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# THE SHORTWAVE

*Magazine*



**EXCLUSIVELY FOR THE  
RADIO EXPERIMENTER &  
TRANSMITTING AMATEUR**

**VOL. VIII No. 7 SEPTEMBER 1950**

# H. WHITAKER G3SJ

10 YORKSHIRE STREET, BURNLEY Phone 4924

**XTALS.** The complete Xtal Kit in sealed cartons for the SCR 536 (BC611) Walkie Talkie. 14 xtals in all with 14 coils, 7 osc. and 7 final covering the complete freq. range of the unit. There are 7 tx. freqs. and a further 7 xtals spaced 455 kc for the receiver. All are in Ft 243 holders with  $\frac{1}{2}$ " pin spacing. The complete range is as follows: 3885/4340, 4080/4535, 4280/4735, 4397/4852, 4840/5295, 5327/5782, 5437/5892 kc.

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**XTALS.** 1000 kc Bilely, Valpey or Somerset, standard  $\frac{1}{2}$ " pin spacing, 20/-, 100 kc RCA, Bilely, sub-standards, 17/6, Marconi, etc., 500 kc British  $\frac{1}{2}$ " pin spacing, 6/-, Western Elec. 500 kc  $\frac{1}{2}$ " Ft 243 holders, 7/6.

**XTALS.** 3-5 Mc Band any spot freq., 15/-.

**FOR 144 Mc.** Any freq. 8000 kc to 8110 kc Ft 243 fitting at 15/-, A few Bendix  $\frac{1}{2}$ " pin spacing 8007-69 kc at 12/6.

**FOR 28 Mc.** Any spot freq. from 7 Mc to 7500 kc at 12/6, with the following specials. 7200, 7225, 7250, 7275, 7300, 7325, 7350, 7375, 7400, 7425, 7450, 7475, 7500 kc at 7/6 each or 72/- per doz. All  $\frac{1}{2}$ " Ft 243 holders.

**FOR 7 Mc.** 7000 to 7300 kc any spot freq. at 12/6, with the fone band specials as above.

**6 Mc Band for 144.** 6000 kc to 6083 kc any spot freq. at 12/6. Ft 243 holders.

**FOR 21 Mc.** 5250 to 5350 kc any spot freq., 12/6- Ft 243 holders.

**TOP BAND.** Double, 850 kc to 863.5 kc and 937 to 1038.5 kc, Ft 243 holders, by Western Elec. Prolific harmonic generators. Plated type, spot welded contacts, mounted in air gap, at 5/- each. To Commercial users and others. A complete range available from 2 Mc to 9 Mc in either  $\frac{1}{2}$ " or  $\frac{1}{4}$ " holders. The entire range by: RCA, Bilely, Valpey, Stand, etc., and all leading American manufacturers. Quantity quotations are available on request. Export enquiries welcomed.

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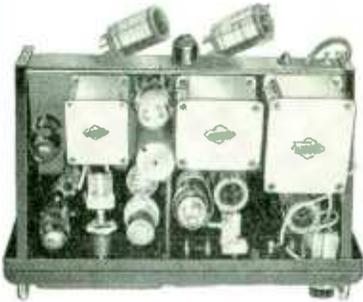
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0.2 1/2a, 7/6; 0.1a, 5/-; 0/30a, 7/6; 0/100ma 2 in. sq., 5/6; 0 500 uA, 5/-; 0/500 ma Thermo, 3/6. B7G Cans, 3 for 1/-. VALVES—5R4GY, 6SL7, ARP12, AR8, VU120, 5Z4G, 2C26, 6AC7, 6BBM, KTW63, EF36, EBC33, ML6, 2X2, VU111, 6C4, 6J5M, VR91, 12SK7, 12SR7, 12SG7, 12AH7, 9003, at 5/-. 6SG7, 6SH7, SP1, SP41, 9006, 3B24, P61, at 3/6; VR21, VT90, 6L16, EA50, EB34, 7193, CV6, at 2/6; 5U4G, 5Z4M, 6X5, 12A6, 6J7, 6F6M, 6AG5, 7V7, EF54, 5Z3, Pen46, 6N7M, MU14, 2050, IT4, IS4, IR5, IS5, 6SN7, 6K7, 6AG7, 6Y6, OP21, 717A, 721A, VR105, VR150, AC6Pen, 6L6GA, at 6/6; PT15, 6V6, 6L7M, 6K8M, 6F7, 807, EC52, 3Q5, CV66, at 7/6; 6AK5, 6J6, 6L6M (1622) at 8/6. XTAL DIODES IN 22, 3/-.

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# SHORT WAVE MAGAZINE

FOR THE RADIO AMATEUR & AMATEUR RADIO

Vol VIII SEPTEMBER 1950 No. 86

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*Editor* : AUSTIN FORSYTH, O.B.E. (G6FO)

*Advertisement Manager* : P. H. FALKNER

*Assistant Editor* : L. H. THOMAS, M.B.E. (G6QB)

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# SHORT WAVE MAGAZINE

FOR THE RADIO AMATEUR AND AMATEUR RADIO

## E D I T O R I A L

### **Change**

*It is widely believed that Amateur Radio is one of the few human activities that takes no heed of race, colour, creed, social distinction or politics—and over the world, as a whole, this was almost true in fact until about 1930.*

*But since then human freedom has ceased to have the meaning in many parts of the world that it still has in this country. The Fascists, Nazis and now the Communists—different names for the same sort of autocratic regime—have had to be guided by strictly political considerations in all their dealings with the miserable serfs absorbed into their hideous systems. Hence, an amateur in a country like Hungary or Czechoslovakia must, first and foremost, be politically pure before he can be officially licensed. The term political purity in countries brought under Communist domination within, say, the last ten years or so, means whole-hearted acceptance of the theory and principles of Communism.*

*Since all these countries have been communised against the known wishes of the vast majority of their peoples, those who do accept the regime are regarded as collaborators, in the same way as anyone who supported the Germans in the occupied countries during the last war. Hence we see it that Amateur Radio in these countries is based on political considerations and that the HA's, OK's and all the rest are themselves collaborators—to use the mildest term.*

*It is easy to take the view that such matters are of no concern to anybody on this side of the Iron Curtain. Certainly, nothing can be done at present for those on the other side.*

*But the fact remains that over a large part of the world Amateur Radio has been drawn into the arena of politics, with all that is implied by that melancholy reflection.*

*Arthur Forsyth  
G6FD*

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# ECONOMICAL THREE-BAND TRANSMITTER

## Cheaply Built from Surplus

By D. SKIRROW (G3GFD)

THIS transmitter has been built almost entirely from readily available surplus apparatus. The main points borne in mind in its design were efficiency, simplicity, and economy. As to the latter, most of the parts for the transmitter were recently purchased as advertised in these pages for less than 55s.

The transmitter incorporates a VFO and PA stage. It can be run as an input of 80 watts on 40 and 20 metres and slightly more on 80 metres. After several weeks' trial on Forty, no reports worse than T9 were received.

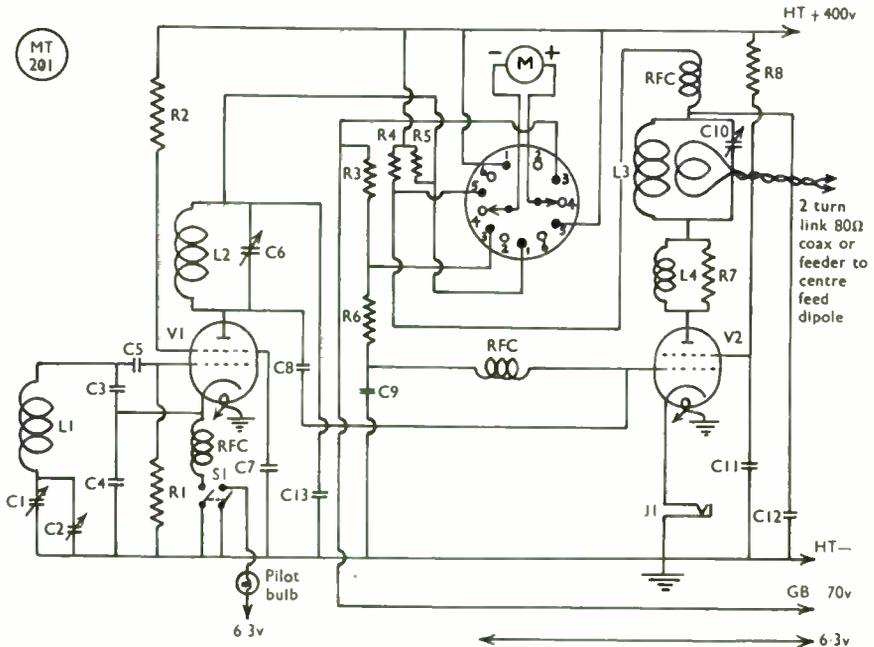
The equipment is built on a TU8B and can be fitted either into the case, providing it is well ventilated, or incorporated in a small rack.

*This neat little assembly cost our contributor less than 55s. not allowing for the resources of an average junk box. It might be built for less, and could cost more, depending on what parts are on hand. In any case, it is a design on lines that will appeal to many readers.—Editor.*

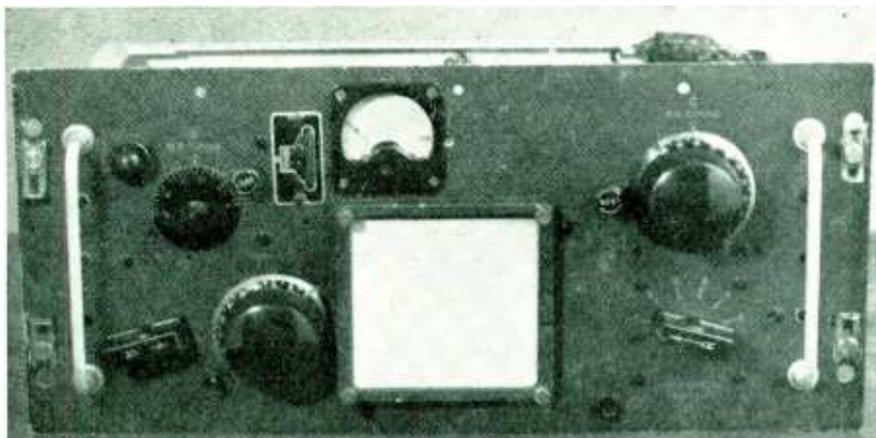
### Circuit

Fig. 1 shows the circuit diagram. This could hardly be simpler and there are no special points to mention. The Clapp oscillator was used because its frequency appeared to be least affected by changes in HT supply. A 6V6 valve is employed in the oscillator stage because these are readily and cheaply available on the surplus market and give enough output to drive an 807 in the PA stage. The tank circuit is single ended and RF output is taken from a two-turn link via a short length of coax or twisted flex to a plug on the rear of the chassis, whence the RF can be fed directly to the aerial.

With most oscillators (and all those tried for this transmitter) a slight chirp was noticed if keying was done in the oscillator stage. Therefore the driver is left running and the key placed in the PA cathode.



Circuit of the two-stage transmitter designed by G3GFD and built for well under £3. A single meter is used, the shunts being brought in by switching.



Looking at the front of the very neat transmitter designed and built by G3GFD entirely from surplus parts, at a cost of under £3.

### Construction

The TU8B must be partly stripped. All coils, chokes and fixed condensers are removed. The tuning condenser in the left-hand compartment (VFO) is not touched, but the one in the other compartment is removed and replaced by a similar but larger one as used in the TU5B. (Most of the fixing screws are easily shifted after being warmed with a soldering iron.) A piece of aluminium is cut to fit the bottom of the chassis, holes being drilled round the edges to correspond with the threaded holes in the TU chassis.

### Table of Values

Fig. 1. The G3GFD Surplus Transmitter.

C1, C6	= 100 $\mu$ F
C2	= <i>see text</i>
C3, C4	= .001 $\mu$ F, silver mica
C5, C8	= 100 $\mu$ F, silver mica
C7	= 0.1 $\mu$ F
C9, C12, C13	= .01 $\mu$ F
C10	= PA condenser as fitted TU5B, or similar
C11	= .001 $\mu$ F
R1	= 25,000 ohms
R2	= 50,000 ohms
R3, R4, R5	= Shunts to suit Meter, wound by trial
R6	= 10,000 ohms
R7	= 60 ohms
R8	= 50,000 ohms, 5-way
S1	= DPST toggle
S2	= Yaxley double-section 6-way
J1	= Keying jack
M	= 0.5 mA m/c meter, or as required
V1	= 6V6
V2	= 807
RFC	= 2.5 mH
L1	= 30 turns 18 SWG over 2½-in. on centre of PA coil former ( <i>see text</i> )
L2	= 16 turns 22 SWG on 1¼-in. plug-in former
L3	= 8 turns 10 SWG for 20 Metres 16 turns 10 SWG for 40 Metres
L4	= 5½-turn parasitic suppressor

Modification of the front panel is now begun.

The original controls are left in position and used as marked. Others are added and the positions can be seen in the photographs. A hole is cut in the panel directly above the calibration chart and as near to the VFO tuning control as possible to take a 2 in. square 0.5 mA meter. Enough space is available with careful planning to fit two such meters, but in the interests of economy only one is used; this is switched to read oscillator anode, PA grid, and PA plate current.

To the left of the calibration chart is the oscillator anode tuning control. This is a spare "velvet-vernier" taken from yet another TU unit—but of course any type of tuning control may be used providing it is not too large for the available panel space. (In the writer's case the flanges containing the 180° stops had to be sawn off in order to fit the control.)

To the immediate left of the oscillator tuning control a small DPST toggle switch is fitted. From the photographs it will be seen that this switch protrudes very slightly below the bottom of the chassis. One half of the switch is in the VFO cathode circuit and the other half when in the on-position supplies 6.3 volts to a ruby indicator.

To the left of the switch and directly opposite the aerial coupling switch, a Yaxley type 6-way double-section switch is fitted. This takes care of the meter.

A ruby indicator is provided near the left-hand top corner, and with a jack socket just underneath the bottom panel near the right-hand bottom corner, the front panel alterations are completed. (over)

### Under the Chassis

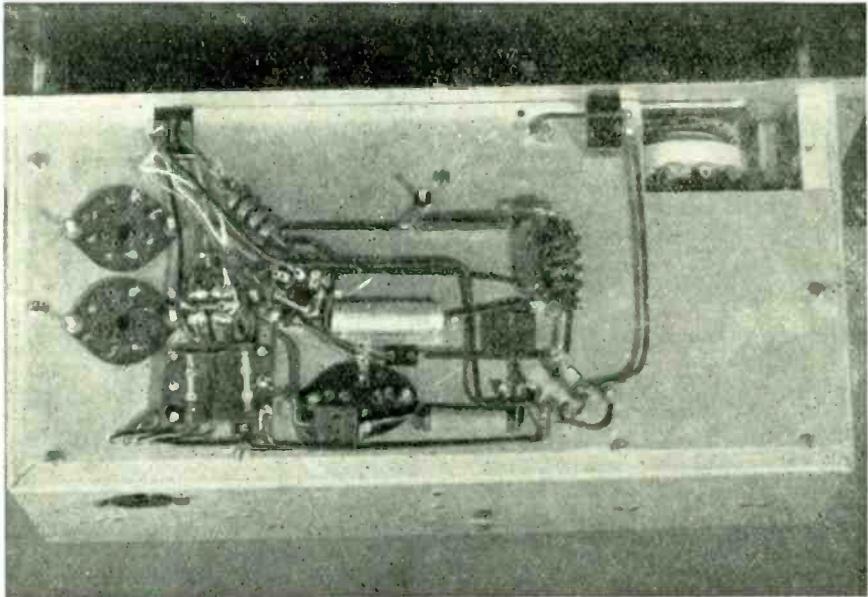
The position of the valves and coils can be seen from the photographs. The two valve holders at the right-hand side were intended to take four of the FT243 type crystals for band edge working, but have not been used so far. Looking at the top view of the transmitter, the 6V6 and the oscillator anode coil L3 are placed at the right-hand side of the VFO compartment; L3 is of the plug-in type. Directly behind the meter can be seen the VFO grid tuning coil, which is 30 turns of 18 SWG spaced over  $2\frac{1}{2}$  in. on the link former; after a long struggle this was extracted from the centre of the original PA coil. Behind the coil can be seen the condenser C1. This is pre-set and all tuning carried out on C2. Underneath C2 at the left-hand side of the VFO compartment are the condensers C3 and C4 (not visible in the photographs).

In the PA compartment there is just sufficient space to fit a small plug-in type tank coil and the 807 valve. The coil plug socket is mounted on two lengths of 2BA rod to bring it to the top of the compartment. Behind the coil is the 807 valve. Just enough room was left to fit the screening can round the valve so that it screws to the back of the chassis. To the right of the valve cap can be seen the parasitic suppressor L7/R7 and to the right of that the RF choke and by-pass condenser C12. A

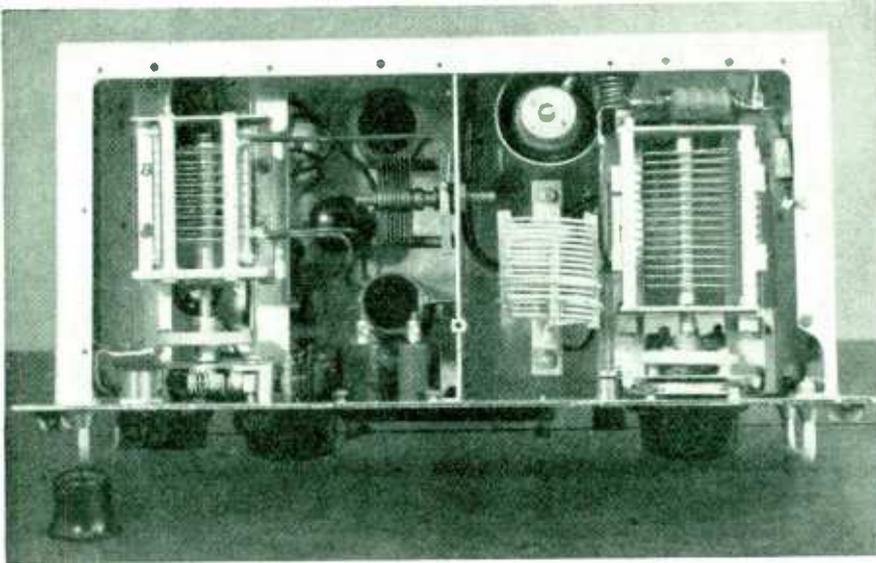
short length of coax cable is visible to the left of the tank coil, feeding the RF output to the small plug on the back of the chassis. There is space underneath the main PA tuning condenser to mount another coil, in which case use could be made of the aerial coupling switch as originally fitted. However, this has not been tried yet.

From the under view can be seen the octal valve base on the back of the chassis through which the various inputs are taken. Wiring from the valve base is run through small holes drilled in the bottom of the chassis to a small distribution panel. All wiring, with the exception of that to the meter switch, is carried out with stiff single-cored thick plastic-covered wire. The other small assembly underneath this distribution panel contains the meter shunts. These were home-made by trial, the various current readings being checked against an Avometer and the shunts altered until the required ranges were obtained on the 0-5 mA meter.

It was found to be too difficult to complete the wiring with the bottom screwed in position, so the bottom and top parts were wired out separately. Care should be taken to leave enough slack from the input socket and other points between sections in order to ease the final fixing. The wires are then passed through



Under-chassis view of the transmitter described in the accompanying article.



Behind the front panel of G3GFD's transmitter.

the holes in the base, which is screwed into position and soldering completed.

#### Setting Up

The transmitter should now be ready for its first tests. Most of the testing at this station was done on the 40-metre band, therefore setting up for this band will be described. With the 40-metre PA coil and either the 80- or 40-metre coil L3 in position, power is supplied to the transmitter. The condenser C2 on which tuning is to be done is set to about its centre position. The station receiver can be tuned to the LF end of the 80-metre band and with BFO on, C1 is rotated until a beat is heard. All the VFO grid tuning can now be carried out using C2 only, C1 being left set. It was found that about three full rotations of the tuning control covered the 40-metre band and this seems to be accurate enough for ordinary use. If "slower" tuning is thought necessary one or more of the vanes can be removed from C2, at the same time increasing the value of C1.

Having started the VFO oscillating and with the appropriate coils in position, either the aerial or a dummy load is plugged into the output socket. With the key down and the switch in pos. 3 to read PA anode current, the main PA tuning condenser C10 is rotated until a drop in PA current is obtained. With minimum anode current, C6 the VFO anode tuning condenser, is now adjusted until the PA

anode current reaches the highest reading possible. The procedure is repeated and if an electric lamp is used as a dummy load it should now be glowing.

With 400 volts HT, the readings on the meter under working conditions are: Osc. anode current, 15-20 mA; PA grid current, 2-3 mA; PA anode current 56-60 mA on 40 metres and at least 50 mA on 20 metres.

#### Other Points

Very little difficulty was experienced in building the transmitter or in getting it into operation. Care should be taken to keep C1 as far as possible from the chassis otherwise V1 will pass heavy current and the VFO will refuse to oscillate. In order to increase frequency stability, all components are fixed rigidly and wires kept as short as possible. Part of the original screening lid can be cut off and fitted over the VFO compartment.

In conclusion it may be said that the author does not claim this to be one of the best low power transmitters described in these pages. However, nothing similar has been seen which can be built at such a low cost and at the same time having a neat appearance. No doubt others will be able to improve on the design and the author will be pleased to hear from them—also to be of assistance to anyone experiencing any difficulty in building the transmitter.

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*The Short Wave Magazine covers the whole field of Amateur Radio*

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## NEW APPROACH TO S-METERS

### Measuring Signal Level Against Local Noise

By H. C. WOODHEAD (G2NX)

THE measurement of signal strength, as far as amateur transmission is concerned, is a matter that must appear to many to be far from satisfactory. That this is the case is evident from the discussion that goes on about it. The "R" code (or should it be the "S" code?) is almost universally employed in amateur telephony working, though from the fact that some of the more conscientious operators feel constrained to prefix their report with, "According to my S-Meter . . .", there are obviously some doubts about the reliability of the system.

How many workers in the amateur field have complete confidence in the value of the reports they give? Presumably a number based on a logarithmic scale is more satisfactory from a technical point of view than a report giving the signals as "twice as loud as the man from next door but one." It certainly gives some idea of the condition in which the signal is being received, particularly if details of QRM and QSB are also taken into account, but it still leaves a great deal unspecified. For instance, an S5 signal on one receiver may quite well be an S9 on another, so presumably one should specify the type of receiver in use. Again, if a standard "all-band" receiver is lined up very carefully for best performance on the amateur bands the result will certainly be increased signal strength, as recorded, on some bands since the line up of the "all-band" receiver is usually something of a compromise. It is also necessary sometimes to narrow the reception band, to avoid QRM, to the point of switching in the crystal filter and since this arrangement usually introduces additional loss of gain in the receiver *before the point in the circuit where the S-Meter is recording signal strength*, the result is a reduction in the meter reading.

#### Variations due to the Receiver

It often occurs that the performance of a set varies from one end of the scale to the other and where there is an overlap in the scales it may be found that S9 + 10dB on the top of one may only be S7 on the bottom of the other.

So we see that if it is to be of any real value at all the report should specify all these con-

*Ever since the S-meter appeared on the amateur horizon, its proper use has been the subject of heated controversy. As now fitted in any amateur band receiver, the S-meter has but one practical application—it can be used to give comparative signal levels only, as when carrying out tests with another station under stable conditions. As this article shows, any other sort of report given on the basis of S-meter readings is valueless. But if the S-meter could be used to indicate "signal level in comparison with local noise and interference," then the receiving operator is being given some useful information. Our contributor discusses the problem in detail from this angle.—Editor.*

ditions of working and might appear somewhat as follows:—

"Signal S8 on an Z-Type receiver used on Range 3 set to a bandwidth of 1,500 cycles, which is badly in need of alignment and may be presumed to give a somewhat pessimistic figure." To be consistent the report should go on to describe the type of aerial, its height, the height above sea level of the site itself, possibly the configuration of the local terrain and maybe even details of geological formations in the neighbourhood. By the time such a report is finished the operator at the other end might be pardoned for coming back to enquire "the engine-driver's name."

Perhaps it might be better to give every readable station an innocuous R4 and S8 and let it go at that! It would be nearly as valuable as anything else we could say on these lines.

On the other hand it might be worth while to examine the commercial practice of assessing the signal in terms of signal-to-noise ratio to see whether that system could usefully be adapted to amateur working. There are, of course, difficulties in the way and not the least of these is devising some means of measuring the ratio. In the commercial field this can be done quite easily by measuring, at audio frequency, the receiver output with either speech or, better still, standard line-up tone and comparing it on the meter scale (calibrated in dB) with the residual noise level when the transmitter microphone is silent. Note that the carrier is still on in this latter condition and holding back the AVC. This noise will be made up of ether noise, QRM, hum on transmitter carrier and perhaps even receiver first-circuit noise if the signal is weak.

#### Special Difficulties in Amateur Working

Such an arrangement would no doubt be quite satisfactory on some bands at some times in the day, for example the 80-metre band at its best; but it would be quite useless for operation on the 20-metre band at its worst. The reason is not difficult to see if we consider for

a minute the make-up of noise as outlined briefly above. The commercial station is not usually worried much with QRM. It has its own assigned frequency and if QRM is experienced then one of the two stations concerned is on its wrong frequency.

In amateur operation, however, as we know only too well, this is far from being the case. QRM is the rule rather than the exception and its level is likely to be greater than all the other noises put together and even more, at times, than the signal itself. Since it forms the main part of the noise and is also so variable it is no use whatever adopting it as a basis of comparison with the signal. A "signal-to-QRM ratio" might be +30 dB one minute and -20 dB the next. That is to say, the signal 30 dB louder than the QRM one minute and the QRM 20 dB louder than the signal the next.

One way of overcoming the difficulty would be to relate everything in the way of a signal to the inherent noise on the band in the absence of any signal and make the measurement at RF, so that we do not distinguish in our measurement between modulated and unmodulated carrier, nor do we take any account of percentage modulation. The method employs a meter to read the anode currents of the auto-controlled RF and IF stages which is a measure of the AVC voltage developed, which is in turn a measure of the magnitude of the signal being received. This is obviously not the same as the AF method in commercial use, for any noise coming from the transmitter itself (such for example as hum on carrier), would not be indicated; whereas in the AF measurement carrier hum would result in a low signal-to-noise ratio. Similarly, in the AF method a 50 per cent. modulated transmitter would have a lower S/N ratio than if it were modulated 100 per cent. Nevertheless, we shall be making a useful comparison between the level of received carrier and the basic radio noise.

There is no doubt that the AF method is the more desirable one to adopt because it does give the level of the effective signal (speech) in terms of background interference, whereas the RF method only approximates to this, ignoring the effect of carrier noise and percentage modulation. In spite of its shortcomings, however, the RF measurement is probably more suitable for assessing the strength of amateur telephony signals just because the extremely variable nature of the background noise in a crowded amateur band does not provide any fixed basis for comparison by the AF method.

#### Telegraph Working

In the case of CW the conditions are much the same, except that the two methods are more likely to give the same results since percentage

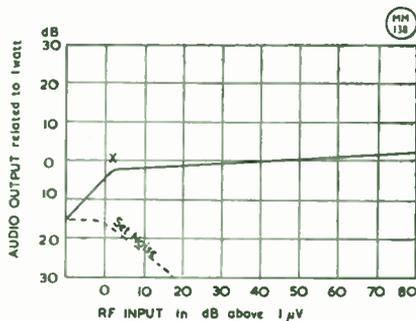


Fig. 1. The AVC characteristic of a typical communications-type receiver. The S-meter is operative only above point X, and will not register on incoming noise if it is below this value.

modulation and carrier hum are no longer factors which affect the measurement.

At this stage someone is sure to remark that all this is quite obvious and is the reason that most receivers are fitted with a suitable S-meter. But is that the same thing? The S-meter, as we have seen earlier, can give results which may differ widely from one receiver to another and though it has some relation to the magnitude of the received signal, its meaning is by no means precise. Some writers say one S-point should equal 3 dB and others that it should be 6 dB. Nothing is laid down and the designer is free to choose as he thinks fit. A dB is, however, always a dB and we know that it means a ratio of 1.26 to 1.

One practical solution in many cases would be to retain the existing S-meter but to recalibrate it in terms of dB which really do mean something. This will not be entirely sufficient for if we are to give the signal report in terms of its S/N ratio we must first measure the noise. If certain precautions are taken we should be able to get a reading for radio noise on our dB meter and this could serve as a basis for our report.

#### Measuring Signal-to-Noise Ratio

The procedure then would be something like this: The receiver is first tuned to the quietest part of the band, or even outside the band, where only general noise is heard and the meter reads minimum, let us say 10 dB. Suppose we now tune in a signal which gives a steady reading of perhaps 65 dB; the report is obviously "S/N ratio 55 dB." If the signal happens not to be steady but varying in a regular manner between 60 dB and 35 dB, the report will be "S/N 50dB with -25 dB QSB." Supposing again that the noise is high, as much as 30 dB on the quietest part of the band, and the wanted signal is varying be-

tween 45 dB and 30 dB (the noise reading), then the report will be "S/N 15 dB with -15 dB QSB." That is to say a margin of only 15 dB at the best of times fading right down into the noise level.

It may be that the noise reads 20 dB and the signal a steady 50 dB until another signal comes up on the same frequency, not loud enough to spoil the transmission but keeping the meter up to 35 dB when the wanted transmission switches off at the end. The report will be "S/N 30 dB, QRM/Noise + 15 dB," from which it is to be inferred that there is a workable margin of 15 dB between the wanted signal and the QRM. If a local transmitter should come up right on the wanted transmission, completely blotting it out and kicking the meter up to 80 dB (which Heaven forbid), the report would be "S/N 30 dB and Sig/QRM -30 dB."

All this would be clear and concise and would tell the operator at the other end exactly what were the conditions at the receiving end, without having to specify the type of receiver in use and its condition. To be really effective there are one or two points to be taken care of and the first one is that the receiver shall have sufficient gain to give a reading on the dB meter for the noise level in the quietest part of the band. This may mean the provision of an additional IF stage. For example it will be clear from Fig. 1 that the AVC does not operate below the point "X" and any signals below this point in level, though readable provided the ether noise is low enough, will not give any indication on the meter. Similarly, no reading will be obtained for the ether noise if it is less than the point "X." It is also advisable to reduce any AVC delaying voltage to correspond to a signal which is just greater than the first circuit noise in the set.

The circuit usually employed to measure the level of an RF signal is shown in Fig. 2 where one or more of the anodes of the AVC'd stages are fed through a small resistance R1 and the drop across this resistance is used to operate the meter M. Since this would give a large reading for no signal, and a small reading for a large signal, it is usual to back off the anode current in the no-signal condition and make the meter read positively when the balance is disturbed by the AVC voltage reducing the anode currents of the controlled valves in the presence of a signal. The backing-off current is conveniently provided by the drop across R2 which carries the feed to the frequency changer and any other non-variable stages. The setting of R2 controls the zero setting of the meter and R3 its sensitivity calibration.

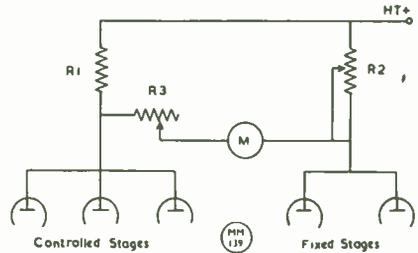


Fig. 2. Usual circuit arrangement for the S-meter connection. For the purpose discussed in the text, R1 should be 100 ohms; R2 more than sufficient to reduce the meter reading to zero; and R3 will depend on the meter range and the number of controlled stages. An instrument reading 0.5 mA or less is suitable for M.

### Calibrating the Meter

The calibration of the S-meter in terms of dB is fairly simple if a signal generator calibrated in dB level is available or if an HF attenuator can be employed in conjunction with an uncalibrated oscillator. It can be carried out on a low frequency range as it is unaffected by the range setting because it is a calibration of the AVC characteristic (Fig. 1) in terms of the meter scale reading and is not an absolute measure of signal level.

An example is shown in Fig. 3b compared with the more usual form of S-meter scale shown in Fig. 3a. A new scale may be made for an existing meter by drawing it out very carefully with a drawing pen (not a mapping pen) and indian ink on a sheet of good quality, fine-grained paper, and fixing it over the existing scale with Bostic cement. Great care should be taken with the selection of the paper as some papers have very fine fibres on the surface, particularly if they have been treated with an india-rubber, which are liable to obstruct the movement of the pointer. If care is taken the finished scale can have quite a professional finish.

It may be arranged in certain circumstances (perhaps in the design of a home constructed set or in the use of a convertor in front of the normal receiver), to retain manual control of the first RF stage so as to permit independent adjustment of the maximum overall gain of the set to give a fixed reading for the noise level, and the meter will then not carry the anode current for this stage. If this is done the meter scale can be arranged as shown in Fig. 3c, and it will then read the S/N ratio directly. It will, of course, be necessary to check the noise setting from time to time by adjusting the gain of the first RF stage until the meter reads on "N" in the quietest part of the band.

And also, of course, when changing from



Fig. 3. Some typical scale arrangements for the S-meter when it is to be used as described in G2NX's article

one range to another or even perhaps when changing from one end of one range to the other.

The difference between the method proposed and the more usual S-meter is that whereas the latter is a measurement of signal level in terms

of an unspecified unit which will vary from one receiver to another, the former is a comparison between the signal and the noise with which it has to compete, and this will be a definite figure at any one time for a particular locality.

## GETTING GOING ON SEVENTYCEMS

### Receiver, Transmitter and Aerial

By E. J. WILLIAMS, B.Sc. (G2XC)

**D**URING the past year, and particularly the last two or three months, much progress has been made in the design of frequency stable apparatus for use on the 420-460 mc band. The G3MY converter, presented in this *Magazine* last November, acted as an incentive to a number of our VHF enthusiasts. Since then G5BY has described a successful modification of the G3MY circuit, which is in several ways simpler to construct, and the results he has achieved with it are sufficient to recommend it as an effective piece of equipment. These converters, both based on surplus Service gear, use coaxial tuned circuits and self-excited oscillators. The fundamental frequency of the oscillator is in the 140 mc region and the third harmonic is selected for injection to the crystal mixer. A third converter was described by G3EJL in the *Short Wave Magazine* in June of this year. He used a Lecher line circuit for his mixer and a crystal-controlled oscillator.

#### The G2XC Converter

At G2XC, a converter has been built using features from all of these previously described circuits and as it may be of interest to those who wish to build cheaply, and if possible from components already on hand, the circuit is described below. The only item which was not available in the station at G2XC was the brass

*This article discusses some of the practical points involved in a move from 144 to 430 mc : the effectiveness of these ideas is proven by the results now being obtained at G2XC on Seventycms. His 430 mc converter is specially interesting as it is easier to build than some previous designs.—Editor.*

rod for the Lecher lines. This cost 1d. per inch so the total cost of getting the converter going was one shilling !

That this particular design does work is shown by the two contacts made with G5BY at 132 miles. In addition, the following have been heard on it : G2ANT (Godalming, 30 miles), G3ABH (Sandbanks, 40 miles), G3BHS (Eastleigh, 18 miles), G3DEP (Ryde, 11 miles), G3EJL (Southampton 17 miles), G3RI (Southampton, 17 miles), G5TP (Stoke Row, 46 miles), G6LK (Cranleigh, 32 miles), and G8LY (Lee-on-Solent, 7 miles). No exact comparison is possible between converters at different stations but there is no evidence to suggest that the G2XC converter is in any way inferior to others. The second contact with G5BY produced initial reports of RST 55/39 on G5BY's signal at G2XC, and RST 33/09 on G2XC's signal at G5BY. There is no doubt that the transmitter at G5BY is superior to that in use at G2XC and helped in providing the better signals in that direction—but G5BY was copied solidly and the converter must take some credit for that.

The circuit is shown in Fig. 1. The oscillator is tunable from 139 to 144 mc, giving third harmonic on 417 to 432 mc, which provides an IF of 10 mc for signals from 427 to 442 mc. Most frequency stabilised signals are, at present, between 431 and 437 mc, so that the coverage is adequate for present requirements. With a good slow motion drive, tuning is reasonably easy, and the main communication

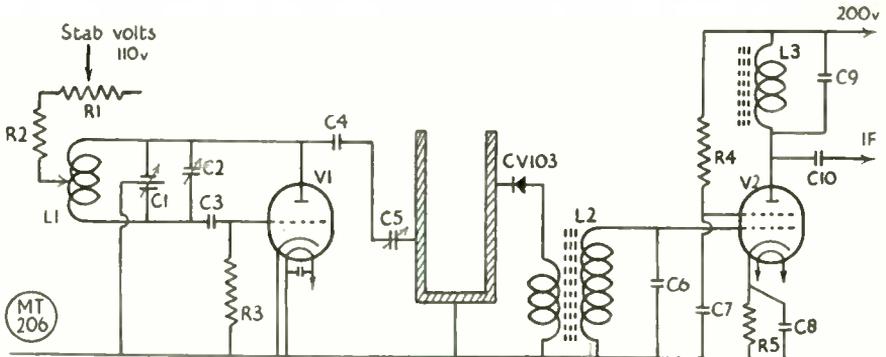


Fig. 1. Circuit of G2XC's 70-centimetre converter, discussed in detail in the text. The mixer section, shown above between C5 and the crystal CV103, is a Lecher line made to the specifications of that for the converter described by G3EJL in the June *Short Wave Magazine*.

receiver tuning may be used for fine control if necessary. Care should be taken in choosing the tuning condenser for the oscillator. Both ends of the rotor should be supported as the *slightest* wobble of the shaft causes a change in the spacing between the condenser plates and makes tuning-in of signals on these high frequencies extremely difficult. It may be found that different dial readings are obtained when tuning clockwise and anti-clockwise. Several split-stator condensers of one well-known make were all found to suffer from the same trouble.

With rigid mechanical construction, and the usual VHF technique of wiring, a good stable DC note is easily obtainable from a 9002. One half of a 6J6 has been tried but results were not so good. The holder can be wired so that 9002 and 6J6 are interchangeable. Frequency drift occurs during the first ten minutes, but after that, provided the oscillator is run continuously, drift is negligible.

### The Mixer

The mixer circuit employs a crystal diode with a Lecher line tuned circuit. The lines were made to the original dimensions given for the G3EJL converter in the *Short Wave Magazine* in June 1950, but with the condenser tabs (C5 in that diagram) omitted. The oscillator voltage is injected through a 3-30  $\mu\text{F}$  concentric type trimmer (C5) at the point on the lines where G3EJL connected the inner conductor for the coaxial aerial feeder. The Lecher lines themselves serve to select the third harmonic of the oscillator there being no separate tuned circuit for that purpose, as in the G3MY and G5BY converters. It is unlikely that any appreciable 140 mc RF can reach the crystal as the 1 $\frac{1}{4}$ -in. of copper rod,

### Table of Values

Fig. 1. Circuit of the G2XC 70-cm. Converter

C1	= 5 + 5 $\mu\text{F}$
C2, C5	= 3-30 $\mu\text{F}$ trimmer
C3	= 25 $\mu\text{F}$
C4	= 10 $\mu\text{F}$
C7	= 0.1 $\mu\text{F}$
C10	= 50 $\mu\text{F}$
C6, C9	= To tune L2, L3 to IF
R1	= 25,000 ohms, variable
R2	= 200 ohms
R3	= 15,000 ohms
R4	= 50,000 ohms
R5	= 220 ohms
L1	= 4 inches, 12 SWG copper in single-turn loop
L2, L3	= To tune IF with C6, C9
Lecher line	— see text
V1	= 9002
V2	= 6AG5

across which the voltage appears, must serve as a near short circuit for that frequency. (At 420 mc this 1 $\frac{1}{4}$ -in. forms part of a circuit tuned to that frequency.) It is essential that the oscillator tuned circuit be placed so that the only coupling to the mixer is via the coupling condenser. It is bad practice to place the oscillator coil right alongside the crystal and inject RF into it by brute force! Such RF will undoubtedly contain an appreciable measure of fundamental as well as harmonic frequency.

The lines must be tuned to signal frequency but still be able to accept sufficient injection at oscillator frequency. The tuning of the lines is reasonably broad, and with an IF of 10 mc enough injection is easily obtained; the injection is controlled by the HT supply to the oscillator, R1. The injection condenser (C5) can be used for the same purpose, but will be found to shift the resonant frequency of the lines, and, in fact, is better used for tuning the lines than controlling injection. The lines were

found to give peak performance on 435 mc with C5 near minimum capacity.

The converter was designed for use with 300-ohm feeder and this is coupled to the lines inductively. The coupling needs to be quite tight for best results. A quarter-wave stub shorted, and earthed at its further end, is connected across the aerial input, and *outside* the chassis to prevent IF break through and ensure that no 145 mc signals can get in!

Some comments on crystal diodes seem necessary. The front-to-back ratio, which is one of the criteria of their goodness, is very dependent on the meter used to measure it. When the resistance of a crystal, or any other item for that matter, is measured with the ordinary ohmmeter it is placed in series with the meter resistance. Hence, the voltage applied to the crystal, and therefore the current through it, is determined by the ratio between the resistances of the meter and the crystal. In fact, reversing the crystal results in an entirely different voltage being applied to it. The resistance of some meters is such that it is possible to put 10 mA through a crystal. This is likely to damage the crystal so all resistance tests should be of short duration. Using a Simpson meter on a "times 100" range, the meter resistance then being 1,500 ohms, the forward resistance of a good crystal is about 200 ohms. Backward resistances measure anything from 7,500 to 100,000 ohms or even more. In practice, the performance of these crystals has not been found to differ greatly. The most important point appears to be the low forward resistance. One crystal was found with a forward resistance of 500 ohms, and backward 2,700 and even that was good enough to receive G3RI at 17 miles at S5 on phone.

Crystal current for optimum results from the mixer is another measurement which needs qualification. Again, the resistance of the meter can play an important part. However, 100 microamperes is a useful starting point and the final adjustment can be made on a signal, with the meter removed from the circuit. A rough adjustment can be made by ear, without any meter or signal. With no crystal current, *i.e.* HT volts on oscillator at minimum, background noise is rather high. As injection is increased the background noise goes down, the crystal current "damping" the input circuit to the first IF stage. Injection should be increased until no further decrease of noise occurs.

### Head IF Amplifier

The head IF amplifier uses a 6AG5. The mixer output is coupled in by an aperiodic winding on the grid coil of the amplifier. Approximately one quarter the turns in the grid coil should be used, and the winding made

at the "cold" end. Instability in this amplifier can cause poor or no 70 cm signals. A tendency to self-oscillation was cured by inserting a 100-ohm resistor in the screen-grid lead as a stopper. This stopper should be placed *between* the by-pass condenser C7 and the valve terminal. The grid and anode circuits are tuned to 10 mc.

### Final Adjustments

Final adjustments must almost certainly be done on a signal, and co-operation between operators is essential. Having found a signal the two variable components, R1 and C5, should be adjusted in conjunction with each other to produce the best signal strength. Finding the band is mainly a case of getting the

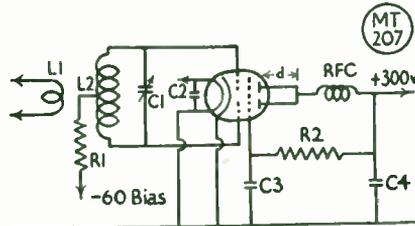


Fig. 2. The 832 RF stage for 70 cm, details of which are given in the text: it operates as a tripler. The tank is brought to resonance by adjustment of the distance "d."

### Table of Values

Fig. 2. 832 Tripler for 430 mc.

C1	= 3-30 $\mu$ F
C2	= .0005 $\mu$ F
C3, C4	= .001 $\mu$ F
R1	= 50,000 ohms
R2	= 20,000 ohms
L1	= 2 turns interwound with L2
L2	= 2 turns 14 SWG, $\frac{1}{4}$ -in. diameter
Anode Tank	—See text. Distance "d" adjustable
Valve	—832, 832A

oscillator on the right frequency and this should not be difficult for anyone who is already operating on two metres. A small tip which may prove useful, if while making adjustments the band is "lost," is as follows: *Before* making the adjustments tune round on the main station receiver and locate one or two of the "overtones" of the converter oscillator. Then it is only necessary to tune the oscillator to reproduce these same "overtones" to know one is back on frequency again.

Car ignition is definitely audible on 70 cm. If like G2XC you live on a main road you will have no doubts on it. It has been suggested that the ignition noise is actually on 145 mc or at 1F, but the aerial shorting stub, effective at all frequencies except 435 mc, renders this impossible. As a further proof, a  $\frac{1}{4}$ -wave open

stub was connected across the feeder and completely removed all ignition noise. This would only be effective at 435 mc !

### The Transmitter

That there are better valves than the 832 for generating 70 cm RF is not denied, but unfortunately their price puts them beyond the reach of most amateurs. With 25 watts input the 832 acting as a tripler can be persuaded to give up to 4 watts out. If this should seem a disappointingly small amount of power, consolation should be sought in the thought that if we increase it to 16 watts we shall only be 6 dB better off, and in any case the 832 is in good supply and is reasonably priced, so we need not worry too much about ICAS and the like. What is more, every 832 and 832A tried at G2XC (and that means about a dozen of them), has worked without any trouble.

For efficient tripling about 200 or more volts of bias is required and this is obtained by about 60 volts fixed and 4 mA of grid current through a 50,000 ohm resistor. With about 280 volts on the anode the 832 then draws 90 mA anode current. Increasing the drive to  $5\frac{1}{2}$  mA increases the anode current to 110 and the 832 takes this quite calmly ! There is some variation between valves and anode currents range from 80 to 100 mA with the 4 mA grid drive.

Fig. 2 shows a suitable circuit. It contains nothing unusual. Copper vane tuning is used on the anode side. A 1-in. square piece of copper (or brass) is arranged so that it can be moved across the anode Lecher circuit and about  $\frac{1}{4}$ -in. from it. The Lecher lines are then made a little longer than resonance, *i.e.* too much inductance. Moving the vane across the circuit then reduces the inductance and brings the circuit into resonance. This method is preferable to home-made adjustable condensers across the lines, as adjustment of these puts a strain on the valve pins. The length of the lines from the glass envelope of the valve is only 1-in. In fact, about all that is required is to short the anode pins. At G2XC, use is made of the brass insets from ordinary two-way electric light connectors. These each contain two clamping screws, one of which is used to clamp the valve pin and the other the piece of 12 gauge copper which is to short the pins. With an 832A a slightly longer line may be required. Aerial coupling is by a hairpin loop of 12 gauge copper.

A 4-watt bulb placed across the aerial loop will serve as a useful indicator for tuning up, as there is little or no variation in anode current at resonance. With 25 watts input a 4-watt bulb has been burnt out after giving a brilliant display of blue flashes and what was assessed as a full 4 watts of light. A check on

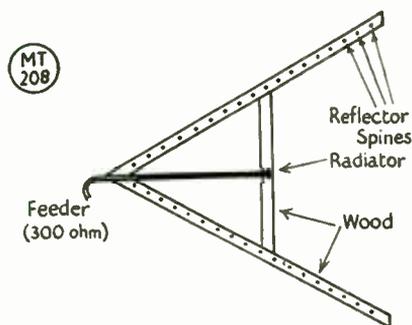


Fig. 3. The corner reflector aerial system designed by G2XC for operation on 430 mc. This is a plan view and details are as follows : Angle between arms, 60 deg. ; length of spines, 18 in., spaced 2 in. apart ; length of dipole, 12.8 in., placed 14 in. from the corner of the reflector. The assembly is constructed of light timber, and the dipole fed with 300-ohm ribbon. This system is giving GDX results on the 70 cm band.

the output with an absorption wavemeter gave little or no indication of any 145 mc RF in this output.

The drive for the tripler is obtained from the normal 2-metre transmitter, which uses an 832A with 25 watts input in the final stage.

Attempts to drive another 832 as a straight amplifier on 70 cm. showed little signs of producing any more RF in the output than was already being obtained from the present tripler. Tests were also made with 8012's but results were inferior to the 832 circuit.

### The Aerial

Due to the small physical size of 70 cm. aeriels many operators have yielded to the temptation to add numerous directors to Yagi beams. Gains quite out of keeping with orthodox theory have been claimed for some of them, but on that no comment will be made here ! One major disadvantage of such systems is, however, their large degree of directivity in the horizontal plane. For that reason a different type of beam was considered essential at G2XC. One of the easiest to erect and adjust is the corner reflector and according to the various text books on the subject gains of up to 12 dB should be possible. The particular specimen at G2XC was made in just under an hour. The angle is 60 degrees, the dipole is placed half-wavelength in front of the vertex, and the reflector consists of a number of 18-in. long,  $\frac{1}{8}$ -in. dia. spines spaced 2 in. from each other. One of the first contacts made with this was with G5BY, over the roof-top, over Portsdown Hill and then 132 miles !

Further experiments have been made with

another corner reflector using  $\frac{1}{2}$ -in. mesh wire netting for the reflector, and on a field strength meter 50 yards away, a further gain of about 6 dB seems to be obtainable by placing a director about  $3\frac{1}{2}$ -in. in front of the dipole. This has not yet been tried on a QSO.

The beam is fed by 300-ohm ribbon. The length of cable involved is only about 20 ft. or so, and matching into the dipole is by Y-match. Feed-points are approximately half-way

between the centre and each end of the dipole. It is recognised that high quality coaxial cable, properly matched, and incorporating balance-to-unbalance transformers is theoretically superior, but whereas the 300-ohm line can be set up in 10 minutes, proper adjustment of the coaxial cable is a matter of hours—and then if there is one decibel difference on the short length used at G2XC it would be a matter for surprise!

## AUDIO FREQUENCY SIGNAL GENERATOR

### Design and Construction

By R. C. HONEY (G3FKE)  
F/O, R.A.F.

ARTICLES have appeared from time to time regarding the construction of audio frequency oscillators that may be used for test purposes. Whilst the author claims no points in originality, it is thought that the following details of such a signal generator constructed for checking the frequency response of amplifiers, modulators, receivers, filter networks,

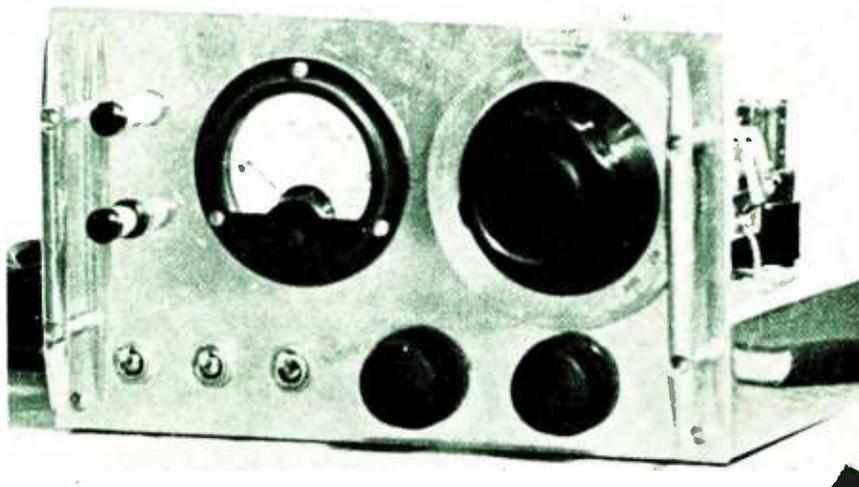
*A signal generator covering the audio frequency ranges would obviously be an extremely useful piece of gear test in any amateur station. Here are the necessary details.—Editor.*

and other audio equipment may prove of interest to readers who wish to construct similar apparatus.

The main requirements in the design were as follows:

- (a) Stability.
- (b) Good output waveform.
- (c) Constant output over the whole range.
- (d) Low or high impedance output.
- (e) Frequency coverage from 25 to 25,000 cycles/sec.
- (f) A logarithmic calibration characteristic to facilitate representation on linear/log. graphs.
- (g) A means of checking and, if necessary, adjusting the output level to ensure constant output irrespective of changes in input impedance of the circuit under test.

(over)



An impression of the front panel appearance of the AF Signal Generator, as described by G3FKE.

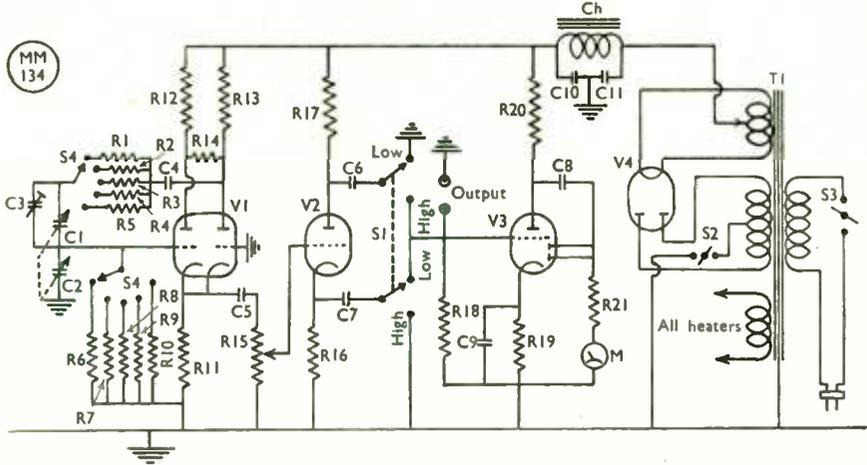


Fig. 1. Circuit of the Audio Frequency Signal Generator described by G3FKE. It is designed to cover a wide range of frequencies, selected by the switching S4.

### Circuit Description

With reference to Fig. 1, it will be seen that the Audio Frequency Oscillator (V1) is connected as a cathode coupled multivibrator, the positive feedback circuit being an RC network C1 R1/5 and C2 R6/10. C4 is purely a blocking condenser used for protection of V1 should C1 be inadvertently short-circuited. By virtue of the cathode coupling, the first triode of V1 has negative feedback applied to its grid circuit. This negative feedback alone was found to be insufficient to ensure good output waveform, and, therefore, an additional NFB system was introduced by interconnecting the anodes of V1 by R14, the value shown reducing the total gain of the circuit to an amount whereby oscillations were just maintained at a constant level, with the output waveform almost pure sinusoidal throughout the whole range of frequencies.

In view of the stray capacity which exists between the frame of C1/C2 and chassis it was found necessary to balance this by the inclusion of a small trimmer (C3) across C1 which was then adjusted so as to maintain constant output over the highest frequency range.

The frequencies of 25 to 25,000 c.p.s. are more than covered in five ranges by means of switching in suitable values of R1/R5 and R6/R10, the switch S4 being of the high grade ceramic wafer type.

The coverage of each range is as follows —

Range 1	25-150 c.p.s.
Range 2	150-800 c.p.s.
Range 3	800-5,000 c.p.s.
Range 4	5,000-30,000 c.p.s.
Range 5	20,000-100,000 c.p.s.

### Table of Values

Fig. 1. The Audio Frequency Signal Generator

C1, C2	= 500 $\mu$ F twin-ganged variable
C3	= 50 $\mu$ F preset trimmer
C4	= 0.1 $\mu$ F 600v
C5, C9	= 25 $\mu$ F 25v
C6, C7, C8	= 1 $\mu$ F 600v
C10	= 16 $\mu$ F 450v
C11	= 8 $\mu$ F 450v
R1, R6	= 10 megohms $\frac{1}{2}$ watt 5 per cent.
R2, R7	= 2 megohms $\frac{1}{2}$ watt 5 per cent.
R3, R8	= 370,000 ohms $\frac{1}{2}$ watt 5 per cent.
R4, R9	= 47,000 ohms $\frac{1}{2}$ watt 5 per cent.
R5, R10	= 12,000 ohms $\frac{1}{2}$ watt 5 per cent.
R11, R16, R19	= 1,000 ohms 1 watt
R12	= 15,000 ohms $\frac{1}{2}$ watt
R13	= 9,000 ohms $\frac{1}{2}$ watt
R14	= 150,000 ohms $\frac{1}{2}$ watt
R15	= 100,000 ohms potentiometer
R17	= 20,000 ohms 1 watt
R18, R20	= 100,000 ohms $\frac{1}{2}$ watt
R21	= 10,000 ohms $\frac{1}{2}$ watt
Ch	= 20 Henry 50mA
T1	= Primary 230v Secondaries 5v 3a CT 6.3v 3a CT 350-0-350v 50mA
M	= 0.1 mA, 100 ohms
S1	= DPDT toggle
S2, S3	= SPDT toggle
S4	= DP 5-way ceramic (2 wafer)
V1	= 6SL7
V2	= 6J5
V3	= 6SQ7
V4	= 5Y3

The values of R1/R5 and R6/R10 are so arranged that there is a small overlap on each range.

The output from the AFO is taken from the cathode resistor R11, via an output level control R15, to the grid circuit of the output valve V2. The plate circuit of V2 is arranged

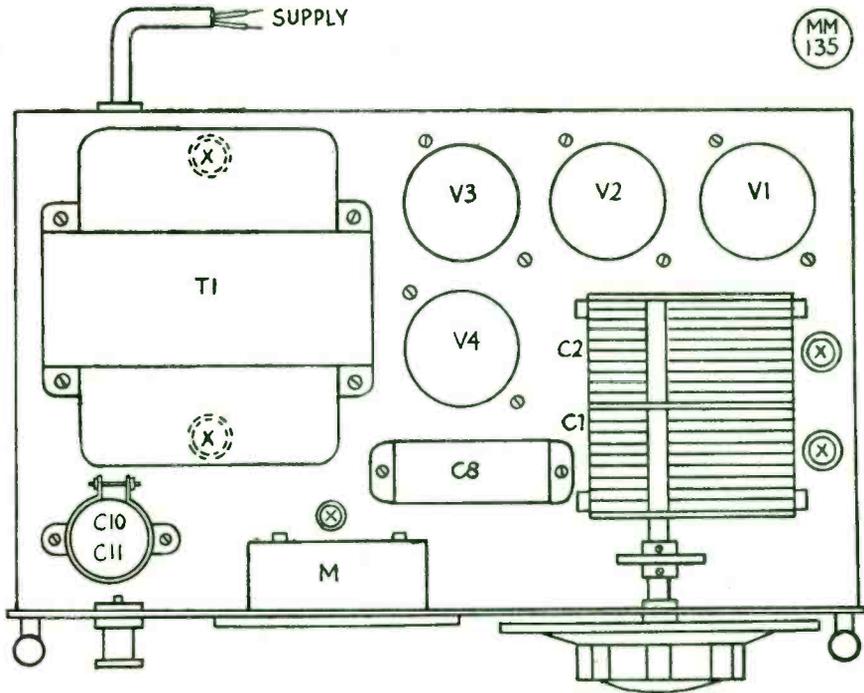


Fig. 2. Plan view sketch of the general chassis layout for the Audio Frequency Signal Generator. The choke C8 (Fig. 1) is mounted immediately beneath T1.

to permit either high or low impedance output by means of S1, which permits the output to be taken either from the anode load R17, or from the cathode load R16, the latter then functioning as a cathode follower.

V3 is arranged as a simple valve voltmeter which rectifies the amplified output voltage and applies it across R21 and meter M, R21 being necessary to prevent the virtual short-circuiting of the diodes of V3 to earth by the low resistance of the meter.

The power supply is of conventional design and no comment is considered necessary.

**Constructional Details**

It was found that a chassis 10 in. x 6 in. x 2 in. was ample to contain all the components without undue cramping. A front panel 10 1/2 in. x 6 in. allows 1/2 in overlap at the sides to accommodate an instrument case if required. Material is 16 SWG aluminium. Side brackets are not required as the panel handles support the front panel sufficiently.

The layout of the chassis is shown in Figs. 2 and 3. A total of six rubber grommets was

used where connectors ran through the chassis, their positions being marked X in Fig. 2.

The frame of the variable condenser C1/C2 must be isolated from chassis, this being achieved by mounting this component on four small ceramic pillars, such as may be found in the well-known TU5 units. The condenser shaft was shortened and then extended by an insulated coupling and a short length of 1/4 in. dia. rod running through a 1/2 in. dia. panel bush to the 4 in. dial. The cursor was made from a small piece of Perspex with a backing piece of aluminium to project it sufficiently from the front panel to clear the dial, the whole being secured to the panel by two 8 BA screws and nuts.

**Calibration**

Calibration was carried out using an oscilloscope portraying the familiar Lissajous figures, with reference to 50 c.p.s. for frequencies from 25 to 1,000 c.p.s., and 1,000 c.p.s. for frequencies from 1,000 to 100,000 c.p.s. If an oscilloscope is not readily available,

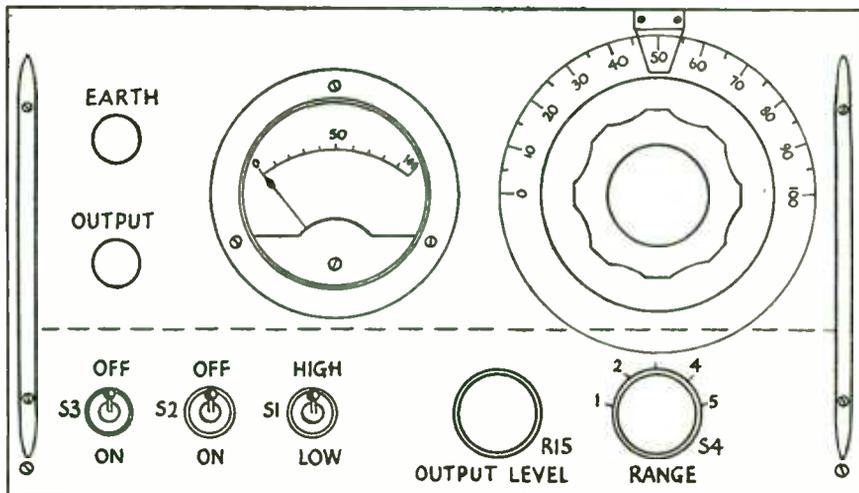
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Fig. 3. Panel arrangement for the Signal Generator—compare with the photograph accompanying the article.

a reasonable accuracy may be attained by calibrating aurally in musical octaves above 50 c.p.s., each octave doubling the frequency of the previous note, but difficulty will be experienced in accurately pitching the higher audio frequencies above 5,000 c.p.s., and the

highest frequencies will be inaudible to the human ear. It would be advantageous to borrow an oscilloscope and so be able to check the output waveform at the same time as carrying out the calibration to one's personal satisfaction.

## THIS "CQ" BUSINESS

### Do You Listen and Search ?

By C. EDINGTON SUTTON (G3ANQ)

**T**HE right way to work DX is not to call CQ at all, but to use the appropriate frequency and call those stations." Thus saith the ARRL. Believe me, they've got something there ! Don't I know it ! Why can other chaps call CQ and get answered, on 80 metre CW, yet all I meet is a shattering silence ? It's getting me down ! Ah ! you say, nodding wisely, you don't time or place your calls properly OM, and besides, what can you expect on your low power ?

Now listen ! This 0.6 watt outfit puts an average S6 signal, from London, all over

"G," and anything up to 600 miles away ; daylight or dark makes little difference. No ! I'm not romancing ; I often exchange S8 and 9 reports, both ways, with the QRO men ; what they think privately I wouldn't know !

You're unconvinced, eh ? Wait ! there's a "G," calling CQ about 3540 kc ! I swing the VFO alongside, and slam in a call. Back comes my call sign ; "G E, ur 569 in . . .," and so on. Easy ; just like that ! We sign off, and, flushed with bravado, I call "QRZ ?" smartly. Silence. I call again ; *ditto*. Snubbed, I creep away, and try another CQ, next door to a G who has just called, and must surely be listening. Silence. He calls again, so do I, one kilocycle off his frequency. Nothing happens. Determined to see it through, I wait, he calls, and, without moving, I rap out a smart "two de two." Back he comes like a shot, smiling happily : "Tks fer call, ur 579 hr . . ." So is he ! Simps ! isn't it ? Gets 'em every time !

Don't ask me why ! I call and call, no one comes back, yet, crowded or empty, I seldom

fail to raise a man if I wait and answer. I go on in the early mornings and call CQ up and down the band, call it alongside a chap doing ditto ; ND. Yet, a minute afterwards, I answer said chap, who comes back smiling happily ! And, believe me, we early birds tune the band. Queer, isn't it ?

Sometimes I go mad and have "CQ nights," when I call every few kc up the band. I call long, I call short ; it makes no difference. I call CQ . . . . BK, snappily, slap-happily—chilly silence. Sometimes I go all cunning, and do a spot of real feline listening. "You should be able to hear ten or a dozen stations from an area before you can work it," saith the ARRL again. Well, there are three or four DL's, all calling CQ like mad in as many kc. So what ?

I wait until at least one stops, and doesn't seem to be answered, steer the VFO in the middle, and call CQ lustily. I listen and tune, you bet I tune ! The DL is calling again, CQ ! Not to be done, I give a directional CQ, "as per ARRL practice." (You know what the *Handbook* says !) "CQ DL" I bellow, then listen. That ought to fetch 'em ! Don't be silly, the DL's are calling harder than ever ! A bit of catwork reveals at least three DL's stopping round my last frequency. Now or never ! I call "CQ DL . . . . BK" steadily, remorselessly, listening carefully between. I call *and* listen, *and* go on doing it ; the DL's are all silent now, they *must* be listening—yes, but not to me ! Exhausted, I stop. Well, I'm— ! Yes, you've said it ! There they go again, calling CQ !

Speechless, I wait respectfully, and, as someone finishes, I slam in a "three de three," take it or leave it ! Almost instantly, back comes my call sign, "dr ob" and all the rest. Can you beat it ? 'S wonderful ; never seems to miss !

#### The Moral ?

Now this frivolous outburst is supposed to contain a moral if we can find it, because it embodies the results of some operating research. This curious state of affairs was noticed when working with an ear-splitting signal last winter, and, now, on QRP, with less punch and more QSB, but still with a good signal, it is even more apparent.

Operating recently, for an hour or so, morning and early evening, 52 stations were worked in 16 days. Out of 100 *answers* to CQ's, probable or impossible, DX or local, 50 stations were raised ; 16, mostly DX, lost to other men, and 34 did not reply. But 41 CQ's, preceded and followed by careful listening, drew only *two* replies, *both* from QRP men, one giving S9 and the other S7 ! Now for another shock ! Of the 52 stations worked, 15 were found to be "crystals" and 16

were VFO's, the other 21 being unknown. Splitting these 21 likewise, this makes "CW Eighty" 50 per cent. rockbound, roughly speaking ; a surprising figure in these VFO-conscious days. I always thought that "rocks" listened like anything, otherwise they never got anywhere. Perhaps they were "out" when I called ; perhaps there is some mysterious factor "X" in it ! Do you know ? I don't !

#### Operating Ability

So I did a good hard think. Traffic on CW Eighty seems to consist of schedules, DX, and "also-rans." Schedule men, on stand-by, will seldom answer on account of missing their date. DX hunters won't answer because you are a G. This leaves the DX and the "also-rans," ; it is impossible to avoid the conclusion that many, of both categories, are indifferent listeners and poor interceptors. Listening needs telegraphic ability and interception is an art, but there is no art needed to spin the dial and catch a bellowing local G. Many newcomers, glad to have your S7 answer, seem quite unable to hear your S7 CQ nearby a few moments before. Working DX is a different matter, but the foregoing description shows that many of these fail to seek the double chance—the other man's CQ.

The same thing is still apparent in Contests, for, despite the stout catwork by all and sundry, evident in the noticeably "live" feel of the band, CQ's yield only a slightly higher percentage than normal. In the last 80 metre QRP, G6ZN made 80 per cent. of his impressive score by answering CQ's. If this is the "Moral," then the following must surely point it. One of the competitors in a contest in which I "helped" during the winter was staggered to learn that I had called him four times before contact ! This was quite good, really. One man was chased and called seven times before he answered, and many others four and five times. Twice is reasonable ; the runner-up needed two calls ; but the winner, and another top man, came back with lightning rapidity at once, first call to VA taking a little over 30 seconds. Some of them listen, evidently !

Well, there you have it ! *They* do the calling and *you* do the listening ; and look sharp with that VFO ! If you don't you'll lose the DX, or any other X, and, in contests, you'll miss the bus with mathematical certainty. What would happen if we *all* listened and *never* called CQ ? I wouldn't know ; but it makes you think, doesn't it ?

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# DX COMMENTARY

CALLS HEARD, WORKED & QSL'd

**A**LTHOUGH there has been no shortage of DX QSO's, the fact remains that July and August 1950 have been the worst months so far met with in this post-war era. We were only too familiar with bad conditions in the pre-war years, but the recollection is that 14 mc just went dead on us then. Nowadays it seems to open up to more and more Europeans until it sounds rather like 7 or even 3.5 mc at all hours of the day.

Correct us if we are wrong, but we *never* remember hearing, before the war, these masses of DL's, I's, SM's, OK's and OH's at any time from 0700 until midnight! To get away from it all a ground-plane aerial was tried for reception, but we found that even *that* brought them in just the same, or possibly even better. It seems as if these near-European signals are not all arriving from high angles.

Nevertheless, some quite exotic DX has been there for the skilful chasers, but one has to spend a lot of time listening before unearthing the worthwhile pieces. Those who have just flopped on the band and called CQ, regardless, have worked no more DX than they deserved.

## Top Band Doings

Once more we begin at the Top and work downwards. This "Counties Worked" business whipped the contestants up into a veritable frenzy during July. The one-year Marathon produced many new enthusiasts for the band, but they all agree that a period of twelve months is too long and too exhausting for

By **L. H. THOMAS, M.B.E. (G6QB)**

such a business. A three- or four-month "do" will be organised next time.

Meanwhile, all honour to the hardy adventurers who stuck it out. The winner was G2YS (Chester) with G6AB (Holland-on-Sea) as runner-up. (See the accompanying panel for the scores of the first four.) Typical of the nice spirit prevailing on the band was the fact that G6AB knew that G2YS had stolen a march on him in the final month, and wrote to ask us for 'YS's QTH so that he could write and congratulate him.

Special credit, by the way, to G6ZN (Horbury) for making fourth place. We happen to know that 10 watts is "QRO" for him.

## RESULTS OF TOP BAND MARATHON

AUGUST 1, 1949—JULY 31, 1950

	Counties	Countries
1. G2YS (Chester)	63	17
2. G6AB (Holland-on-Sea)	61	16
3. G4LX (Newcastle)	60	14
4. G6ZN (Horbury)	59	10

GM5LF/A, portable on Islay, gave several top-banders a new county, as did GW3FZW/A from Merioneth, and HB9CM appeared on the band unexpectedly. He was undoubtedly genuine, as he QSL'd direct to G2YS and said

he was licensed for the band until October. His full QTH is in the panel. 'YS also had a QSL from ZB1AR.

G3GDW unearthed Denbigh and Merioneth, finishing up with a fine score of 58. G2ABT (Bolton) came up at the last moment with a big addition to his list, giving him a final score of 59 and 8. He only came on the air in October 1949, so some of them had two months' start on him. He wants to see more activity from Hereford and Westmorland.

G6AB remarks that our Transatlantic Tests, scheduled for early next year (see p. 428, August), will be hard going if Scheveningen Radio continues to grind out two-second dashes every three seconds all through the night. At 'AB's location he spreads 20 kc either side of 1800 kc; and if any G goes anywhere near, he complains that we are causing QRM!

G3EDW (Rayleigh) also reports an enjoyable time chasing counties, and ending up with 53 of them. He, like many others, has been "dreaming up" a nice new rig with which to work the band in the coming season. G3GGN (Worthing) ends up with a useful 41 and 10. An unusual QSO was reported by G2NJ (Peterborough), who worked G3EBG/A when the latter was in St. Mark's Hospital, City Road, London, with his B2 beside the bed and an aerial on the floor.

#### Eighty Metres

VK5KO is still to be heard on the band on

Friday evenings and also at other more irregular times; G3EDW comments on the polite way in which the boys line up for him. FP8AC also showed up on Eighty, but we haven't yet heard of a G who worked him there. But W2QHH got him, thus putting up his phenomenal 3.5 mc score still further! VEICR also worked him on phone on 3840 kc; G8VB (Greenford) raised the VE but was unlucky with the FP8.

And just to show what can be done in the way of 3.5 mc DX this summer season, we have it that G6GM (Holsworthy) QSO'd on CW no fewer than eight different ZL's, VE1ZZ and PY2AJ during the period August 6-16, 0630-0700, 3505-3525 kc. This is amazingly good for the general run of conditions—but then, as Harold would be the first to admit, a quiet country location with no background noise and power from batteries does help more than a little.

Apart from those items, there is nothing else to be said about the band except that G6ZN and G8TP went portable in the Lake District and gave a lot of Continentals their first QSO with Westmorland; and that G2NJ worked SM5AUC/8, the S.S. *Kalix*, south of the Hebrides and bound for Ardrossan.

#### Forty Metres

Very little of note has cropped up on 7 mc. The DX is there during the night, of course, but there's nothing unusual about that. One of the keener ones has been G3ABG (Cannock).



GC2CNC (Jersey, C.I.) is also holder of call GC3DVC, and this is the former station. Activity is much restricted owing to an unusually high local noise level, but GC2CNC is there on all bands with an 807-807 Tx and S.640 receiver.

On August 8 he worked EA, ZS, LU and HA, and also heard VQ4 and UA9; next day he rolled up a bunch of UA's, a YU and a VE, and heard CO, LU, KP4. All this was roughly between 2200 and midnight. 'ABG had a letter from Eric Trebilcock in Australia saying that he and G3EVO were the most consistent G signals during June and July, and adding that several VK's were looking for G contacts between 1800 and 2030 at the LF end of Forty. Others known to be active on the band are FM8AD, ZD4AB, OA's, HH's, TI's, ZL's and W6NJ/MM in the Pacific.

G3BDQ (St. Leonards) raised VEIGU and SV1VS/MM, 300 miles south of the Canaries. G8PG (Greasby) has worked 19 countries and four Continents on the band this summer with 25 watts and an *indoor aerial*. G2HKU (Sheerness), also with 25 watts or less, worked ZL, UF6, YO and plenty of W's and VE's; he also heard HK, YN, KZ5, CM, UD6 and U18. G6BB (London, S.W.2) found CT2BR for a new one on the band.

G5FA (London, N.11) worked a KP4 and several W's and says that "from all accounts" there seems to be a great deal of South American activity—but 'FA prefers bed these nights.

#### DX on 14 mc

Of course the 14 mc band has been behaving like a will-o'-the-wisp. At times it has been quite maddening. A typical instance of its behaviour came our way late one night, when the entire band was full of DL's, I's, EA's and the like. Not having heard a single piece of DX in twenty minutes' listening, we called a quick CQ before turning in; back came a VE7, a VK and a W1; soon after we heard a PY and a ZS on the same frequency. This was at about 2345 BST!

G2GM (Torquay) supplies evidence that EQ3B (the T3 one) was phoney. He QSL'd and had back a letter from Radio Teheran thanking him for his report on their broadcast transmission in the 19-metre band! And this by registered Air Mail.

GW2CLP (Swansea) is kind about Twenty, calling it "versatile" . . . one minute as dead as a blown 813, and the next full of choice and rare DX. He collected some new ones in the form of TA3GVU, KG4AP, ZD4AB, AR8BC and SU1MR. The latter, by the way, seems to be genuine. 'CLP would like to know whether anyone has ever received cards from UQ2AB or FM7WE.

G2BJY (West Bromwich) found MS4FM and SP5ZPZ plus an obvious phoney signing "VS8V" on a T1 transmission. G6BB was lucky with FP8AC before the W's got at him (at 1910) and also worked FM8AD, VP9HH, EA9AQ and YK1AH.

G2YS took a holiday from the Top Band and worked FM8AD and VP6CDI, also LX4XV (DL4XV in LX), KZ5ES, YV5BJ. He heard VP8AP (South Orkneys) and XE2CP. G5FA wielded some phone on Twenty and worked HE1JJ, SVØAM, EQ3FM and "the more usual stuff." G2HKU's 25 watts brought in LX1BG, VP7NM, VQ3SS, ZS3K and "HY7Q" who said he was in South Hungary! 'HKU also had a QSO with W2OXE/MM, which is this year's call for the famous schooner *Bowdoin*, of the Macmillan Arctic Expedition.

G8PG, with his 25 watts and indoor aerial, was delighted to work FP8AC—no waiting, no queuing! During three days 'PG worked 14 countries and 3 continents. G3BDQ is in the middle of six weeks' holiday, two weeks of which he hopes to spend among the SM's; his DX on 14 mc includes FP8AC and 8AF (with 8AD also heard); KV4's, VS1's and 7's VQ2's and 4's, KG6's, VU's, ZS3's and plenty more. 'BDQ has about the worst aerial in Sussex, which makes this list all the more pleasing and noteworthy. He also warns the chasers to look out for VP1NW (14100, wobbly note), ZK1BC (14085 at mid-day), and ZM6AK (14040 early mornings). He heard PX2Q, which was ON4QF doing his stuff from Andorra (or was it?).

G3ABG mentions CS3AA, MD7TF, PY8MC, FM7WF, EA9AQ and LX1JW, but he spent most of his time on Forty. G3FXB (Hove) collected KV4AA, LZ1AB, M13, UA9, VU, YI and 3V.

G6AT (Hampton Hill) was lucky in being one of the very few to work 3A1A. This station was really in Monaco, and was operated, with official permission, by Ford of DL4ND. G3ATU (Sunderland) has heard KX6AA and 6BA almost daily around 1400 GMT and sometimes at 1700 as well; he also reports the KG6's as being S8 at the latter time, which we can confirm. Further nice ones heard were VP8AO (South Shetlands), ZS6DO/ZD9 (?) and the latest freak call-sign, 9S4AX. The stations in the Saar have started using this 9S4 business, but whether it's with or without official sanction we don't yet know. The "Human Interest" department from 'ATU includes hearing VK7KB (a doctor) close down a QSO in a hurry so that he could visit a small boy who had swallowed a marble! (What's the matter, 'ATU, not working anything these days?)

G3FTQ (Thornton Heath), with 25 watts and a dipole 16 ft. high, worked OA4CL, CT3AB, EA9AT, ZB2A and sundry others on CW. He wonders why so many stations who call CQ never seem to come back to *any* replies? As he is talking largely about Europeans, we imagine that a good deal of inter-European calling goes on which is

ignored by the party interested in DX. But there is something to be said for the other point of view—poor receivers and inability to tune quickly or accurately to one's own frequency.

G3FGT (Birmingham) worked YA3B (14024) at 2030 one evening, and says he seems genuine enough. But our gen. at present is that there never *has* been anyone in Afghanistan except AP5B and his portable expedition. 'FGT has also been after KR6EI and ZK1BC, and adds that CR4SS has re-appeared, complete with T1 note. Best DX during the month was represented by VQ2, 3 and 4, VS7, VP9, TI, FY, HR, KV4 and CX.

GC2CNC (Jersey) sends an interesting bit of news, in that GM3EWC is in the Shetlands. He would be a nice one for the Top Band. 'CNC was pleased about an incident recently, when a very strong DL4 gave him a quick call and said "QRX," simply, as it turned out, to tell him that he was being called by a W7. These little turn-outs, unfortunately, are somewhat scarce on the 14 mc band, though quite commonplace on the others. A surprising item from GC2CNC is that he has heard 38 different VU stations during the past month. And on one single CQ recently he worked VQ4, SP, FC, HK, VU and UAØ.

#### The Ten-Metre News

There's a great scarcity of news about "Ten" these days. The most interesting item comes from G3FGT, who found the band open for the U.S.A. on two occasions, both after midnight. He worked one each time, and also had a contact with ST2KR at 0030. G3FXB managed to work PY4GY, and remarks that the "Gee" station that was on 31 mc two years ago has now returned, to the detriment of the HF section of the band.

G5FA raised SM7IA for a new one, among other short-skippers. G2BJY has overhauled his beam and has also been working short-skip, plus contacts with ZS4, ZS6 and OQ5. And that's the size of the 28 mc band this month!

#### What, Pirates Again?

Just how we inherited this Piracy business in a DX column we can't quite remember; but there it is—they all seem to land on us, somehow, and this month there's quite a record bag. G2YV, who is active on Top Band only, is being misused on 28 mc phone. G3FUY (Pontefract) is troubled with one on 7 mc CW; G3CXG (Chingford) has had QSL's from 15 stations that he has not worked—some call him Harry and some Norman, so they may be two different chaps. G6TG (Scarborough) gets cards for 14 and 7 mc contacts he has not made; G3BEV (Guildford) is bothered by "George" on 7 mc on which band he does not work. G8RY

#### FOUR BAND DX

Station	Countries Worked					Power
	3.5 mc	7 mc	14 mc	28 mc	Total	
W2QHH	72	70	193	102	196	35
G6QB	41	76	184	133	206	150
G3FGT	32	37	102	51	119	60/100
ZB1AR	31	45	113	44	120	150
G3ATU	26	70	187	100	193	150
G6BB	25	61	118	52	132	10/85
G3FNFJ	24	46	118	92	145	150
G2YS	24	33	117	39	130	150
G8VG	24	56	108	26	124	60/75
G3ABG	22	54	122	6	123	150
G2DHV	22	20	89	7	93	25/60
G2WW	21	52	170	105	181	150
G3FXB	21	48	84	31	97	25
G6AT	21	46	91	1	97	100
GM3EST	20	23	102	2	106	150
G5FA	19	95	132	69	146	35/150
G6QX	16	29	106	46	120	30/150
G8PW	15	60	108	58	122	25/100
G6TC	11	43	98	18	107	20/75
G2FYT	5	31	124	31	131	150
G2BJY	4	24	100	104	141	25
G2VJ	4	13	87	56	104	150
G2HKU	1	40	109	13	119	4/25

(Wolverhampton) has been receiving cards for a period during which he was inoperative.

G3CED (Broadstairs) would like to hear from anyone in North London receiving his signals because, as he says, it isn't likely from Broadstairs on QRP and, anyway, the novelty of working DX without a Tx is wearing off. G3CFO (London, S.E.10) "wishes to thank his second pirate for the jolly cards now rolling in." He is thinking of sitting back and leaving it all to his pirates, using the spare time thus gained for taking the XYL out. The genuine G3CFO works 3.5 mc only, with a 6-watt CO/PA and the name of Pete.

We recently referred to a pirate in the Brighton area using "SU2AF," among other call-signs. This particular pest is getting the Brighton amateurs in bad odour by operating

during television hours, putting out a wonderful third harmonic on 42 mc. Needless to say, they are taking a very poor view, but have just about got him taped, and if he shows his nose again (his location is known) he will be for the high jump. Concerted local action is the only way of dealing with these types; when they get the law-abiding fraternity into trouble it's time to take drastic measures.

And, finally, an unusual one in the shape of an apology from G3GPS (Dover), who inadvertently used the call G3GBS through an error on his own part. He is very worried about this and has written to G3GBS explaining the circumstances.

Lest you should think this is all waste of space, we may as well tell you that these notes on piracy are closely followed in "certain quarters." . . .

### The Overseas Mail

VP7NM (Nassau) tells us that VP7NQ has

### ZONES WORKED LISTING POST WAR

Station	Z	C	Station	Z	C
Phone and CW			Phone and CW		
G6ZO	WAZ	222	G6QX	35	120
G6RH	WAZ	222	G2HKU	35	119
G6QB	WAZ	206	4X4CJ	35	114
G2FSR	WAZ	196	GM3EST	35	110
G4CP	WAZ	195	G6TC	35	107
G3ATU	WAZ	193			
G3DO	WAZ	191	G3FGT	34	119
G8IG	WAZ	175	G6AT	34	97
G5YV	WAZ	172	G2DHV	34	93
G2VD	WAZ	168			
G3BI	WAZ	162	GM3CVZ	32	97
G3AAM	WAZ	154			
G3YF	WAZ	152	G2BBI	30	98
G3AZ	WAZ	133			
G8IP	WAZ	132			
G5BJ	WAZ	126			
G5VU	WAZ	124			
G2WW	40	181			
G3TK	40	162			
G3FNJ	40	145			
G6BB	40	132			
G3BNE	40	128			
G5MR	40	125			
G8VB	39	149			
G3DCU	39	148			
GM3CSM	39	147			
G5FA	39	146			
G3CVG	39	136			
G3BDO	39	135			
			Phone only		
G3COJ	38	142	G3DO	37	154
G2BJY	38	141	G6WX	37	128
G3AJM	38	130	G8VB	36	132
G8PW	38	122	G2WW	36	120
G3ABG	37	123			
ZB1AR	37	120	G3COJ	35	115
G2GM	37	108			
			G2VJ	33	104
G2FYT	36	131			
G2YS	36	130	G2BBI	30	95

now been added to their list; he is on 7 mc CW only. But VP7NK, 7NN and 7NP have dropped out. Meanwhile 7NM, with his 50 watts, has worked every European country except GC, GD, OY, PX and SV, and is gunning chiefly for Africa. So if you hear him calling CQ Africa *he means it*. Referring to "thousands of W's with the full gallon," 'NM says: "If I had my say, I would tell you what limit I would place on power!"

Bill Orr, of W6SAI (ex-FP8AC), has a thing or two to say. Listen to this: "I am sorry to state that I thought the W's were the worst DX hogs in the world, but the G's, and the GM's especially, could teach them one or two lessons. A directional CQ meant nothing at all, and as the skip was mainly to G they were louder than anyone else." But he had 850 contacts in 40 countries.

Referring back to last month's note, W6SAI says he is convinced that 7 mc signals do arrive in W6 the long way round in the winter. They never hear OX, VE1, VE2 or W9 at that time, whereas they do receive VK, VS and other long-skip signals from those directions. He badly wants a lot of us to put up ground-planes and have a go.

VP6CDI sends a "Requiem for a Departed Spirit"—unfortunately the Spirit of Amateur Radio. Beginning "Oh to be in England! To be a G once more!" this pathetic little poem concludes:

*"DXCC has changed my chums, their conversation's cramped;  
No time to waste, their greeting's brief,  
their message rubber-stamped.  
The rubber stamp's a small affair, it  
ham't much to say—  
Just '569 Pse QSL, Cnagn, SK'.  
'Cnagn'—don't make me laugh! They  
don't mean that at all.  
I shan't see them again until—I change  
my flipping call!"*

Very sad, and doubtless true—and 'CDI promises that he will have much more to write, with vitriol, on this subject.

G6VD has now become ZE3JL. He is out there on a three-year tour of duty and will be on 14 mc CW with 100 watts, looking for G's, especially on Wednesdays and Saturdays.

Y12UW/G2UW writes from Habbaniya to say that he is returning home. Y13DYN is now Station Signals Officer and hopes that the issue of official licences will be settled very shortly. G's are received better out there now than in the winter, when the VK's are more workable.

VS6BW/G3AQZ sends some nice QTH's from that part of the world. He wants to arrange schedules with someone in the Preston, Wigan or Southport area, on 14 mc CW; so far, he has only worked one G and heard one other. 'BW adds that UAØFR is on Sakhalin Island—but unfortunately that isn't a new country.



KP4USA, the MARS station at San Juan, Puerto Rico, was on view to the public on May 20 last. Normally, the gear is housed in an (air-conditioned) dungeon of the old Fort San Cristobal of Spanish days, and runs a BC-610 at full power, with all the trimmings. Capt. E. H. Boren, of KP4USA, would like to hear from signals officers, interested in the work of MARS, at Communication Centre, HQUSARFANT, APO. 851, Postmaster, New York, N.Y.

G3ESG (S.S. *Linguist*) has had a chance of meeting many DX contacts in person: between May and August they called at MD5, ST, VS9, VQ1. 3 and 4, CR7. He met VQ4AO, who gave him a memorable welcome and is on the look-out for G's, being "ex" himself. Between VQ4 and VS9, G3ESG heard G3FSR (449), 4XC (459), 8HV (579) and GW3DGI (449), all on 7 mc CW. SM stations were predominant.

G3CHN (M.V. *African Prince*) again mentions the "superlative" phone transmissions from G6BY and GM8MN, as received in the West Indies on 14 mc. On his return trip he listened on 3.5 mc and awards the palm to GW2HIR and GW5VX, both of whom were S9 plus 20-30 dB at 1,550 miles S.W. of Land's End.

ZL3CP (Christchurch) says he has been trying to Work All English Counties for two years. It is much tougher than WAS, and he only has 27 to date. He says we would be surprised how often G's can't be heard in ZL when signals from DL, F, OK and ON are roaring in. He can work DL's over a greater part of the 24 hours than any other country.

Regarding QSL's, 'CP has received them from several stations mentioned in this feature as "difficult," but he has a formidable blacklist of GD and GW stations! Tut, tut.

SM5GG tells us that he worked "ZL2AU" recently, coming in at S8 with his VFO clearly audible. When he gave his QTH as "Wellington" it was the last straw. No doubt, as Bo says, "This character was a pirate." (The very morning this was written, we heard "AP2F" roaring in at 0830, RST 589 and steady. What a hope!)

W2QHH (Hamilton, N.Y.) continues to pile up his awards and certificates, having now collected his WAP with VRIC, his WAA (America)—first one issued to a W—and is QRX for his other WAA (Africa). He has been calling VQ8CB (Chagos) until exhausted, and can never hear Zone 23 in his noise level.

#### Miscellaneous Gen.

G3EDW suggests that a more general use of BK would ease the QRM position and make the bands more pleasant for everyone. And he means real BK, not just calling "BK BK BK de G . . ." and then going over and

listening! GM8SQ (Linlithgow) worked FP8AC for the first GM/FP8 QSO; not being a regular DX'er he didn't even realise that FP8 was a rarity!

G2FXA (Gerrards Cross) protests at phone behaviour, particularly in nets. He mentions one which is devoted almost entirely to letting the XYL's say their little piece and pull each other to bits. Never is anything technical discussed or even mentioned. We really *shall* have to run a Hogs' Corner . . . .

G2PL (Wallington) writes to say how easy it is to come by QSL's that one doesn't deserve. When the first FP8 station came on, he was allotted the call FQ8AB in error. (He signed FQ8AB/FP8.) 'PL worked him and sent him a card. Back came a card from the other FQ8AB in French Equatorial Africa (whom he had never worked); "Tnx for FB QSO"—and all that. We know it's easy for anyone to invent a high score, but 'PL's point is that even those who can show QSL's may not have come by some of them quite fairly. Our reaction to all this is to put the old question: "Is it a hobby or a full-time obsession?" Does it really matter if anyone wants to cheat himself?"

As a postscript to last month's remarks on long-winded operating, G2ZC (Farnham) takes us up on the subject of "RR" being sufficient acknowledgment on CW. "Why the second R?" he asks, and tells of a commercial operator who had to send a rush job of the size of about two columns of press print. This was done, on a straight key, at 37 w.p.m. At the end, the other chap's reply was (you've guessed it)—"R". That single letter, as 'ZC says, means just what it indicates, without "solids," "FB's" and all the rest tacked on.

### Shorts

G3FUY (Pontefract) is using a 14 mc version of the "ZL Special," as described in the July issue of the *Magazine*, and is well pleased with it. He would like to know more about the aeriels used by the leading DX workers, and suggests an extra column in the Four-Band table, with a code letter. We hope to do better than this, and to get more detailed gen. from some of them, round which we can write a little article. 'FUY would also like to see a listing or a contest for beginners—first-year 25-watt brasspounders.

G5FA tells of a very interesting visit from Pat Miller, W2AIS and ex-ZC8PM. Pat is on his honeymoon and doing a two-month tour of Europe and North Africa. We imagine that his newly-initiated XYL will have some QRX to do while he visits FA's and CN's!

From G6ZO we get another word about ZS8MK—he is not leaving the country, but

is temporarily QRT for a rebuild. G3FZW so enjoyed himself as GW3FZW/A that he is going to make some further /P expeditions into the county of Merioneth. When G3AMF was in Germany recently on holiday, he listened on 1.7 mc at Bad Pyrmont and sends in a fine list of G's heard on CW during the late evenings of August 4/5; the receiver was 3-V-1 and the aerial quarter-wave. G8LG, having visited the principality of Liechtenstein during his holiday tour, confirms G2WW's fear that it would not be possible for anyone but an HB to operate /P from there; the reason is that all communications in HE are controlled by the Swiss authorities, who would license temporary HB residents under HE calls. When G3FWE went to his local post office at Sandown, I. of W., to see about air-mailing some cards to Box 88, a deathly hush fell on the local inhabitants yarning across the counter when the clerk said "Where to?" and G3FWE replied "Russia"!

G6AT and G3ATU both hark back to this vexed question of VO. Does it, or doesn't it count as a country? 'ATU simply refuses to cross it out! Well, since (privately) we think this whole country-defining business couldn't be more cock-eyed, we don't care two hoots whether anyone counts it or not; but two of the existing bodies are in disagreement. We would be more than glad to be able to evolve a scoring system which completely ignores "countries" and goes by prefix letters and



".... Using auto QSO-maker, here OM—what RST do you want, pse. ...."

numbers only. What do the DX'ers think? How would you like to list your score in terms of G2, G3, G4, G5 and so on, all counting as separate units; likewise F3, F7, F8 and F9; DL1, DL2, DL3 and all the rest? It would make for very high totals, but at least it would be the same for everybody, with no arguments. It would be a little hard in cases like VP8 and VP5, where groups of separate "countries" would all come together and count as one.

Please let's have your opinions next month. What do we substitute for countries: (a) Letter prefixes only, or (b) Letters and figures? Or (c) do we let things stay as they are? Alternatively we could accept real countries as laid down, say, in Stanley Gibbons' catalogue; but good-bye to the Isle of Man, Wales, Scotland, and many, many others. It is really quite a problem.

Meanwhile, here's another one: The "WAE" (Worked All Europe) Certificate.

This has been organised by the German paper *QRV*. Count each European country once per band, and if your total comes to 100 or more, you are eligible for this award. The list of countries quoted is just about standard, except that German Nationals (DL1, 3, 6, 7) are counted separately from "German Occupationary Personnel" (DL2, 4, 5). Full particulars available from '*QRV*', Box 585, Stuttgart, Germany.

Deadline for the October issue is first post on September 12. For the overseas brigade, who work further in advance, the November deadline will be October 10. Address the whole lot to "DX Commentary", *Short Wave Magazine*, 53 Victoria Street, S.W.1. Don't overlook the query in the last paragraph but two—please let us have your views on that. Meanwhile, search the bands thoroughly and see what you can find for next month. Good Hunting, 73 and BCNU.

## Portrait Gallery

### G2ZC

BESIDES being well known as one of the joint honorary secretaries of the First Class Operators' Club—and the mainspring of the F.O.C. during the first three years or so of its post-war existence—the subject of our "gallery" this month is also an Old Timer of considerable experience.

Capt. A. M. H. Fergus started in Jersey, Channel Islands, as early as 1922, using TBA (one of the old Army callsigns) on 440 metres and the "other bands open to amateurs at the time." In 1923, he became G2ZC and, moving first to Hindhead in Surrey and then to Churt; he was knocking off the CW DX before the year 1930.

As soon as transmitting was again permitted after the last war, G2ZC opened up from Churt and subsequently moved to Farnham, Surrey, from where he is to be heard as a frequent signal at the LF end of Eighty, with occasional appearances on 160 metres.

Always a keen CW-only man and a strong upholder of the ethics of Amateur Radio, the principles on which the F.O.C. is based made an immediate appeal to "Fergie" when the question of the revival of the Club was being discussed in these columns during 1946. In October of that year, G2ZC consented to act as honorary secretary-treasurer, and since then "Fergie" has been unremitting in his labours



for the well-being and healthy development of the First Class Operators' Club. The influence, prestige and expanding membership that the F.O.C. now enjoys is the measure of his success.

Aged 56, G2ZC is retired (by which he means he digs weeds in the garden) and his interests in Amateur Radio and the F.O.C. make him one of the keenest and happiest amateurs on the air. The G2ZC station archives contain a large collection of early QSL cards of great value historically, with many Old Timer photographs and other relics of the early days of Amateur Radio. And for those who take pride in regular long-standing schedules, it will be of interest to learn that G2ZC-G5LH have maintained theirs almost unbroken since it was started in 1925!

## 70-CENTIMETRE PA STAGE

### QQV06-40 as Straight Amplifier on 430 mc

By H. L. O'HEFFERNAN (G5BY)

THIS 432/438 mc Power Amplifier is the answer to the problem of providing, quite simply, an adequate output on 70 cm. at the full legal input of 25 watts.

It may be used either as an additional tier to the Compact 144/432 mc Transmitter (described by the writer in the August 1950, *Short Wave Magazine*), or as a remotely operated PA installed at the top of the tower alongside the transmitting beam, thus eliminating all feeder losses.

The makers state that the Mullard QQV06-40 tetrode, used in this amplifier, operates at an efficiency of 50 per cent. at 300 mc; assuming this figure drops to 44 per cent. at 432 mc, it should still be possible to secure an output of 11 watts RF with 25 watts anode input. Allowing, say, 20 per cent. for circuit losses, this should mean that when remotely operated alongside the beam, 9 watts of RF power will be available.

Most good 70 cm. beams have a gain of at least 17 dB, so this should ensure that the output from the power amplifier under such conditions—and in the favoured direction—is equivalent to approximately 450 watts of RF in a dipole.

The total power needed for the entire transmitter—the unit as described in the August *Magazine* and this Amplifier—is 6.3 volts at 6.5 amps for heaters and 300 volts at 300 mA (maximum) for plate requirements.

#### Circuit

A series tuned grid circuit enables resonance to be established with no more difficulty than with a 7 mc job. Tuning is definite but not critical and shows no tendency to drift over long periods. The anode circuit uses similar soft drawn copper tubing to that employed in the tank circuit of the 832A tripler; but is of smaller dimensions because the anode leads (inside the envelope) of the QQV06-40 are longer than those of the 832A.

#### Construction

General layout is identical with that of the 832A tripler stage but the valve holder should be mounted on a vertical metal panel to obtain the necessary shielding between grid and plate circuits. This is of 18 SWG aluminium and measures  $3\frac{1}{2}$  in.  $\times$  4 in. high,

With this article and that contributed by the same author to our issue for August 1950, is described a complete crystal-controlled 70 cm. transmitter to operate efficiently at the full permitted input on 430 mc of 25 watts. G5BY shows that by mounting the PA unit itself as near as possible to the beam feed point and driving it remotely, an equivalent RF power of 450 watts can be realised when using a beam showing a gain of 17 dB in comparison with a dipole.—  
Editor.

the clearance hole for the valve pins being cut out with a fretsaw.

The grid tuning condenser C1 is the same type (Ex-AM W 6168) as used in the grid circuit of the 832A tripler. Since L1 consists of two 1 in. long pieces of  $\frac{1}{8}$  in. o.d. copper tube, each soldered at one end to a grid socket and at the other to C1, enough mechanical strength is provided to support the tuning condenser without any other form of mounting, thus ensuring a minimum of stray capacities. A polystyrene pillar should be used, however, for support if the apparatus is to be employed in portable operation.

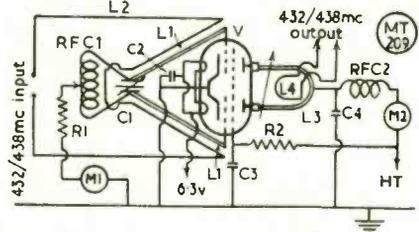


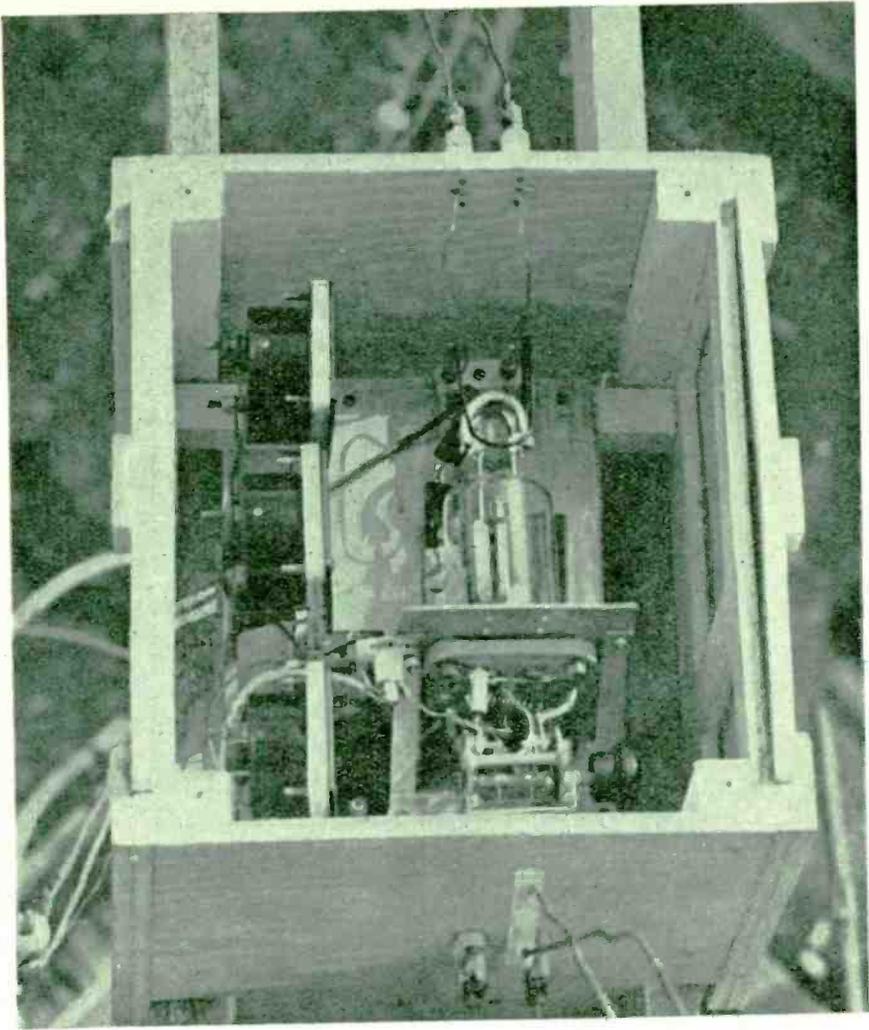
Fig. 1. Circuit of the 430 mc PA stage using the QQV06-40 as a straight amplifier. Under the conditions stated by G5BY in his article, the valve will give 9 watts of RF output.

#### Table of Values

Fig. 1. Circuit of the QQV06-40 PA for 430 mc.

- C1 = Split stator, exAM No. W6861
- C2 = 200  $\mu$ F, button type
- C3 = 200  $\mu$ F, button type
- C4 = 50  $\mu$ F (2-100  $\mu$ F T.C.C. in series)
- R1 = 20,000 ohms,  $\frac{1}{2}$ w
- R2 = 30,000 ohms, 10w
- V = Mullard QQV 06-40
- L1 = each 1 in. long, of  $\frac{1}{8}$  in. O.D., silver-plated copper tube
- L2 = Plastic cov. flexible, almost touching L1
- L3 = Loop of  $\frac{1}{8}$  in. O.D. silver-plated, soft-drawn copper tubing (see Fig. 2)
- L4 = 14 s.w.g. coupling loop (variable to L3)
- RFC1 = 10t  $\frac{1}{8}$  in. I.D., c.t., of 20g., 1 in. long
- RFC2 = 5t.  $\frac{1}{8}$  in. I.D., of 20g.,  $\frac{1}{2}$  in. long
- M1 = 0.5 mA
- M2 = 0-100 (or 200) mA

The valve holder is mounted with the cathode pin at the bottom and this pin is earthed to the adjacent back mounting bolt. On the other side of the screen this same bolt secures a  $\frac{1}{8}$  in. wide copper strip 2 in. long, to



PA stage for operation as a straight amplifier on 430 mc, incorporating the Mullard QQVO6-40. As designed by GSEY, this PA is a separate unit for operation close up to the aerial itself, thus minimising feeder loss. The output is taken off by the U-loop above the valve.

the end of which the plate by-pass condenser is soldered. For 6 volt operation the top two heater pins are connected together and earthed to the top back bolt. Best grid current was obtained when the rotor of C1, was earthed to this lead midway between these two heater pins. Both screen and heater by-pass condensers are button types soldered direct (no leads) between those points and the cathode pin.

Connections between the copper tube tank circuit and the anode pins are made by soldering spring clips (obtained from the small

type acorn valve holders) to the tubing (see Fig. 2), so that the whole slides along the anode pins, thus allowing the inductance to be varied initially to secure resonance. In order to ensure the best heat transference from the valve anode seals it is advisable, finally, to adjust the size of the loop so that the clips come as close as possible to the valve itself. Fine tuning is accomplished by a movable copper disc, as used on the 832A tripler.

If this amplifier is to be mounted permanently on top of the driver unit, it is recommended that the layout be altered so that

## QQV06-40

## RF Power Double Tetrode

RF double tetrode rated to dissipate 20 watts at each anode and primarily intended for use as Class C amplifier or oscillator at frequencies up to 300 mc.

CATHODE Indirectly heated for series or parallel operation.

	Series	Parallel	
$V_h$	12.6	6.3	V
$I_h$ (approx.)	1.0	2.0	A

## MOUNTING POSITION

Vertical—base up or down  
Horizontal—anode pins in horizontal plane

## CAPACITANCES

$C_{g1-a11}$ (each section)	11.0	$\mu\mu\text{F}$
$C_{c-a11}$ (each section)	3.5	$\mu\mu\text{F}$
$C_{a-g1}$ (each section)	<0.1	$\mu\mu\text{F}$
* $C_{out}$	2.2	$\mu\mu\text{F}$
* $C_{in}$	6.6	$\mu\mu\text{F}$

\*Two sections in push-pull

## CHARACTERISTICS (each section) measured at

$I_{b-30}$ mA		
$\beta_m$	4.5	mA/V
$\mu_{g1-g2}$	9	

## LIMITING VALUES

$V_a$ max.	600	V
$P_a$ max.	2x20	W
$V_{g2}$ max.	250	V
$P_{g2}$ max.	2x3	W
$I_{g1}$ max.	2x5	mA
$P_{g1}$ max.	2x1	W
$I_k$ max.	2x120	mA
$i_k$ (pk) max.	2x480	mA
$V_{g1}$ max.	-175	V
Max. temperature of pins	180	deg. C
Max. temperature of bulb	225	deg. C
Max. frequency at reduced ratings ( $V_a$ max. = 400v)	300	m

## OPERATING CONDITIONS AS PUSH-PULL CLASS-C RF AMPLIFIER OR OSCILLATOR

$f$	60	150	300	mc
$V_a$	600	500	400	V
$V_{g2}$	250	250	200	V
$V_{g1}$	-100	-60	-60	V
$I_a$	2x100	2x100	2x100	mA
$I_{g2}$	2x9	2x9	2x6	mA
$I_{g1}$	2x2	2x1	2x1.5	mA
$V_{in}$ (pk)	2x120	2x80	2x80	V
$P_a$	2x17	2x17.5	2x20	W
$P_{out}$	85	65	40	W
$\eta$	71	65	50	%

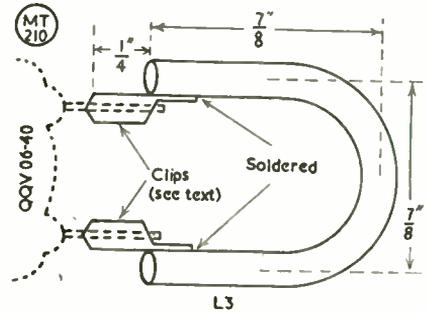


Fig. 2. Detail of the dimensions for the plate tank L3, permeability tuned by means of a copper disc about the size of a halfpenny and mounted on a screwed rod; the disc "looks" into the U-shaped tank coil.

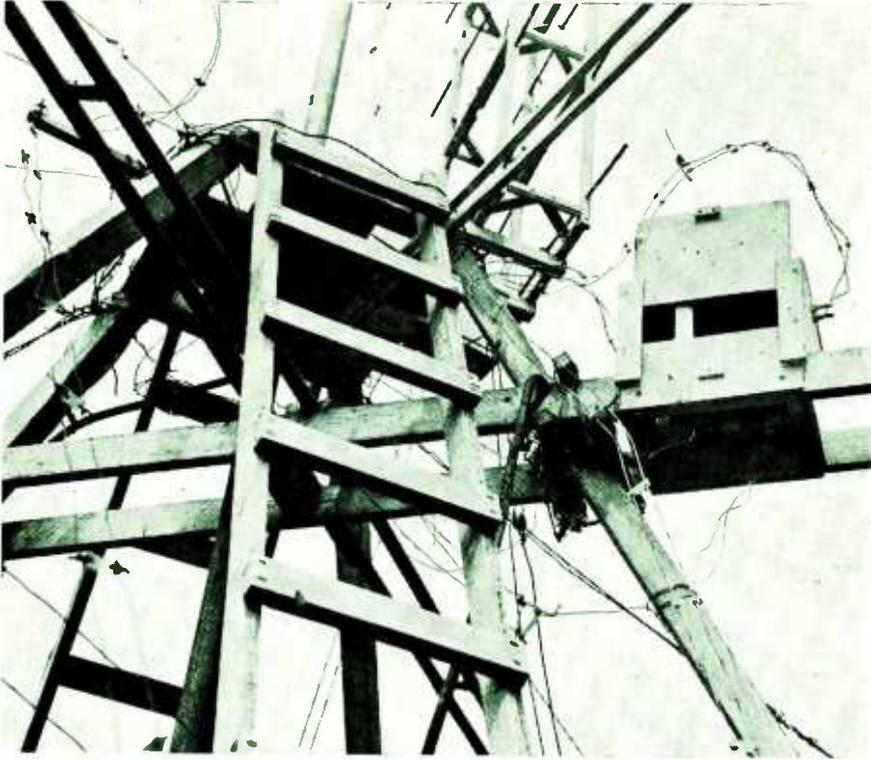
the grid input is at the right and the plate output at the left. Thus the amplifier output circuit will be kept as far away as possible from the tripler plate circuit. For remote operation it is more convenient to have the grid and plate meters mounted at the back of the unit (as illustrated), but when combined as one unit with the driver, the same arrangement as on the 832A tripler stage can be adopted.

## Adjustment

With the heater on but with no HT applied to the QQV06-40 valve and with the driver unit giving its maximum 70 cm. output, couple the two units together with a parallel—not twisted—link (wires about  $\frac{1}{2}$  in. apart). Vary C1 and an indication should be obtained, on the grid meter, with the plates about one third in mesh. Once resonance has been established, adjustments can be made to secure the maximum grid current by variations of coupling to both the 832A plate and PA grid circuits. Any such variation usually necessitates retuning both these circuits, since they tend to interlock. Try reversing link connections at one end—retuning and re-coupling will again be needed—to obtain best results. When between 1.0 and 1.6 mA grid current—more, if possible; the manufacturers advise 3 mA for the QQV06-40 at 300 mc—is showing in the PA, about 200 volt HT can be applied and the

Output stage	HT	Current	Watts input	Grid current	Field strength pick-up in rect. DC $\mu\mu\text{A}$
QQV06-40 PA, using 35-ft. feeder ..	240	66	15.8	1.0	430
2x 8012 Tripler, using 35-ft. feeder ..	200	84	16.8	27	310
QQV06-40 PA, alongside beam, no feeder	240	66	15.8	1.0	605

25 watt input to QQV06-40 is obtained with 300v and 83 mA



The box with the sliding door houses the QQVO6-40 PA, operated as a separate unit ; this view shows the method of mounting, with a short length of feeder (emerging on the right) connecting into the 70 cm aerial just above and to the left of the PA box. Such an arrangement ensures minimum feeder loss, the RF drive for the PA being piped up from the exciter in the transmitter rack, with HT and LT. To eliminate change-over complications, a separate receiving beam is used, mechanically connected to the transmitting array so that both rotate together.

anode circuit adjusted. (This operation was described in detail before when tuning up the 832A tripler tank circuit and present procedure is just the same.)

Some comparative figures between QQV06-40 PA and  $2 \times 8012$  Tripler, and with the former mounted alongside the beam, are given in the table.

#### Remote Operation

A minimum of three leads are required for heater, earth and (modulated) HT but four are recommended because then the grid current can be metered in the shack. The RF excitation can be carried up on whatever was used previously to feed the beam, either open wire or coaxial feeder being suitable. If only one beam is employed then a send receive relay, with separate feeder to the receiver, will have to be installed at the beam end, but it is strongly advised that two beams be used when operating a remote PA.

It is suggested that the field strength pick-up device described (in the previous article), be

permanently set up in front of, but well below, the beam, so that a check can be kept on the operation of the remote PA. Leads from the FS pick-up should be wired to sockets alongside the amplifier at the tower top and to a convenient point in the operating room, so that a 0-1 mA meter can be plugged in when required. The meter shown at the right, in the photograph, is permanently wired to read this field strength and is connected in series with a similar meter installed on the driver unit in the operating room.

A six-foot length of open-wire feeder is used between the PA and the beam because, this being an experimental arrangement, it was desired to have easy access to the unit, even during high winds, and this would not have been possible if the PA had been mounted on the mast right at the beam feed point.

This remotely controlled PA has now been in operation for a month, during which time the official rainfall for this area was three to four inches ! No trouble from moisture has been experienced.

# VHF BANDS

**Conditions Generally Good—  
Station Reports and News—  
Increasing Seventycem Activity—  
VHF DX Records and Survey of  
the Tables**

FROM the heavy volume of mail this month, we get it that conditions have been "fair to good generally," with a high level of activity, many new stations showing up on Two, some excellent GDY contacts made, and increasing practical interest in the 70 cm band.

Before going further, it should be explained that the story this time is being written up by the stand-in, as G2XC has been on leave—so that it is hoped that the regular followers of this piece will be indulgent about any errors, omissions or other signs there may be of an unintelligent grasp of VHF matters in the treatment this month. However, our regular conductor will be in full blast next time and will no doubt issue any necessary corrections or amendments!

### Some Individual Opinions

Taking a few of our correspondents' letters at random, some of the personal opinions that seem important are: "Isn't it about time we had another Fiveband Club gathering?" (G3BOB). "Please use every possible means to get earlier operation on 144 mc, with more CW signing when using phone" (G3ATZ). "I wish more stations would operate during the whole evening, instead of outside TV hours only" (G2BUJ). "Local weather is not necessarily any indication of VHF conditions" (G2AHP, G3EHY). "Though no difficulty was experienced in working over 200-230 miles to the West and South-West, it has not been possible to get a signal over the same distance to the North, in spite of arranged schedules" (G2CPL). "There is nothing against a 70 cm hour every week, when we could be certain that someone was on. Could this be arranged for, say, Mondays 2200-2300?" (G2QY). "Less than 30 per cent. of listed stations are not conforming to the Band Plan. I am ignoring

stations calling in the wrong part of the band" (G3COJ). "On Tyneside, we have only one small pocket of activity at less than 100 miles from us, and therefore we look upon 100-mile QSO's as normal, the 150-mile contacts being the spectacular ones; but in the South 100-mile working is apparently regarded as something special and a sign of good conditions" (G4LX). "Have just taken the 16-ele. stack down for an overhaul, and it certainly needed it; the copper/dural clips were very badly corroded in spite of precautions taken to keep out the weather" (G3ABA). "There are people who appear to imagine that the *Magazine* gets some commercial advantage out of sponsoring the Band Plan; I have heard a lot of tripe being talked about it" (G3BLP). "We in the Medway towns are getting worried about the QSL situation; many well-known operators simply will not QSL, which is downright disgraceful" (G3CAZ). "I think you will agree the return of QSL's is rather poor at 30 per cent." (G3CFR). "We are black-listing some VHF CC members for not sending us their cards" (G4LX).

Well, there are some bones of contention to pick over in that short selection from the current mail—though there is remarkable unanimity about the difficulty of obtaining QSL cards; a number of other correspondents write in the same strain on that point.

This failure to QSL is a curious and previously quite an unknown phenomenon on the VHF bands. We shall be getting lists of "black" stations next, but here and now let it be said that we cannot take sides in this matter; all we can say is that anybody receiving a card should send one in return, even if not much interested in QSL'ing nor in the habit of originating cards himself. The point is that many people do badly want a card for every station worked, and there seems to be no reason why they should not have one provided they have themselves QSL'd. It is the accepted practice in Amateur Radio at least to QSL those who send you cards. And on the the VHF bands QSL'ing is of particular interest, so that it is important to maintain the standard in this respect.

### Station News—Two Metres

G3BOB (Hayes, Kent) says he has found the DX about most nights, and remarks that his increase in power from 25 to 150 watts has made very little difference to his signal reports. G3ABA (Coventry) is anxious for some portable co-operation on the evening of October 7, when the Coventry VHF chaps will be out *all night* using G3ABA/P on both bands.

G3BLP (Selsdon, Surrey) found Two fairly well open most of the month, with steady signals from the North; he has now hoisted his stations worked to the very fine total of 317 in 46 counties, all time. Regarding last month's comment on receiver selectivity, this has been borne out by further experiences recently, and G3BLP says that it now seems that certain of the ex-Service types with an 1F around 2 mc, and the R1132A, are those that lack the selectivity necessary for working with reasonable frequency separations.

G3ELT (Salford) reports himself in his zone at 144.24 mc and hopes shortly to have a 12-ele. array on a 30-ft. tower. G3CAZ (Gillingham) managed some new contacts in what appeared to be bad conditions and gives G8AX as another station to have started up in Norfolk.

GW2ADZ (Llanymynech) takes us up once again on what to him is the vexed question of the right way to reckon the "Best Twenty." He says he agrees with G3EHY, and G4HT (Ealing) remarks that he "still wants to see it all different." The whole question of targets,



Several G's have worked DL3FM on Two, and many more have heard his signals on the 145 mc band. He was out /P on July 2, and in this photograph DL3FM himself is sitting front with DL3FO (2nd operator) standing at the equipment. The DL3FM receiver is 6J6-6J6 RF-mixer with an LD1 oscillator, into an HRO at 10.7 mc 1F. The aerial is a 4-ele. wide-spaced rotary and the CC Tx runs an 829B in the final. Operating frequencies are 144.7 and 145.28 mc. DL3FM/G5BY hold the present European DX record for Two Metres.

contests and tables will shortly be under review, and we shall keep all these opinions in mind—but it will *not* be possible to please everybody, nor are we going to try!

G4HT also says that he strongly deprecates any reference to those not conforming to the Band Plan as "clots." So do we, and if he means us, no expression of that kind has ever appeared in the *Magazine*. G4HT's total of stations worked is now at the very commendable figure of 270—he is one of those interested in early morning operation, and hears some other stations at it, too.

Down in the West Country, G5QA (Exeter) keeps busy on 145.62 mc and runs a daily schedule with G4RX (Bridgwater); they find this very useful for aerial testing. Other contacts from G5QA have been G81L (Salisbury) and GW2ADZ. G3WW (Wimblington) caught the period of exceptional conditions around August 4, and worked stations to the North and South-West. G2OI (Eccles) opened a new page when he at last got across the Pennines to work G8AO and G8JO in Durham on August 5.

G3DUP (Northampton) reports himself and G2HCG as active on Two since the beginning—but admits that it is their own fault that no news of this has previously appeared in this feature. Their totals are excellent—G3DUP has 107 stations worked in 36 counties and three countries, while the

### VHF RECORDS

144 mc

**World :** W5VY / W8WXV  
1196 miles June 24, 1950

**European :** G5BY / DL3FM  
470 miles June 28, 1950

**Inter-G :** G3BLP / G12FHN  
330 miles Aug. 20, 1949

420 mc

**Fixed, World:** G5BY / G6LK  
161 miles June 4, 1950

and W1PBB / W2QED  
160.5 miles June 13, 1950

**Portable :** W6VIX/6 / W6ZRN/6  
262 miles July 4, 1949

1215 mc

**World :** W1OFG/1 / W1MZC/1  
37 miles July 30, 1949

**British :** G6CW / G8DD  
4.5 miles Nov. 17, 1949

2300 mc

**World :** W6IFE/6 / W6ET/6  
150 miles Oct. 5, 1947

**British :** G3CBN / G8IH/P  
24.4 miles Oct. 20, 1948

## TWO-METRE ACTIVITY REPORT

**G2XC, Portsmouth, Hants.**

**WORKED:** G2ANT, 2CIW, 2CPL, 2FMF, 2HCG, 2MC, 2NS, 2OI, 2RI, 3ABH, 3AHT, 3ANB, 3ARL/P, 3ATZ, 3BHS, 3BNC, 3BOB, 3CFR, 3COJ, 3CXD, 3DAH, 3EJL, 3FAN, 3MY/P, 3VM, 3WW, 4CI, 4HT, 4MW, 4NB, 5BY, 5JU, 5NF, 6KB, 6LK, 6OH, 6XM, 6ZQ, 8DM/A, 8IL, 8LY, 8QY.

**HEARD:** F3LQ, 8NW, G2FNW, 2FZU, 2IO, 2XV, 3CAZ, 3CGO, 3DIV/A, 4RK, 5RO, 6JK, 6VC, 6VX, PE1PL. (July 18 to August 8.)

**G3BLP, Selsdon, Surrey.**

**WORKED:** G2ATK, 2BFT, 2FNW, 2FWW, 2IO, 3ABA, 3ALC, 3AOK, 3ATZ, 3BJO, 3BK, 3BVJ, 3DJQ, 3WW, 4NB, 5CP, 5PP, 5RW, 5VN/A, 6AG/A, 6CW, 6LI, GW2ADZ.

**G5LI, Hampstead, London.**

**WORKED:** G2BMI, 2DD, 2DIO, 2HDZ, 2YL, 3AAB, 3AVF/P, 3BHS, 3BPM, 3BY, 3CDJ, 3CFB, 3CFR, 3CU/P, 3EHY, 3EJW, 3EYV, 3FSD, 3GDR, 3GHI, 3MI, 3SM, 5BY, 5DS, 5LN, 5OO, 5UF, 6HD, 6KB, 6LO/A, 6PR, 8IL, 8QC, 8VR.

**HEARD:** G2BUJ, 3AUS, 3BNC, 3BTC, 3CGO, 3CQC, 3DAH, 3DT, 3EAB, 3FNL, 3FUM, 3GMZ, 3GTH, 6SC, 8DM/A.

**G2MC, Brighton, Sussex.**

**WORKED:** F8LO, 9MX, 2NM, 2XC, 3ARL, 3AUS, 3BEX, 3BNC, 3CFR, 3DEP, 3EJL, 3FAN, 5BY, 5MA/P, 8IL.

**HEARD:** G3ABH, 6XM.

**G3CQC, Torquay, S. Devon.**

**WORKED:** G2DGB, 2MC, 2NH, 3AGA, 3BHS, 3CFR, 3EBW, 3EJL, 3FUT, 3WS, 4IX, 4KB, 4RX, 5MA, 5QA, 5UF, 6LK, 6XM, 8IL.

**HEARD:** G2CIW, 2DSW, 2XC, 3BLP, 3BNC, 4GR, 5TP.

**G4HT, Ealing, Middlesex.**

**WORKED:** G2BFT, 2CPL, 2FNW, 2IO, 2OI, 2XC, 2XV, 3AHT, 3ALC, 3ATZ, 3BK, 3BVJ, 3COJ, 3CXD, 3DAH, 3DIV/A, 3DMU, 3DUP, 3EBW, 3EHY, 3FMI, 36DR, 3VM, 3WW, 4FB, 4MW, 4NB, 5LK, 5SK,

5UD, 6AG/A, 6CW, 6LI, 6SN, 8QY, 8SY, 8WV, GW2ADZ and 36 local stations.

**HEARD:** F8GH, G2MA 3ANB, 3APY, 3FIJ, 6TF. (July 11 to Aug. 7.)

**G3BHS, Eastleigh, Hants.**

**WORKED:** F9RL, G2AJ, 2BMZ, 2CPL, 2FMF, 2HCG, 2XV/P, 3ABA, 3AGA/P, 3ANB, 3APY/P, 3AUS, 3CGO, 3CQC, 3DAH, 3EBW, 3EHY, 3FIH, 3FMO, 4CI, 4DC, 4IX, 4MR, 4NB, 5BY, 5DS, 5LI, 5MA/P, 5MR, 5NF, 5UD, 6NB, 6NR, 6XM, 8DM/A, 8SM/P, GW2DUR, 3EJM, 5SA.

**HEARD:** F8GH, 8NW, G2CIW, 2DGB, 2IQ, 2MC, 2OI, 3AHT, 3BK, 3BVJ, 3FIJ, 3FUM, 3WW, 4AU, 4CG, 4RX, 5TP, 6LR, 6LX/P, 8QY, PAØPN.

**G3FIH, Radstock, Somerset.**

**WORKED:** G2UJ, 3AVF/P, 3BHS, 3FMO, 3FUM, 3MA/P, 4GR, 4RX, 5BY, 6LX/P, 8IL, GW3EJM.

**HEARD:** G3ABH/P, 3BOB, 3BLP, 3BLX/P, 3CFR, 3CQC, 3EHY, 5UF, GW2DUR. (July 2 to August 14.)

**G3COJ, Hull, Yorkshire.**

**WORKED:** G2BDO, 2HCG, 2XC, 3AHT, 3ALC, 3BOB, 3CFK, 3CGO, 3CYY, 3DA, 3DAH, 3DIV/A, 3EHY, 3FIJ, 3GHI, 3GSE, 4AU, 4DC, 4HT, 4LX, 4MW, 5IB, 5MA, 5UF, 6NB, 6OH, 6VC, 6WU, 6XM, 8AX, 8IL, 8SM, GM3BDA, 3EGW, GW2ADZ.

**HEARD:** G2AOK/A, 2BUJ, 2CIW, 2FMF, 2UJ, 2XV, 3ABA, 3BJO, 3BLP, 3DUP, 3EJW, 3FUM, 3FXG, 3GMX, 5BM, 5CP, 5DS, 5VN/A, 6LX, 6VX, 8OC, 8OY, 8SY, PE1PL. (All over 100 miles. (July 10 to August 15.)

**G4LX, Newcastle, Northumberland.**

**WORKED:** G2FO, 2OI, 2MA, 3ABA, 3COJ, 5OU, 6LI, 6TF, GM3BDA, 3EGW, 3ENJ.

**HEARD:** G2CPL, 3ALY, 3BPL, 3CXD, 3DMU, 3DUP, G1ZFHN, GM3FOW, 5VG, GW2ADZ, PAØUE.

**G3EHY, Banwell, Somerset**

**WORKED:** G2ADR, G2CGO, 2CIW, 2CPL, 2DIO, 2HCG, 2OI, 2XV, 3ABA, 3AHT, 3ATZ, 3BJ, 3BJQ, 3BOB, 3BVJ, 3COJ, 3CXD, 3DAH, 3DUP, 3FD, 3FMI, 3MA, 3VM, 3WW, 3YH, 4AU, 4DC, 4GR, 4HT, 4LU, 4MR, 4OS, 4RK, 5BM, 5CP, 5DS, 5IB, 5LI, 5MA, 5RW, 6CI, 6KB, 6LX, 6NR, 6WU, 6XM, 6YP, 6ZO, 8IL, 8SB, 8SY, GW2, ADZ, 3EJM, 3XLX, 3KY, 5SA.

**HEARD:** G2AIO, 3BW, 8GL, 8ML. (Period July 13 to August 14.)

**G6TF, Chapelton, Sheffield.**

**WORKED:** G2FO, 2IO, 2XV, 2ADR, 2HCG, 2CPL, 3BLP, 3DMU, 3EHY, 4LX, 4MW, 5BD, 5UD, 5QU, 6CW, 8JO.

**HEARD:** G2HQ, 2MA, 3CGO, 3COJ, 3DAU, 4HT, 6VX, GM3BWW.

**G3VM, Norwich, Norfolk, NGR63 1B2101.**

**WORKED:** DL3FM, G2CPL, 2YU, 2XC, 3CFK, 3DUP, 3EHY, 3EJW, 3FIJ, 4CI, 4HT, 4PV, 6WU, 6XM, 8AX, 8QR, GW2ADZ, PAØJW, ØNL.

**HEARD:** G2AIO, 2BUJ, 2CIW, 2HCG, 2IO, 2XV, 3ALY, 3AVO/A, 3BK, 3BOB, 3CGO, 3COJ, 3DAH, 3DT, 4AU, 4MW, 5BD, 5MA, 5NF, 5UD, 6LI, 6LL, 6TF, 6VX, 8IL. (July 10 to Aug. 14.)

**G6CI, Kenilworth, Warwickshire.**

**WORKED:** G2AOK/A, 2ATK/P, 2HCG/P, 3ABA/P, 3APY/P, 3BJO, 3BVJ, 3CGO, 3CZV/P, 3DJQ, 3DUP, 3EHY, 4GNB, 4RK, 4G5ML, 5SK, 5RP/P, 8RQK. (July 1 to August 13.)

**G3BOB, Hayes, Kent.**

**WORKED:** G2ATK, 2OI, 2XC, 3AHT, 3BHS, 3CFK, 3CFR, 3CGO, 3COJ, 3CVO, 3DMU, 3DUP, 3EHY, 3FIJ, 3WW, 5CP, 5SK, 5UF, 6DM/A, 8QC, 8SY, 8WV.

**HEARD:** G2CPL, 2FNW, 2FZU, 2HCG, 2IO, 2UJ, 2XV, 3ABA, 3BJQ, 3BK, 3DIV/A, 3VM, 4MW, 5BM, 5BY, 5UD, 5VN/A, 6JK, 6LI, 8AX, 8IL, 8OY, 8SB. (July 12 to August 12.)

G2HCG totals are 126-36-3, all on phone. G4HT is their most consistent signal from the London area. At G3DUP, the aerial is a 16-ele. stacked turnstile at 30 ft., with 75 watts to an 829B; converters available are a crystal 6J6, and another using EC91-EC91-6AK5-diode mixer-CO and triplers.

G3WS (now of Chulmleigh, Devon) has got himself going again at a location 450 ft. a.s.l. with another 50 ft. of aerial height; he is temporarily off frequency until the new crystal arrives.

G5LI (Hampstead) is well known as one of our most successful stations on the DX

communication bands, so he is specially welcomed to the VHF world. Using a simple dipole, 109 stations have been knocked off in 15 counties in a period of about four months. He has been a bit worried with feeder loss as 120 ft. of line is required to connect to an aerial 60 ft. high. The SCR522 is run at 15 watts, and G5LI remarks that practically

all his DX has been worked by calling them, and not on CQ's; the receiver is 6AK5-EF54-EC52-RF27 modified into an AR88 at 8.6 mc; and G2BMZ, G3AVF and G5BY are among the more distant stations worked.

GM3DIQ (Saltcoats) reports a contact GM3DDE-GM3BDA which has long been tried for over hilly country, and 16-ele. beams are now in course of erection at 3DIQ and 3DDE. G3FIJ (Colchester) found conditions consistently good, but not outstanding, so that nothing startling happened there during the month. G3ATZ (Chester) draws attention once again to the frequency with which the Northerners can hear weak, modulated carriers from Southern stations who could have some nice DX QSO's if they would only fire North and call CQ on CW. G3ATZ proposes to go /P in Denbighshire to give many of us a new one. G6UH (Hayes, Middlesex) turns in a total of 212 stations worked in 26 counties, and G5DS (Surbiton) who started up in May last shows 92-21 using 15 watts to an SCR522, a 4-ele. Yagi and G2IQ 6J6 converter. G2BUJ (Swindon) is back again with 80 watts to an 829B and a new 4-over-4 with a converter using 6AK5-EF54-EF54-9002 into a BC-342; his operating frequency is 145.27 mc, and he feels he now has the gear to get results.

G2AHP (Perivale) is doing much better with the new 12-ele. beam in place of the 4-over-4, and he is anxious to contact stations in the Cambridge-Norfolk area; he has had only 49 cards for 111 stations worked. G6CI (Kenilworth) has a new 16-ele. beam under construction, and G3VM (Costessey, Norwich) is another who is working on a new aerial; he succeeded with DL3FM during the month, and says that local activity is very much greater than anything previously experienced. G6TF (Sheffield) has pushed up from 20 to 80 watts into a pair of LS50's, and results are encouraging; he is busy on a dual-frequency converter with a common local oscillator, so that both bands can be covered with the one piece of equipment on the Rx side. G6TF would like schedules on Two for any evening after 1900, but not later than 2230, and is also anxious for co-operation from the Cheshire-Lancashire area.

G3EHY (Banwell) and G2CPL (Lowestoft) maintained their schedule at 2100 all through the month, often when nothing else could be heard on the band at the G3EHY end. Another good contact for G3EHY was GW3KY (Holyhead) over a 160-mile path across the Welsh mountains, and G3COJ (Hull) has been worked mid-day. G6KC kindly QSP's a message to the effect that F9DN of Libourne, 20 miles from Bordeaux, transmits continuously 2030-2045 BST and listens 2045-2055 every day, using CW on

**TWO METRES**  
**COUNTIES WORKED SINCE SEPTEMBER 1,**  
**1949**  
**Starting Figure, 14**

Worked	Station
43	G3BLP, G6NB
42	G2OI
39	G3EHY, G6XM
38	G4HT
36	G2HCG
35	G3ABA, G3CGO
34	G2XC, G3DUP
33	G3COJ, G5UD
32	G3BK
31	G2AJ
30	G3BOB
29	G2CIW, G2XS, G3VM, G8SB, GW2ADZ
28	G2CPL, G8IP
27	G8IL
26	G2FNW, G3BHS, G3FIJ, G8QC
24	G3FXG, G6VC
22	G6CI
21	G2NH, G3AVO/A, G3GSE, G5DS
20	G3GBO
19	G3EJL, G5PY
18	G6CB
16	G3ANB, G3BNC, G3CAZ, G8VR, GW5SA
15	G2AOL, G4LX, G4RX, G5LI, G5MR, G5SK
14	G3CWW, G3DCC

*NOTE: This table was run for the year to August 31, 1950. Please let us have final scoring to that date for appearance with the next issue.*

## TWO-METRE ACTIVITY BY ZONES AND COUNTIES

(Based on reports for the current issue only)

## Zone A (144.0 to 144.2 mc)

Ayr : GM3DDE, GM3DIQ  
Lanark : GM3BDA

## Zone C (144.2 to 144.4 mc)

Cumberland : G3BW  
Durham : G2DKH, G2FO, G8FO, G8JO  
Lancashire : G2OI, G3DA, G3ELT, G5VN/A, G8SB  
Northumberland : G2BDQ, G3CYY, G4LX  
Yorkshire : G2ADR, G2HQ, G2IQ, G2MA, G3ALY, G3COJ, G3DMK, G5QU, G6TF, G6YO, G8SJ

## Zone E (144.4 to 144.65 mc)

Cheshire : G2CDB, G3ATZ, G3BOC, G3FM1, G3GMX, G5CP, G6TW  
Derbyshire : G2FZU, G5RW  
Leicestershire : G2RI, G3ENS  
Lincolnshire : G3APX, G3AXS, G3DMU, G4OF, G5BD, G6LI  
Nottinghamshire : G3APY, G6CW  
Rutland : G2FNW, G3ALC  
Staffordshire : G3CXD  
Warwickshire : G2ATK, G2BFT, G2FWW, G3ABA, G3BPW, G3BJQ, G4NB, G4RK, G5JU, G5ML, G5PP, G5SK, G6CI, G8QY

## Zone F (145.65 to 145.80 mc)

Anglesey : GW3KY  
Glamorgan : GW3EJM, GW5SA  
Montgomeryshire : GW2ADZ  
Shropshire : G3AHT

## Zone G (145.65 to 145.80 mc)

Bedfordshire : G3CGQ  
Buckinghamshire : G3AHB, G6JK, G6NB, G8QC  
Cambridgeshire : G2FJD, G2XV, G3BK, G3WW, G4MW, G8SY  
Hertfordshire : G5UM  
Norfolk : G2XS, G2YU, G3CFK, G3VM, G4PV, G5UD, G8AX, G8QR  
Northamptonshire : G2HCG, G3DUP  
Suffolk : G2CPL, G5MI

## Zone H (145.25 to 145.50 mc)

Berkshire : G6OH, G8DM/A  
Dorset : G2DGB, G3ABH, G4IX, G4OZ, G5UF  
Gloucestershire : G2AOK/A, G3YH, G5BM, G6ZQ  
Hampshire : G2DSW, G2NS, G2XC, G3ARL, G3AWY, G3BHS, G3BNC, G3CFR, G3CGE, G3DLG, G3FAN, G3GOP, G6XM, G8LY  
Oxfordshire : G5TP, G6KB  
Wiltshire : G2BUJ, G4AP, G8IL

## Zone I (145.50 to 145.65 mc)

Cornwall : G3AGA  
Devon : G2BMZ, G3AUS, G3CQC, G3WS, G5BY, G5QA, G6WT  
Somerset : G3CMT, G3EHY, G3FIH, G3FMO, G3FUM, G4RX

## Zone J (144.85 to 145.25 mc)

Essex : G2CIW, G3ANB, G3COL, G3FIJ, G3FNL, G6CH  
Kent : G2BYF, G2UJ, G2VA, G3AEX, G3AFV, G3BOB, G3CAZ, G3DAH, G3FOD, G3GAX, G6VC, G6VX  
London County : G2DTO, G3BIW, G3FXG, G4AU, G4DC, G5IB, G5LI, G5PY, G6WU, G8VR  
Middlesex : G2AHP, G2BMI, G2DD, G2FMF, G3CKX, G3GSE, G4HT, G6UH  
Surrey : G2ANT, G2BN, G2MV, G2YL, G3BLP, G3GMI, G4CG, G4CI, G5DS, G5LK, G5MA, G5NF, G5WP, G6LK, G6LX, G8SM  
Sussex : G2MC, G3DIV/A, G3EBW, G5RO

Note : Frequency areas given above are in accordance with the Two-Metre Zone Plan, as accepted by the majority of VHF operators. A few stations do not conform.

145.32 mc and a 4-ele. beam aimed at London. F9DN further reports via G6KC that he has heard one two-metre G on phone, but was unable to resolve the call; this particular station was heard to say that he had a "4-over-4 array and an 815 in the final"—which might be a clue for someone. But doesn't it emphasise the importance of clear and distinct enunciation of call signs on phone and a bit more signing on CW!

G3COJ (Hull) has now scored 125-41, with

six new ones during the month, which was rather a disappointing one for him; a DL opening was missed on August 4, and no Continentals at all could be heard on the 5th when the Southern stations were having a good innings. A fairly successful schedule was maintained with G8AO (South Shields) at 0900 and 1200 daily, which failed on three occasions only.

G5PY (London, S.W.12) has been back again and with only an 832 in the final running

16 watts has worked G3EHY, G5BY and G81L for some new DX. G2CIW (Romford) raised G3ALC in Rutland for a new county, and to help those who may be wanting Northumberland, G4LX (Newcastle) beams North at 2130 BST, on Lancashire at 2215 and South-West and South-East from 2230 onwards, every night.

### The Seventycem News

The news is mainly of constructional activity and preparations for the band, with a few local contacts, and nobody claims anything spectacular in the way of GDX—but it will come.

G2O1 (Eccles) has two converters working on 70 cm, one with a crystal and the other using a Lecher line oscillator and valve diode in a concentric mixer circuit; he also has a tripler on the transmitter and is now looking round for someone to try it all on! G6XM (Farnborough) is ready with a G5BY-type converter, but using a 9002 oscillator.

Seventycem results at G2QY (Pinner) as at August 16 were G2DD, G3FP, G4CG and G8GX worked and G2FKZ heard. The G2QY-G4CG path is non-optical and signals are usually extremely fluttery, sounding like a string of dots even when a steady carrier is going out from either end. The gear at G2QY is SCR522-832 tripler, and a Lecher line converter into a BC-348; frequency is 435.13 mc and the aerial a 10-ele. array plus reflector. And if anyone heard G2QY/P on Sunday, August 20, he was out to try to break records from the neighbourhood of Princes Risborough, Bucks.

G2CIW (Romford) was delighted to hear a signal from G2FKZ (Dulwich) without any prearrangement; the distance is only 17 miles, but signals were S9 plus, so that G2CIW rightly feels greatly encouraged. He has also been cross-banding with G3E1W, G4CG and G6YP. G5PY (London, S.W.12) is now CC on 435.402 mc, using a converted Type 105 unit as a tripler and a CV53 in place of the CV82; this has greatly improved his signal at G4CG. G3COJ (Hull) has no local co-operation as the nearest 430 mc station is 60 miles away—so he does not yet know if the converter is working properly. Car ignition is not a reliable test, as he finds it at the 1F of 27 mc. G2DCI (Speke) says that we had it wrong last month about G3DA on 70 cm; the note should have referred to G2DCI—Sorry! He has heard what appear to be 3rd harmonics from G8SB (22 miles, S2), G3BOC (10 miles, S3-4) and G3DA ( $\frac{1}{4}$  mile, S9); G2DCI's own 430 mc signals blow the lid off at G3DA, so things seem to be working out along the right lines.

Those getting ready for Seventycems

### TWO METRES

#### BEST TWENTY

July 1950

Station	Total Miles	Best Contact	
		"Call"	"Miles"
G3EHY	3717	G2CPL	221
G2CPL	3698	G5BY	275
G2O1	3215	G5BY	234
G4HT	2816	G5BY	186
G2XC	2800	PAØPN	210
G3FIJ	1975	PAØUN	205
G2FNW	1076	G2AJ	120

*For this table send details of date, mileage and callsigns of best twenty contacts made during previous calendar month. No station to be counted more than once in any seven-day period.*

include G2CPL (Lowestoft), G3VM (Nr. Norwich), G5MI (Ipswich), G3ELT (Salford) and G3BOB (Hayes, Kent), while others are ready with gear, but have not yet achieved contacts much outside the local area. These include: G3ABA (Coventry) and G3FIJ (Colchester).

G2XC (Portsmouth) has heard G5TP at 47 miles and had a second QSO with G5BY on July 29. On August 8, G2XC-G8DM/A had a near-QSO in that G2XC was 579 with QSB at G8DM, the latter's signals being 339 with flutter fading as received at G2XC over a 58-mile path. G8DM/A uses a 10-ele. Yagi above his two-metre beam and the Rx is crystal controlled, injection being at 410 mc; the final valve in the frequency multiplier is a CV53 quadrupler, and the mixer is the coaxial type. For the Tx, an 832 is run at 12 watts. G8DM/A has a 30-mile path always open in the direction of G5TP, and he has heard G4AP (Swindon) and G2AOK/A (Stow-in-the-Wold).

GM6WL (Glasgow) now has two 70 cm converters, the first a G3MY type and the other using push-pull mixing with two crystals, the idea being to cancel out oscillator noise. An 832 tripler provides for CC transmission, and the aerial is 5 two's stacked with an aluminium sheet reflector  $\frac{1}{4}$ -wave behind. This gear is giving results with GM6KH at Hamilton (13 miles).

Other items, in brief, are that G4RK (Coventry) is believed to have heard G2AOK/A on 430 mc; that G2ANT (Godalming) is a nice 559 with G2XC at

30 miles ; and that G2XC-G2QY have so far had no luck on a test-schedule.

An important point for those interested in crystal diodes for Seventycems is that types with CV numbers in the 200's are not likely to be much good at frequencies as high as 430 mc ; as an example, a good specimen of a CV226 gave excellent results in a medium-wave receiver and was much better than a CV103. But in a 70 cm converter the CV103 was 12 dB up on the CV226.

### The Tables

We have thought it right to re-state the standing records on the VHF bands, so that we all know where we are in these matters. It is tolerably certain that new records will be made during the next two or three months, both here and in the States. There seems to be a measure of general agreement that records made by climbing mountains to gain optical paths, though interesting when a new band is being opened, are of no real value as proofs of progress, because we all know that 3-centimetre signals have been heard at (relatively) colossal distances from high-flying aircraft.

This is the time to remind all interested that we want the final tidy-up on "Counties Worked since September 1, 1949" for the next issue ; will those who have a score to re-adjust please state it with the report for October.

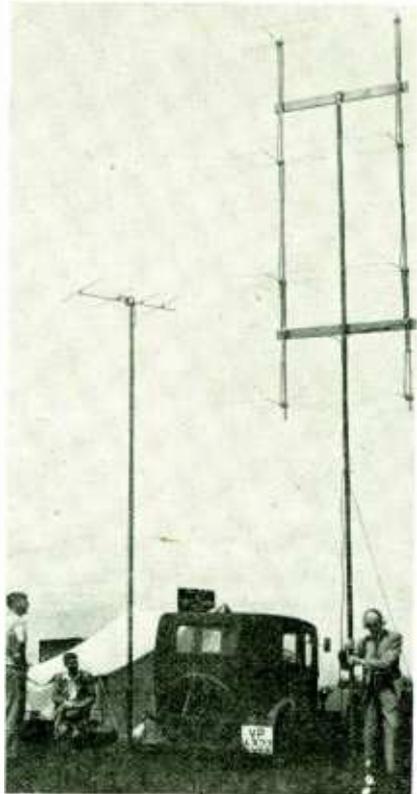
In connection with the "Two-Metre Activity Report" (Calls Heard, that is), it is really quite important to put in lists on sheets separate from the accompanying letter, arranged in numerical and alphabetical order, with call and location along the top and any other information at the foot. In fact, we call down blessings on the heads of those several correspondents who always succeed in making their lists look as they do in print here. The reason is simple : Such lists can be pasted straight down and are easily followed by the printers. The others have to be typed out by your obedient servant, and it is really work which could be unnecessary.

The "Best Twenty" is still a thorny topic with some, but this will have to be reconsidered on its merits. Incidentally, G3EHY (Banwell) is on top again for the second month running.

The "All-Time Counties Worked" is out this time because we want to get the 12-month affair finalised and then start off again with the all-time totals ; so please go on letting us have the scores—and when claiming, please make it absolutely clear which table your score is for ! A note which says simply "One more for Counties Worked" can be ambiguous.

### Finally—

So there it is for this month. The present



For the /P affair on July 2, G8QY/P ran this elaborate 144 mc aerial system. They were 4 miles S.E. of Hay (Brecs.) on a good site. But results were marred by generator noise in the receiver, which was a great pity as considerable trouble had been taken with the organisation of the G8QY effort.

scribe can only say he has done his best to get the story right and thanks you for listening, so to speak.

The dreaded dead-line for October must be September 13 latest, which makes it tight, but next month's publication date is early. Please address all your news, views, criticisms, ideas, suggestions and results to E. J. Williams, B.Sc. (G2XC), *Short Wave Magazine*, 53 Victoria Street, London, S.W.1.

And, by the way, during that big Aurora display during the period August 19-21, did anyone shoot due North on two metres in trying to work stations in other directions ? And if so, what happened ? Remember, this was a good thing to do on five metres during the auroral manifestations.

## G1BF HERE

### Happy Days !

**A**FTER last month another letter from Zone 16 saying Ur feature alone worth the money. Editor very sour about this but take no notice Theme G1BF now picked up by yellow press. *Daily Shriek* says OMØTO (this of course is me G1BF) typical example British enterprise. *Evening Howl* all plaudits with some guff about Brilliant approach science by Modern British Youth (do not understand this as am nearly 70 and browned off). But *Communistratzblah* takes very different view arguing this column contrary best interests hungry proletariat fighting for freedom self-expression.

Heavy mail includes rude letter from SUSIE saying Not on sked any more and Do not want ur QSL so QRT as QRU es hr nw QRX nice operator MOIFFI wid real FB char-chip-char-chip char-char-chip-char tone. Oh, well, it was ever thus. Though nonplussed this rebuff am cheered by letters from new DX chums DRIP, SPØOK, GHØUL, CLØT and type signing KY6AA ("double A's always convincing") even though suspecting some of them phoney.

Interesting rig at DRIP—he uses 50 watts to water-cooled PM2A and whole Tx controlled by o/c relay operated by system pulleys and weights. This real technical gen right up my alley. CLØT has FB ant system consisting fixed beam buried in garden; elements project into neighbour's garden producing parallel bands dark growth much to bewilderment neighbour.

My duty now to pass on to beginners clever

#### CARDS IN THE BOX

Here is the current list of those stations of which we would like the full postal addresses, as we hold cards for them in our Bureau. Please forward a large S.A.E. to BCM/QSL, London, W.C.1 (by itself a full and sufficient address and the only one for the QSL Bureau operated by us), and the cards will be forwarded with the next G delivery. Callsign/addresses can also be inserted in "New QTH's" if a note to that effect is made when sending envelopes; this will ensure eventual appearance in the *Radio Amateur Call Book*.

G2ATG, 2BDL, 2BFR, 2CDM, 2CQP, 2CZY, 2DWY, 2FN, 2HV, 3BPX, 3CWB, 3EAE, 3FRS, 3FZI, 3GRL, 3GSP, 3GWN, 3GYL, 3JA, 5GJ, 5JX, 6VR, 8ZY, GM2AUQ, 2MW, 3DB.

ruse invented by chum GHØUL to raise the Best Stuff. If super-DX comes on calls CQ and forms long queue he creates temporary diversion by calling CQ near DX station's frequency signing exotic call then drifting 30 kc off super-DX. Pack follows of course so GHØUL slips back and knocks off super-DX no trouble at all. This real operating know-how nearly up to best standard OMØTO (this of course is me G1BF). These chaps obviously taking intelligent interest this feature and understand importance of Getting the DX.

Have decided approach Editor for more space instead of printing stuff about TVI Suppression and How to Get Cracking on VHF and similar bunk. All this inimical best interests those readers wanting authentic gen on Getting Out. Have also decided ignore correspondent reporting he heard OMØTO trying to work "Voice of America" station on 15 mc BC band—it was Radio Moscow reference my cards held up in Box 88.

(We had hoped that Susie could fix him for us.—Editor.)

#### XTAL XCHANGE

Insertions in this space are free, but can be accepted only in respect of exchanges of crystals. Set out your offer in the form shown below, on a separate slip headed "Xtal Xchange—Free Insertion." All negotiations should be conducted direct.

**G2BAM**, Iwerne Minster, Blandford, Dorset. Has 3628.5 kc crystal,  $\frac{1}{2}$ -in. pin spac<sup>ing</sup>, no certificate. Wants similar crystal about 3530 kc.

**G3AAJ**, 385 High Street North, London, E.12. Has 465 kc band-pass unit, 1000 kc bar, and crystals for 3465, 3575, 3735, 6522.9, 6547.9 and 7075 kc. Wants Service-type crystals,  $\frac{1}{2}$ -in. pin spacing, in 1.7 and 3.5 mc bands.

**G3EAY**, 192 Colchester Road, Leyton, London, E.10. Has G.E.C. 3-pin 1000 kc bar, no certificate. Wants 100 kc bar or 1.7 mc crystal, any pin spacing.

**G3ELG**, 37 Sough Hall Road, Thorpe Hesley, Nr. Rotherham, Yorks. Has two 500 kc bars,  $\frac{1}{2}$ -in. pin spacing, and 8112.5 kc crystal. Wants frequencies 7000-7030 kc or 7110-7150 kc,  $\frac{1}{2}$ -in. mounting.

**G3GBO**, 9 Oxford Gardens, Denham, Nr. Uxbridge, Bucks. Has 6025.5 kc crystal,  $\frac{1}{2}$ -in. mounting, and 7022 kc,  $\frac{1}{2}$ -in. pin spacing, no certificates. Wants 1810-1890 kc,  $\frac{1}{2}$ -in. mounting, and 6 mc crystal to fall 144.75-144.90 mc when (x 24).

**G3GHB**, 31 Franklin Road, Birmingham, 30. Has ex-Service 6010 kc crystal,  $\frac{1}{2}$ -in. pins. Wants 7020-7035 kc frequency,  $\frac{1}{2}$ -in. or  $\frac{1}{4}$ -in. mounting.

**SWL**, 16 Silverbirch Road, Solihull, Warwickshire. Has 2415, 2435 and 3870 kc crystals,  $\frac{1}{2}$ -in. pins. Any or all offered for 100 kc bar, any mounting, with certificate.

## NEW QTH'S

This space is available for the publication of the addresses of all holders of new U.K. callsigns, as issued, or changes of address of transmitters already licensed. All addresses published here are reprinted in the quarterly issue 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.

- E18A** A. MacNamara, 55 Fitzroy Avenue, Drumcondra, Dublin, Eire.
- G2AMX** C. D. Bailey, 34 Torrington Road, Ruislip, Middlesex.
- G2AZU** H. V. Upton, 8 Falcon Terrace, Whitby, Yorkshire.
- G2AZU/A** H. V. Upton, 30 Sholebroke View, Leeds, 7, Yorkshire.
- G2BAM** C. H. P. Verrinder, Iwerne Minster, Blandford, Dorset.
- G2BZI** P. T. Beard, 37 New Road, Ware, Herts.
- G3ABF** D. A. Mullen (ex-SU1DM), 44 Sussex Road, Maidstone, Kent.
- G3BDG** G. W. Whitehead, 836 Dagenham Road, Dagenham, Essex.
- G3BSJ** E. J. Theobald, 89 Wandsworth Bridge Road, Fulham, London, S.W.6.
- G3BTG** K. Fraser, 12 Fore Street, Bampton, Devon.
- G3DRF** N. Hall, 32 Cissbury Ring South, Woodside Park, London, N.12.
- G3DRF/A** N. Hall, 49 Government Road, Enfield Lock, Middlesex.
- GM3DWJ** R. Muir, A.M.I.E.E., 20 Peddie Street, Dundee, Angus.
- G3ESI** H. Seed, 13 Denford Avenue, Church Road, Leyland, Preston, Lancs.
- G3EYV** N. P. Murrell, 29 Innom Road, London, S.W.4.
- G3FFC** A. Cave, 187 Hallam Crescent East, Braunstone, Leicester.
- G3FKJ** W. F. Jeffery, 94 Gubbins Lane, Harold Wood, Romford, Essex. (Tel.: *Ingrebourne* 2573.)
- G3FOT/A** K. E. Broughton, The Beehive Tea Rooms, Banwell, Somerset.
- G3FSY** W. T. Whettall, 94 Cannock Road, Pye Green, Hednesford, Staffs.
- G3FUT** F. J. Hawke, Holne Brake, Manaton Road, Bovey Tracey, Devon.
- G3FVM** J. Marland, 5 Rupert Street, Rochdale, Lancs.
- G3GBO** D. T. Bradford, 9 Oxford Gardens, Denham, Uxbridge, Bucks. (Tel.: *Denham* 2019.)
- G3GCC** P. H. Chapman, Roadside, North Road, Hemsby, Gt. Yarmouth, Norfolk.
- G3GOH** J. W. Reed, 27 Co-op Street, Shildon, Co Durham.
- GM3GOW** Sgt. D. Wood (VS2BY), Royal Signals, Goosecroft Drill Hall, Stirling. (Tel.: *Stirling* 808.)
- G3GPS** P. G. Burrows, 255 Folkestone Road, Dover, Kent.
- G3GRC** R. J. T. Athey (ex-ZE3JA), 1 Gunter Grove, Chelsea, London, S.W.10.
- G3GRQ** C. S. Hebden, 11 Berkeley Avenue, Greenford, Middlesex.
- G3GRW** E. H. Goldsmith, 34 Amoy Street, Southampton.
- G3GSI** B. S. Atkinson (VP9Q), Old Barklye, Broad Oak, Heathfield, Sussex.
- GW3GSJ** E. E. Hewins, 65 Glamorgan Street, Barry, Glam.
- G3GSK** S. T. Chisholm (VE3ATU), Royal Signals Wing, School of Signals, Caterick Camp, Yorkshire.
- G3GSO** T. W. Bryan, 16 Hardwick Street, Derby.
- G13GSI** R. Shaw, 31 Grays Hill, Bangor, Co. Down.
- G3GSV** F. J. Taylor, 244 Chorley Old Road, Bolton, Lancs.
- G3GSZ** J. S. Tempest, Old Hall, Hutton Henry, Castle Eden, Co. Durham.
- G3GTC** F. Wilson, 64 Brown Edge Road, Buxton, Derbyshire. (Tel.: *Buxton* 1272.)
- G3GTD** The Wymondham Modern Secondary School Radio Club, Wymondham Modern Secondary School, Norfolk Road, Wymondham, Norfolk.
- G13GTG** J. E. Egar, 2 Fortfield Villas, Greenisland, Co. Antrim.
- G3GTH** E. R. Cooper, 90 Hillfield Road, Hampstead, London, N.W.6. (Tel.: *HAM* 6418.)
- G13GTR** R. B. McKinty, Benroy, Cloughfern, Whiteabbey, Co. Antrim.
- G3GTU** N. A. Loake (ex-V31CU), 21 Harrington Road, Desborough, Northants.
- GM3HBY** A. G. Hornby, 93 Croftfoot Road, Glasgow, S.4.
- GW3KY** I. Jones, Brixton Mount, Holyhead, N. Wales.
- G4QO** A. Collins, 62 Hill Top Road, Northfield, Birmingham, 31.
- GM3YW** G. Luke, 22 Marionville Drive, Edinburgh, 7. (Tel.: *Edinburgh* 75058.)
- Y13ECU** W. W. King, Officers' Mess, R.A.F. Station, Basrah, British Forces in Iraq, M.E.A.F. 20.
- ZE3JM** C. B. Phillips (ex-G4JF), Box 99, Umtali, Southern Rhodesia.
- CHANGE OF ADDRESS**
- DL2GU** E. G. Styles, 76 Brownlow Road, Bounds Green, New Southgate, London, N.11.
- G2AHT** J. W. Elliott, 73 Pinewood Drive, Blechley, Bucks.
- G2BW** L. C. Snowden, Leyburn, Silverdale Avenue, Walton-on-Thames, Surrey.
- G2CDN** R. J. Toby, 7 Prospero Road, Archway, London, N.19.
- G2DVD** W. L. Rimmington, Batwells, Hayes Lane, Slinfold, Sussex.
- G2VV** J. N. Roe, M.I.R.E., F.R.S.A., 28 Darby Crescent, Sunbury-on-Thames, Middlesex. (Tel.: *Sunbury* 176.)
- G3ACQ** H. J. Harmsworth, 10 Acacia Drive, Laburnam Avenue, Hull, Yorkshire.
- G3AIM** L. S. Wright, 36 Conleach Road, Speke, Liverpool, 19.
- G13A0B** J. J. Smyth, Strathleven, Toome Road, Ballymena, Co. Antrim.
- G3AWU** C. A. White, South Point, Limes Road, Folkestone, Kent.
- G3BKL** R. Bland, 87 East Morden, nr. Wareham, Dorset.
- G3CEI** C. W. Brown, 33 Manville Road, Balham, London, S.W.17.
- G3CNX** Grimsby Amateur Radio Society, Bk. 50, Welholme Road, Grimsby, Lincs.
- G3DUC** E. H. Williams, 12 The Arrowry, Hanmer, Whitchurch, Salop.
- G3EGD** S. G. Harmer, 19 Cameron Drive, Waltham Cross, Herts.
- G3EHS** D. Cairns, 16 Bolland Street, Barnoldswick, Via Colne, Lancs.
- G3FEP** C. Williams, 24 High Street, Oakley, Beds.
- G3FMZ** B. R. Brown, 8 Harewood Avenue, Eastburn, nr. Keighley, Yorkshire.
- G3FNK** C. Dri nkwater, 79 Hillsway, Littleover, Derby.
- G5QL** F. Herrington, 3 Longford House, Brangbourne Road, Bromley, Kent.
- G5TN** W. C. Holley, Waverley, Worebury Hill Road, Weston-super-Mare, Somerset.
- G6CP** J. Cooper, 6 Carrside, Eastfield, Scarborough, Yorkshire.
- G8WF** D. Westwood, 5 Carrholm Grove, Chapel Allerton, Leeds, 7, Yorkshire.

# Here and There

## National Radio Exhibition

The 17th Radio Exhibition opened at Castle Bromwich Birmingham, on September 6, and will continue till the 16th of the month. The 90 exhibitors include the best-known names in radio, electronic equipment, valve, television and component manufacture, and the R.A.F., the G.P.O. and the B.B.C. are also well represented. There is a special "Hall of Television" with live reception demonstrations, and the rehearsal and performance of actual sound and TV programmes can also be watched. Special transport facilities out to Castle Bromwich have been arranged and altogether everything possible has been done to make this Exhibition as attractive and as interesting as those held previously in London.

## Henry's of Harrow Road

In the advertisement appearing on p. 402 of our August issue, the item under the heading "Aluminium Sheet" should read three sheets for 10s., and not as printed.

## 6F12 Equivalents

The article by G5UM appearing in the July *Short Wave Magazine* has inspired several suggestions that we should publish a full list of 6F12 equivalents. So here they are: Mazda 6F12, Mullard EF91, Cossor SP6, Marconi-Osram Z77, Brimar 8D3, American 6AM6, and Service CV138. We hope that this is the lot, though readers who know will undoubtedly correct us if any have been overlooked. Basic information and characteristics can be obtained from any of the manufacturers named in this list.

## Slight Kick

It is often put about (and perhaps more so recently as we have not previously alluded to these matters) that the *Short Wave Magazine*, being a "commercial publication" operating in the Amateur Radio field, conducts its business in such a way as to suit itself rather than what are held to be the best interests of its readers. It is also said that we did not continue publication during the period of the last war because it was not convenient to us to do so, the

implication being that we waited to come in again on the crest of the wave, so to speak.

The brief answers to these disparaging innuendoes are that (with the exception of local club journals) *any* Amateur Radio periodical, whether public or circulated on a "members only" basis, must be run in a business-like manner if it is to be of any value to its readers; hence, and in spite of all protestations to the contrary, it tends to become a commercial undertaking in a competitive field. The American Radio Relay League's *QST* is a perfect example; the commercial standing and financial success of *QST* sustain the whole fabric of the League, and *QST* is the only reason why the ARRL has such a large body of overseas members.

That the *Short Wave Magazine* ceased to appear during the war was because of the simple fact that all active members of our staff were called up before it started, having obligated themselves to the Services in various ways during 1938-39. Plans were in hand for the re-appearance of the *Magazine* well before the first release was obtained, and our March 1946 issue was the result of three months' preparatory work. (No "release leave" was taken, either!)

As for the preposterous suggestion that being a "commercial" undertaking we run the *Short Wave Magazine* to suit ourselves, the best answer to that is surely the *Magazine* itself—to say nothing of the extent to which it is being plagiarised in style and content! The fact is, of course, that such progress as we have been able to make during the last four years has only been possible because we *do* try to conduct all our operations in what we believe to be the best interests of our readers as a whole.

## RF Yardstick

In a station that we know, a glow discharge tube about a yard long (of the kind often used for lighting purposes) is propped up with one end near the aerial tuning panel. When the tube is filled with light, the aerial is at resonance and the transmitter tuned dead on the nose. But these conditions do not obtain if that yard of RF is not showing!

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*The Short Wave Magazine is now in its Eighth Year*

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# The Month with the Clubs

FROM REPORTS RECEIVED

By now the Rules and Entry Form for the Fifth Annual "MCC" will have been sent to the Secretaries of some 80 Clubs. The circulation list was prepared from those Clubs reporting to us more than once during the last eight months.

One or two others have since emerged from a dormant state and have sent in another report, but they would not have appeared on our Active List at the time it was prepared.

So any Club Secretary *not* having received a copy may, of course, apply for one.

Will all interested in this year's Contest please note that we want to publish an "acceptance" list in the November issue (the Contest will take place between November 11 and November 19). In order to make this list as complete as possible, we require advice of entry by *October 10 at the latest*. This gives Clubs nearly five weeks from now to organise themselves. So go to it—discuss the matter, decide to enter (or not to) and let us know as soon as possible, and certainly not later than October 10. Don't forget to state the call-sign that will be used.

And herewith follow this month's reports, from 32 Clubs. The deadline for next month will be first post on September 12. And the date for the November issue (when we want your MCC entry) will be October 10. Address them to "Club Secretary," *Short Wave Magazine*, 53 Victoria Street, London, S.W.1.

**Brighton and District Radio Club.**—Meetings continue on Tuesdays, various talks and informal evenings comprising the current programme. The Club Tx, G3EVE, is active on the informal evenings (CW and Phone on 3.5 mc). A new HRO has been purchased and has improved the station considerably. A Hamfest in Brighton during October is being discussed.

**Bristol and Bath Television Club.**—This Club, with a membership of 30, has been running for twelve months and meets on alternate Tuesdays. A good series of lectures has been arranged for the coming months, together with demonstrations of members' receivers. Meetings are at 7.30 p.m., Keene's Café, Cannon Street, Bedminster, Bristol 3, next after publication being September 19.

**BTH Radio and Television Section.**—Summer activities have been limited to D-F Field Days. An open contest was held in July and many other Clubs were invited, although only one responded. Slade were beaten by the home team, but managed a second place! The final contest will be on September 23, for the Club Shield.

**Chester and District Amateur Radio Society.**—The Club Tx G3GIZ has been on the air many times, and it is proposed to make it a regular feature of the weekly meetings. Morse classes start at 6.30 and the regular meeting at 7.30—every Tuesday in the Tarran Hut, YMCA Grounds, Chester. Some conducted trips have been arranged for the coming season, as well as a full series of lectures.

**Edinburgh (Lothians) Radio Society.**—The new season begins on September 7 and fortnightly meetings will continue from then—7.30 p.m. at 25 Charlotte Square, Edinburgh. An interesting programme has been drawn up, and Morse classes will be held at each meeting. A feature will be a series of constructional lectures on television, to be given by GM3BBW in anticipation of the (eventually) forthcoming TV service for Scotland.

**Grimsby Amateur Radio Society.**—Activity on the 3.5 and 7-mc bands continues and the Club hopes to be on the Top Band very shortly. Dr. H. D. Whiteley has been elected as President. Weekly meetings continue, but attendances are reported as poor, probably on account of the season of the year.

**Radio Society of Harrow.**—The Club Tx is now operating on 70 cm. as well as the other bands, and several contacts have been obtained. The holiday season has caused a slight drop in attendances, but they still number about 30, with a membership of between 60 and 70. The youngest member, recently joined, is 12 years of age.

**Coventry Amateur Radio Society.**—Recent meetings have included a Quiz Night, a Hints and Tips Night, and the joint MARS/CARS Field Day. It is hoped that G6CJ will be presenting his lecture on Aerial Systems during the autumn, and in view of its popularity the Club is arranging for it to be held at the local Technical College. Full details later.

**Eccles and District Amateur Radio Society.**—Meetings continue every Monday evening at the Eccles House Club. For the past few weeks Mr. H. Knowles has been lecturing on Radio Mathematics, and the series will be followed by another on Radio Theory. These are to serve as a refresher for members taking the C. & G. examination and course. On September 9 the Club visits the Radio Exhibition at Castle Bromwich.

**Midland Amateur Radio Society.**—At a recent meeting G2RQ gave an interesting lecture on the Taylor Super Modulation System. This with a demonstration of the system with home-built equipment, is reported as causing many members to start disposing of their 6-ft. racks! Next meeting, at the Imperial Hotel, Birmingham, is on September 19.

**Paisley and District Short Wave Club.**—New members will be welcomed to this Club, which meets at 39 Oakshaw Street, Paisley, on Saturday nights at 7.30. The Club Tx is GM4KM, active on 28 and 14 mc from the highest part of the town, although rock-bound at present. A VFO is under construction by GM3FDN.

**Reading Radio Society.**—Indoor activities have been somewhat quiet of late, and meeting have included a Junk Sale, a discussion with local Radio traders, and collaboration with the Police in their Crime Prevention Exhibition. Interesting visits are planned for the future, and on September 3 there is a trip to the seaside, largely for XYL's, friends and children.

**St. Albans Radio Society.**—Forthcoming subjects for meetings are as follows: September 13, "70 cms Demonstrations"; September 27, "Oscilloscopes" (Demonstration); October 11, "Stable VFO's." The fortnightly meetings start at 8 p.m. at "The Beehive," Keyfield, London Road, St. Albans. It is hoped to set up a Club Tx on 2 metres very shortly, and parts have already been given by members.

**Scarborough Amateur Radio Society.**—This Club has now found a permanent HQ at the LNER Rifle Club Rooms, West Parade Road, Scarborough, and new members and town visitors will be made welcome there every Thursday evening at 7.30. Future plans include the building of a Tx and Rx to comprise a Club station. Considerable 2-metre interest is apparent since a recent Field Day, and lectures

on UHF are expected in the near future.

**South Manchester Radio Club.**—July and August were very active months. An idea that has been introduced is that of having a Quiz at each meeting, with five questions. A prize of 5s. is awarded, to be carried on to the next meeting if no one wins. G3BMF has given the Club a cup for an Annual DX Contest. Forthcoming events: September 15 Comparison of two types of Communications Receiver.

**Spenn Valley Radio and Television Society.**—Fortnightly meetings will be resumed at the Temperance Hall, Cleckheaton, starting on September 20, with a lecture on "Recording the Brain." The subject for October 4 is Magnetic Tape Recording. A full programme has been arranged, right through to next spring and summer, with lectures, demonstrations and social functions.

**Surrey Radio Contact Club.**—For the August meeting this Club had the good fortune to locate several overseas amateurs, and they were given very interesting talks by VQ4CRE, VK2AIP and ZS5YF. It is hoped that ZL1QX will be present at the next meeting.

**Sutton and Cheam Radio Society.**—The Club Tx is now on the air, with the call G3GFA. Meetings start again on September 5, when Mr. K. Boxall will talk on the "Helschreiber," as used by Reuters and other news agencies. Thereafter, meetings will be on the first and third Tuesdays at the Sutton Adult School.

**Thanet Amateur Radio Society.**—Meetings are now held every Friday, 8 p.m., at St. Peter's Church Hall, Broadstairs. Every week an item of interest is arranged, and plans are well advanced for the Club Tx, G3DOE, which will be on the air soon. Morse classes are a weekly feature, and visitors to the district will be welcomed on Friday evenings.

**Warrington and District Radio Society.**—This Club has arranged an Inter-Club Top Band Telephony Contest for Sunday, September 24. The Times of operation are 1500-1700 and 1900-2200. Copies of the rules will be sent to any Club in the Lancs/Cheshire area on application to the Hon. Sec. Listeners in the same area are also catered for, and the sender of the best log will be presented with a very worth-while prize (value about £2).

**Wirral Amateur Radio Society.**—Recent activity has been devoted to D-F Contests, and some very interesting and enjoyable events have been held. Brains Trusts and lectures have also been on the agenda. September meetings are on the 6th and 20th, and the AGM on October 11, all at Room 3, YMCA, Whetstone Lane, Birkenhead, at 7.30 p.m.

**Worthing and District Amateur Radio Club.**—The AGM will be held on September 11, 7.30 at the Adult Education Centre, Worthing. The "Bucket-and-Spade" party, scheduled for August 27, will be a thing of the past by publication date; we hope the weather was fine! From September 4 to 9 the Club runs a stand in the Model Engineering Exhibition at the Assembly Hall, and there will be a station working on 7 and 1.7 mc, a home-built TV set and a Museum Section.

**Yeovil Amateur Radio Club.**—This Club's station, G3CMH, recently handled an SOS for medical supplies from a DL3, and received considerable publicity, as a result, from the West of England newspapers and the West Region of the BBC. Power is now being increased to 50 watts, and a 274-ft. aerial is in use already. At the same time the Tx is being modified for the 28-mc band.

**Bradford Amateur Radio Society.**—Informal meetings during the summer have been well attended. The AGM will be held at Cambridge House, 66 Little Horton Lane, on September 12, 7.30 p.m. Details of the new syllabus

will be available, and all old and new members will be welcome.

**Cambridge and District Amateur Radio Club.**—There will be a meeting at "The Jolly Waterman" on September 15 at 8 p.m., when Mr. C. Terry will talk on The Radio Control of Models. Mr. Terry has done extensive work in this direction and a good attendance is hoped for.

**East Surrey Radio Club.** The August meeting was the last in the old Headquarters, and future meetings will take place at the Barn Room, 8 Lesbourne Road, Reigate, the next being on September 7 at 7.45 p.m., when G2MV will talk on HF and LF impedance matching. In October the Club holds a DX receiving contest for the G5LJ Trophy. New members will be welcomed at any meeting.

**Kingston and District Amateur Radio Society.**—Meetings are still well attended; the Shack has now been fitted with benches and has a supply of tools. Morse practice is in progress, and

four members have passed the R.A.E. A new feature of meetings is called "Circuit for To-Night," and consists of a fifteen-minute discussion on some circuit of interest. Next meetings are on September 13 and 27, Penrhyn House, at 7.30 p.m.

**Mid-Cheshire Radio Society.**—This Club's first meeting was held on August 10 in a large wooden "shack" purchased by members. Officers were elected, and a series of lectures organised for the coming winter. It is hoped to get the club Tx on the air as soon as the mains are in, after which things will be in full swing. Meetings are on alternate Tuesdays and Thursdays—full details from the Hon. Sec., whose QTH is in the panel.

**Wanstead and Woodford Radio Society.**—A recent Field Day went well, in spite of mixed weather. The next event the members are looking forward to is MCC! The Hon. Sec. would like all old Club Members to drop him a line so that he can forward them details of the winter programmes.

**Salisbury and District Short Wave Club.**—This Club, with its station G3FKF, is now in new premises at South Street, Wilton, and meets on Tuesdays at 7.30 p.m. The Tx is active on 3.5 mc with occasional excursions into the other bands. In the coming months, some slow Morse classes will be given by G2FIX at meetings, and at 2100 on Sundays on the Top Band.

**Edinburgh Amateur Radio Club.**—A series of RAE classes will begin with the new session, which starts in September. Morse classes will also be formed, and anyone wishing to take advantage of the courses is asked to get in touch with the Hon. Sec. as soon as possible. The AGM will be held on September 13.

**Stourbridge and District Amateur Radio Society.**—Good attendances continue here in spite of the holiday season; at the August meeting, G3CLG and G4MI gave a most interesting and instructive talk, with a practical demonstration, on the subject of 144 mc operation.

#### NAMES AND ADDRESSES OF CLUB SECRETARIES :

BRADFORD : V. W. Soven, G2BYC, Rushwood, Grange Park Drive, Cottingley, Bingley, Yorks.  
 BRIGHTON : L. Hobden, 17 Hartington Road, Brighton.  
 BRISTOL AND BATH TV : J. Archer, 100 Beaulay Road, Southville, Bristol, 3.  
 BTH, RUGBY : Radio and Television Section, BTH Recreation Club, Rugby.  
 CAMBRIDGE : T. A. T. Davies, G2ALL, Meadow Side, Comberton, Cambridge.  
 CHESTER : R. Windsor, 17 Hough Green, Chester.  
 COVENTRY : K. Lines, G3FOH, 142 Shorncliffe Road, Coventry.  
 EAST SURREY : L. Knight, G5LK, Radiohme, Madeira Walk, Reigate.  
 ECCLES : E. Rayson, 11 Hartington Road, Winton, Lancs.  
 EDINBURGH : D. A. E. Samson, GM3EQY, 56 Elm Row, Edinburgh, 7.  
 EDINBURGH (LOTHIANS) : I. Mackenzie, GM3FGJ, 41 Easter Drylaw Drive, Edinburgh, 4.  
 GRIMSBY : W. Atkinson, 43 Sidney Road, Grimsby.  
 HARROW : S. C. J. Phillips, 131 Belmont Road, Harrow Weald.  
 KINGSTON : R. Babbs, 28 Grove Lane, Kingston, Surrey.  
 MID-CHESHIRE : W. Houseman, G3GCU, 15 Snowdon Street, Barnton, Northwich.  
 MIDLAND : A. W. Rhodes, 135 Woolmore Road, Birmingham, 23.  
 PAISLEY : J. MacArthur, 9 East Buchanan Street, Paisley.  
 READING : L. Hensford, G2BHS, 30 Boston Avenue, Reading.  
 ST. ALBANS : D. Elliott, 38 Jennings Road, St. Albans.  
 SALISBURY : V. G. Page, 32 Feversham Road, Salisbury.  
 SCARBOROUGH : P. Briscoe, G8KU, 31 St. Johns Avenue, Scarborough.  
 SOUTH MANCHESTER : M. I. Wilks, G3FSW, 57 Lonrley Lane, Northenden, Manchester.  
 SPEN VALLEY : N. Pride, 100 Raikes Lane, Birstall, nr. Leeds.  
 STOURBRIDGE : W. A. Higgins, 28 Kingsley Road, Kingswinford, Brierley Hill, Staffs.  
 SURREY (CROYDON) : S. A. Morley, G3FWR, 22 Old Farleigh Road, Selsdon, South Croydon.  
 SUTTON AND CHEAM : R. I. Clews, G3CDK, 1 Hurstcourt Road, Sutton.  
 THANET : J. Barnes, G3BKT, 18 Grange Road, Ramsgate.  
 WANSTEAD : R. J. C. Broadbent, G3AAJ, Wanstead House, The Green, London, E.11.  
 WARRINGTON : J. Speakman, Davyhulme Cottage, Dark Lane, Whitley, nr. Warrington.  
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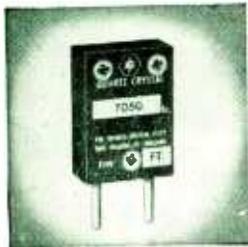
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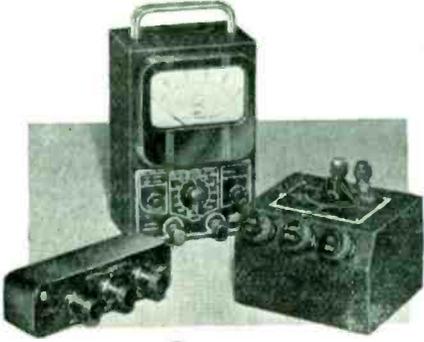
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 H.S.30. Input 200/250v. Output 300/0/300v. 80 m/a 17/6  
 H.S.3. Input 200/250v. Output 350/0/350v. 80 m/a 17/6  
 H.S.2.X. Input 200/250v. Output 250/0/250v. 100 m/a 19/6  
 H.S.30.X. Input 200/250v. Output 300/0/300v. 100 m/a 19/6  
 H.S.3.X. Input 200/250v. Output 350/0/350v. 100 m/a 19/6

**Fully Shrouded—**

F.S.3. Input 200/250v. Output 250/0/250v. 80 m/a 19/6  
 F.S.30. Input 200/250v. Output 300/0/300v. 80 m/a 19/6  
 F.S.3. Input 200/250v. Output 350/0/350v. 80 m/a 19/6  
 F.S.2.X. Input 200/250v. Output 250/0/250v. 100 m/a 21/6  
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H.S.6. Input 200/250v. Output 250/0/250v. 80 m/a 6-3v 6 amps C.T. 5v 3 amps. Half-shrouded... 24/6

For Receiver R1355

HS150. Input 200/250v. Output 350/0/350v. 150 m/a 6-3v 3 amps C.T. 6-3v 3 amps. Half-shrouded... 25/9

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## SMALL ADVERTISEMENTS

READERS'—continued.

SALE.—Eddystone 640 with matched speaker, £20.  
—78 Biddulph Mansions, Elgin Avenue, W.9.  
(CUNNINGHAM 6838.)

WANTED.—HRO GC Coil Pack for 80-960 mc/kc.  
Good price paid.—Ascoli, Letham, Angus.

BC348R with 230v AC power supply, first class condition, six new spare valves.  
£17. Premier VCR97 TV, complete with spare CRT, spare valves, cabinet, £20. Coils and metalwork for Wireless World superhet television receiver, £2. 20 copies Short Wave Magazine, 1949-1950, 12/-; 17 copies Short Wave Listener, 6/-.—Martin, 3 Cliff Avenue, Loughborough, Leics.

SWOP 40 watt Phone/CW rack Tx, super Power pack, for similar table Tx, 1-10 metre Rx.—65 Woodstock Gardens, Blackpool.

SALE.—Woden transformer DTM21 and choke DCS19, also Gardners transformer R148 and choke C240. Last two super jobs. Also Heayberd charger 2-6-12v lamp. All brand new, £14, or exchange for BC348, or sell separately.—Box No. 799.

WANTED.—Service handbook on Marconi B36 and R.A.F. Types 76 and 78 receivers. Or any information which would assist in putting into working order.—Box No. 798.

HALLICRAFTER S27 for sale.—Offers to Box No. 806.

BC221AH perfect, p/pack. American Tx 40/80 CW Phone, VFO needs attention. 1154 four band 150-watt Tx, 40/20/101. TU5B VFO. Offers? Wanted, BC212D, tape recorder, AR88, exchange.—Box No. 800.

R.1155 with p/pack, no o.p. stage, £5/10/-, RF26, 30/- Magazine "3 EF50," £2/10-. SX28, needs slight attention, £30. Carriage extra.—200 Bishopthorpe Road, York.

HAM and XYL, no children, require unfurnished flat, S.E. London area.—Please write under cover. W. A. Martin, G3FVG, 21 Brixton Hill, S.W.2.

AR88LF as new, £40 delivered. Type 31 electric motor generator, 15/-.—Atkinson, 29 Plains Lane, Elland, Yorks.

HALLICRAFTERS SX24, rood condition, with valves, xtal and manual, less speaker, requires realignment, £12/10/-. T.1154, new valves, meters, transit case, £5. Synchronous 12v vibrator pack, 7/6. 6v non-synch. with OZ4 rect., 12/6. 24-32v DC cut-outs, sealed packing, 7/6. Wood turning lathe "Red Triangle," new and unused, £6. All carriage paid.—Williams, 12 The Arrowery, Hamner, Whitchurch, Salop.

640 Eddystone as new, perfect condition, and performance excellent, only just out of guarantee, with Eddystone matching speaker, £21. Buyer collects.—L. F. Gasden, Torweigan, Halliford Road, Sunbury-on-Thames, Middlesex.

WANTED.—Unused, brand new, sealed boxed, AR88D or CR91. Not earlier model than August, 1944. Price, details.—G3DAM, Offenham Road, Evesham.

NEW BC610 spares, valves, PA coils, tuning units, relays, chokes, condensers, manual, cables, T.50 mike, speech amplifier, etc. Offers? Hallicrafters S36M (improved S27), new condition, manual, offers? —Box No. 802.

BC348/Q 230 AC speaker and phones, delivered £18/10/-. Also Taylor meter model 70a, as new, £9. Offers?—Hougham, 27 Foads Lane, Cliffsend, Ramsrate.

HALLICRAFTER SX17 for sale, xtal gate, S-meter, complete with matching speaker. Good working condition, but needs some adjustment.—W. Barclay, 35 Essex Park, Finchley, N.3. Offer or to arrange inspection Finchley 3390.

BC312 dynamotors (3), 12/235v 90 mA, 10/- each. 10H 600 mA chokes (2), 17/6 each. Promotor, £2. Wanted Variacs, 200CU or 100R.—Box No. 801.

SALE.—Eddystone 690 xtal calibrator, as new nearest £9.—Cairns, G3EHS, 16 Bolland Street, Barnoldswick, Via Colne, Lancs.

**SMALL ADVERTISEMENTS**  
**READERS'—continued**

**100KC** 1,000 kc G.E.C. twin xtals. 3 pin, brand new in box, 17/6. Brush xtal carpiace as used on deaf aids, 3" diameter, 5/-. Parmeko ex-W.D. two-stage amplifier, approx. 5 watts output; VP133 into PEN383, xformer input and output isolates chassis from main case, requires only 60 mA metal rect. for AC operation, or works from DC immed. In grey case with civilian appearance. New condition. Tested before despatch, 25/- plus carriage.—J. Wood, 192 Colchester Road, Leyton, London, E.10.

**WANTED**.—Aldis lamp, tilting mirror type, and spare bulbs. State condition and price.—G8KD, Newfield, Newfield Lane, Dore Moor, Sheffield.

**SUPER** de-luxe QRO transmitting station for sale in its entirety. Collins, RCA, and first rate BC610 transmitters covering 1 mc thro' 30 mc, complete with speech amplifiers. Variacs to work from 230v to 100v. Senior HRO receiver with noise limiter, and AR88 receiver frequency meter. Oscilloscope, Modern test equipment. Genuine enquiries only. Will arrange installation anywhere in Europe by arrangement.—Box No. 807.

**URGENTLY** wanted, buy or borrow, data booklet for BC348N. At present QRT owing to no Rx. All letters answered.—G3DVH, 5 Ashcroft Road, Dunstable, Beds.

**HALLICRAFTER** SX24. Excellent condition. Details on request. Best offer over £28.—K. C. Hawkes, 31 Garfield Road, Chingford. (Phone Silverthorne 1361.)

**ET4336** Tx by RCA. Complete with plug-in VFO and Xtal oscillator. Aerial tuning unit, 2 x 813 in final, power input 230v 50 cycles. Less speech amplifier and outer case. £30. Buyer collects.—Archard, Marton, Stoke Road, Taunton.

**BC221** built-in AC mains power pack, audio output, £14. Brand new 1155 receiver, £7/10/-. New 1154 transmitter, £7. Buyer collects.—E. Clapshaw, 369 Alexandra Road, London, N.10.

**WANTED**.—Valves, type CV53, CV153, CV257, CV288, CV290, CV397.—Details and price to G3APY, Wendover, Frederick Avenue, Kirby-in-Ashfield, Notts.

**FOR** sale.—AR88D, immaculate condition, superb performance, recently unpacked from maker's tropical packing, complete with cabinet, speaker, S-meter and manual, not ex-R.A.F., £42 or near offer. Free delivery London area.—100 Galloway Road, Shepherds Bush, London, W.12.

**WIRE** recording parts. Motor, reels, capstans, pulleys, cam 2 heads, brackets, bearings, £4/10/-.—P.P., G2FXA, 35 Kensington Road, Stockton-on-Tees.

**EDDYSTONE** 640 9-valve communications receiver, purchased new last Christmas, little used, faultless condition. Offers invited.—M. Rae, 31 Brangwyn Drive, Brighton 6. (Phone Brighton 52798.)

**URGENTLY** wanted. BC348 in good condition, preferably Double-ended model. Also FL8A filter.—Offers to Griggs, 55 Ramsgate Road, Margate.

**RECEIVERS** for sale. DST100 14-valve double superhet, internal power pack, 10-3000 metres, needs slight attention, £10/10-. RCAAR77 110-250 AC, working order, 10-600 metres, going cheap, £12/10/-. Both carriage paid. No callers, please.—Write S. Gabriel, 10 Abbotsford Place, Glasgow, C.5.

**19" RACK**. 1" angle iron, 6' 3" x 17 1/2" deep. Undrilled, 30/-.—Barton, Friargate, Penrith, Cumb.

**AR88D** or AR88LF wanted. Must be in good mechanical and reasonable electrical condition.—Please give details and price to Box No. 804.

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VALVES. 3A4, 3B4, 6AG5, 6/6; 6J6, 6/6; 6AM6 (8D3) T.V. pentode, 10/6; 6AL5, 6/6; VU111, 6/6; VR78 (D1), 3/6; VR92 (EA50), 3/6; 6J5GT, 4/-; 6N7GT, 6/6; 955, 956, 4/6; AC5Pen (NR74), 6/6; 5T4, 7/6.

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POWER PACKS—EDDYSTONE. In smart grey crackled cases, 12" x 4½" x 5½". Input 200-250v AC 50 cycles. O/P 175v 60 ma DC. 12-0v 2-6 amps AC. Double smoothed with 2, 10K. broadside 4 chokes, triple 8 mfd 500v paper condensers, 5Z4 rectifier. Ideal for that new VFO or pre-amp. A real GIFT at only 38/6 ea. O.P. U.K. 3/- extra to Euro or C.I. Limited quantity.

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### SMALL ADVERTISEMENTS

#### READERS—continued

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**BC.610** wanted by W. Ham. Quote reasonable price and condition. Air Mail.—Lt.-Col. Chas. E. Spitz, American Embassy, Oslo, Norway.

**HRO** Senior, professionally improved, limiter, stab. osc., high gain RF's, seven coils, nearest £25.—Neale, 15 Woodbank Road, Downham, Bromley, Kent.

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**S.20R** Hallcrafters, good condition, £14/10/-, complete with phones.—G. Kirby, 25 Annesley Avenue, Colindale, London, N.W.9.

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**FOR** sale.—Hambander receiver, two 38-sets, £9 the lot.—E. G. Green, 42 Queens Road, Slough, Bucks.

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Brand new. 50v, 50 c/s, 3-phase motor rated for continuous use. By means of the resistor and condenser included with the motor, it can be operated from the standard 200-250 AC mains supply. Full wiring instructions are given together with details for securing rotation in either direction. Reversing switch, 2/- extra. **15/- (carr. paid)**

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A BRAND NEW unit incorporating a 10 cm. Klystron tube type CV67. Also with EF 50, 5U4G, CV88 and 3 neon-stabilisers. Power supply incorporated. Wt. 35 lbs. Size 18" x 8 1/2" x 7 1/2". **ONLY 20/-** (Carr. and pkg., in wood crates, 7/6.)

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### R. 1355 BRAND NEW

For that inexpensive Television Receiver; while they last.

**ONLY 52/6**

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A special purchase of an impedance matching unit enables us to offer a pair of brand new DLRI headphones and a matching unit at this bargain price. The DLRI Headphones are 30 ohms per earpiece, diaphragm type. By use of the match-BRAND NEW ing unit supplied they can be used for all applications requiring high-resistance phones. **5/3**

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**15/-** Callers only

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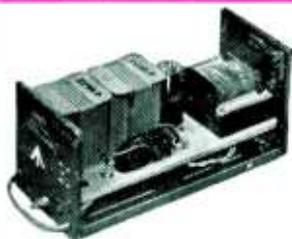
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This compact power pack by Stratton Co. is complete and ready to be connected to A.C. Mains from 0-200 to 250v 40-60 c/s A.C. With an output of 175v H.T. D.C. at 60 m/a and an L.T. supply of 12.5v at 2.5A.

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A necessity in any experimenter's workshop or "Hams" shack. Extremely useful for use with the SHARP CHANNEL Q5'er and many other surplus units requiring a 12-v heater supply, including P.40 Receiver.

Totally enclosed in a louvred metal cabinet 11½" x 5½" x 4½" finished in grey.

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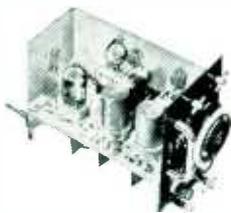
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