmed!* This sounds as though the Fareham chaps have a secretary worth his weight in gold—it is tough trying to keep that far ahead on a monthly programme,

but to do it weekly shows real devotion to duty. Visit them any Sunday evening at Fareham—Portchester Community Centre lies between Fareham and Portsmouth on the A27.

The **East Worcestershire** lads are centred on the town of Redditch, where they have their venue at the Old People's Centre in Park Road, assembling on alternate Thursdays. This gives September 10 for a Junk Sale, and September 24 for a good old natter.

Down in Devon there is a Club serving the area around Barnstaple; it is called the **North Devon**, and meets at Crinnis, High Wall, Sticklepath, Barnstaple on September 9 and 23. No details are given this time, but the general pattern is to try and organise one talk or film-show or whatever, and one natter-evening as a reasonable balance. All who are interested in any aspect of Amateur Radio are welcome.

At **Chippenham** the summer season's end is marked by the last Direction-Finding event—the sixth one of the season—on September 8. In addition there is to be a Hamfest at the George and Dragon at Rowde, the date being provisionally September 18, as well as the normal gathering every Tuesday evening at the Boys' High School.

Cray Valley Newsletter carries a very good piece by G3VLX on his all-band trap dipole, built basically to the G3DZZ design, but giving all the inside dope on how to realise a *practical* design to stand up to the weather. The evening of September 3 is to be given over to G3GVV who will be taking as his theme "Amateur Radio for the Beginner," while the informal meeting comes up on September 17, both at the Congregational Church Hall, 1 Court Road, Eltham, S.E.9.

Up at **Northern Heights** there is always something cooking. On September 2 there is a mini-auction followed by one of their popular Pie Suppers. On September 16 a Morse Practice session will be held for the beginners in the gentle art, and on the 23rd G3TCS will initiate a general discussion on TVI. As for October 7, there will be a re-run of the W1BB Tape-and-Slide lecture Mark 1.

The **Echelford** group is always buzzing with something or other, and it is suspected that they will soon be joining the ranks of the Direction-Finding addicts, as a result of a trip made by some of the members to the recent Verulam D/F affair, when G3SBA was the fox. In terms of their normal meetings, these are at the Hall, St. Martins Court, Kingston Crescent, Ashford, Middx. The date for September is the 14th, and for the first time in many a long year, it will be just a plain old Natter Nite, by general request, so that everyone can come and get to know the people they have never had time to talk to before!

The *Radial* readership is made up of the invalids and blind folk who are the reason for existence of the R.A.I.B.C. set-up, and the supporter members to do all the active things that make this Club such an asset to our hobby; and of whom, alas, there are never enough! Here indeed is a club to which every able-bodied amateur and SWL can contribute, and which should be recommended to any disabled or blind person who has the slightest interest in Amateur Radio. The person to contact is G3LWY—see the address Panel—who does all the hard work of co-ordination and writing the *Newsletter*.

Verulam have the pleasure of entertaining Jimmy

Matthews, G6LL, on September 16; not to talk about VHF, nor yet construction practice, at which subjects he is an acknowledged past-master, but instead to spend an evening yarning on the general theme of "Twenty-Eight Megs in the Twenties, and Other Interesting Tales." It should be worth a lot to hear that talk! On a slightly different plane, the Verulam chaps have a 10th anniversary dinner on the evening of Saturday, October 3. This one is at the Pea Hen Hotel in St. Albans. In a late message, it is learned that tickets are 32s. 6d. per head, and that if anyone from the surrounding areas wishes to come to the celebration they are welcome, and a proportion of the tickets are put by for visitors. For this, which will really be a "do" to remember, contact G8BJK at 119 Gurney Court Road, St. Albans before the end of September for a ticket.

Luck seems to be with the **Northumbria** crowd; although for the moment they are assembling in a room at the "Black and Grey" Inn in Morpeth, they have managed to get nearer the town centre, which venue they are in the process of making inhabitable. This being the case, it would perhaps be advisable to contact G3XAI (*Panel*) for details before making a visit.

Also in Northumberland is **Tyneside**, where the Drill Hall, Vine Street, Wallsend, is the venue on the second and fourth Mondays. Your scribe remembers the secretary writing to indicate that they were going to form a club if they had enough members, just a short while ago. They now have 79 on the books!

Harrow have a firm change of address to report; they are now at Harrow County School, Gayton Road, where September 4 will be a Junk Sale, 11th a talk on the use of ICs; a talk and film on D/F on the 18th; and a Practical Evening plus film-show to round off a good month.

Nice to hear from **Purley**, who are in session on September 4 and 18. The first date is mainly a Natter Nite but will of course concern itself mainly with the final VHF/NFD preparations. The second date is the formal affair, and will be the Annual Construction Contest, with prizes to be won. Both are at the Railwaymen's Hall, Whytecliffe Road, Purley.

Though a not-so-frequent correspondent, the hon. secretary of **Thanet** writes to indicate that they keep going—with meetings on September 25, talk by G3RAD on his recent business visit to Europe; on October 2, a bring-and-buy sale; October 9, tape-and-slide lecture; the 16th, visit to the monthly VHF meeting at Wye College; and on the 23rd the subject is the "Hospital Broadcasting Service." All meetings are at 7.30 p.m., Hilderstone House, St. Peters Road, Broadstairs.

Southgate have their next meeting on September 10, at the Civil Defence Hut, Bowes Road (opposite Arnos Grove Tube station), 7.30 p.m. for a junk sale. They recently met, and handsomely slaughtered, the Finchley group in a challenge cricket match—the return game is to be fought on different terms: Bar billiards and tiddley-winks!

Just as this appears, the **Silverthorn** chaps will be off for their annual four-day camp at Epping Green, with G3SRA/P, G8CSA/P and G3ZCC/P, on HF/VHF and

HON. SECRETARIES—PLEASE NOTE

Closing date for "The Month With The Clubs" for the next few months is, **Fridays: September 4, October 9, November 6.** Address: "Club Secretary," Short Wave Magazine, Buckingham, posted to arrive by the date given.

Top Band. This should be a very good "do," and all they need is kind Wx.

Future arrangements for **North Kent**, who gather at the Congregational Church Hall, Bexleyheath, include: August 31, attendance at the Erith Show, with an exhibition station; September 5-6, participation in VHF/NFD; September 10, Junk Sale; September 12, at the Greenwich Show, with an on-the-air demonstration; September 24, talk on Solid-State VHF/UHF Transmitters, by G3OOU.

Up at the **Lothians** (Edinburgh), they have their next meeting on September 10, when their president, GM3SHB, will address them—but "keeping it short, so as to allow plenty of matter-time!"

Next formal meeting for **Crawley** is on September 23, at Trinity Congregational Church Hall, Ifield, when the event will be a Quiz contest with the Reigate group. Informal meetings are held on the second, and formals on the fourth, Wednesday of each month—details always available from G3YVR (*see Panel*), and visitors very welcome.

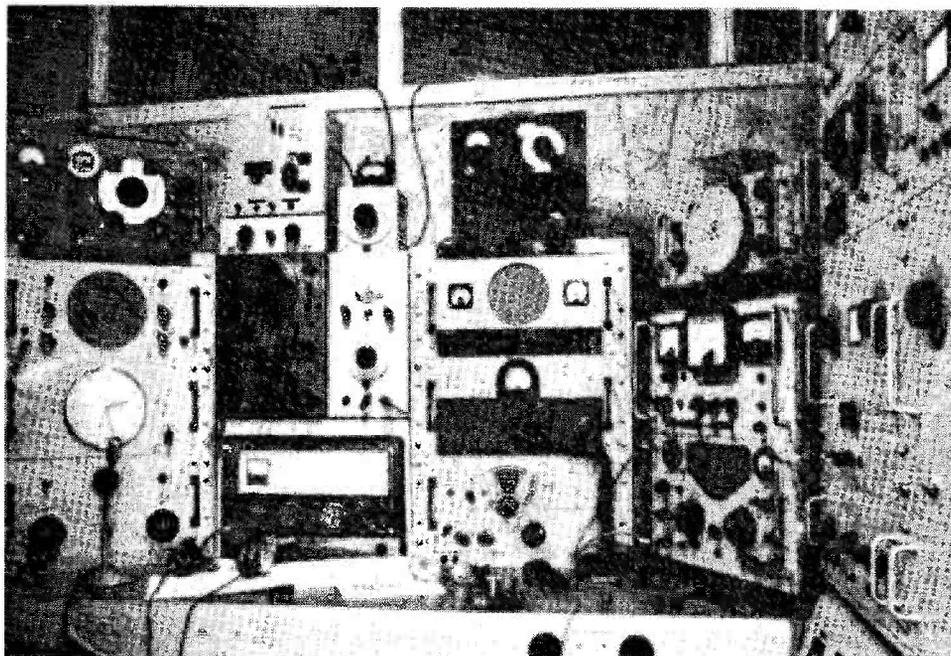
British Rail Amateur Radio Society send their usual voluminous *Newsletter* which, among other things, discusses plans for the FIRAC Congress at Alvignac, France, when representatives of the railway radio amateur groups of more than a dozen European countries will be present, for a three-day event early in September.

Every Tuesday the amateurs of the Lincoln area head, straight after tea, to the No. 2 Guardroom, Sobraon Barracks, Breedon Drive, off Burton Road, Lincoln. Not, let it be noted, to do drill, but to do all the things that are dear to the hearts of successful radio clubs. September 1 is an SWL Contest night, and on the 8th there is a Night-on-the-Air. September 15 is down for a Treasure Hunt, while on the 22nd they are having an evening out, to visit the Radiotherapy Unit, St. George's Hospital. Back at home, on September 29, the month is rounded off by an Open Night.

Last, but by no means least, comes the letter from one of the most consistent reporters to this piece, G3GEH, on behalf of the **Acton, Brentford and Chiswick** lads. They get together at Chiswick Trades and Social Club, 66 High Road, Chiswick, on September 15 to hear from G3CCD an account of his Mobile operation in France as FØUT.

Deadline

Having once again disposed of the pile of letters, it remains but to remind all Club Secretaries that the deadline for next time is to arrive first post on **September 4**, addressed to "Club Secretary," **SHORT WAVE MAGAZINE, BUCKINGHAM.** And don't forget the preparations for MCC—we would like to see you *all* win!



THE OTHER MAN'S STATION

G6HL

FOR W/Cdr. I. E. Hill, C.Eng. F.I.E.R.E., R.A.F. (ret'd), G6HL, interest in radio generally and Amateur Radio in particular started in the early twenties at school-boy level. Access to transmitting equipment came on joining the R.A.F. in 1925 and starting radio training at Flowerdown, where a T250 helped to put GFR on 45 metres. Various receivers, transmitters and ancillary gear were built but a licence to transmit was not obtained until completion of radio training in 1928, and then only under nominal parental control.

Service life means continual movement, restriction of equipment (magnitude and complexity) and frequent rebuilds to take advantage of any local facilities. This was the pattern for the next thirty-odd years although installations at some locations did become transport problems when it was time to move. Many call signs have been used, most overseas activity being attributable to SU6HL, ST6HL or ST2D prewar, and VE3CHL or DL2YP postwar. Retirement from the R.A.F. in 1961 brought some stability and the opportunity to rebuild in a more static form.

Until recent years equipment has been all home constructed—even to the winding of transformers—but time has taken its toll and it has been necessary to utilise some commercial equipment although all have suffered mutilation to meet specific requirements.

The transmitter drive unit is a Racal MA79G exciter giving 100 milliwatts RF output over 1.5 to 30 MHz with

most modes of modulation and keying. Frequency stability is assured by use of a Wadley oscillator and 3.6 to 4.6 MHz VFO. Spot crystal-controlled frequencies can also be selected. The amplifier to the right of the photograph contains a variety of PSU's in the lower half; all are variable, adequately metered and, except for the final PA plate supply, are regulated. The top half houses amplifiers and aerial coupling units providing:

PA1: 28-21-14 MHz, Two Mullard 4CX350 in parallel

PA2 7-3-5 MHz, Two STC 4X250 in parallel

PA3: 28 MHz, One Mullard 4CX350

PA4: 3-5-1.8 MHz, One Mullard QV06-20

Also change-over switching between PA's and including LPF; aerial coupler 28-21-14 MHz; aerial coupler 14-7-3-5-1.8 MHz; aerial switch unit, SWR1 and dummy load; and keying unit.

The main receiver started life as an Eddystone EA-12 and was satisfactory for general usage but not really quite good enough for CW. A completely new 100 kHz IF is seen under the EA-12, incorporating switched LC and crystal filters. A further conversion unit to 18 kHz is located to the left of the Rx and this is used for SSB and CW. Above the clock is a general-purpose AF unit which takes output from any receiver or the TV monitor, and also provides for feeding receiver IF to the oscilloscope.

Located centrally is the TVI monitor which tunes the whole of Band 1 but is normally left on 42.1 MHz and gives an immediate indication if the transmitter is mis-

behaving. The Dumont oscilloscope was liberated from U.S. forces at the end of the war and is now rather elderly but still functions as a check on received signals and can be switched to tuned circuits to permit transmitter monitoring. An auto keyer and various items of test gear fill the gaps.

The present location (11 Heatherway, Edgcombe Park, Crowthorne, Berks.) is very residential and well wooded so aerials present somewhat of a problem. A

Hy-Gain 12AVQ ground plane on a 50ft. fabricated wooden pole is used on 28, 21 and 14 MHz. A centre-fed 66ft. wire hangs between the pole and the domestic TV aerial support and can be loaded variously on 14, 7, 3.5 and 1.8 MHz but is not very satisfactory. However, most operating activity is on 28 or 21 MHz and with the advent of universal break-in SSB on phone, CW is the preferred mode with short DX contacts as the routine, extended to ragchewing if the other chap wishes.

SPECIALLY ON THE AIR

A few more interesting events appropriate to this heading—it was originally our own, and at last we can get back to it!—when AT-stations will be operating under the scrutiny of the public.

Probably that which will attract most attention is the appearance of an amateur station over Sept. 10-12, while the World Archery Championships are being held at Glyncornel, Rhondda, South Wales. The local boys (the Rhondda Radio Society) are going big for this interesting occasion and have arranged for QSL cards bearing the crest of the Rhondda (one of the legendary areas of industrial South Wales) to be sent out in commemorative envelopes, post-marked at the Archery Range office.

GB3RSH, August 29-31: Operated by the Radio Society of Harrow at the annual Harrow Show, Pinner Park, Headstone Manor Recreation Grounds, operating all bands Top to 70 cm. simultaneously. There will also be an RTTY station and an A/TV exhibit. Talk-in for visitors on 2.4-160m.—R. H. Medcraft, G3JVM, 134 Dulverton Road, Ruislip Manor, Ruislip, Middlesex, HA4-9AG.

GB3WRA, September 5: Operating from the 24th annual Wycombe Show, on The Rye, High Wycombe, on all bands 10-160m., AM/CW/SSB. Visitors will be very welcome.—A. C. Butcher, G3FSN, 70 Hughenden Avenue, High Wycombe, Bucks.

GB3WAC, Sept. 10-12: Exhibition station put on by the Rhondda Radio Society for the occasion of the World Archery Championships at the Glynconel Archery Centre. To operate on all bands 2m. to 80m., AM/CW/SSB, daily 1000-2000 BST. QSL address and details: C. M. Parry, GW3PHH, 34 Cae'r-Gwerlas, Tonyrefail, Porth, Glam., South Wales.

GB3LRS, Sept. 18-19: To be presented by the Mid-Warwickshire Amateur Electronics & Radio Society for the Arts & Crafts Exhibition, Town Hall, Leamington Spa, Warwickshire, running AM/SSB on 20 and 80m. A special QSL card is being minted and will be used to confirm all contacts and reports.—K. J. Young, G3ZCG, 56 Old Road, Bishops Itchington, Nr. Leamington Spa, Warks.

GB3MAN, Sept. 26-Oct. 17: Put on by the University of Manchester Institute of Science & Technology to coincide with the intake of new students for the forthcoming year. Operation on all bands 10-160m., CW/SSB, and on two metres with AM. It is intended to mint a special QSL card for the occasion. Further enquiries (particularly from prospective students

holding licences or interested in Amateur Radio) to: A. M. Davies, Amateur Radio & Electronics Society, UMIST Union, P.O. Box 88, Sackville Street, Manchester M60-1QD. (Tel: 061-236 1281.)

GB3REC, October 2-4: At the Phasels Wood Scout Camp, Kings Langley, Herts., programme of activities covering many aspects of Amateur Radio interest—including A/TV demonstration, SWL contest, D/F hunt, and operation of amateur-band equipment. Sponsors are G3YVI, G8CBU and G8CKT, all concerned with the Scout movement. It is hoped to make this an annual event at an established Scout camping centre. Details and information from: M. H. Tooley, G8CKT, 59 Oatlands Avenue, Weybridge, Surrey.

RETIREMENT OF G5BG

After 20 years with Painton & Co., Ltd., Northampton, first as the Company's chief engineer, then becoming general manager, joint managing director and finally vice-chairman, Mr. J. B. Kaye (G5BG) of Wappenham, Northants., has retired. His activities in the Amateur Radio field have included quite a lot of home construction, carried out meticulously, while on the air he could be heard mainly on Top Band and two metres, always with an excellent transmission.



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NEW QTH's

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

EI2CB, M. J. Powell, Pranstown House, Booterstown Avenue, Blackrock Co. Dublin.

EI3CB, T. Vaughan, Ballydesmond, Mallow, Co. Cork.

G3YOT, G. Wright, 56 Queensway, Bamber Bridge, Preston, Lancs. PR5 6UD.

G3ZJD, R. Jones, 18 Chantry Close, Parsonage Lane, Windsor, Berks.

G3ZJW, Dr. B. H. McCombe, 208 Thorpe Road, Peterborough. PE3 6LB.

G3ZKG, J. Riley, 60 Waverley Avenue, Bedlington, Northumberland.

G3ZLN, N. Thomas (*ex-G8BVE*) 9 Burlington Road, Ipswich, Suffolk. IP1 2EU.

G3ZLW, R. B. Dunkling, 34 Rose Avenue, South Woodford, London, E.18.

G3ZLY, V. C. Bird, Jr., No. 1 Flat, 67 Finchley Lane, Hendon, London, N.W.4.

G3ZMG, J. Maughan, 40 Windsor Drive New Silksworth, Sunderland, Co. Durham.

G3ZMQ, J. T. Pickles (*ex-G8CUD*) 207 New Line, Greengates, Bradford, Yorkshire. BD10 0BN. (*Tel. Bradford 611883.*)

G3ZMU, M. D. Bass, 43 Prospect Road, Carlton, Nottingham. NG4 1LX.

G8DDE, E. C. Weatherall, 641 Farnborough Road, Clifton, Nottingham.

G8DJN, J. Patrick, 57 Lansdowne Road, Laleham, Staines, Middlesex.

GM8DOX, I. McKechnie, 9 Grahamfield Place, Beith, Ayrshire.

G8DRF, P. G. West, 47 London Road, Braintree, Essex. (*Tel. Braintree 1123.*)

G8DRP, A. W. Morecroft, 17 Princess Street, Swinton, Manchester, Lancs.

G8DTM, F. L. Partington, 21 East Road, Wymeswold, Leics. LE12 6ST. (*Tel. Wymeswold 880279.*)

G8DVG, R. M. Waldren, 24 Alderney Avenue, Hounslow, Middlesex.

G8DVT, P. J. Lee, 13 Eaton Court, Regency Walk, Shirley, Croydon,

Surrey. CRO 7US. (*Tel. 01-777 2085.*)

G8DVV, P. Hudson, 338 Bennett Street, Long Eaton, Nottingham. NG10 4JD. (*Tel. Long Eaton 4189.*)

G8DWB, D. W. Bowers, 124 Rothwell Road, Desborough, Kettering, Northants. (*Tel. Desborough 175.*)

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G3EZG, C. V. Sallows, 3 Ashleigh Mount, Teignmouth, S. Devon.

G3FVV, R. C. Fagg, 26 Bishopstone Drive, Saltdean, Brighton, Sussex. BN2 8FF.

G3HZW, D. C. Mainhood, 131 Westbury Lane, Westbury-on-Trym, Bristol. BS9 2PX.

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G3NEA, L. J. Saunders, 1 Channel Court, Woodspring Avenue, Worlebury, Weston - super - Mare, Somerset.

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G3PFJ, J. D. Harris, 20 Westgarth Gardens, Bury St. Edmunds,

Suffolk. (*Tel. Bury St. Edmunds 2307.*)

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G3PQE, J. Thorn, 43 Hill Road, Weston-super-Mare, Somerset.

G3SDK, M. R. Kidman, 27 Norton Crescent, Towcester, Northants.

G3SUG, J. J. Jarvis, 56 Upper Churnside, Beeches Estate, Cirencester, Glos. GL7 1AP.

GW3TKH, K. J. Winnard (*ex-G3TKH*), 3 Heol Gabriel, Whitchurch, Cardiff. CF4 1JS.

G3TML, T. H. Lloyd (*ex-9LITL*), 279 Allesley Old Road, Coventry, Warks. CV5 8FN.

GI3UHL, T. M. McKeown, 92 Glebe Avenue, Coleraine, Co. Londonderry.

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G3WMA, W. P. Shepperd, 24 Troughton Walk, South Witham, Grantham, Lincs.

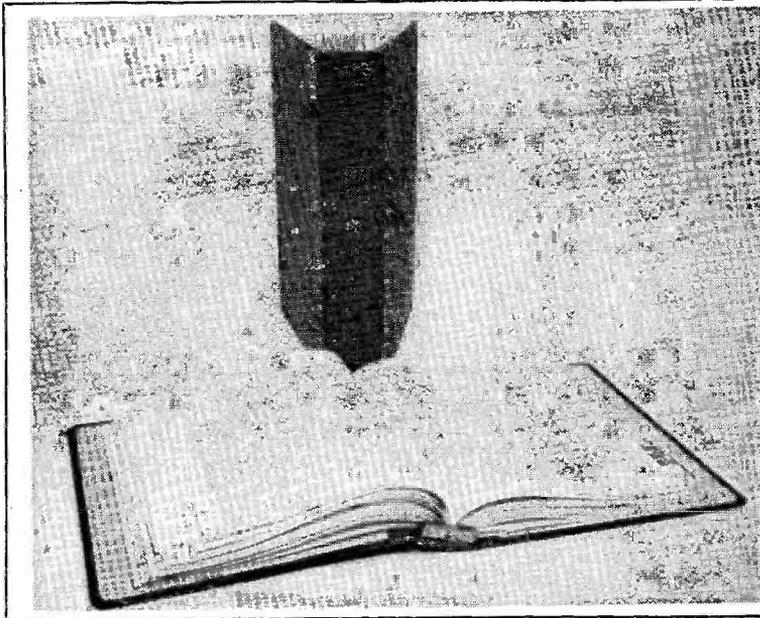
GW3WSU, C. S. Beynon, No. 1 Bungalow, Decca Navigator Transmitting Station, Llancarfan, Barry, Glam.

G3XJZ, C. L. Sykes, Decca Transmitting Station, Denhall Lane, Neston, Wirral, Cheshire.

G3YWQ, W. McClure, 8 Stackwood Avenue, Barrow-in-Furness, Lancs.

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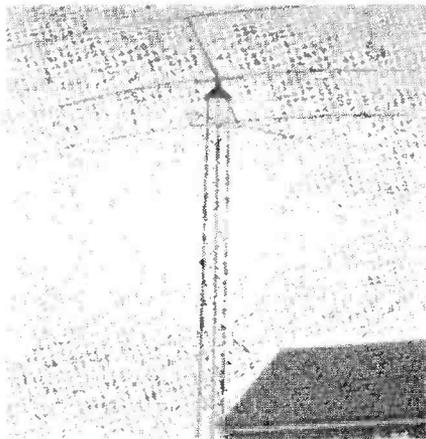
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QSL Cards for Tx and SWL. Send s.a.e. for samples stating which type required.—Beaumont, G5YV, 8 Ashfield Avenue, Morley, Leeds. LS27-0QD.

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, Green Lane, Coventry.

TEST-DRIVE a Trio: Transceivers and receivers on demonstration. Licensed operators may try a transmitter by previous arrangement. (Bring your licence with you.)—Holdings, Photo-Audio Centre, 39-41 Mincing Lane, Blackburn, BB2-2AF, Lancs. (Tel: 59595/6. Colsed all day Thursdays.)

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

OCTOBER Issue: Appears September 25. Single-copy orders, 4s. (4s. 3d. "first-class" mail) to reach us by Wednesday, September 23, for posting on September 24.—Circulation Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED: Early Wireless Items from 1900-1928, including World War 1, ship's gear, Marconi apparatus, spark-gap, coherer and crystal-set items; also gramophones and similar equipment. Please describe and quote price.—Christen, 12 Princess Terrace, Brighton, 7, Sussex, BN2-5JS.

QSL Cards: To your own design if required. Samples. Casling, G3MWZ, 31 Fiskerton Road, Cherry Willingham, Lincoln.

STAR SR-700A Communications Receiver: Triple conversion, seven amateur bands, eleven BC bands, every facility, all crystal controlled, additional crystal turret fitted, plinth speaker with aerial, tuning unit and Joystick, also special headphones. As brand new, cost over £150, our price £100. Lafayette HA-63, fitted with Ameco nuvistor RF preselector, plinth speaker. As new, cost over £45, our price £25.—Gordon House, 9 Candleriggs, Glasgow, C.1., Scotland.

SENATOR CRYSTALS have for sale a power-operated quartz crystal lapping machine which has become surplus to their requirements. The use of a lapping machine offers the advantage of being able to move the frequency of quartz crystals with professional accuracy. Inspection and offers invited.—Senator Crystals, 36 Valleyfield Road, Streatham, London, S.W.16. (Tel: 01-769 1639.)

DX-100U Tx modified to take SB-10U Adaptor; in first-class working order, price £50 carriage paid U.K. B.40 receiver, average condition, £18 carriage paid U.K.—Swanco, 67 Station Road, Kenilworth (57225), Warwickshire.

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EDDYSTONE AND TRIO RECEIVERS. DIECAST BOXES. JACKSON CAPACITORS AND DRIVES. DENCO COILS. "RADIO-SPARES" TRANSFORMERS AND COMPONENTS.

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RECEIVER UNIT R3673 20 to 90 Mc/s. Size 13" x 8" x 8" 10 channel. Motor selected. High quality converter unit into 7.5 Mc/s. IF strip. 19 valves. (13 EF91, 3 EB91, 1 EL91, 1 6J6, 1 EAC 91.) Small blower, 2 relays. Supplied with circuit and modifications. £3/10/-, plus postage 15/-. All tested before despatch.

898 GEARED DRIVE ASSEMBLY. Still available at old price £6 6s. 8d., post 4/6.

AR88D. Communications receiver. Brand new, with spares, handbook, etc., £85, carriage £1.

ALUMINIUM CHASSIS WITH BASE PLATE. 17" x 8½" x 2". 32 valveholders B9A 100 0-01 disc ceramics. Erie. 500v., 100 resistors, 75 standoff insulators, 10/-, post 4/6.

RACAL RA.17. Tuning heart, 2 to 3 Mc/s. Conversion to 100 kc/s. Film strip scale. Calibration to 1 kc. Geared tuning mechanism, ratio approximately 20/1 with flywheel, brake, etc. Die-cast construction. 6064 osc., 6BE6 mixer. All units tested before despatch. Excellent condition. In maker's packing, £12, carriage £1, with circuit.

R209 Mk. II PORTABLE/MOBILE RECEIVER. 1 to 20 Mc/s. 12 volt DC operation. AM/CW/FM. Internal speaker. Ideal for Caravan or small boat enthusiast. Checked and tested before despatch, £15, carriage 10/-.

TWIN COIL RELAY. 666 ohm. 1 coil-1 pole C/O. 1 pair make. 1 coil-1 pole C/O pairs break. Can be operated singly or paired, 12/6, post 2/-.

SMALL POWER TRANSFORMERS. Drop through Mtg. 3" x 2½" x 2½". Above chassis, postage is 4/6 each. 240v. 100mA. 6.3v. 2A LT, 25/-, 180v. 40mA. 6.3v. 2A LT, 17/6. 180v. 25mA. 6.3v. 2A LT, 14/-.

CONTACT COOLED RECTIFIERS. Postage 1/- each. 250v. 75mA, 9/6. 250v. 125mA., 12/6.

Some items left from previous adverts.

Business hours: 9 a.m.—6 p.m. Tuesday-Saturday

CLOSED ALL DAY MONDAY

THE SENTINEL DUAL GATE MOSFET 2 METRE CONVERTER

Dual gate MOSFET cascode circuits for RF amplifier and mixer. Silicon planar transistor crystal oscillator and multiplier. Silver plated input coil—all tuned circuits are capacity tuned and inductively coupled. Noise figure 2 dB. Supply 12 volts. I.F.'s available 4-6MHz, 9-11 MHz, 14-16 MHz, 23-25 MHz, 24-26 MHz, 28-30 MHz. Built on a printed circuit board $2\frac{1}{2}$ " square.

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The transistors are selected and the circuits aligned for a noise figure of less than 1 dB. Gain 20 dB. Can you better that? Supply +12 volts. Boxed as the converter. Price: £6 10s.

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Ashford (MX) 55265 (up to 9.30 p.m. any evening)

**HOLIDAYS '70 - WE SHALL BE CLOSED
FOR ALL BUSINESS
UNTIL SATURDAY, SEPTEMBER 5th, 1970.**

We regret the delay in forwarding full details of our new 2-metre solid-state receiver, the Echelcom 2401, this has been due to our desire to give you the fullest details, together with photograph of a production unit—the prototype looks hideous! If you wish to have details when they are available and are not on our mailing list, please send a S.A.E.

NEW ITEMS IN STOCK

	£	s.	d.	P & P
Trio 9R 59DE receiver	42	10	0	10/-
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We hope to have a full range of KW Electronics equipment in stock by the time of the appearance of this advert.

	£	s.	d.	
KW 2000B with PSU...	240	0	0	carriage extra
KW Atlanta with PSU	230	0	0	carriage extra
KW E-Zee Match ATU	13	16	0	inc. P & P

H.P. terms available on all items over £30.

SECOND-HAND ITEMS

These change so rapidly we ask you to send a S.A.E. for the current lists.

CLOSED ALL DAY WEDNESDAY

A. G. Wheeler,
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3d. per word, minimum 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.

WANTED: Urgently, in GI, mains-type and mobile Tx/Rx for two metres and four metres. Must be in working order. Details and price, pse.—Box No. 4930, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: G3YUA Frequency Translator, 10m. to 2m., price £10. Class-D Wavemeter No. 2, £7. TIS88A FET two-metre converter, less xtal, £7.—Pickers, G3YUA, 8 Croftway, Markfield (2063), Leicestershire.

SALE: Heathkit RA-1 receiver with crystal calibrator, speaker and manuals, like new. Price £35.—Balmforth, G3RKQ, 37 Kew Crescent, Sheffield, 12.

SELLING: All new items: Cadenza ribbon microphone in case, high and low Z, £6. Eagle crystal microphone, 12s. Labgear mobile microphone with strung cord, 12s. Shure throat microphone, 5s. HZP ferrite HF balun, 7s. 6d. Eddystone E.586 140 mmF variable capacitor, 10s. Six-inch "Expelaire" with iris shutter, £6. STC xtal for 71 MHz, wire ends, 30s. Telephone dial, 5s. Also Grundig "Music Boy" transistor radio, needs attention, 30s. Box of 100 mixed transistors, 10s. Weston Analyser E.772, needs attention, 30s. UM3 mod. transformer, 30s. Driver transformer, 10s. Collins 40-watt mod. transformer, 10s. RF ammeter, 3-amp., 5s. Three-phase motor, 10s. Cossor HF Wobbulator, spare valves and comprehensive manual, needs attention, 60s. Cossor 1045K manual, 6s. Crystals 10 MHz, 1 MHz and 464.5 kHz, 5s. each. Ch.1 TV amplifier with PSU, 10s. Pair of self-powered handsets, 20s. 1961 ARRL "Handbook," 5s. 1965 "Radio Communication Handbook" 7s. 6d. "VHF Handbook," by W6SAI, 7s. 6d. BVA valves, new and boxed: ECC2000, 15s.; ECL80, 6s.; PCF80, 6s.; PCF801, 6s.; PCF802, 7s.; PCL83, 8s.; PL36, 8s.; PL500, 11s.; PY33, 7s.; U26, 8s.; 6BW7, 5s.; 30PL14, 11s.; and A.1714, 3s. All carriage extra; excess refunded.—Crisp, G3GZJ, QTHR.

WANTED: Redifon R.145 Rx, as June 1960 "Short Wave Magazine." Also HF/DF type radiogoniometer; and FL8 audio filter. Pse give details and price asked.—Box No. 4932, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED: VFO, such as VF-1U, etc. For SALE: R.107, T-model, as new, £12 (to collect). Crystals for 40/80m., 1/2in. pins, eight, 40s. Large Post Office type key, 15s.—Thomsen, 16 Coniston Road, Reddish, Stockport, Staffs.

WANTED: Urgently, CRT Type VCR-139A, must be in good condition.—Hill, 114 Green Lane, Castle Bromwich, Birmingham. (Tel: 021-747 4570.)

OFFERING: Gelo G.210 Tx, coverage 10 to 80m., 35 wttts AM/CW. Trio 9R-59. Few HRO coil packs and dial. TCS Tx for spares. Offers? (Buyers collect).—Hutchins, G3JPK, QTHR. (Tel: Chipping Sodbury 8759.)

FOR SALE: No. 19 Set Tx/Rx, Mk. IIIT, coverage 2.0-8.0 and 229-241 MHz, good condition, with control unit, headphones and PSU; price £20.—Page, 59 Kipling Road, Eastleigh, Hants.

SALE: HP-23 PSU for Heath HW-100 or single-banders, price £20. Reslo RBT microphone with matching xformer, 40s. Eagle Reverb. £7 10s.—Noquet, 4 Hey Bridge Road, Ingatstone, Essex.

RADIO Amateur returning from overseas contract requires unfurnished family accommodation, London area.—Box No. 4931, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED: Rack-fitting PSU, 2000v. 500 mA, or suitable mains transformer for building same. Also one dozen electrolytic capacitors, each 200 mF, 450v. working.—Parker, G3KH, 133 Station Road, Cropston, Leicester, LE7-7HH.

OLD Volumes "Short Wave Magazine" wanted. Reader in U.S.A. will pay any reasonable price for pre-war Volumes I, II and III of the Magazine. Bound volumes preferred but single copies are acceptable if suitable for binding, i.e., no missing or unreadable pages. Remember, any reasonable price offered.—Box No. 4933, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: Valve Voltmeter, R.C.A. Type 165-A, suitable for 110-250v. AC.—Watts, 62 Belmore Road, Thorpe, Norwich, NOR.72.T.

WANTED: 2M20, CTR and Heath HW-30, complete with manuals. Pse state details and price.—Box No. 4934, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED: Pye Radiotelephone Equipment, Types F.27 base station; AM10B and AM10D; Westminster mobiles; and AC-10FU power unit.—Austen, 28A Valebridge Road, Burgess Hill (3409), Sussex.

TOP quality polypropylene non-rot rope. Diameters, 1/4in., 1300 lbs. breaking strain; 5/16in. + 1890 lbs. B/S; and 3/4in. dia., 3100 lbs. B/S. Send s.a.e. for sample.—Powell, GW3HUM, 21 Tanybryn Estate, Valley, Anglesey.

GOING QRT: Regretfully, G3BES selling up complete full-power SSB station, a rig to be proud of, comprising professionally-built QQV06-40A exciter, 2/813 linear amplifier, R.206 receiver, Minimitter converter, two-tone operating console, pedestal, 4-drawer filing cabinet, two microphones, valves and extras, selling at nearest £150 The Lot, to be collected. (Send s.a.e. for itemised description.) Also, separately, a Hallicrafters Super Skyrider receiver, with matching speaker and service manual, in new condition (stored for years) price £20. And a good junk-box, £5. Buyers to collect.—Nash, G3BES, 60 Tisbury Road, Hove 3, Sussex.

WANTED: Urgently, to buy, on loan or hire, the manual and circuitry for CT.52 oscilloscope.—Chapman, Crockers Farm, Stoke Wake, Blandford, Dorset.

SELLING: At £6 each, Heathkit GD-1U GDO and HM-15 SWR meter. K.W. trap dipole, £8. K.W. E-Zee Match, £10. AR22 rotator and control unit, £15. Water coax switches Type 335 1-pole 6-way and Type 341 1-p 2-w, £4 each. Filter Type 504 tunable 34-86 MHz, 20s. G.E.C. Miniscope, £6. Woden UM2 and DT1 transformers, 20s. each. Valves, A.2087 noise diode and 5B/254M, 20s. each. Manuals, all at 15s. each, for Swan-350, Swan-500, National NCX-3, NC-303, Collins 32S-1, 75S-1, Eddystone 960, Heathkit electronic organ. R.C.A. "Transistor Data Book," 7s. 6d. Crystals B7G mounting, for 130, 140, 150, 160 and 180 kHz, all 12s. 6d. each. Post and carriage extra.—Hope, G3MGT, 9 Chiltern Gardens, Leighton Buzzard, Beds.

SELLING: To modernise, Top Band Tx, with microphone, Type 52 receiver (with xtal calibrator), headphones and xtal-controlled converter for 21/28 MHz. Only requires PSU for complete station, ideal for beginner, price £12. (South-West Lancs.).—Box No. 4935, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

DISPOSING: G. & D. 70-centimetre converter, internal PSU IF 24-28 MHz, £10. Tripler, £12. Two-metre double-six beam, with rotator, 12/24v. actuation, £10. Geloso R.209 receiver, needs trimming, with alien speaker, £20. HRO, PSU, alien speaker, all coil packs except 40m., £14. G. & D. two-metre Falcon Tx, needs mains transformer and attention to smoothing, matches 70 cm. tripler, £15. Buyers collect, except converter/tripler.—Truscott, G8AGO, 8 South Riding, Bricket Wood, Watford, Herts. (Tel: Garston 72105.)

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MARCONI CR100 we have a few more of these very popular receivers now in stock. Freq. coverage 60 khz to 420 khz, 550 khz to 30 MHz in six bands. Switched selectivity down to 100c/s. Operates from 250v. A.C. mains. £18 10s. plus 30s. post.

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TRIO 9R59DE general coverage receiver, £42 plus 30s. post.
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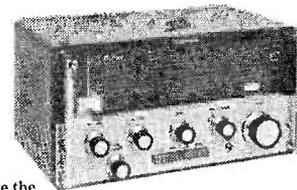
RCA AR88 general coverage receiver	£32	0	0
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LAFAYETTE HA500, 1 to 30 Mhz coverage receiver	£32	0	0
Heathkit RA1. Ham band only, receiver, very sensitive	£30	0	0
Emsac CN2 two metre converter, low noise	£10	0	0
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Murphy B40 receiver all band, good condition	£22	10	0
PYE FM20 base station, complete as is	£14	0	0
Cossor TV Wobulator, Model 1332, in good working order	£8	10	0
Cossor signal generator, Model 343, 1 to 20 Mc/s.	£5	10	0
Hallicrafters 5120 receiver, all band	£17	10	0
Heathkit DX100 in top condition	£40	0	0
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BC221 Heterodyne wavemeter	£14	10	0

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There is an Eddystone Communications receiver for any frequency between 10kHz and 870 MHz full details from Imhofs or your local Eddystone agent.

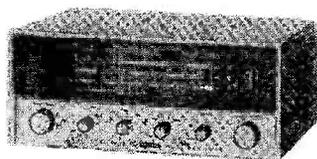
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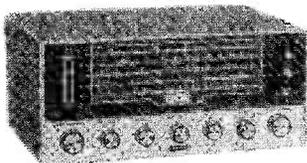
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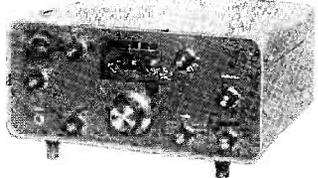
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SALE: New and fully guaranteed, KW-2000B transceiver, used only on demonstration by Plymouth Radio Club "Mayflower" station GB2USA, price £210. Write or phone.—Jones, G5ZT, 3 Bircham View, Eggbuckland, Plymouth (76552), Devon.

SELLING: KW-2000B with AC/PSU, two months old, price £215 or near offer. Would take a K.W. Vespa Mk. II or good G2DAF-type Tx/Rx in part exchange. Wanted: STC Tube Type 4069AB. (Midlands).—Box No. 4936, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

OCTOBER Issue Short Wave Magazine, due out September 25. Single-copy orders 4s. (or 4s. 3d. "first-class") post paid to reach us by Wednesday, September 23, for despatch on Thursday, 24th. These copies are sent flat in an envelope.—Orders, with remittance, to: Circulation Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FORCED To Dismantle Quad: Polyquad Zipglass fibre-glass spreaders, three-band two-element configuration, on 8ft. boom, fed with 52-ohm low-loss coax; instruction manual included. CDR AR22 rotator, complete with 50 yards 4-core control cable. Few months old, total cost £66, selling for £45. (Somerset).—Box No. 4937, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: Hallicrafters S.36A receiver, coverage 28 to 135 MHz, £27 10s. Marconi Redifon R50M Rx, 13.5 kHz to 32 MHz, £45. Pye two-metre "Reporter," rough, 30s. Pye 4m. ditto, good condition, £4. Beam for 4 metres, 50s. Universal Wavemeter Type R.502, 100 kHz to 48 MHz, 50s. Stabilised PSU, £5. Home-built PSU, 40s. Pye two-metre base station, £18. Wanted: CDR rotator.—Wager, G3VOJ, QTHR, Tel: Maldon (Essex) 2757, evenings, Mon.-Sat.

SALE: TS-510 Trio Transceiver, eleven months guarantee, absolutely as new, price £150.—Box No. 4938, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SELLING: Hunts R/C Bridge, £5. Racal digital frequency counter, £45. CR-150/6 receiver, with PSU, coverage 2.0-30 MHz, £35. Xtal Calibrator No. 10 with handbook, £5. Pye PTC-351 PSU only, £5. Pye Scalamp galvanometer, 80s. Spectrum Analyser, £35. Numerous other items.—Speight, G3PYW, QTHR, Tel: Maldon (Essex) 2041.

SELLING: New Eddystone EC-10 receiver, £50.—Garton, 24 Park Drive, Sandiacre, Notts. (Tel: Long Eaton 4753.)

WANTED: Admiralty B.40 receiver, in good working condition, with circuit diagram.—Ring Gallet, 01-788 8208 (London).

HAVE Simon SP2 tape-recorder. Would Exchange for good receiver covering about 1½ to 5 metres, or Juliette.—Wilkes, 5 Eldalade Way, Wednesbury, Staffs.

WANTED: Minimitter 10 to 80m. converter.—Turnbull, 77 Holywell Avenue, Whitley Bay, Northumberland.

FOR SALE: Complete 50-watt Tx, also Vanguard and several boxed 805 valves, unused, reasonable.—Dorward, 22 Beechwood Crescent, Southwick, Sunderland, Co. Durham.

DISPOSING: Trio 9R-59DE general coverage and bandspread receiver, new July 1970 and unused. Still under guarantee, stabiliser fitted, offered together with PR-30 preselector. Price £38, could deliver London area.—Ring Crayden, West Drayton 4759.

FOR SALE: National HRO Rx, with five coil packs, BS and GC, in excellent condition, with PSU, speaker and manual. Price £18 including carriage.—Skipworth, Main Road, Benington, Boston, Lincs.

SELLING: Heathkit RA-1 receiver, £28. JXK two-metre FET converter, IF 28 to 30 MHz, £12. Low-band Pye Reporter, rough, offers?—Hall, G3VQQ, 41 St. Annes Road, Leeds 6, Yorkshire. (Tel: 54122.)

EXCHANGE or Sell: TCS receiver complete with PSU and speaker, just aligned and like-new performance, at £10—or would Exchange for more ambitious receiver needing attention. Anything considered; s.a.e. enquiries.—Cox, 8A Parker Street, Chorley, Lancs.

WANTED: Good general coverage Rx, such as KT-340 or similar; must be in good condition. Details, pse.—Harding, G3YHG, 12 Assisi Road, Salisbury, Wilts. (Tel: Salisbury 28457 after 6.0 p.m.)

WANTED: Electronics Quilpax, amateur bands, either valve or transistor type; also Eddystone 898 dial.—Brewster, 25 Bickerton Road, Oxford (62466).

FOR QUICK Sale: Variable PSU Type 8, 0-500v. 0-30 mA, with metered output. Home-built ten-watt 80/160m. AM/CW Tx, with PSU. Semi-automatic bug key. Three new 6L6's. The Lot for £12. Or would consider Exchange for good multi-meter or receiver.—Stamp, 12 Butler Estate, Digby Street, Bethnal Green, London, E.2.

CASH Required Urgently: Eddystone EC-10 Mk. II, new in April, £60. Brand-new AR88D Rx, cost £89, accepting £65 or near offer. Also ex-service dept. valve stock and instruments going cheaply. (North Midlands).—Box No. 4939, Short Wave Magazine Ltd., 55 Victoria Street, London, S.W.1.

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