The SHORT WAVE Magazine

1/6

EXCLUSIVELY FOR THE RADIO EXPERIMENTER & TRANSMITTING AMATEUR

VOL. V No. 7 SEPTEMBER 1947

Versatility

The advantages of using a versatile valve — and an economical one at that — should not be overlooked by the "25-watter". Take the Mullard QVO4–7 for example.

In a 25-watt transmitter this valve can be used in every stage except the modulator. So instead of carrying several spares, one — or at the most two — are all you need.

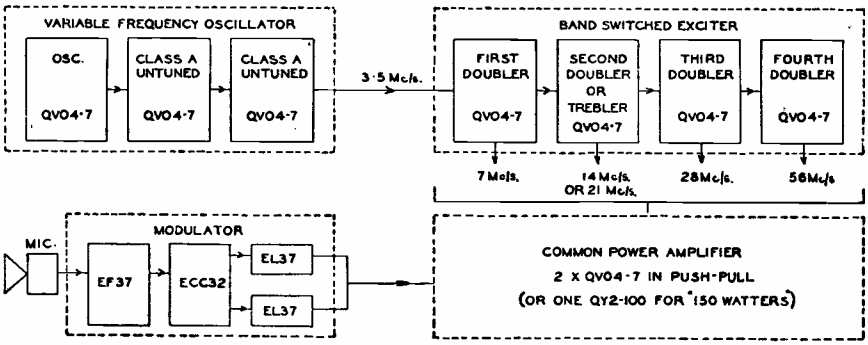
Another advantage is in the power pack. The QVO4–7 (anode dissipation 7.5 W, cathode current 50 mA) only requires 300 volts H.T. That's *real* economy.

When it comes to performance, the efficiency of the valve is well maintained up to 150 Mc/s. And although two QVO4–7's in push-pull will give you all you need as a "25-watter", the only change necessary when you get your 150 watt licence will be in the P.A. stage. There is sufficient power available from each stage of the Band Switched Exciter to drive a QY2–100 (813) using *high Q doubler circuits*. It is advised, however, that the original 25-watt transmitter be used as the exciter which would have the following advantages:

1 25-watt transmitter immediately available on all bands including 5 metres.

2 Low Q wide band doubler circuits are permissible since ample power is available from 2xQVO4-7 in push-pull to drive one or two QY2-100's as the P.A.

This diagram explains it all



A note to the address below will bring you complete data on the versatile QVO4-7. If you are interested, please also ask for folder MV784 which gives details and prices of the complete Mullard Amateur Range.

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CONTENTS

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EDITORIAL

Achievement

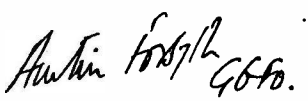
In Amateur Radio, as in so many other branches of human endeavour, there is ample scope for the competitive element. To some, competition is as the breath of life, and many strive almost to breaking point to achieve that pre-eminence that puts them—or seems to put them—above their fellows.

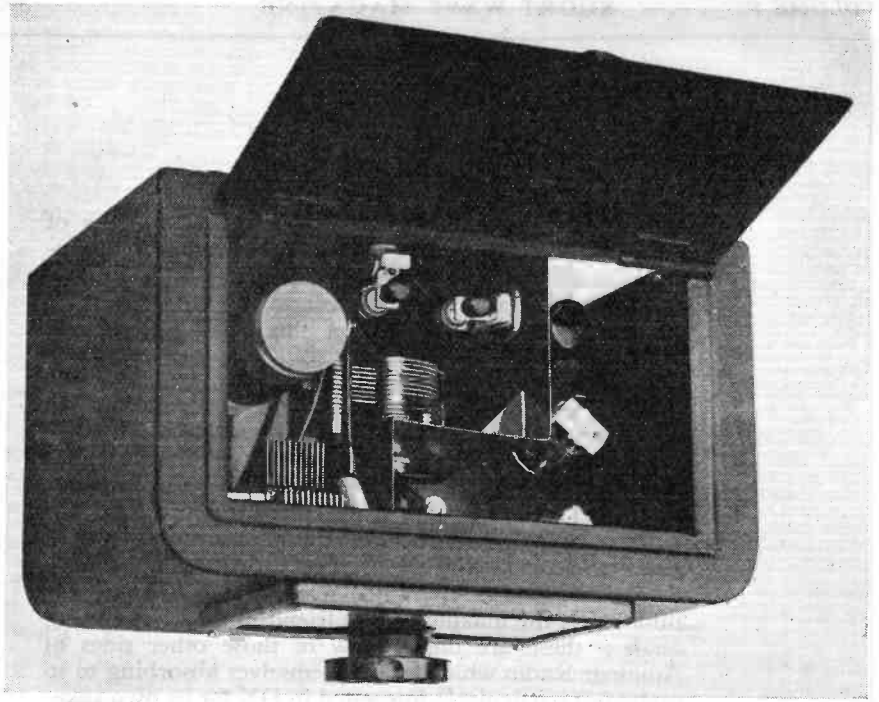
In our particular sphere of activity, this process of " competitive selection " finds its expression in DX working. But as the best of its exponents will always agree, DX is not in itself the only thing that matters in Amateur Radio. There are other aspects of the game that are equally interesting and quite as important, all of which make their contribution to the fabric of the whole—design and construction, the overcoming of particular difficulties, the making of new friendships, the operating angle ; these are only a few of those other sides of Amateur Radio which are in themselves absorbing to so many not particularly interested in DX for its own sake.

The newcomer may feel a little bewildered about it all in that he may be led to suppose that it is to successful DX working that all operators aspire. Not so ; there are many doing much in Amateur Radio who never work any DX and indeed are seldom heard on the air at all.

Thus, there is plenty of scope in all the various branches of Amateur Radio activity, and each individual should develop in the direction which he may find most interesting.

Though communication is the life-blood of Amateur Radio and DX is its expression, there is so much wrapped round the achieving of communication, over any distance, that much can be learnt and huge enjoyment derived from it even if no DX is ever worked.





T9x Franklin Driver

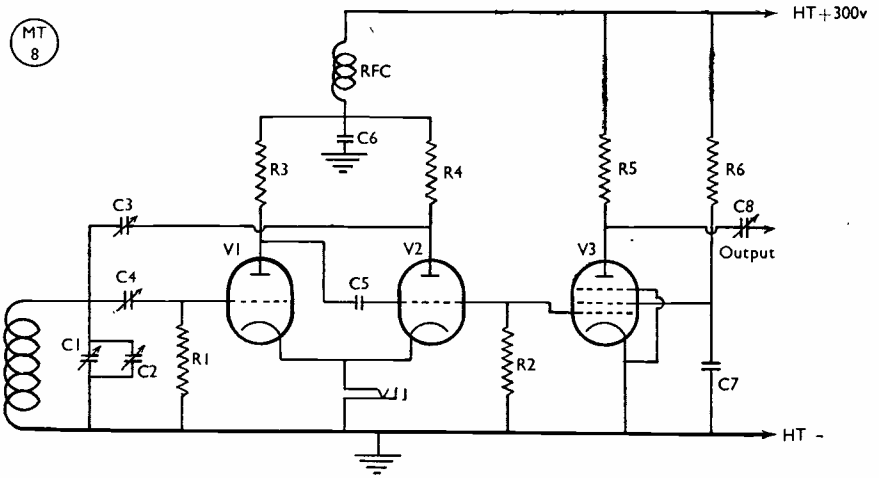
Stability, Accuracy and Good RF Output with Crystal Characteristics

By **W. JOHNSON (G2IN)** *and* **J. R. FENNESSY, M.I.R.E. (G5ZI)**

(The VFO in careless, inexperienced or irresponsible hands can be a fearful thing on the amateur bands as they are to-day. But it is also true that a good VFO, correctly operated and used with discretion, is a valuable asset to any amateur station and should be part of the equipment of all. The design described here is an effective instrument. Let it be employed with due consideration for others.—Ed.)

SINCE the war, many articles have appeared in the *Short Wave Magazine*, and in American journals and handbooks, describing various forms of variable frequency oscillator designed for amateur communications use. Most of these have proved excellent in practice, though some fall short of modern requirements, especially when it is remembered that precise frequency pin-pointing and stability are of paramount importance under modern conditions. In fact, accurate oscillator equipment for the amateur transmitter is every bit as necessary as to a commercial user.

The Franklin variable frequency oscillator described has been built for use on the 160- and 80-metre bands. It will be seen that the oscillator, conventional in form, is followed by an untuned buffer stage which provides a



Circuit of the " T9x " Franklin Oscillator and Buffer.

T9x driving signal adequate for controlling any transmitter of modern design.

Franklin Oscillator

The band is set by C1, to either 1·7 or 3·5 mc, and is spread by C2. The grid condenser C4 and the feed-back condenser C3 are midget air-spaced variables with a maximum capacity of 4 $\mu\mu$F, which enables a correct setting of the capacities to maintain oscillation. The two valves used in this part of the circuit are 6J5G or 6J5GT triodes.

Untuned Buffer

The Franklin oscillator is followed by an untuned buffer stage employing a 6SJ7 valve. This stage is exceedingly simple and its arrangement self-evident from an examination of the circuit diagram. It does, however, perform a very important function despite its simplicity in that it gives complete isolation of the oscillator, an all-important requirement in the search for T9x reports.

Output

The output is taken from the plate of the 6SJ7 buffer stage, through a variable capacity, which allows correct adjustment of drive, and ensures that there is no "pull" on the preceding stage.

The power supply requires only 250-300 volts with a current capacity of at the most 30mA. The heater loading will be 6·3 volts at ·9 amps.

The chassis consists of a cast aluminium base 8½ in. × 5¾ in. × 2⅜ in.,

Table of Values

T9x Franklin Oscillator

C1	=	·00025 μF, receiving type
C2, C8	=	·0001 μF, receiving type
C3, C4	=	Small neutralising type air-spaced variable, 4$\mu\mu$F
C5	=	·0001 μF, mica
C6, C7	=	·01 μF, mica
R1, R2	=	100,000 ohms, 1-watt
R3, R4, R5	=	25,000 ohms, 3-watt
R6	=	50,000 ohms, 1 watt
RFC	=	Standard S/W RF choke
Valves	=	6J5GT or 6J5G (two); 6SJ7 metal (one)
Coil	=	40 turns close-wound 20 SWG enamelled on 1½-in. diameter former

Other Parts Required: Chassis 8½-in. × 5¾-in. × 2⅜-in.; metal cabinet; slow-motion dial; brass or aluminium screening box, with lid; former of distrene or similar material, 3½-in. long by 1½-in. diameter; closed-circuit jack; three octal valve-holders; 5-pin power connector or terminal block; co-axial connector; flexible coupler; pointer knob; rubber grommets, terminals.

which was preferred because of its rigidity, although a 16-gauge aluminium chassis will serve the purpose admirably. On this, as is shown in the photographs, is mounted a sheet brass or aluminium box, complete with base and lid. It is emphasized that this box must be completely rigid, and with this in view corner pieces were sweated into the angles, as can be seen from the photographs.

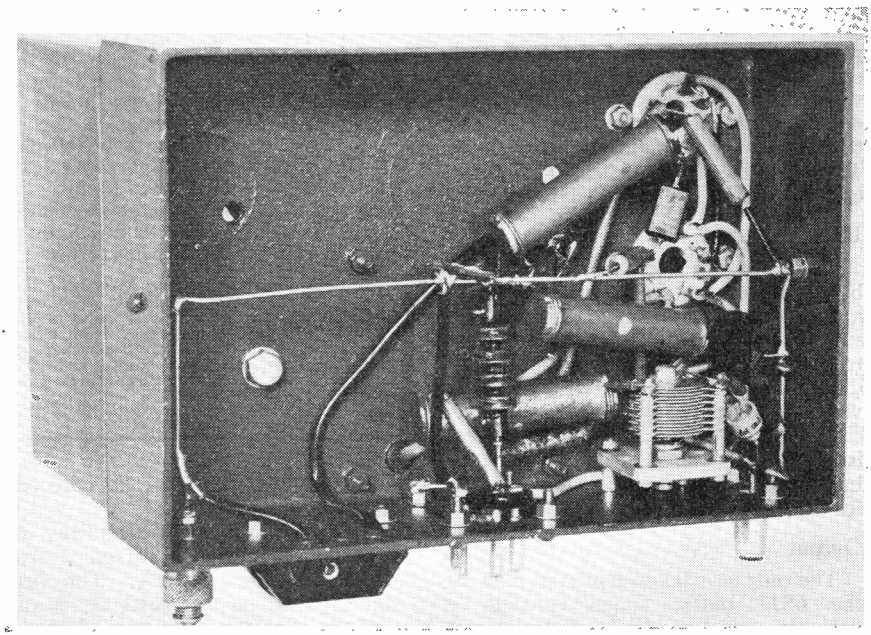
Constructional Details

The band-setting condenser is visible mounted at right angles to the front, complete with pointer knob. It will be appreciated that to make any adjustment of this condenser, when the chassis is mounted in its cabinet, it will be necessary to lift the lid; this prevents alteration of the setting, which might occur if band-setting adjustment were possible from the front or outside the cabinet.

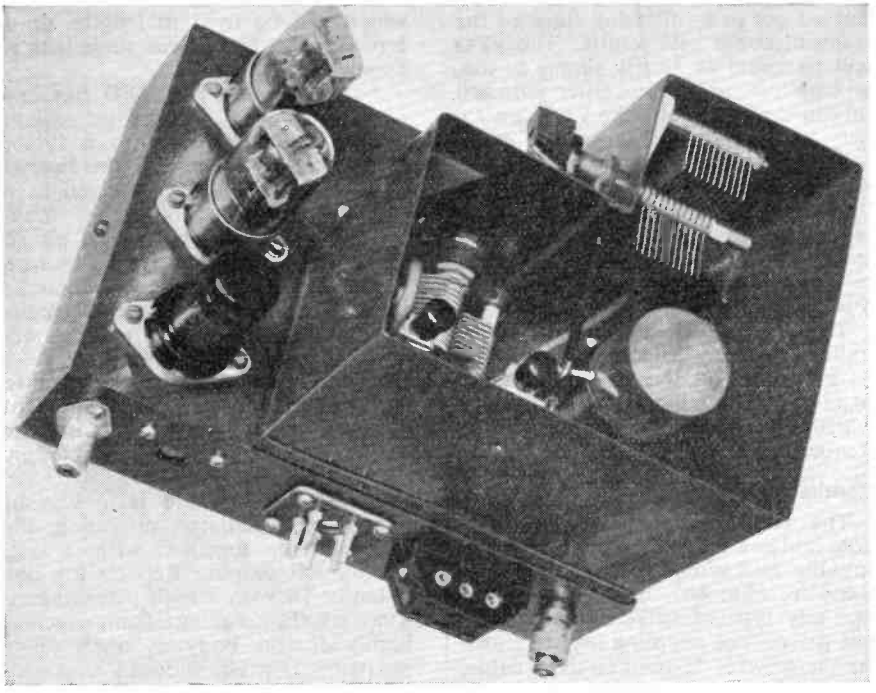
The band-spread condenser is seen mounted centrally on the chassis, and supported by the screening box. As the rotors of both variable condensers are at earth potential, all that is required is to bore the screening box and fit. The band-spread condenser is coupled to the full-vision dial by a flexible coupler. The grid coil is wound on a $3\frac{1}{2}$-in. length of $1\frac{1}{2}$-in. diameter solid distrene, which is tapped and bolted to the base, giving very rigid mounting. Any other suitable material will serve equally well.

On viewing the photograph showing the instrument mounted in the cabinet, the grid condensers and feed-back condensers C3 and C4 respectively are in sight mounted on the sides of the screening box.

In the photograph showing the underside of the chassis, a 100 $\mu\mu$F ceramic condenser can be clearly seen. This was incorporated in the original as the variable output condenser was found to be too small, but naturally can be removed if the ·0001 μF variable condenser as specified is



Under-chassis view of the Oscillator Buffer unit, showing wiring detail.



General layout above the deck for the " T9x " Franklin VFO.

incorporated. The two 6J5GT valves are nearest to the front edge of the chassis, with the 6SJ7 at the rear.

The layout is not critical, but as shown gives the shortest possible leads. It is emphasised that all wiring must be rigid, and with this object 16-gauge wiring was used throughout.

Assembly and wiring is very simple, and if the golden rules of rigidity and short leads are adhered to no trouble should be experienced.

Operating Procedure

To operate the VFO, the heater voltage should be applied a few minutes before the set is required in order to give the cathodes time to settle down. After a few minutes' warming up the anode voltage may be applied and the meter reading in the cathode circuits of the two 6G5 valves which comprise the oscillator should be noted. With 300 volts on the anodes the current reading should be 16 mA. The signal may now be monitored by the station receiver. Using the tank circuit specified and with the band-spread condenser set at zero, the 160-metre band will be found with the band setter about two-thirds enmeshed.

Using the ·0001 μF band-spreading condenser, the 160-metre band occupies approximately 55 degrees of the dial. Increased band-spread may be obtained by suitably padding the spread condenser.

The 80-metre band is located in the same way but with the setting condenser approximately quarter-mesh. Should it be desired to use the 80-metre band only, it is recommended that the spreading condenser be reduced to a maximum of 40 $\mu\mu$F.

The jack in the cathode circuit is provided for break-in use and meter readings only, as keying should be

carried out in a following stage of the transmitter for best results. The VFO will be found extremely simple in use, as with the main transmitter switched off (during reception), the VFO control may be rotated until its beat is heard to heterodyne the transmission being received. This will enable very accurate "netting" to be accomplished. It is recommended that a frequency sub-standard be employed for maintaining calibration of the receiver when using this or any other VFO.

The stability of the unit may be quite accurately checked by finding its harmonic on the 10- or 20-metre bands, and producing a heterodyne which can then easily be observed for frequency creep.

Results

The oscillator gives a clean T9x note and can be used to drive into any suitable grid circuit using a valve of the 6V6, 6L6, 807, or 42 variety—in fact any type of valve operable with low drive. The coupling lead to transfer the drive is 72 ohm co-axial cable, which can be used in lengths up to 5 or 6 feet to the driven stage with no apparent loss.

For some time the VFO has been employed on 1·7 and 3·5 mc, driving a 6V6 buffer, followed by a further 6V6, which is driven to the licensed input on 160, and fully driven to its rated capacity on 80 metres. Using the VFO followed by a 6V6 an 807 has also been fully driven to its rated capacity on 3·5 mc. It will therefore be appreciated that the combination of the "T9x" Franklin Oscillator with following 6V6 is admirable as a frequency control unit and driver for the higher power valves using low grid excitation, in addition to its other valuable attributes as a stable and accurate oscillator.

In conclusion, here is a Variable Frequency Oscillator providing adequate drive, together with a high quality RF output. Reports are consistently T9 with a high percentage of T9x which, coming from such a highly critical body as one's fellow amateurs, is praise indeed!

Five-Metre Beams

Choice, Feeder Considerations, Design, Constructional Details and Tuning-up Procedure

By **HILTON O'HEFFERNAN (G5BY)**

(This is a practical article which will be of considerable value to all interested in beam aerials for the 58 mc band. Our contributor, one of the leading exponents of VHF technique, and a most successful 58 mc operator, has had years of experience with the problem of radiating effective signals on five metres.—Ed.)

PRACTICALLY every Amateur Radio handbook devotes some space to the design of three- and four-element beams, but this is mainly taken up with the best arrangement for use on the regular communication frequencies, and any mention of their use on the 58 mc band is usually confined to suggesting a proportionate reduction of the given dimensions or by reference to the standard formulas.

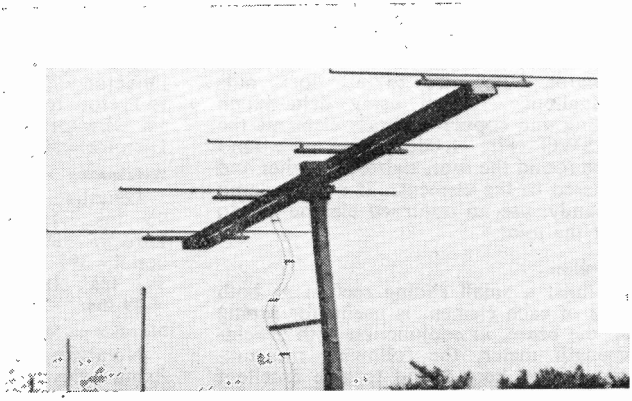
The writer has now constructed and tested so many different types of beam aerials, on the 58 mc band, that it is felt that much of the data thus obtained would prove of assistance to others, particularly to those in isolated (in the 58 mc sense) parts of the country where their own is the first station in that district to attempt serious operation on 58 mc.

General Considerations

The outstanding type of beam has undoubtedly proved to be some form of half-wave radiating element, with up to three parasitically excited elements, the

whole being used in a horizontal plane and capable of being rotated at will from the operating position.

First, a decision must be made as to whether wide or close spacing of the elements be adapted. There is no doubt that wide spacing does give somewhat increased gain and, in conjunction with a folded dipole as the radiating element, enables that gain to be maintained over the whole of the 58·5 to 60 mc band. On the other hand, the close-spaced version is capable of excellent results—needs a boom length of only 7 ft. 6 ins., as against the 11 ft. required for the wide-spaced job —and, if cut for 58·8 mc, will cover the range from 58·5 to 59·2 mc (where most of the general activity is concentrated) with good efficiency.



Close up of 4-element wide-spaced 58 mc beam at G5BY, carried on a 12 ft. mast during alignment tests.

Next comes the question as to whether an open wire 2 in. spaced line or co-axial cable be employed. Unless local conditions make the use of co-axial imperative, it is strongly advised that 14 SWG enamelled copper wire, with 2 in. perspex spreaders spaced about 3 ft. apart, be used for the feeder system, since this reduces losses to the minimum.

Having now decided on the element spacing and feeder system to be employed, we next come to the problem of matching the 450/500 ohm feeder impedance to that existing at the centre of the radiating element. There are three very satisfactory systems, namely :

Folded Dipole

A highly efficient method, the broad band characteristics of which can, however, only be utilised to the utmost when employed with *wide-spaced* elements. Calls for a certain amount of mechanical skill and time in its construction ; once designed and made, the centre impedance cannot be varied to cope with different element spacing. Use 4-to-1 conductor ratio for 300-450 ohm feeder line and wide-spaced elements.

Delta Match

One of the best methods of feeding the radiating element in a *close-spaced* system ; simple, robust and efficient. Use 31-in. top and 34½-in. sides for the delta when used with close-spaced elements and 2-in. open wire line (14 SWG).

T-match

Quite successful and particularly useful when experimenting with wide variations of element spacing, since a reasonable feeder match can always be obtained by readjustment of the T arms.

Summing up, the writer recommends the folded dipole method with a wide-spaced beam, and the delta match when using close-spaced elements.

Constructional Details

Boom

A satisfactory boom consists of two 2 in. × 1 in. side members (each 7 ft. 6 ins. long for close-spaced elements, 11 ft. long for wide spacing) held apart, like a ladder, by six 6 in. rungs of 2 in. × 2 in. batten. Four battens, each 4 ft. long, of 2 in. × 1 in., are used, with a stand-off beehive type insulator at each end, to hold the elements.

Elements

These can be of dural, copper, brass or aluminium. External diameter of not less than ⅝ in. is recommended (¾ in. in wide-spaced systems to maintain broad-band characteristics) to avoid undue whip in strong winds. If the popular ⅜ in. diameter dural tubes be used, then the supporting battens should be increased to 6 ft. It is recommended that with ⅝ in. diameter (or larger) elements a clearance hole be drilled right through the element to take the 2 BA fixing screw of the stand-off insulator ; with smaller diameter

elements it is best to secure these with a band of metal round the tube, clamping both ends of the band to the stand-off insulator. Be sure to use lock nuts throughout. When using delta-match feeding and copper or brass elements the 14 SWG wire feeder can be wound twice round the tube, twisted together and soldered to the element. If no blowlamp is handy, use an upturned electric fire to heat the joint !

Dimensions

Whilst a small sliding section at both ends of each element is useful for tuning up the beam, in conjunction with a field-strength meter, the following measurements have been found to give excellent results.

Close spacing

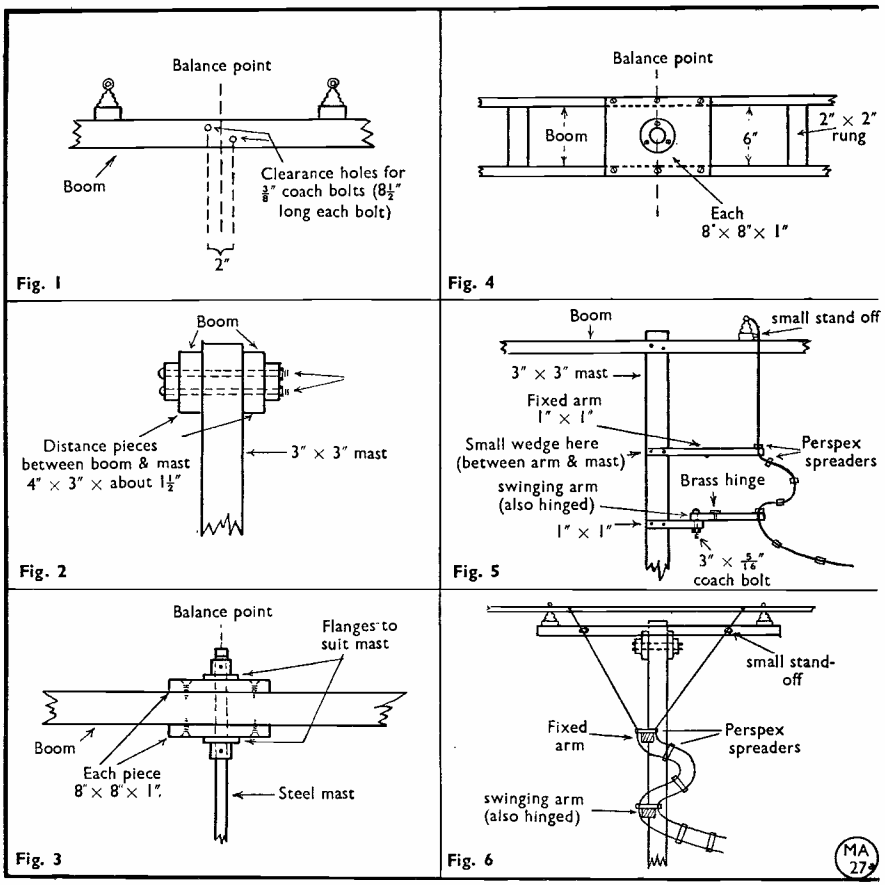
Length of elements : Reflector=99 ins., Aerial=96 ins., 1st Director=91 ins., 2nd Director=90 ins. Spacing of elements : Reflector to Aerial=25 ins., Aerial to 1st Director=30 ins., 1st Director to 2nd Director=30 ins.

Wide spacing

Lengths : Reflector=100 ins., Aerial=96 ins., 1st Director=90½ ins., 2nd Director=89 ins. Spacing : Reflector to aerial=39¾ ins., Aerial to 1st Director=39¾ ins., 1st Director to 2nd Director =49 ins.

Mounting on Mast

No attempt should be made to drill any fixing holes in the boom until everything has been completely assembled, including



elements, and then the centre balance point can be found. Mounted at this point (which is *not* the centre of the boom) the beam will have no tendency to tilt up or down due to unequal weight distribution. If fixing is to be to a 3 in. × 3 in. mast, then a satisfactory method of mounting is illustrated in Figs. 1 and 2. For use with tubular masts, employ that shown in Figs. 3 and 4.

Swinging Feeder Support

The writer usually rotates the whole mast and the very simple method, illustrated at Figs. 5 and 6, allows for about 330° rotation without twisting the feeder.

Tuning Up the Beam

It is suggested that the beam be erected, for tuning-up purposes, on a short mast about 9 to 10 ft. high, and that the field-strength meter pick-up be mounted parallel and at exactly the same height, being as far away as local conditions permit. The element length and spacing can then be altered by hand when the operator stands on a small pair of steps. It is frequently more effective to "tune up" a beam by varying the spacing between elements rather than by altering their length and a convenient way of doing this is shown in Fig. 7. By slackening off the long centre wood screw the element can be slid along the boom to the desired position.

If you intend to start from scratch and go through the entire tuning-up procedure then the beam should be put up, initially, with only the radiating element in place.

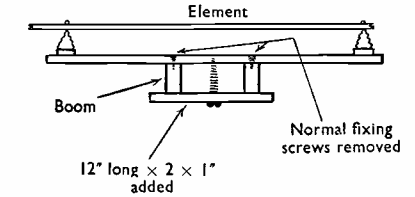


Fig. 7

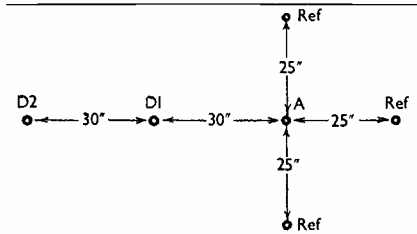


Fig. 8 SIDE ELEVATION

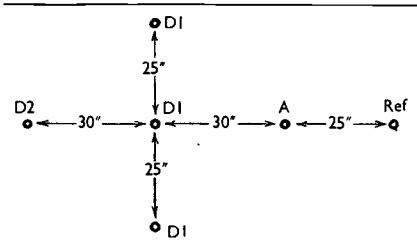


Fig. 9 SIDE ELEVATION

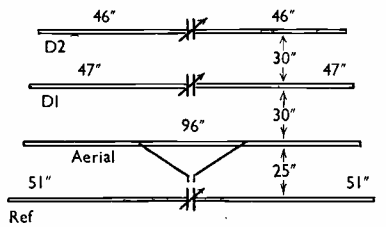
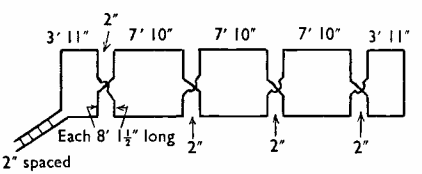


Fig. 10 PLAN



Add centre sections as space permits; each adds broadside gain & increases directivity.

Fig. 11 14 SWG used throughout the curtain

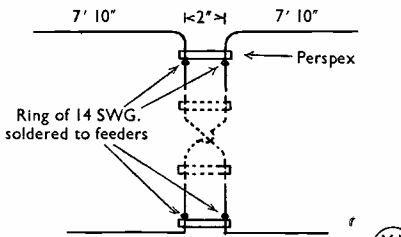


Fig. 12

MA. 27b

Couple up the feeder coil (2-3 turns, same diameter as that of plate coil) to the transmitter until a barely detectable reading is obtained on the field-strength indicator. Note the transmitter input, this is now the reference input which must be maintained at each stage. Add the reflector and adjust spacing and/or length for maximum f.s.m. deflection. Next adjust coupling at transmitter until the reference input is obtained. Add 1st director and repeat above procedure, finishing by readjusting length/spacing of reflector. Add final director and go through drill again, readjusting finally the length/spacing of the reflector and 1st director.

By the time the final adjustments have been completed and all four elements are in place a tremendous increase—over the original reading—should be indicated on the field-strength meter. Remember, though, that this increase is not *solely* due to the forward gain obtained by adding the extra elements, but is augmented considerably by the now proper matching of the feeder to the radiating element, which was, of course, designed for the impedance existing on the radiating element when all *four* elements are in operation ; a large mis-match must exist when the initial tuning up starts with only the single element in place.

It is important that the aerial of the f.s.m. be parallel to the beam and at the same height. If lower, as is sometimes the case, the effect of sharpening up the vertical angle of radiation from the beam, when directors are added, can sometimes cause a drop at the f.s.m., which proves very misleading.

Back/Front Ratio

It will be noted that no attempt has been made, throughout these tests, to check the front-to-back ratio by swinging the beam round and adjusting the reflector for minimum f.s.m. deflection. This is intentional, because the adjustment for optimum front-to-back ratio is *never* the same as the condition under which maximum forward gain can be obtained. Except possibly in crowded areas, a poor front-to-back ratio is a distinct advantage, since it enables stations to be detected from two directions, whilst the absolute maximum gain is being obtained in the favoured direction.

A beam, adjusted for such results, is quite broad in the forward direction, having a useful coverage of about 25° *each* side of the beam centre. Signals drop off to almost *nil* off the ends, rising to about 25 per cent. of normal when being received off the back. The final test of the beam under adjustment can well be to swing it round and note if the f.s.m. readings check with the pattern just described.

To those who have neither the time nor the space to carry out such tuning-up procedure the writer advises them to go right ahead and put up a four-element beam, using the lengths and spacings given earlier in this article—they will never go back to their long wire or dipole ! Tune up the beam, by all means, if you can—you will have the satisfaction of knowing it is giving the best possible results and you will have learnt a lot—but do not worry if you cannot.

Variations on the Four-Element Beam

Two 4-element Beams Stacked

To lower the vertical angle of radiation two identical 4-element beams can be mounted, one above the other, on the same mast and with exactly a half-wave separation between them. They must, of course, be fed in phase. This arrangement has proved one of the author's most successful beams for both GDX and sporadic-E operation, despite the fact that the top element is only 27 ft. above ground.

Six Elements

Beams have been tried with three reflectors, radiator, and two directors, as in Fig. 8 ; and with extra directors, as in Fig. 9.

Four Elements, Condenser Tuned

Parasitic elements split in the centre and tuned by a 100 $\mu\mu$F variable condenser, as in Fig. 10.

All variations worked well—the reference standard being a contact with G6LK at 164 miles *during the winter months.* Each was tried out in comparison with the regular 4-element beam, so changing conditions introduced no error in these tests. An interesting way of tuning up a beam was that in which the writer, standing on the flat roof of the house and wearing a pair of headphones, listened to a B.B.C. harmonic on 59 mc (which originated about 70 miles away) and adjusted the element lengths and spacing for the loudest signal ! This has also been done whilst receiving G6LK !

A Fixed Bi-Directional System

Now how about those unfortunate persons who cannot find space enough to erect a four-element beam but who possess two masts (one usually on the house-top)

used for the 67 ft. top of the Zepp, Windom, or what have you? Must they put up with a long wire or simple dipole? No, definitely not, for our old friend, the Sterba curtain, is the answer to their problem. The author erected one of these last autumn (Fig. 11) and tested it against the regular 4-element beam. Local conditions prevented the average height of the curtain from being more than 12 ft. above ground and, under these conditions, signals were about 50 per cent. weaker than those received on the 4-element beam at 30 ft. More recently, the writer's latest beam—a 4-element wide-spaced affair, with 1 in. diameter elements—was given its initial tuning-up tests at that same 12 ft. above ground and, at that height, it produced signals about 40 per cent. weaker than those of the normal 4-element. Yet, erected on a 45-ft. rotatable mast, it now outperforms all the other beams, so if the Sterba curtain gains proportionately with increased height above ground, it should offer a very good alternative to a 4-element beam.

It is, of course, bi-directional (broadside) and if fed at one corner, a most convenient method, can be connected directly to a 2 in. spaced 14 SWG line with only a slight mis-match. Extreme lightness of construction is important to avoid loss of height, due to sag, when slung between masts. It is suggested that 2 in. long perspex spreaders be used to insulate the sections (Fig. 12) as well as for line separation. Very small egg insulators were actually used in the writer's curtain, but if the perspex has sufficient mechanical strength it should make a much more satisfactory job.

In conclusion, the author would appreciate hearing about the results obtained, should anyone, as a result of these notes, put up a Sterba curtain for use on the 58 mc band.

New Amateur Frequency Allocations

Proposals for the European and American Regions

By The Editor

IT has now been possible to study the detailed frequency allocation proposals as put forward by the appropriate Working Committee for the consideration of the International Telecommunications Conference, still in full session at Atlantic City.

While these proposals have yet to be finally agreed and ratified, it is reasonable to regard them as the basis for agreement, and so we can begin to see the broad picture of what to expect for the amateur bands of the future.

Before detailing the suggested amateur allocations, it is as well that it should be made quite clear that all the business of the Conference was public and that no secrecy attaches to any of the official documents issued in connection with it. Indeed, a curious feature of many of the main meetings was the sudden appearance of casual onlookers from the street, some of whom even came up from the beach in bathing costumes to hear what was going on!

The agreements for the European and American Regions so far achieved by the Working Committee concerned with Frequency Allocations are, in respect of amateurs, shown in detail in the table herewith. In the official papers there is a third heading "Other Areas" with which for the moment we need not be concerned.

The only points for immediate comment on these allocations are that it is difficult to see how a good deal of Amateur/Non-Amateur interference can be avoided in the 3·5, 7 and 14 mc bands if the Americans do in fact obtain the full widths. For us, the 1·7 mc allocation can be regarded as fair, 3·5 mc better than it might have been, but 7 mc is quite pitiable. The 14 mc band calls for no remark at present, since its exact width has not yet been decided—but a heavy cut must be expected. The new 21 mc band is a most satisfactory allocation that makes up for much else, and about 28 mc we can also be quite happy.

VHF—Above 30 mc

The first point to make is that there is, as yet, no agreed frequency limit above which "optical transmssion" can be deemed to be the only factor that need be considered,

i.e., is the lower frequency limit for line-of-sight range to be 30, 60 or 90 mc—or what? In view of the services established or to be established in the 30-100 mc region, this is a very interesting as well as a most important point. It is only necessary to reflect upon recent DX results in the 50-60 mc band, as reported in "Five Metres" in the *Short Wave Magazine*, to appreciate what disruption could be caused to local-area services in this range under sporadic-E and good ducting conditions.

The VHF bands under discussion for possible amateur allocation in either or both Regions are (in mc) 50-54, 70-72·8, 144-148, 166-170, 220-225, 240-260, 385-412, 450-460, 1060-1295, 2500-2700, and 10,000-10,500 mc. These are suggestions only by various parties and obviously could not all be granted to us.

Moreover, the very first amateur VHF band above 30 mc on which there is any measure of agreement does not come till 2300-2400 mc. There are objections of one sort or another to all the others. But already, the Americans have mapped out 50-54, 144-148 and 220-225 mc for the W's. The only firm amateur proposal for the European Region is 70-72·8 mc—where one of the British pulse navigational aids is already well established. As explained in the June issue of the *Magazine*, on the present showing there appears to be no room for G's anywhere in the 30-100 mc area. The sole VHF band upon which there are at present identical proposals for amateurs (by all delegations unreservedly) is 10,000-10,500 mc!

There is no agreement yet on which bands, amateur or otherwise, pulse types of transmission are to be permitted.

Frequency Summary

Taking the normal communications band area 2·85-25.0 mc as a whole, we find that the original British official delegate proposal for amateurs was a total of 900 kc of *exclusive* frequencies.

The Working Committee's proposals, as summarised in our table here, have boiled them out to 550 kc exclusive *plus* 350 kc shared *plus* anything we may yet get on 14 mc—on the face of it, not at all a bad bargain, particularly when it is remembered that many non-amateur services have been cut heavily on their original demands. To these figures must of course be added the 1,700 kc clear in the 28 mc band.

Points of Interest

As forecast in our June Editorial, HF Broadcasting proved to be the menacing factor for all other services; since by most countries HF or long-range broadcasting is regarded as an important propaganda weapon, urgent demands for frequencies by HF broadcast organisations were backed to the limit and at the highest levels.

The great strength and influence of the American amateur organisation, the ARRL, was convincingly demonstrated; as at past conferences of a like nature, the American official delegation led the way on amateur proposals, and it would probably not be an exaggeration to say

BAND	REGIONS EUROPEAN	AMERICAN
1·7 mc	1800-2000 kc, shared, with 10-watt power limit.	Nil
3·5 mc	3500-3800 kc, shared with certain other services.	3500-4000 kc, exclusive.
7 mc	7000-7100 kc, exclusive to amateurs. 7100-7150 kc, shared with S/W BC.	7000-7300 kc, exclusive.
14 mc	Agreement has not so far been reached regarding this band. America holds out for the full 14000-14400 kc exclusively for amateurs, but there may be a cut of anything from 50 to 300 kc in favour of S/W BC. This may apply to the European Region only.	
21 mc	21000-21450 kc	21000-21450 kc
28 mc	28000-29700 kc	28000-29700 kc

that they did not *dare* accept any cutting of the American amateur bands.

Unhappily, strong opposition to amateurs came from France, supported by the unstable and suspicious little Balkan states. Russia was surprisingly co-operative, no doubt because Soviet amateurs—of whom there are an enormous number—provide an organised communication network within their own country. China was helpful, and the Dominions gave valuable support.

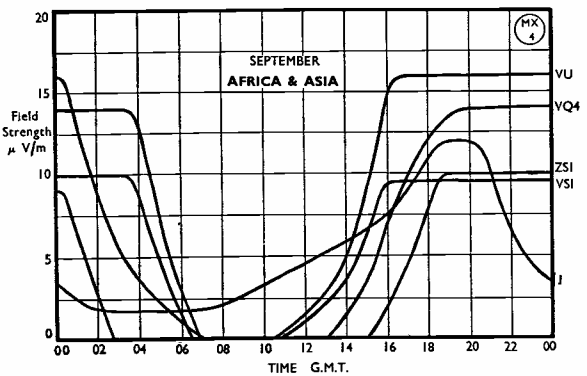
Our own GPO delegation, headed by Sir Stanley Angwin, lately Engineer-in-Chief of the GPO and chairman of the Frequency Allocations Committee, played very well for amateurs within their terms of reference as agreed in advance of the Conference.

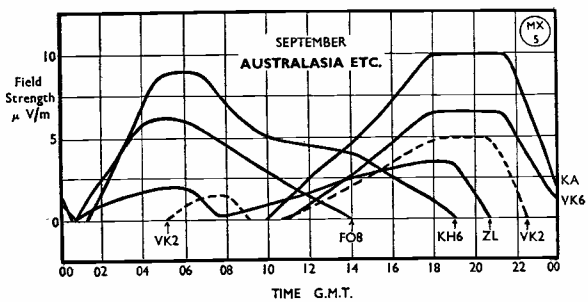
Though it is now headed for its final stages, the Conference is not yet over—till it is, none of the bands proposed can be regarded as definite. But the foregoing discussion is a full summary of the position on the latest available evidence.

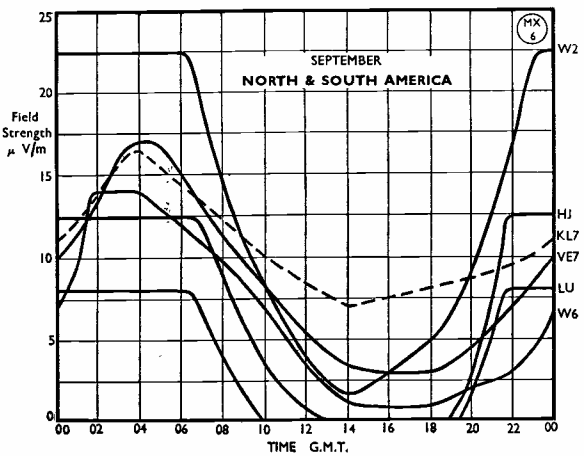
Twenty-Metre DX Forecast

Predictions for September

By I. D. McDERMID, A.R.T.C. (GM3ANV)







COMPARISON between the curves published last month and these will show a marked increase in signal strength from several areas, and a general improvement in conditions.

The American curves show a big improvement for VE7 and KL7, whereas the peak period for W6 has receded by about three hours. The northern areas of South America are starting to make an appearance a little earlier in the evening, whereas it will be seen that LU is about stationary, both in type of slope and in time.

The main interest in the African and Asiatic groups is the marked increase in field strength from J signals, as compared with last month. The only other variation is a general tendency for the various areas to remain at peak strength for a little longer.

The curves for Australasia and Oceania show the greatest change this month. Instead of two separate periods of activity for ZL, it will be seen that the ZL curve has contracted in time and expanded in strength, having become double-humped. The curve for VK2, which has been drawn as a dashed line to avoid confusion, is also tending the same way. The peak morning period has advanced from 0600 to 0800 hrs., and the afternoon period has considerably enlarged. Pacific signals such as FO8 and KH6 are seen to peak at around 0600 hrs. However, it is possible that the band may not be open at that time of the morning, and so any hunting for those areas should be begun as soon as things liven up.

The No-Cost Five

Simple CW/'Phone Transmitter for the LF Bands

By **J. HUM (G5UM)**

(This design derives its title from the fact that it was built entirely from spare parts of the kind that most experimenters will have readily available. Nevertheless, it is not a junk-box job as regards performance and it incorporates practically every feature worth while in an orthodox design. As such, even if not built exactly as specified, it can form the basis for a thoroughly sound transmitter suitable either for the beginner or for stand-by or mobile operation.—Ed.)

NEW licences continue to be issued at a rate of 120 to 150 per month. Many of these recruits to the ranks of Amateur Radio will already have formulated their own ideas on the type of equipment they will want to use when they get on the air. Many others, however, will seek guidance and direction from the pages of the *Short Wave Magazine*; and from the wealth of material presented to them each month they may not be quite certain what to select.

Proficiency and Pounds

Two fundamental considerations usually govern an amateur's thinking along these lines: they can be tersely and alliteratively summed up as "Proficiency and Pounds." An amateur well versed technically and with few financial restrictions will obviously be able to provide for himself a station far superior to that which can be built by the man with only a little practical knowledge and even less pounds in his pocket.

But these types of amateur represent, perhaps, two extremes; between them, lies the large mass of what might be called "average amateurs," who want to build themselves simple and effective apparatus which will give them good results at a reasonable cost. Of course, much of the available cash earmarked for radio can be swallowed up by the purchase of an expensive, factory-built receiver—unless the experimenter is enthusiastic enough to build his own receiver to some such design as the G6FW superhet or the writer's own "All EF50 TRF Receiver" (valued, one notices from a recent small advertisement in the *Magazine*, at £8—which should not make much of a hole in the average amateur's budget !).

Generally, a receiver *does* run away with a good deal of surplus cash, leaving less available for the transmitter. For this reason—but for the further equally practical reason that most newcomers are restricted to 25 watts input for the first year—transmitters tend to keep to the well-worn 6L6 *plus* 807 route ; and a deservedly popular route it is. Newly licensed readers could do worse than adopt that highly effective design, using these valves, which was described by GW3ALE in the January *Magazine*.

Nevertheless, even the expenditure on a simple 6L6-807 25-watt transmitter can be a not inconsiderable item to the new, often young, members of the transmitting fraternity, and it occurred to the writer that such amateurs would welcome an even simpler and cheaper design of transmitter which would give a good account of itself for low cost in power and pence (yes, we have discarded pounds and are now talking in terms of pence, for reasons which will become apparent in due course !).

The writer therefore sought to build himself a small transmitter which would employ as far as possible parts which were already available in the junk box or which could be acquired by a process of barter from other amateurs. When he reports that the resultant "No-Cost Five" transmitter (which will be described below) cost him precisely nothing, that is perhaps not a fair statement. For many of the items which were dug from the junk box must obviously have cost something at some time in the past, and should therefore be charged to the cost of the present transmitter. Against that it might be argued that some of them were so old that their value had depreciated to a low amount (even crystals and 6L6 valves !).

Be that as it may, the fact is that this transmitter did not cost the writer a penny, and others who build it will probably not

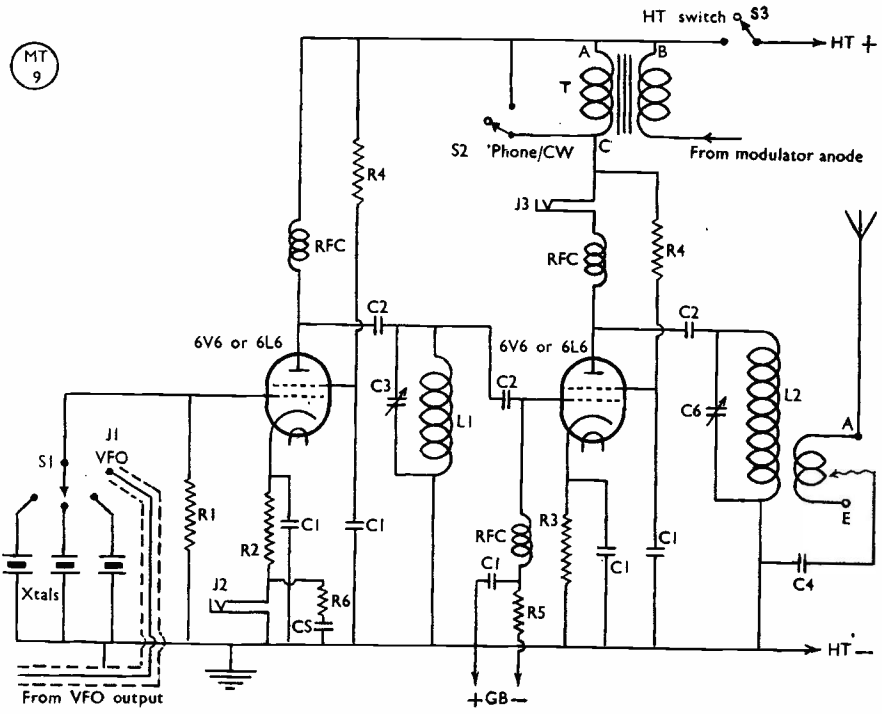


Fig. 1. Circuit of the RF portion of a simple CO/PA., with provision for modulation.

be more than a pound or two out of pocket—depending, of course, on the contents of the junk box !

The Specification

The specification of the "No-Cost Five" was governed by the following considerations :

It must be thoroughly flexible, using fixed coils, operating on 160 and 80 metres only.

It must be light and small and supplementary to the main transmitter. Because much of the writer's work is done on the 1·7 mc band its input would be confined to the 10 watts allowed on that band. It can be pushed up a little higher on 80 metres, but that is not important (if a 25-watt signal will "get there" a 10-watt signal will do so ; in fact, a reduction of 50 per cent in input generally lowers QRK by only one S-point !).

It must be capable of use where no mains exist, that is, from a car accumulator and dry batteries or vibrator supply. In the writer's particular case this was because it would be required for portable and mobile use ; but he does happen to

Table of Values

Fig. 1. RF Section of "No-Cost Five"

R1, CO grid return = 50,000 to 250,000 ohms, ½ watt
R2, CO bias = 200 to 500 ohms, 5 watt
R3, PA bias = 200 to 500 ohms, 5 watt
R4, screen dropper = 10,000 to 40,000 ohms, 5 watt
R5, PA grid-leak = 5,000 to 30,000 ohms, 1 watt
R6, key thump filter = 1,000 to 10,000 ohms, ½ watt
C1, RF by-pass = ·001 to ·05 μF
C2, anode stoppers = ·0005 to ·001 μF
C3, C6, tank tuners = 350 μμF variable
C4, aerial tuner = 500 μμF variable
C5, key thump filter = experiment for best value ·001 to ·1 μF
RFC, broadcast band RF choke, or 200 turns wound either scramble-wise or solenoid-wound on small former
L1, CO tank coil = 40 turns on 1½-inch former bolted beneath chassis, 22 SWG
L2, PA tank coil = 26 turns on a 3-inch ribbed former fixed to upper side of chassis as shown in photograph. Aerial coupling : 22 turns wound at "cold" end of same former, 16 to 20 SWG enamelled
S1 = Yaxley or similar type multi-position switch, bringing into use separate crystals or VFO
S2 = 'Phone/CW switch. Should be well-insulated, when open will have to stand full audio output. Heavy duty Bulgin
S3 = HT main switch. Heavy duty Bulgin
J1 = Jack for VFO input
J2 = Key jack (will also meter CO cathode current)
J3 = Metering jack for PA input

know that even to-day there are many amateurs "out in the blue" who still have to do without the AC mains with which most people are assumed to be blessed, and to whom an economical non-mains operated transmitter has a decided appeal. Therefore, the RF section of the present design can employ either a 6V6G-6V6G line-up where economy is desired, or a 6L6-6L6 arrangement where power consumption is less important. The 6V6G takes only ·3 amp heater current compared with ·9 amp for the 6L6, and it is correspondingly light on HT. To enable the set to be operated from a 12-volt car accumulator these two 6-volt heaters are wired in series. The writer happens to have a 12-volt AC winding on his power pack, which makes series heater connection no inconvenience when the set is used at home on the usual AC mains. The actual economy effected in heater current is shown by the following contrasting facts :

Two 6V6G series heaters consume ·3 amp at 12 volts.

Two 6L6 paralleled heaters consume 1·8 amp at 6 volts.

Another requirement for the "No Cost Five" was that it should be capable of telephony operation—hence the "five" in its title. Certainly, this facility will be of no interest to the majority of newcomers for the first year of their activity, but it can be usefully incorporated while the transmitter is being built—and so simply that most constructors will take it in their stride, as will be shown. The provision of telephony for the no-mains man is generally a superfluity ; he will probably prefer to omit it. For this reason the description of this transmitter is divided into two parts—the RF section and the modulator section, since the former is of interest to all concerned, while the latter is not.

MECHANICAL DESIGN

A mild steel chassis-and-front-panel are employed to carry the complete transmitter, compactness being a prime consideration, not only for those occasions when the transmitter is used "mobile" but also because space in most stations is at a premium and can rarely be wasted by lavishly sprawling designs. Mild steel is easily drilled by means of an ordinary hand-drill and the metal-work presents no difficulties.

Illustrations of the actual chassis are given. They show the manner in which the RF section is confined to the left-hand side (viewed from the front) and the audio section to the right-hand side.

The RF Section

The circuit of the RF section is as shown in Fig. 1. It is a perfectly orthodox 2-stage line-up designed to work either as CO-PA or CO-FD on 160 or 80 metres, but including a number of detail features.

First of all, readers will observe that parallel feed is used in both stages. This permits both tank condensers to be mounted directly on the metal panel. The aerial tuning condenser is also similarly at earth potential, but its "hot" end goes to a heavy gauge wandering lead terminated in a crocodile clip that can be taken either to point E on the aerial coil for series tuning (as with a 134 feet end-on aerial on 160 metres) or to point A for parallel tuning (again according to length of aerial).

In the grid circuit of the CO is a multiway Yaxley switch for selecting any desired crystal. The last position on the switch brings in the output from the variable frequency oscillator, if one is in use at the station. The output lead from the VFO is preferably screened right from the point where it leaves the oscillator, through the jack and up to the switch contact.

Details of the remaining parts in the circuit are given in the Table of Values. Practically every component can be of the receiving type, though the constructor will naturally take care to ensure that all of them are rated well above the maximum HT voltage is it proposed to use. Apart from this, none of the values shown is at all critical.

A further word of warning should be given : in view of the writer's advocacy of the use of "left-over" parts from the spares box, it is important to remember that certain components deteriorate with time. Every one should therefore be checked for "goodness" before use. Condensers especially should be checked for leakage, by using a voltmeter in series with the HT supply and the condenser. Do not use a milliammeter ; if a condenser is poor it may pass so much current that the milliammeter will be damaged.

Biasing

It will be observed that in the CO stage a combination of cathode and grid-leak biassing is employed ; the only point to bear in mind here is that the higher the value of the cathode bias resistor the lower will be the anode current—and the lower the RF output.

In the PA a similar arrangement is

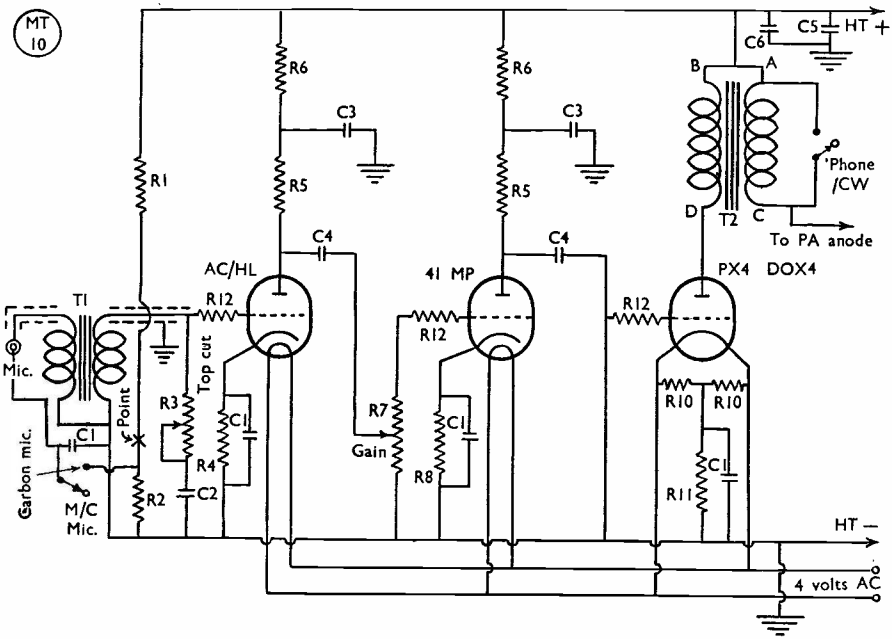


Fig. 2. A three-stage modulator for the CO/PA. The input circuit is arranged for either a carbon or a moving-coil microphone ; the input leads should be shielded. For " DOX4 " above read DO24.

Table of Values

Fig. 2. Audio Section of "No Cost Five"

R1, R2 — These comprise the potential divider to furnish excitation voltage for carbon microphone. Their value will depend on HT supply available, and should be selected to give 4 to 6 volts at point X when microphone is in circuit and whole transmitter drawing current ; use high resistance voltmeter or false reading will be obtained. With 400 volt HT supply, R1 can be 30,000 ohms and R2 2,000 ohms, both 2-5 watt.

R3 = Top-cut control, 50,000 to 500,000 ohms variable
R4 = Cathode biasing 900 ohms, 2 watt
R5 = Anode load, 10,000 to 30,000, 2 watt
R6 = Anode decoupling : 10,000 to 75,000 ohms. 2 watt
R7 = Audio gain : 100,000 to 500,000 ohms variable
R8 = Cathode bias : 320 ohms, 2 watt for 41 MP
R9 = Grid return : 100,000 to 500,000 ohms, ½ watt
R10 = Filament-to-earth return : 50 ohms carbon or wire-wound
R11 = Cathode bias : 950 ohms for PX4. 5 watt or larger.
540 ohms for DO24. 5 watt or larger
R12 = Grid stoppers 1,000 to 10,000 ohms, ½ watt
C1 = Audio by-pass : 25 to 50 μF, 25 volt working
C2 = Top-cut : ·01 to 0·5 μF
C3 = Audio decoupling : 2 to 16 μF, 500 volt working
C4 = Audio coupling : ·05 to 0·5 μF, 500 volt working (higher value will give greater bass response)
C5 = HT audio decoupling : 2 to 16 μF. 500 volt working, for incorporation only if instability or high hum level experienced
C6 = HT RF decoupling : ·0005 to ·01 μF, 500 volt working
T1 = Microphone transformer. Any small type ratio 25 : 1 or 50 : 1
T2 = Modulator transformer (See text)

Also required :
1 jack for microphone
1 toggle switch for "carbon" or "moving coil" microphone positions.

employed but with the addition of conventional battery bias. Many constructors object to the "messiness" of battery bias and prefer to confine themselves to automatic biassing arrangements. This is reasonable enough when done by experienced hands ; for the newcomer, however, battery bias is recommended.

The PA can then be easily biassed to cut-off as shown on the plate milliammeter, and no spurious oscillations will cause trouble. If by any chance spurious oscillation *does* occur—denoted generally by the picking up of rough notes in an adjacent receiver even when no crystal is in oscillation in the transmitter—a 50-ohm

carbon resistor connected to the grid pin of the PA will effect a cure.

Keying

As Fig. 2 indicates, cathode keying of the CO is employed. This permits the use of full break-in facilities—an important provision in the interests of efficient CW operation. The key thump filter R6/C5 should be connected across the key terminals as close to the key as possible. The best values to use should be found by experiment. A broadcast receiver should be operated in the same room as the transmitter and should be tuned to a *distant* station—not the local one—and the values of R6/C5 adjusted until minimum thump occurs in the speaker. Thump will probably not be entirely eradicated, but this seldom matters in a receiver immediately adjacent to the transmitter.

Other Details

Inductances. Fixed coils are used, so arranged that with the parallel capacity shown (the condensers came from an old R.A.F. GP set, 1082/1083, incidentally !) they tune to 1·7 mc with full capacity and 3·8 mc with minimum capacity.

Metering. No meters whatever are built into the transmitter. Many amateurs, while greatly impressed by the rows of meters frequently seen in station photographs, find emulation financially impossible ; one or two good "loose" meters are all they can afford. In consequence the present design provides merely a self-closing jack in the PA anode feed so that a milliammeter terminated in a standard plug may be inserted for measuring DC input in accordance with GPO regulations. To ascertain that the CO is functioning the meter may be plugged into the cathode-keying jack. A kick will occur in the cathode current reading when the crystal oscillates.

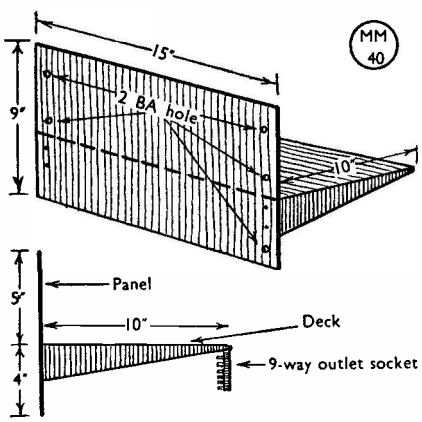


Fig. 3. Chassis-panel dimensions as used by G5UM for this transmitter.

Crystal Selection. It is a good plan to include crystal holders for various sizes of crystal mount. The writer happens to have several of the old-type Q.C.C. mounts with wide spacing of pins as well as several of the modern type with ¾-in. spacing. Sockets for both types were therefore incorporated in the design.

When wiring up to the first position of the crystal switch the constructor should paint "No. 1" against the crystal holder to which it is connected. The next holder should be indicated "No. 2" and connected to the second position on the crystal switch. Identical numbers can be painted on the front panel at the appropriate position of the crystal switch. It is a good plan to number the crystal positions in ascending order of frequency; the last position should be labelled "VFO" and connected to the VFO jack on the front panel.

Power Supply. No power supply details are given. With two 6V6G valves the transmitter could be quite conveniently operated from a receiving-type power pack. Whether these valves or the larger 6L6 are used, a 400-volt power pack delivering 100 milliamperes will comfortably operate the entire transmitter on telephony at 10 watts input. With a 500 volt pack the transmitter will run at 25 watts input on CW (on 3·5 mc only, of course !).

Operation

Now here are complete tuning-up details for setting the transmitter into operation on 1·7 mc fundamental and on the 3·5 mc harmonics.

Turn the crystal switch to Position No. 1, making sure that a crystal for the 1·7 mc band is plugged into Socket No. 1.

Insert a milliammeter into the cathode-keying jack. If it does not read current check with a high reading voltmeter that voltage exists at the anode and screen pins of the CO valve.

Rotate C3 from the fully-meshed to about half-mesh position. This more than covers the whole of the 1·7 mc band frequency range. A kick should occur on the cathode current meter, indicating oscillation.

Next, transfer the milliammeter to the HT feed jack in the PA anode circuit.

As has already been said, the PA should first be adjusted for zero—or cut-off—anode current. When oscillation occurs in the CO, drive will be applied to the PA grid, and the PA anode current will rise. Rotate C6 near the fully-meshed position until the anode current drops almost to zero. Rotate C4, with aerial connected up. The anode current will rise as aerial loading is imposed. With 10 watts input and a 134 ft. aerial connected against ground approximately ·3 amp should show in the aerial current meter.

For harmonic operation rotate C6 almost to the full-out position, with the aerial condenser off-tune. A further dip in the milliammeter will occur as the condenser passes through the harmonic. Bring the aerial condenser towards resonance and adjust coupling until anode current rises to the desired value with the aerial condenser "dead on the nose," *i.e.* in resonance. With a 134 ft. end-on aerial only a slight indication of *aerial* current may be expected.

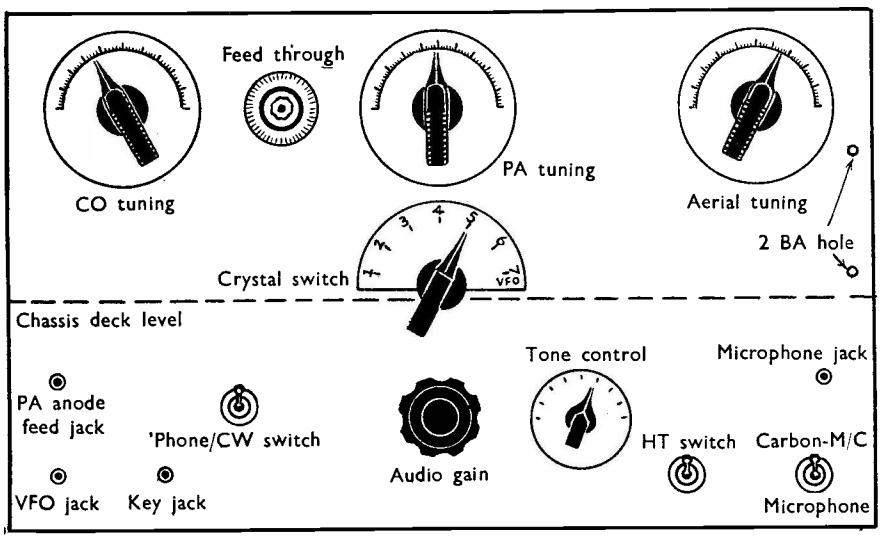
A key may now be plugged into the CO keying jack, and the character of the note should be checked by listening on an adjacent monitor (which may consist simply of a 1-valve reacting detector in a well-screened box). It is desirable to back off the CO tuning condenser a little from the point at which maximum output occurs. This reduces the strain on the crystal—an important point when CO keying is employed.

For fundamental operation on the 80-metre band the CO condenser position will be nearly fully unmeshed. The PA condenser position will be as for harmonic operation, or near enough.

THE AUDIO SECTION

So much for the RF section. The audio section will be considered next. Most constructors will know that 5 watts of audio are required to modulate fully a 10-watt carrier, though to allow for losses in the modulation transformer (and in the general interests of "having a bit in hand") it is a good plan to budget for an extra watt or so of audio. An audio output of 5 to 6 watts is readily obtainable from many large receiving output valves, suitably driven by one or two earlier stages.

The modern tendency seems to be to use, say, a 6C5 driving a 6J5 and finally a 6L6 as the modulator valve. If these valves happen to be available they may usefully be employed. But the writer's object was to use that which was "in stock," and these valves were not. From the remoter depths of the junk box he unearthed instead a couple of Mazda AC/HL triodes, a Mullard DO24 and an



MM 41

Fig. 4. Suggested panel layout for the CO/PA transmitter and modulator.

Osram PX4, all good pre-war types. It was accordingly decided to build a simple 3-stage modulator employing AC/HL-AC/HL-DO24, with the PX4 as a spare (to be used only in emergency, for it gives lower output than the DO24 and its cathode biassing resistor needs to be increased in value).

While this line-up functioned reasonably well, the second AC/HL was found to be too small to handle the audio passed to it by the first AC/HL when using a carbon microphone. A "small power triode" was then sought, and a Cossor 41MP proved to be the answer. The 3-stage AC/HL-41MP-DO24 line-up will be found to give remarkably pleasing quality, with none of that peakiness characteristic of uncorrected tetrodes and pentodes. The simple circuit shown will, of course, function equally well if valves of other types, near equivalents to those specified, are used. The only point to watch is that bias resistor values are correct for whichever valve happens to be available. Each stage can be checked by plugging the microphone into its jack and connecting a pair of phones in series with a ·05 μF fixed condenser between each anode in turn and earth. The fact that the microphone is "live" and that each stage is working will be evident when the microphone is gently tapped. If the resultant noise is not heard in the 'phones something is wrong and the usual checks of HT and LT currents and voltages should then be made.

Here are some detail points which will be apparent from a study of the circuit diagram.

Alternative Microphone Switch. A change-over switch on the front panel allows the use of either a carbon microphone or a moving-coil microphone at will—but because only one jack is provided (in the interests of symmetry and compactness) the constructor must ensure that the correct type is plugged in when the switch is in the appropriate position. Because a moving-coil microphone furnishes less output than a carbon the overall gain of the modulator will need to be increased by applying higher HT, say, 400 volts. In these circumstances the carbon microphone when used will be found to give more than adequate gain to modulate a 10-watt carrier. The common microphone transformer can be any small audio type normally used for matching an output stage to a speaker and having a ratio of between 20- and 50-to-1.

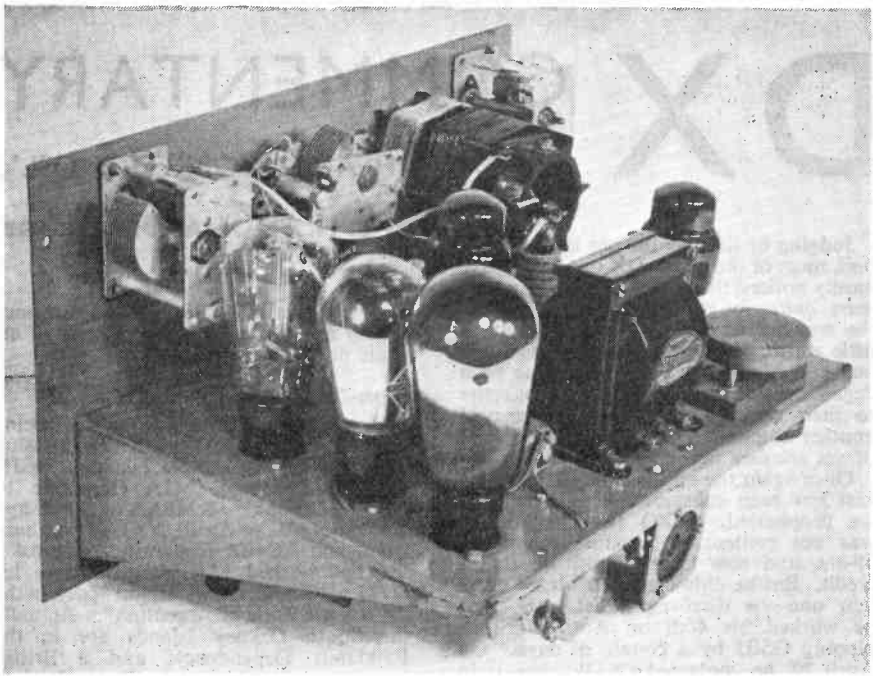
Variable Controls. Only two variable controls are provided on this modulator, a top-cut potentiometer in the grid circuit of the first valve (very useful for counteracting any harshness produced by carbon microphones), and the gain control in the grid circuit of the second valve.

Hum Bucking. Two low-value resistors are connected across the heater line, their common connection grounded through the cathode bias resistor of the modulator valve. This is the only satisfactory method of providing automatic bias to a directly heated output stage. If desired the humbucking resistors can take the form of a 100-ohm potentiometer, whose slider should be adjusted for minimum hum on an aural check.

The Output Transformer. This item can quite easily be the most expensive in the whole modulator. The writer sought to ensure that it would not be ! First of all, he employed an old mains transformer, secondary used as primary and its primary employed as the output winding. It functioned excellently.

Not every amateur will have a mains transformer to spare for this duty, and it must be admitted that its use is rather extravagant, since it will handle far more audio than the amplifier will give. While the set was under construction a Ferranti OPM1C audio transformer happened to become available. This is rather smaller than the average mains transformer but is very well-constructed and will take a great deal of audio punishment. It has push-pull input and output windings, which are an advantage in ensuring that the modulator is correctly matched to the PA stage. But matching—so often held up before amateurs as an esoteric rite—is no trouble at all with the present design. The modulator, being operated Class-A, is extremely docile, and almost any audio transformer with a 1-to-1 ratio (or even varying as much as 1-to-1·5 or 1·5-to-1) will modulate the PA satisfactorily. Any slight mis-matches might be calculable ; but they are not evident in the transmitted signal. The OPM1C connections have had the changes rung on them "all ways round," but still the DO24 goes on blithely modulating the 6V6G as if it had not a care in the world ! This cannot be said of the tetrode modulators, which require far more care in matching if they are not to produce literally "screeching" results—and very little efficiency.

If no suitable transformer is available a centre tapped choke can be used with little drop in efficiency. Study of the circuit diagram will show that T2 is effectively a tapped choke.



RF and audio sections can be accommodated together on the chassis-panel assembly. The three valves in line in the foreground are AC/HL-41MP-DO24 for the speech amplifier/modulator, with the PA just behind and the CO to the right rear.

Decoupling. In attempting to be economical the writer endeavoured to keep the values of the decoupling condensers shown at C3 to a low value. Motor-boating ensued and nothing less than 4μF proved satisfactory. If no deleterious effects result through using 2μF then the writer's advice is : Use it. But it is desirable to have a few spare 2μF condensers on hand to add if stability is not obtained. The condensers C5 and C6 are respectively audio decoupling and RF decoupling of the HT line.

Construction. Practically all the fixed condensers and resistors in the audio section were wired on to one long tag board running from front to back underneath the chassis. This makes for neatness of construction and ease of tracing out. Long leads matter less in audio construction than in RF unit construction, and no trouble need be anticipated in this respect provided that the grid stoppers R12 are mounted right at the grid pins and that the lead carrying the microphone input is shielded—and its shielding earthed.

Modulation Conditions. As has been said, this amplifier will deliver more than enough output to modulate a 10-watt PA stage. While it is more desirable to modulate a straight-through PA stage it is quite feasible to modulate the second 6V6G when it is functioning as a doubler, though the modulation percentage will be reduced and care will be needed to ensure that only the harmonic and not the unwanted fundamental is modulated.

CONCLUSION

Constructors who essay the design of the "No-Cost Five" (or merely the "No-Cost Two" section of it) will find it an extremely economical and docile transmitter capable of putting a CW signal into most parts of Europe after dark and across the Atlantic on 80 metres during the winter, given reasonable conditions and a good aerial. It does not conform to stereotyped design, and in its use of "parts you have by you" (or if you do not have them by you, which are obtainable at low cost from *Short Wave Magazine* advertisers) it should have a strong appeal during these days of continued austerity.

DX COMMENTARY

ON CALLS HEARD, WORKED & QSL'd

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

Judging by the way the pot keeps on the boil, most of the active DX operators have hardly noticed that (*a*) conditions have not been *quite* so good lately, or that (*b*) the weather has tended towards being a little warm. No, through heat and cold, hell and high water, they scrutinise each degree on that dial, and they do not retire to their couches without having carved another notch on it to indicate the capture of yet another new country.

Once again the appearance of the WAZ List has been substantially changed ; as we prophesied, G6ZO (London, N.20) was not content to remain among the 39-ers, and now appears with 40 to his credit. But he didn't have to winkle out a new one—he discovered, belatedly, that he worked his 40th on April 30, thus pipping G5BJ by a couple of days. On April 29, he contacted C6TW, who is in Sian, the principal town of Shensi. Now, although Shensi does not appear in the lists for Zone 23, there is no doubt that the town of Sian *is* in Zone 23, as shown on the Zone Map ; so when G6ZO worked UAØKQA (Zone 19) on the following day, he was capturing his 40th and not his 39th, as he imagined at the time. G2WW (Penzance) has also joined the Roaring Forties, having worked a KL7 at last !

We hope that this Chinese province business will be sorted out in the near future ; if you happen to have had a card from C1CH you will have a map of the Chinese prefix-districts, and careful comparison with an atlas and with the Zone Map will show that certain parts of both the 6th and 7th districts are in Zone 23. Cards, by the way, *are* arriving from China now—we have seen them from C1AN, C1CH, C1DK, C6HH, C6YZ and C7HY. Will C8YR do *his* stuff, we wonder ? UAØKQA, the only Zone 19 station worked by the great majority of G's, doesn't seem to have sent any along yet. Of course, the QSL factor is most peculiar —we have a tirade on the subject from G2PL (Wallington), who says it is quite inexplicable. He and G6ZO have raced between them for most of the DX, and in some cases Peter has had a card and Jim has not ; in other cases the reverse applies. Your commentator has worked eight stations in Chile post-war, without having a single card back, in spite of air mails and all !

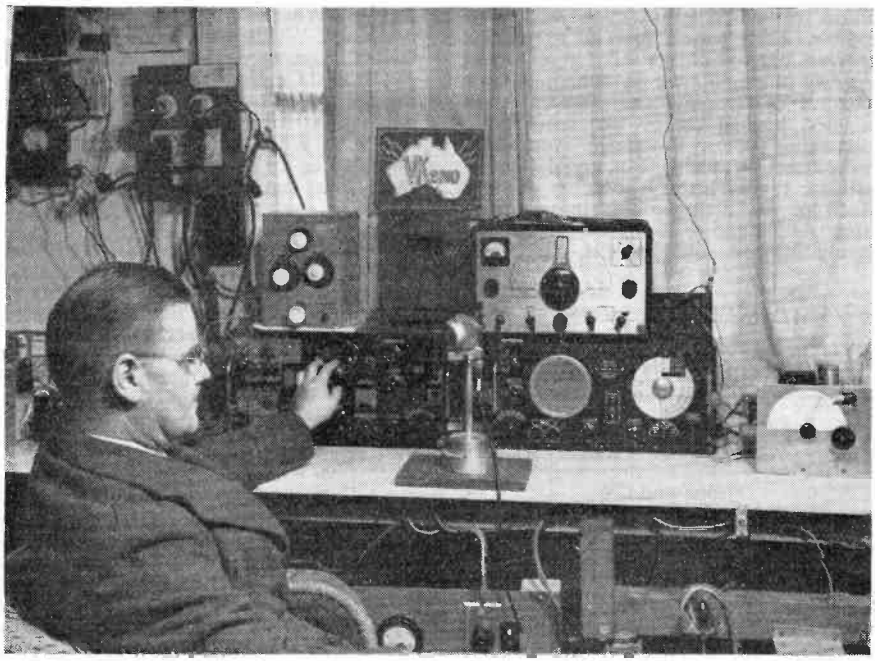
Super-DX on 14 mc

Here are some of the unusual ones being bandied round : G6ZO has been chasing W8WEA/Truk (Caroline Islands), J9SIR (Marshall Islands), M1A (Republic of San Marino), KM6AA (Midway), KX6USN (Bikini Atoll), YA1AB (Afghanistan) and AC4BR (somewhat doubtful !) 'ZO has worked LU1ZA, who gives his QTH as "South Orkey Island" [*sic*], in the "Antarctic Zone of Argentina". Actually the South Orkney Islands are in the Falklands Dependency, and a British possession, so we don't know how to regard that one.*

We have heard other mysterious ones, including several people calling AR1OM and AR1YL ; whatever their status may be, AR8AB is very active on 'phone. Then there is W6YAW/J8 in Korea, who has recently been signing W6YAW/AK ; but Korea is no novelty—we have had a card from W2OAA/J8 on the wall for a year !

Some of the chasers lower down the WAZ list are coming along nicely—we see new names every month. But it is the right time to remind everyone that call-signs will not remain in the list indefinitely ; if anyone has not reported after a lapse of three months, he will be deleted until we hear from him again. We should also mention again that though we are crediting those who claim 40 Zones with the figure "40", they do *not* qualify for the supreme distinction of "WAZ" until the QSL cards have been sent us for checking—see the note in this space last month. *CQ* is at present holding everyone at 39, and not awarding the figure 40 until the cards are sent in, but we feel that as our WAZ roll is merely a list of *claims*, those who claim their 40 may as well do so for all the world

* *(This must mean that Argentina claims the "South Orkeys"! We had better tell the Foreign Office !—Ed.)*



Operating position at VK2NO, Sydney, N.S.W., with OM Don Knock himself in the chair. To the right is the 28/50 mc converter, used with the Philips R163 to its left. The Rx on tune is an Australian Army No. 4 set, and above is a band-switched pre-selector for 3·5, 7, 14 and 28 mc. VK2NO will be remembered in this country as G6XG of the early days.

to see. If it cannot be substantiated when the time comes to show cards, we'll soon put some of them on a charge !

The MD Prefixes

Here is some welcome news on the MD prefixes, as forecast last month by LI2CL. G3CO (Plumstead) worked the latter who told him that the following are now in operation : MD1, Cyrenaica ; MD2, Tripolitania ; MD3, Eritrea ; MD4, Somalia ; MD5, Suez Canal Zone. To these we can add MD6, Iraq ; and G4RX (Barnet) tells us that he worked MD7RH, who gave his QTH as "RAF Nicosia, Cyprus." LI2CL is now MD1D ; MD1E and MD1F are also active, all three being at El Adem.

G4NU (Liverpool) has worked HV1AD (Vatican City) on 14 mc 'phone, and received his QSL direct. HV always used to count as a separate "country," but it doesn't yet appear in the post-war lists, so we don't know what to say to his obvious query on the subject.* G8VR (London, S.E.2) in sending in his first WAZ claim, adds a P.S. that warms our ancient heart : "All station home-made, including hand-wound transformers!" This gives us the idea that we must think up a contest for amateur-built stations ; trouble is, where shall we draw the line ? Do we allow these new-fangled ready-made variable condensers, or do we have to go back to 1923 and buy the plates and spindles in Lisle Street ? (No, we're not being sarcastic—we *like* home-brew).

Spivs and Other Pests

Complaints about ill-mannered use of VFO's continue to be the most numerous of all, but some pointed paragraphs in a long letter from G5CV (London, W.C.1) are worth quoting. He says, "Why not have a crack at these 7 mc 'phone merchants working duplex ? Last week-end I listened to one (S9) for 33 minutes and even then he had not once given his call-sign. He was working 'Stan' (funny call-sign !)

* *(The Vatican City is an independent State and should certainly count as a separate country.—Ed.)*

whose rather doleful voice was also audible. There were at least six babies and children, each given the mike in turn, and a gaggle of giggling women who kept up a constant background of 'oo-ers' and sniggles, backed up by two continually squawking babies. Practically every child in the street was brought in, and his or her intimate family history given by the op. Much of the dialogue was in very bad taste. At the end of 33 minutes I gave up, having finished soldering the job I was doing." What *can* we say about this sort of thing? There's only one answer, and that is to record the whole lot and send it to the G.P.O. But that would mean waiting for the call-sign, which might be too much even for good-tempered old birds like us! When the 7 mc DX boys have only 100 kc to share with characters like these, we can foresee tempers getting warm . . . and a few tickets being cancelled.

On the subject of the spivs and their VFO's, we had better quote our friend Arabackle Oblifork, who says, "It all depends on what you *mean* by manners. These types who insert a VFO in the middle of a QSO are probably the kind who never let anyone get out a complete sentence without butting into the conversation."

WORKED ALL ZONES

Maximum Possible 40

Total Prefixes Listed 217

Station	Post-war Zones Worked	Post-war Countries Worked	All-time Zones Worked	All-time Countries Worked
	'Phone and CW			
G6ZO	40	169	40	176
G2PL	40	168	40	185
G5DQ	40	144	?	?
G2WW	40	143	40	143
G5YV	40	141	40	152
G6QB	40	137	40	159
G5BJ	40	126	40	159
G8KP	39	135	39	159
G3DO	39	132	39	145
G2CDI	39	132	39	132
D2KW	39	131	39	131
G2AJ	39	131	39	131
G3FJ	39	127	39	130
G5RV	39	126	?	?
G5WM	39	120	39	120
G6BS	39	117	39	138
G3AAK	39	114	39	114
G8IL	38	123	40	146
G8RL	38	115	38	132
ON4JW	38	110	?	?
G3QD	38	109	38	110
G3ZI	38	107	38	115
G2VD	37	118	38	126
G5CI	37	113	37	114
GW3AX	37	110	37	114
G4CP	36	101	37	110
G6PJ	36	66	36	117
G2CNN	35	109	35	109
G5MR	35	76	36	88
G3TK	34	99	39	101
G8QX	34	99	34	99
G2AO	34	84	38	116
J4AAK	34	66	34	66
G8IP	33	88	36	103
G2LC	33	85	38	104
GW4CX	33	78	33	78
G8FF	32	78	33	87
G8RC	32	69	32	72
G3VA	31	101	31	102
G5OQ	31	78	33	104
G3BDQ	31	64	31	64
G6XX	30	80	31	87
G8VR	30	78	32	91
G2VV	30	74	32	91
G5HH	30	67	38	107
G6BB	30	64	31	81
	'Phone only			
G3DO	36	104	36	115
G6WX	36	99	37	118
GM2UU	35	91	36	113

More DX

After the powder, some more jam. To return to pleasant subjects, we hear from G3BFC (Ferndown, Dorset) that he has been working the W's on 7 mc in the early mornings, and has collected 19 States and all Districts except 6 and 7. On 14 mc, he has rolled in South and Central Americans to the extent of CE, LU, HK, CP, KV4, PZ1, CM, PY, KZ5 and NY4, which sounds pretty good going to us.

G5HH (Reading), sending in his first DX report, says that he thought he had lost the urge, but back it came again! So he has entered in the log such good things as J3AAD, VP3LF, ZK1AB, KL7UM, all on 14 mc, and a PY on 7 mc. 'HH says that so many criticisms have been made of the DX-chasers that he would like to add that the DX end of the line is not always perfect either. He heard a KG6 call CQ and add "No replies on my freq," but then he came straight back to an ON who called him dead on it! And a W7/C, after saying "QRT," plunged into the sea of VFO's and extracted another one after all. This sort of thing is not going to tidy up the bands.

G3CO (Plumstead) also has a little grouse at the "DX end"; he says his pet aversion is the DX station who is the sole representative of his country on the air, and restricts himself to 'phone operation (Something in that, 'CO, but the CW boys get most of the cake; we must let the 'phone-hounds beat us to it now and then!) G3CO also says he strongly favours VFO as against crystal—his country total leapt up as soon as his own was ready, and he says it was achieved without any "Spiv tactics."

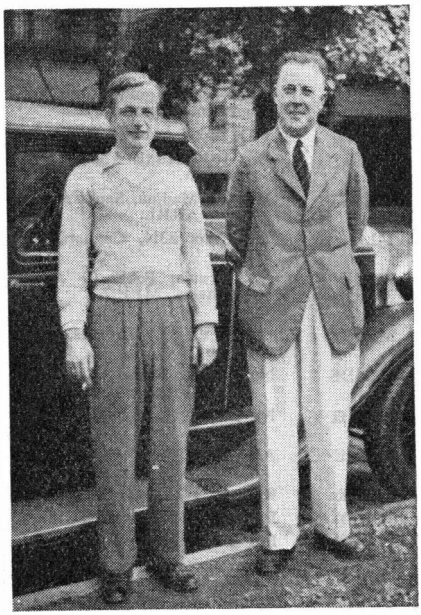
G2VV (Hampton) has been working DX regularly on 14 mc, with NY4CM, FQ3AT, UA9CA, CE3BA, KZ5AZ, KZ5DX and sundry W's and PY's. He also worked VK2NO, pictured here, who told him this was his *thirty-sixth* year in Amateur Radio. 'VV practically reached for his feeding-bottle after that. He has acquired a little 10-watt portable rig for 3·5 and ·7 mc, and hopes to operate G2VV/P from his car later on. 'VV called a queer one—"TR2O" on 14 mc the other day ; but a vacuum cleaner came on and he doesn't know whether he got a reply or not. Can anyone elucidate ?

G5RV (Chelmsford) sends a nice list of DX without comment. It includes KS4AE, VS6AY, VP4TAD, C1AN, UL7BS and J5AAL (all 14 mc CW), and XE1CQ, TG9JK, KA1AI, HK3DD, YV5AB, YS3PL, TI2OA, TG9RV and AR8AB (all 14 mc 'phone). He has got up to 126C and is still going strong. G5VQ (Westcliff) sends a list of the stuff worked in the past few weeks ; too numerous to mention, but bristling with VK, W6 and 7, VE7 and 8, KL7 and ZS, with quite a few rarer pieces. 'VQ uses 150 watts to push-pull PT15's and a 1-V-2 receiver ; his aerial system comprises a 66-ft. top and a 33-ft. counterpoise—a rare combination nowadays but one with which we used to have a lot of fun.

G5ZT (Plymouth) has been keeping the 28 mc flag flying, with VU2AV, 2BF and 2LR, VK5KG and 3OP, ZE1JO, PK1MF and OQ5BQ, all on 'phone. G4RX (Barnet) has also been on 28 mc mostly and says he hopes the autumn conditions will induce some of the "fancy DX" to shift to that band out of the QRM.

G3BDQ (Hastings) has just started up at a new QTH with a "curly" Windom and VS1AA tap, and seems to have been working stacks of DX on it. G2BCX (London, E.18) is a devotee of the old "W3EDP" aerial, on which, with his 25 watts, he has knocked up 22Z and 50C. One 14 mc he uses the aerial (83 ft. long) with a 7 ft. counterpoise. He says, "The Spivs are a dead loss, and so's the DX after they've messed it up."

G3BCS (Wednesbury) sends in an impressive list of 14 mc DX, all done with an 807 and 400 volts. He says he has proved a point which all the big DX-men have already found out—that the aerial is not just half the battle, but 90 per cent. of it. And he would like to see more detail given on aerial systems used, including height above ground and method of feeding. He comments on the trying "short-skip" conditions that have been



G6WY is now VE3BWY of Toronto, Canada. Here he is (on right) visiting W2NZH at Buffalo, N.Y., looking very well and much fatter than when we saw him last!

prevalent during August, and also has a grouse about the commercials occupying the LF end. Two of his three crystals fell right in the middle of some racket or other ! (We know how it feels, 'BCS ; we want to go right out with a teeny-weeny bomb when we hear some of that dental-drill stuff going.)

G5OQ (Tunbridge Wells) has always been a Windom enthusiast, and he now has three of them up, all fed VS1AA-fashion. With a maximum power of 50 watts he has worked VU7BR, CR7AD CR4AA, CR9AG, VS6AC, HH3L, KZ5AW, VQ8AD, PK1TC and loads of others (all on 28 mc). G3TK (Leigh) uses two crystals (14072 and 14124) only, and has worked up a very nice total of DX on them. He reports the glad news that lots of DX stations seem to listen as far as 40 kc off their own frequency nowadays ! 'TK has worked all the Russian prefixes except UF6 and UM8—has anyone ever *heard* either of those ?

GM2UU (Stranraer) admits that he is a 'phone addict, and pleads for a separate WAZ listing for 'phone only. As *CQ* does this with its own list, we are doing the

DX QTH'S

AR8AB	P.O. Box 293, Beyrouth, Lebanon.
EK1AS	RCA Telecommunications, Tangier International Zone.
EP2BU	P.O. Box 7, Schiras, Persia.
ET3Z	Box 1636, Addis Ababa, Ethiopia.
HZ2HV	Box 14, Medina, Saudi Arabia, or *via* ARRL.
I4LL	P.O. Box 83N, Cagliari, Sardinia.
MD1D, MD1E, MD1F	c/o Signals, RAF El Adem, Cyrenaica, MEF 7.
MD5AK	Capt. V. H. Thomas, 2050 (Maur) Co., R.P.C., MELF.
MD6DS	No. 6 Forces Broadcasting Unit, Basra, British Forces in Iraq.
NY4ZQ	Navy 115, c/o F.P.O., N.Y.C., U.S.A.
OX3GE	APO 859, c/o P.M., N.Y.C., U.S.A.
PK2RK	Radio P.T.T., Solo, Java.
PZ1OY	Box 637, Paramaribo, Surinam.
SV1AH	Box 255, Athens, Greece.
SV1TA	59 Anakreontos Street, Kallithea, Athens.
TI2JE	Box 454, San Jose, Costa Rica.
UJ8AD	Box 88, Moscow.
VP4TT	73 AACS Group, APO 869, P.M Miami, Fla., U.S.A.
VK9BW	W. Holland, Kokopo, *via* Rabaul, New Guinea.
VQ2DH	D. C. Hilton, Box 93, Livingstone, N. Rhodesia.
VQ4KTH	Box 4013, Nairobi, Kenya.
VQ5WCP	W. C. Puttick, P. & T. Dept., Kampala, Uganda.
VS1AQ	Capt. L. K. Ayre, Engineer Branch, GHQ, SEALF, GPO, Singapore.
VS7DR	205 Sqdn., RAF Ceylon.
W6WCN/KG6	Naval Air Station, Kobler, Navy 957, c/o Fleet P.O., San Francisco. (*Station on Saipan Island.*)
XAMC	Box 5485, Dallas, Texas. (*Station in Trieste.*)
XZ2AG	64th Brigade Sigs., Maymyo, Burma.

same from this month. So please, you DX 'phone operators, send in your claims separately. This is the right place to mention, by the way, that slight misunderstandings with *CQ* have been cleared up, and that henceforth our own WAZ listing will automatically appear in *CQ*'s WAZ Roll, beginning with their September issue. This will enable a direct comparison to be made between G and W DX working. And, by the way, we shall be glad to accept WAZ claims from overseas readers, signing any prefix except W and K.

G2HLF (Heathfield, Sussex), who has not long been operating on 14 mc, sends in a list of such good things as VE6AO, VE7AAD, 7GI, 7MH, 7VO, 7ZM, KP4DV, FT4AN and lots more, which must be running his country total up nicely since the 7 mc days!

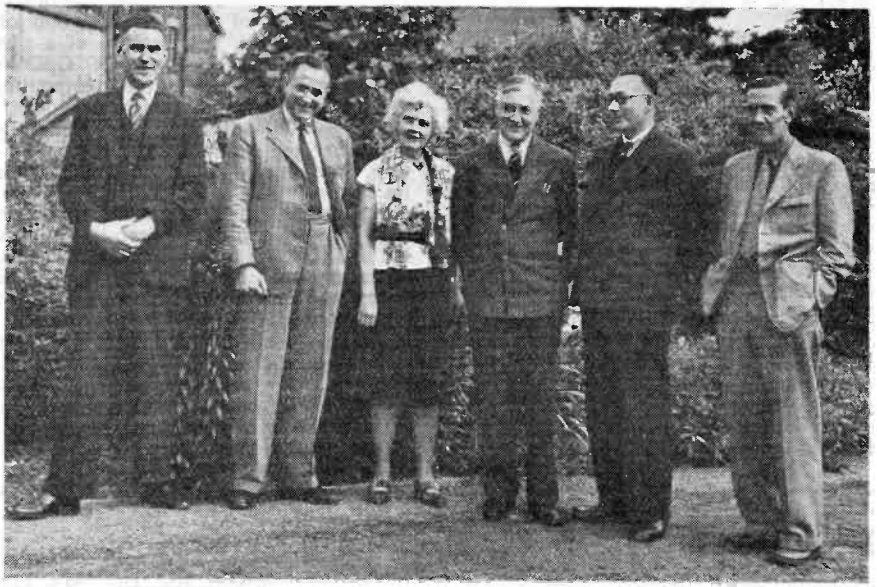
From Overseas

A letter from ZD2K (S. G. Kitchen, now in this country) tells us that after he left Nigeria another ZD2K, giving his QTH as RAF Lagos, turned up. (We know—we worked him!) The original ZD2K accuses this second gentleman of being, well, a pirate, but as the latter has since changed his call to ZD2KC, we imagine that all is well.

J4AAK/G4LV (Miho, Japan) says conditions have not been good, and the humid weather *plus* millions of mosquitoes have not been conducive to DX: but he worked VK9BW (QTH in list), MX3BG and KA6AB (Panay Island). He also sends a short list of G Calls Heard.

A most amusing letter from F3HK (Louveciennes) asks what all this "WAZ" business is about, and says, "We French boys have been drinking too much water lately, since we are expected to swallow the crazy notion that the output of our old vines has fallen to nil. So we have to turn to Amateur Radio and without a list of

I'll be quite brief about the rig here. . . .



An occasion in Sheffield. Reading from left to right, G3FA, G2MF, Dorothy Hall W2IXY, G2HQ, G4JW and ZC6MF

prefixes and Zones nothing can be done, since the last time R.E.F. published any was in 1789, and they have got a bit obsolete." So, of course, we sent him a Zone Map !

VQ3WCP, late of Tanganyika, asks us to state that his call is now obsolete, and he will shortly be on the air as VQ5WCP in Uganda (full QTH in list).

VQ2DH (QTH also in list) is up on 14028 kc at 1900 GMT every day, and wants G's to look for him. He is also on 28160 kc at 1630 daily, and hopes to have a rotary 8JK firing before long. He will be glad to act as a QSL Bureau for the VQ2 boys, as he is at the GPO there and has a complete list of them !

G3BFV has by now arrived in Simonstown, South Africa, and hopes to have a ZS1 call very shortly. We will publish it when we know, because he is naturally anxious to work G's as soon as he can.

ZD4AM (Tafo, Gold Coast) is trying to keep off his receiver so as to get his transmitter built with the minimum of delay, but we note that his excellent and most useful list of G Calls Heard appears to be as long as ever ! He will be on soon, using his 220-volt DC mains as power supply.

VQ3ALT (Dodoma, Tanganyika) finds 28 mc opening up, and sends a little list of Calls Heard. He receives both G's and VK's at 0700 GMT, and can usually hear both ends of a QSO between them.

21 mc and All That

There is no reason to doubt that we shall have a 450 kc band at 21 mc one of these days—and very nice, too. For the present there's not much one can do about it except try to squeeze a little more third harmonic out of that 7 mc CO, and ruminate on the subject of aerial systems. We all know the polar diagrams of half-wave, full-wave and two-wave aerials by heart, but how many are equally conversant with three half-waves ? A 67-ft. top will be quite a nice thing to have (provided it runs in the right direction).

One thing we have decided upon—that with a clean start on a new band like this we must have a WAZ/Countries Worked Marathon on 21 mc only, right from the first day the new band is open. It should be a big help in reducing the QRM on 14 mc, if nothing else ! To the first scorer of the century on 21 mc we bequeath our last 807 (the one with the loose base), complete with full set of parasitics. As for the first to WAZ on the new band—if it happens before 1949 we just shan't believe him.

What End In View?

A long and thoughtful letter from G8DV (Farnham) puts forward the sound opinion that too much DX-chasing is rather pointless these days in view of the relative ease of achieving results, compared with the pre-war days. G8DV says "All that is required is (*a*) a moderately efficient aerial, (*b*) 100-150 watts, (*c*) a VFO, good, bad or indifferent, (*d*) a good commercial receiver (no good DX-chaser could ever spare the time off the air to build one himself), and (*e*) patience, concentrating on the end in view, whatever that may be."

Using all this, G8DV has knocked off 38Z and 102C in three months, so he concludes that the pastime is overrated and gets us nowhere. He says that DX for its own sake is not the best thing in the world for our hobby, as we may tend to forget the more leisurely and friendly side of it—the satisfaction of turning out a good job in the workshop, the pleasure of a rag-chew. The general theme of G8DV's little homily is "Keep the competitive spirit more for contests, where it belongs." We agree that there is a danger of making Amateur Radio one enormous competition, which would not be the best thing for its future. DX is, of course, only one aspect of the game, and many operators whose callsigns never appear in any DX list make just as big a contribution to the art as anyone else. We *still* like a nice cosy chat with a W6, or even a W1—or even another G!

Nothing now remains except to give next month's date, which is September 12, first post. *Please* send those WAZ claims on post-cards, and don't forget to make separate 'phone claims if you are interested. Until then, Good Hunting.

CALLS HEARD

Please arrange all logs strictly in the form given here, in numerical and alphabetical order and on separate sheets under appropriate headings, with callsign and address on each sheet.

14 mc

ZD4AM, West African Cacao Research Institute, Tafo, Gold Coast Colony.

CW: EI6G (55), 7Q (44), 9P (33), G2ABC (566), 2ACZ (33), 2AKQ (55), 2AYZ (44), 2BCX (46), 2BJF (32), 2BUY (45), 2CBA (44), 2CCD (55), 2CIW (44), 2CNN (44), 2DZT (44), 2FDC (568), 2FDF (44), 2FK (55), 2FPO (44), 2FSP (338), 2FSR (44) 2FXQ (55), 2GK (33), 2HAX (45), 2HLN (33), 2LU (57), 2MZ (56), 2NS (558), 2SB (558), 2UA (44), 2UT (568), 2YY (44), 3ABV (44), 3ACC (55), 3AGR (338), 3ARE (44), 3ATT (43), 3AUZ (44), 3AVK (448), 3AWK (44), 3AZ (44), 3BOI (33), 3BQ (568), 3BU (33), 3CDG (55), 3FM (44), 3FS (44), 3GF (55), 3GX (44), 3JW (55), 3LB (448), 3NW (558), 3SN (54), 3SR (44), 3VN (33), 3XD (33), 3YC (34), 3YF (34), 3YT (44), 4FB (33), 4IC (558), 4MU (568), 5BJ (558), 5BZ (57), 5HH (558), 5IP (33), 5JU (55), 5OO (45), 5RS (55), 5RZ (44), 5VQ (557), 5VU (44), 5WM (448), 5XW (56), 6BQ (55), 6CJ (44), 6GM (558), 6GN (57), 6IC (558), 6KP (45), 6OY (557), 6RC (55), 6TT (56), 6UP (448), 6UT (55), 6WO (56), 6XX (558), 6ZA (55), 6ZQ (44), 8AL (55), 8DD (44), 8FC (57), 8FL (44), 8GO (448), 8JJ (55), 8JR (44), 8NF (567), 8PP (44), 8RC (447), 8TR (448), 8TV (568), 8VV (55), GI5UR (44), GM3RL (44), GW3ZV (578), 8UH (566). (*July* 1-*July* 30. *RS in brackets, T9 unless otherwise stated. Receiver: O-V-1.*)

J4AAK, B.C. Air Station, Miho, B.C.O.F., Japan

G2BOZ, 3BI, 4HJ, 4IF, 5VB, 5VQ, 6GN, 8GP, 8JJ, 8KU, GW3ZV GM6IS.

G6ZO in Ankara, Turkey.

G2AAU, 2AHP, 2CHI, 2CIX, 2CIW, 2CJH, 2CNN, 2DH, 2DHR, 2DU, 2FDC, 2FK, 2FMC, 2FXQ, 2HNC, 2HNO, 2HPF, 2IM, 2KG, 2KU, 2LU, 2OC, 2OS, 2PL, 2QO, 2SO, 2TT, 2UV, 2VK, 2YY, 3ABH, 3ADP, 3AGN, 3AMO, 3ATK, 3ATM, 3AZ, 3AZE, 3BI, 3BIN, 3CFN, 3DM, 3FM, 3GY, 3KP, 3MZ, 3QQ, 3QV, 3SR, 3WS, 3YH, 4CP, 4DH, 4FN, 4IC, 4MU, 5BZ, 5CV, 5DQ, 5DV, 5FN, 5JU, 5LI, 5LY, 5NL, 5QB, 5QG, 5RK, 5UX, 5XW, 5YV, 6BB, 6GN, 6NV, 6TC, 6UT, 6VQ, 6XT, 8AX, 8BM, 8DD, 8FC, 8FW, 8II, 8JR, 8KG, 8KP, 8MZ, 8PP, 8QY, 8RF, 8RC, 8RL, 8UK, 8VV, GD2FRV, GI5HU, GM2LQ, 2OY, GW8UH. (*July* 7, 8 *and* 9.)

7 mc

G6OZ in Ankara, Turkey.

G3ABN, 3ACI, 3BTA, 3BUE, 6DK. (*July* 7.)

28 mc

VQ3ALT, Dodoma, Tanganyika.

G2FPP, 4IN, 4MT, 5RF, 6TD 6WN. (0700-0745 *GMT.*)

FIVE METRES

SWL, Arundel, Knighcott, Banwell Somerset.

F3HL, G2AAW, 2DWI, 2ZG, 3AST, 3AWP, 3BM, 3HW/P, 3KX, 3YH, 4LU, 5BY, 5JU, 6BW, 6LQ, 6TO, 8QX/P, 8TU, GW3VL, 4FW, HB9CD, I1DA, 1IRA. (*Rx: R.1147B modified. Aerial: Rotatable 5-metre Windom.*)

HB9BZ, Uster, Nr. Zurich, Switzerland.

Worked: G2BMZ, 3ABA, 3YH, 5BY, 6LK, GM6WL, GW2AVV, 6QK, SM5AI, 5FS, 5SI, ZB1E.

Heard: F8YZ, FA8IH, G2AK, 2WS, 2XC, 2YL, 3DA, 3IS, 4LU, 5CP, G5LJ, 5MA, 5MQ, 5OJ, 5ZT, 6XM, GM8AH, 8MJ, OZ7XU, SM5GQ, 5PE, ZB1AB, 1AC. (*Period July* 16-*August* 6.)

G3WW, North House, Wimblington, Nr. March, Cambs.

Worked: G3BK, 3BXE, 5BD, 5IG, 5MA, 6DH.

Heard: G2FKZ, 2MV, 2NH, 2XS, 3AAT, 4IG, 4LU, 5BS, 5WP, 6VX, 6XM, 6YS, 6YU, 8QM, 8QX, 8UZ.

G6MN, Castlemount, Worksop, Notts.

Worked: F8MG, 9BG, G2XC, 5BY, 5VM, 6BX, 6LC, 8JO, HB9CD, I1IRA.

Heard: HB9BZ, ON4IF. (*July* 26-*August* 14.)

FIRST CLASS OPERATORS' CLUB

PRESIDENT: GERALD MARCUSE, G2NM

HON. SECRETARY: CAPT. A. M. H. FERGUS, G2ZC

With no less than twenty-one new members registered this month, the F.O.C. has now passed the 50-mark on total active membership to date, in a period of nine months since the rebirth of the Club in November of last year.

Though this is a most gratifying indication of the real interest there is in the ideals and standards of the Club—demanding good and considerate operating and a code of behaviour on the air as prerequisites of membership—it is still barely one per cent. of the total of transmitting licences now issued in this country.

No doubt this figure could be considerably improved, in terms of mere numbers, by relaxing the high standard which the F.O.C. sets. But it never was the intention to encourage a large membership simply for the sake of numbers. On the other hand, transmitters of any age, either sex and irrespective of callsign status are very welcome as new members if they can meet these standards.

Open Contest

With reference to the open contest announced in the August issue of the *Magazine*, it should be noted that the three sections score separately and will be

---

SWL, 122 St. Andrew's Road, Coulsdon, Surrey.

F8SN, 9BG, I1AY, 1DA, 1XW, OK3ID, 4IDT, ZB1AC, 1E, ZB2A. (*Period July* 22-*August* 16. *Rx: Modified HRO. Aerial: 4-El. rotary.*)

G3BW, 53 Hill Top Road, Arrowthwaite, Whitehaven, Cumbs.

Worked: F3HL, 8CT, 8MG, 9BG, G3DA, 3BY, 3TN/P, 4BI (160), 5MZ, 5TH, 6LC, 6SQ, GM3BDA, 3OL, GW5YB, HB9CD, I1IRA, PAØHA.

Heard: F3DN, 9FT, G2BXL, 5BD (559), 5MQ, 6TL, 6MN/A (559), 6VX (339), I1AY, 1MAS. (*Distances or RST of GDX in brackets.*)

G2ADZ, Lloft Wen, Ardmillan Lane, Oswestry, Salop.

F3HL, 8CT, 8SN, 8XB, 9BG, 9BN, HB9BZ, 9CD, 9CE, I1AS, 1AY, 1DB, 1ER, 1IRA, 1JG, 1MH, 1XJ, 1XW, OK1RY, 3ID, 3IT, 4IDT, ZB2A.

Over 50 *miles:* G2ATK, 2BJY, 2IQ, 2RI, 3BY, 3PZ, 4BI, 5BK, 5BM, 5IQ, 5JU, 5LJ, 5VM, 5XV, 6MN/A, 6OS, 6YU, 8QX, 8WL.

Over 150 *miles:* G2MR, 2NH, 2XC, 3AAT, 3BXE, 4AP, 4DN, 4IG, 5BY, 5PY, 5RP, 5WP, 6DH, 6FO, 6LK, 6NB, 6NF, 6OH, 6VX, 6XM, 8LY, 8NV, 8SM. (*Reception only, period July* 26-*August* 13. *Receiver: O-V-1.*)

G2KF, Havencroft, Eden Bridge, Kent.

Worked: F8ZF, G2AJ, 2BMZ 2FKZ, 2FZR, 2QT, 2QY, 3BTC, 3BWS, 3BXE, 3YH, 5JU, 5MQ, 5RP, 5WP, 6DH, 6JJ, ON4IF.

Heard: F3HL, 3JB, G8WL, I1XW, ZB1A. (*Month ending August* 18.)

G2BRR, 10 Hillcrest Road, South Woodford, London, E.18.

F3HL, 3HN, 8NW, 8SI, 8ZF, 9BG, G2AJ, 2KF, 2MN, 2MR, 2NH, 2QY, 3BTC, 3BWS, 3CO/A, 3ID, 3PW, 4DN, 4ID, 5PY, 5RD, 5RP, 6DH, 6LK, 6LX, 6NF, 6VX, 8SK, 8SM, 8NV, I1DA, ON4ZA, SM5IH, 5GQ. (*Reception only, period July* 26-*August* 2. *Receiver: S.20R with converter.*)

G3ABA, 41 Manor Road, Rugby. Warks.

F3HL, 8SN, 8XT, 9BG, G2AIH, 2AJ, 2AK, 2ATK, 2BJY, 2BKZ, 2IQ, 2MR, 2MV, 2NH, 2OI, 2RI, 2XC, 3APY, 3BJQ, 3BXE, 3DA, 3IS, 3PD, 3WD, 3ZK, 4BI, 4IG, 4LU, 5BD, 5BY, 5JU, 5LJ, 5MA, 5MQ, 5WP, 6CW, 6DH, 6GF, 6HY, 6VD, 6VX, 6XM, 6YU, 8JV, 8QX, 8QY, 8SM, 8UZ, 8VN, 8WL, HB9BZ, I1AY, 1DA, 1JG, 1MH, 1PP, 1XW. (*Heard or worked during month.*)

G3YH, 24 Hall Street, Bristol, 3.

Worked: F9BG, G2KF, 2NH, 2XC, 3AAK, 4AP, 5BM, 5MA, 5XV, 6LK, 6OH, 6VX, 6XM, HB9BZ, 9CD, 9CE, I1DA, OZ7G, ZB2A.

Heard: F3DN, 3HL, 8SN, 9BG, G2ZG, 3BXE, 5BY, 5MP, 5VM, 6DH, 6NB, HB9CB, I1AY, 1BR, 1RA, 1MAS, 1XA, 1XM, 1XW, OK3IT. (*Period July* 22-*August* 7).

SWL, 6 Guildhill Road, Southbourne, Bournemouth, Hants.

CW: G2AJ, 2BMZ, 2KF, 2MR, 2MV, 2NH, 2QT, 2QY, 2WS, 2XC, 3BXE, 3YH, 4DN, 4DW, 4IG, 4MR, 5BY, 5MQ, 5OJ, 5PY, 5VM, 5WP, 5XB, 6DH, 6LK, 6OH, 6RB, 6VX, 6XM, 8GX, 8KZ, 8SM, 8TS, 8UZ, 8WL. (*All July* 23-*August* 15.)

'Phone: G2BMZ, 5MA, 6YU, OK4IDT (*All July* 23). G2AJ, 2BMZ, 2NH, 4KD, 5OJ, 5PY, 5RD, 5WP, 8NV, 8QX (*All July* 24-*August* 4). G5BY, SM5FS, 5GQ (*All August* 6). G2BMZ, 4JO, 5OJ, 6LK, 8TS, 8KZ (*All August* 7). HB9CD (*August* 8). G2AK, 2BMZ, 2CUA, 2HN, 3AAT, 4JO, 5MA, 5OJ, 5VM, 6LK, 6VX, 6XM, 8KZ, 8TS (*August* 9-15). *Receiver:* 1-*V*-1.

G8TS, Stoneyland, Byworth, Crandell Lane, Farnham, Surrey.

Worked: G2LC, 2NH/P, 2QY, 2XC, 3APY/P, 3BTC, 3CRO/P, 4AP/P, 4LU, 4MR, 4NT/P, 5IG/P, 5OJ, 5PY/P, 5RP/P, 6CW/P, 6LK, 6NB/P, 6OH/P, 8GX, 8NV/P, 8SM/P.

Heard: G2AK/P, 2IQ, 5JU/P, 5MQ, 8SK/P. (*All when operating G8TS/P on July* 20.)

Worked: F8NW, 8ZF, 9BG, G2BMZ, 2KF, 2QT, 3BLP, 4AP, 5BY, 5MR, 5VB, 6DH, 6JJ, I1AY.

Heard: F3IR, 3OO, 8XP, FA8BG, G2AK, 4LUK, 5BM, 6OT, ON4IF, ZB1AB, 1E. (*Fixed working July* 24-*August* 16.)

G4LU, Avalon, Pant, Nr. Oswestry, Shropshire.

Worked: F3HL, G2AK/P, 2ATK, 2ATK/P, 2BJY, 2CUA/P, 2MR, 2NH, 2NH/P, 2NV, 2OI, 2RI, 3ABA, 3AHX, 3APY/P, 3BXE, 3DA, 3NR, 3PZ/P, 3ZK, 3IS, 4AP, 4AP/P, 4BI, 4NT/P, 5AS, 5BK, 5BM, 5BY, 5IG/P, 5LJ, 5MA, 5MA/P, 5RP, 5RP/P, 6CW/P, 6HY, 6LK, 6MN/A, 6TL, 6VX, 6XM, 8DM, 8GX, 8JV, 8KL, 8LY, 8QM/A, 8QS, 8QX, 8QX/P, 8RS, 8TS/P, 8UZ, 8WL, 8WV, HB9CD, OK3ID, 3IT, 4IDT.

Heard: G2AJ, 2BKZ, 2NN, 3AAT, 3MY/P, 5BD, 6DH, 6FO, 6GF, 6NB/P, 6OS, 6YO, 8KZ, 8SM/P, I1BR, 1IRA, 1JG, ZB2A.

judged individually as sections, in each of which prizes will be awarded.

Letter Budget

With the big increase in membership, plans have had to be made to sub-divide the monthly L/B on a group basis, so as to ensure circulation within a reasonable time. All letters for the Budget should be in to G5JP by the 15th of each month.

Club Periods

By vote of the membership, these are now on Wednesdays 2000-2200 and on Sundays 1200-1330, clock time. The Club wave remains the 3500-3635 kc section of the 80-metre band, and during these periods all members sign "FOC" after the call. Club periods are not only meetings, but are intended to enable prospective members to make contact with the F.O.C. over the air.

Will all concerned please note, however, that there will be no meeting on Sunday September 21 nor on Wednesday September 24 in order to avoid unnecessary interference with a contest which will be taking place at those times.

There have been two slight alterations to the Club rules (obtainable on request from the Honorary Secretary). Ability to work break-in on at least two amateur bands is a condition of membership, and what was the annual subscription of 3s. has become an entry fee of that amount, since it is not proposed to levy any fixed annual subscription (Rules 3*b* and 8 refer).

Election Notice

In accordance with the Rules of the Club, the following have been elected to active membership of the F.O.C. :

J. Lees, G2IO (Sherwood, Notts.); R. Mitchell, G5LH (Horbury, Yorks.); J. P. Hawker, G3VA (Minehead, Som.); J. F. Moseley, G2CIW (Brentwood, Essex); H. F. Briggs, G4GF (Norwich); J. Davis, G5XY (Havant, Hants.); P. C. Scheller, OZ4FT (Gentofte, Denmark); W. H. Maycock, G5SK (Coventry); P. W. Gammon, G3VB (Haslemere); Mrs. M. Mills, G3ACC (East Dulwich); J. D. Kaye, G3AAE (Bournemouth); A. L. Clare, G6AX (Rochdale); R. F. Weston, G6PZ (Cranwell, Lincs.); T. F. Higgins, G8JI (Birmingham); S. H. Hasselbalch, OZ7T (Hellerup, Denmark); J. Gouck, GM3NH (Dundee); H. Nicholas, G3BQB (Dudley, Worcs.); E. G. Houldsworth, G6NM (Wilmslow, Ches.); H. C. Spencer, G6NA (Guildford); R. Ramsey, G3ARM (Guildford) and T. C. R. Littlemore, G8AX (Dereham, Norfolk).

Applications for membership and all correspondence regarding the F.O.C. should be addressed to the Honorary Secretary, Capt. A. M. H. Fergus, G2ZC, 89 West Street, Farnham, Surrey. (*Tel.: Farnham Surrey* 6067).

CARDS IN THE BOX

If your call appears in the following list, it is because we have not got your full address. We want it for there are cards waiting for you in our QSL Bureau. Please send a stamped addressed envelope of a suitable size, with your name and callsign, to BCM/QSL, London, W.C.1. The cards will be forwarded on the next G clearance.

G2ADL, 2AFM, 2AQN, 2AXA, 2AYZ, 2BTU, 2CFK, 2CWW, 2DHM, 2FZK, 2GBZ, 2HIL, 3AAP, 3ABN, 3ACY, 3AGF, 3AGG, 3AKO, 3ALK, 3AMH, 3AMO, 3AMW, 3ANX, 3APP, 3ASX, 3ATZ, 3AUP, 3AUR, 3AWK, 3AXT, 3AZP, 3BAN, 3BBY, 3BBZ, 3BCU, 3BET, 3BGN, 3BHS, 3BHW, 3BIE, 3BIP, 3BUR, 3BUU, 3BVL, 3BYF, 3CAJ, 3CAV, 3CBA, 3CDQ, 3JV, 3LM, 3TP, 3YV, 4BI, 4DH, 4DP, 4FG, 5JL, 5MN, 5NB, 5WL, 6FJ, 6GA, 6HK, 6II, 6OY, 6SI, 8DG, 8FC, 8SS, 3JP, 6FB, GM2FQG, 3ALZ, 3BGA, 3BQO, 4AA, 8MA, GW2ANT, 3ALV, 3AZQ, 3BHA, 3BYZ, 5BX.

HB's WAC'd

We see from USKA's journal *Old Man* that 46 HB's have made WAC on CW and 9 have achieved it on 'phone. In the main, the HB's do not use high power and the cost of equipment in Switzerland is very high.

BEAM AERIAL COMPONENTS

It is now possible to obtain, in the range of "Q5R9" products, all the materials required for the construction of 14, 28 and 58 mc rotary beams. These include not only elements and frames in various materials, but also rotating mechanisms, remote indicators, and masts, fittings and all the associated ironmongery.

Write Messrs. Emdo, Ltd., Ace Works, Moor Lane, Staines, Middlesex.

GOING UHF !

We see from current American publications that their war disposal advertisers are now offering the 3J31 magnetron for the equivalent of £5. This is the 1-cm. job, for frequencies around 30,000 mc. How have the mighty fallen !

Here and There

The Radio Exhibition

The first post-war Radio Show takes place at Olympia, London, during the period October 1-11. As befits the advances in the art and the new dignity accorded to radio as a potent factor in winning the war, the 1947 Exhibition will be much more than a display of broadcast receivers. The Show is also to cover transmitting and studio equipment for broadcasting and television, communications apparatus, the components trade, radar and navigational aid equipment, and electronic applications to industrial processes.

In a sense, therefore, Radiolympia reverts to the more interesting and useful type of exhibition of the mid-1920's, when the show was always well worth a visit of several days. By the late 1930's, however, it had degenerated into a mere display of standardised BC receivers in not-very-tasteful "cabinets", with practically nothing to interest the technician. But we may look forward to something of much greater worth this year.

For the first time, Radiolympia is sponsored by the Radio Industry Council, which co-ordinates the activities of the four manufacturing organisations—the British Radio Equipment Manufacturers' Association (BREMA), Radio Communication and Electronic Engineering Association (RCEEA), British Radio Valve Manufacturers' Association (BRVMA) and the Radio Component Manufacturers Federation (RCMF) — representing between them 170 firms, or 95 per cent. of the whole British radio industry.

With the object of attracting overseas interest in the Exhibition and stimulating export sales, the RIC is issuing to overseas buyers a well-produced booklet called "British Radio for the World."

Comment on some of the products at Radiolympia of interest in the short-wave field will appear in forthcoming issues of the *Short Wave Magazine*.

Zone Map Reprint

The first printing of our Zone Map having unexpectedly become exhausted before the new DX season has got fairly under way, a reprint has been put in hand, and copies will be available very shortly. It is without doubt essential to everyone interested in DX operation.

The Zone areas are delineated in red, and the Zone List complete is printed down the sides of the Map. It also gives magnetic (beam) bearing, distance and time in GMT of every part of the world relative to London—which, for this purpose, can be regarded as applicable to the British Isles. A reproduction of the Map appeared in our issue of May last.

The *Short Wave Magazine* **Great Circle Zone Map**: In two colours, size 21-in. by 35-in., on heavy paper for wall mounting, price 3s. 9d. post free. Order from the Circulation Manager, The Short Wave Magazine, Ltd., 49 Victoria Street, London, S.W.1. Trade enquiries are invited.

New QTH's

As during the last few months the number of readers requiring publication of a new callsign or a change of address in our "New QTH" feature has been rather larger than could be carried in the space available, we are printing a two-page list (approximately 120 QTH's) in the current issue in order to clear off the arrears. In general, however, only one page can be allotted for this service, and readers may be assured that all insertions are made in strict rotation.

Crystal Exchange

This month's offers are :

G3ADS, Barr Cottage, Runfold, Farnham, Surrey. Has 7214 kc crystal for one anywhere in 1·7 mc band.

G3BKU, 19 Bernard Avenue, London, W.13. Has 3519 kc in standard holder. Wants 7010 kc, or anywhere 7030-7050 kc.

G3BNI, 9 Morden Road, Chadwell Heath, Essex. Has 1733 kc with holder. Wants 7060 kc or near in holder.

Month with the Clubs

Due to heavy pressure on space and there being less than twenty Club reports this time, it has been decided to hold them over. Will secretaries please note that the closing date for October is September 12 and for November it is October 15.

NEW QTH's

This space is available for the publication of the addresses of all holders of new callsigns, or changes of address of transmitters already licensed. All addresses published here are automatically included in the quarterly issue of the Call Book in preparation. QTH's are inserted as they are received, up to the limit of the space allowance. Please *write clearly* and address on a separate slip to QTH Section.

G2AHL J. A. Rouse (*ex-VU2AD*), 3 Betchworth Avenue, Earley, Reading, Berks.

G2AUM A. G. Beckett, 13 Central Road, Arrowthwaite, Whitehaven, Cumberland. (*Tel. : Whitehaven* 712.)

G2BBP P. Elms, 23 Bearton Green, Hitchin, Herts.

G2BCB E. A. L. Barrall, 26 Capel Road, Colchester, Essex.

G2BYF W. H. Fox, 76 Broadway, Sheerness, Kent.

G2CKK P. King, 4 Broadmead Road, Folkestone, Kent.

GW2CUT L. Carter, 13 Letchworth Road, Ebbw Vale, Mon.

G2DFX T. J. Evans, 5 North Parade Terrace, Monmouth.

G2DLX A. J. Mitchell, 167 Southbury Road, Enfield, Middx.

G2DOM W. Holland, 10 Raphael Avenue, Tilbury, Essex.

GM2DRD J. J. Thompson, Jeanfield, Dundee Road, Forfar, Angus.

G2DTD L. W. Lamb, 93 Wymondley Road, Hitchin, Herts.

G2HBS E. M. Shepherd, 5 Cleveland Road, Ealing, London, W.13.

G2HCO E. Shields, Renishaw, Sheffield, Yorks.

G2HGI W. J. Paterson, 43 Roundwood Road, Ipswich, Suffolk.

G2HKW R. Uphill, 6 Elmhurst, Bedonwell Road, Belvedere, Kent.

G2OK E. A. C. Jones, 6 Gatcombe Road, Tufnell Park, London, N.19.

G2XS H. W. Sadler, Burnham House, Nelson Street, Kings Lynn, Norfolk.

G3AAQ S. L. Jacobs, 6 Blakebrook, Kidderminster, Worcs. (*Tel. : Kidderminster* 2033.)

G3AAZ Capt. G. G. Gibbs, Garthland, 81 Codicote Road, Welwyn, Herts.

GM3AJZ N. McKechnie, 4 South Union Street, Cupar, Fife.

G3AKW H. J. Hurst, 8 Carnsdale Road, Moreton, Wirral, Cheshire.

G3ALF R. J. S. Scotto, Ombersley, Barming Woods, Maidstone, Kent. (*Tel. : Barming* 86278).

G3ANW C. Paxton, 112 Riverside Drive, Mitcham, Surrey.

G3APY . Spragg, Wendover, Frederick Avenue, Kirkby-in-Ashfield, Notts.

G3ARD F. V. Bellamy, 60 Wygate Road, Spalding, Lincs.

G3ARL H. Buckett (*ex-VQ4HJB*), Radio Service, Queen Bower, Sandown, I.O.W.

G3AYM G. Reily, Myrescroft, Princess Road, Bournemouth West, Hants.

G3AYY L. Fletcher, 36 Scholes Lane, Prestwich, Lancs. (*Tel. : Preston* 1297.)

G3AZY R. Cornish, Garth Cottage, Combwich, Bridgwater, Somerset.

G3BAB F/L A. S. D. Burke, Officers' Mess, HQ 46 Group, RAF, Bushey Hall, Watford, Herts.

GW3BAZ J. Evans, 5 Llantarnam Road, Gabalfa, Cardiff, S. Wales.

G3BCI 31a Christchurch Road, Bournemouth, Hants.

G3BCP L. S. Dixon, 18 Silver Birch Road, Erdington, Birmingham 24.

G3BDQ J. D. Heys, c/o G3BRD, 35 Church Road, St. Leonards-on-Sea, Sussex.

G3BFZ Willesden Radio Club, 51 Dudden Hill Lane, Willesden, London, N.W.10.

G3BHD R. H. Whitley, 100 Fulbridge Road, Peterborough, Northants.

G3BIA J. H. Lord, 377 Chertsey Road, Twickenham, Middx.

G3BIN Sgt. A. Bosten, No. 10 W.T.S., Royal Signals, Garais Heu, Woodhouse, Loughborough, Leics.

G3BIO J. E. Anderson, 11 Congreve Terrace, Aycliffe, Darlington, Co. Durham.

G3BLG E. J. Chatfield, Woodland Lodge, Worcester Road, Great Malvern, Worcs.

G3BLW/A F. H. Gilbert, 17 Sybil Road, Leicester.

G3BMW A. A. Griffard, West Mill Kennels, West Mill, Ware, Herts.

G3BNB N. E. Barker, Holmlea, 118 Hawley Road, Cove, Farnborough, Hants.

G3BND Ashton-under-Lyne and District Amateur Radio Society, Astral House, Thompson Cross, Stalybridge, Ches.

G3BNM A. Whitelock, No. 8 Railway Cottages, Aine, York.

G3BNQ N. L. Carpenter, 19 Chelworth Close, Moredon, Swindon, Wilts.

G3BNY W. T. Horn, 186 Darley Avenue, Chorlton-cum-Hardy, Manchester 21.

G3BPL H. J. Virgo (*ex-VQ4HJV*), 94 Mangrove Green, Luton, Beds.

G3BPR J. C. Devlin, 7 Chiltern Road, Wendover Bucks.

G3BUK W. J. Kelsey, 15 Elm Grove Road, Littlehampton, Sussex.

GI3BVB D. R. J. Adair, Cosy Lodge, Culmore Road, Londonderry, N.I.

GI3BVR T. B. Crosson, 15 Little Diamond Londonderry, N.I.

G3BVX M. H. Pilkington, Firwood, Woodhill Road, Portishead, Som.

G3BWX Capt. A. L. Fayerman, Hestercombe The Ridgeway, Tonbridge, Kent.

G3BWX/A Capt. A. L. Fayerman, Royal Signals HQ Mess, Catterick Camp, Yorks.

GI3BXG A. C. Deeny, Clarendon Street, Londonderry, N.I.

G3BXS	A. G. Stacey, Green Lodge, Ridge Way, High Wycombe, Bucks.
G3BYP	G. W. Arnold, 24 Walsall Road, West Bromwich, Staffs.
G3BYV	Lt. J. Crerar, Blair Park, Crown Road, Sittingbourne, Kent. (*Tel. : Sittingbourne* 16.)
G3BZC	J. Bradshaw, 5 Elton Avenue, Manchester 19.
G3CAO	G. S. Powell, Gaywood, 137 Trelowarren Street, Camborne, Cornwall.
G3CAZ	J. J. Springate, 130 Grange Road, Gillingham, Kent.
G3CBH	B. Horton, Prescott, Haven Avenue, Bridgend, Stonehouse, Glos. (*Tel. : Stonehouse* 220.)
G3CCZ	E. L. Devereux, Wireless Wing, Barford Camp, Barnard Castle, Co. Durham.
GI3CDF	L. M. Lyske, 63 Church Street, Portadown, Co. Armagh, N.I.
G3CDG	D. H. Bearcroft, Buxton Cottage, Lingfield, Surrey.
G3CDK	R. I. Clews, 1 Hurstcourt Road, Sutton, Surrey.
G3CEG	B. King, 5 Byron Road, St. Marks, Cheltenham, Glos.
G3CEI	C. W. Brown, 25 Belltrees Grove, Streatham, London, S.W.16.
G3CEM	N. F. J. Schembri, 43 Laygate Lane, South Shields, Co. Durham. (*Tel. : South Shields* 1266.)
GW3CEN	R. S. Craig (*ex-VU2AP*), 91 New Road, Llanelly, Carmarthenshire, South Wales. (*Tel. : Llanelly* 848.)
G3CFJ	A. Munton, 15 Hillcrest Road, Yeovil, Som.
G3CFK	P. Harrison, 63 Southdown Road, Great Yarmouth, Norfolk.
G3CFW	N. Burton, 81 Harlington Road West, Feltham, Middx.
G3CFZ	F/O R. Aird, 166 Mill Lane, Newcastle-on-Tyne 4.
G3CGB	R. H. Eaton-Williams, B.Sc., 95 Greencroft Gardens, Hampstead, London, N.W.6.
GI3CGO	A. Whyte, Bellspark, Urney, Strabane, Co. Tyrone, N.I.
G3CGP	H. S. Sayer, 35 Marlborough Gardens, Whetstone, London, N.20.
G3CGQ	F. W. Tyler, 94 Alexandra Avenue, Luton, Beds.
G3CGY	B. H. Gay, 22 Claremont Road, St. Margarets, East Twickenham, Middx.
G3CIF	J. F. Rogers, West View, 35 Oak Road, Caterham, Surrey.
G3CIH	J. Osborne (*ex-LI2BO*), 46 Howard Road, Braintree, Essex.
G3CJ	E. H. Jones, 37 Canterbury Road, Farnborough, Hants.
G3DI	R. C. Fishlock, 51-53 Albert Street, Rugby.
G3FN	A. H. B. Cross, Fourways, 490 Richmond Road, Sheffield, 9.
G3OY	31 School Street, Moldgreen, Huddersfield, Yorks.
G3PZ	R. R. Waite, 254 Cheltenham Road, Gloucester.
G3RZ	Dr. T. A. Appleby, 8 Clifton Crescent, Wheatley Hills, Doncaster, Yorks. (*Tel. : Doncaster* 4877.)
G3RZ/A	Lt. T. A. Appleby, R.A.M.C., Military Hospital, Liverpool Road, Chester. (*Tel. : Chester* 1142.)
GW3VL	P. R. Jenkins, 100a Manor Way, Whitchurch, Cardiff.
G3WH/A	Capt. J. P. Edwards, R/Sigs., War Office Buildings, Droitwich Spa, Worcs.
GW3ZV	J. Banner, M.B.E., Cartref, Neath Road, Hirwaun, Near Aberdare, South Wales.
G4FC	F. Clarke, 646 Hanworth Road, Hounslow, Middx.
G4GN	W. Fletcher Cooper, M.I.E.E., Ravenswood, Weston Road, Gloucester.
G4OR	E. Roberts, 73 Merseyton Road, Ellesmere Port, Cheshire.
G4PO	Rev. T. G. Geddes, The Vicarage, Mattishall, Dereham, Norfolk.
G4QK	J. B. Roscoe, 39 Manor Way, South Croydon, Surrey. (*Tel. : CROydon* 5323.)
G5BT	C. W. Crook, 31 Sefton Road, Addiscombe, Croydon, Surrey.
G5CU/P	J. Cuthebrtson, Box 68, GPO, Warrington, Lancs.
G5HS	P. G. Hesten, 19 Southern Road, Thame, Oxon.
G5MF	F. A. King, Edzell, Tudor Road, Eastwood, Essex.
G5QK	M. Geddes, The Chalet, Woodside, Leigh-on-Sea, Essex.
G5QP	J. V. Parsons, 24 Upper Holland Road, Sutton Coldfield, Birmingham.
G6BS	B. M. Scudamore, The Plot, 52 Manton Drive, Luton, Beds, (*Tel. : Luton* 3804.)
G6DV	C. Noke, 33 Mill Lane, Ashton-under-Lyne, Lancs.
G6HL	S/L I. E. Hill, Woodminto, Shepperton, Middx. (*Tel. : Walton-on-Thames* 559.)
G6JJ	W. N. Craig, Red Roofs, 34 Blossom Way, Hillingdon, Middx.
G6OM	I. D. Auchterlonie, 4 Stand Close, Ringley Road, Whitefield, Manchester.
G6SQ	J. W. Nuttall, 76 Longacre, Southport, Lancs.
G6SY	J. F. Stanley, The Frith, Mersham, Ashford, Kent.
G6TC	Lynton House, Black Halve Lane, Wednesfield, Wolverhampton.
G6TR	T. F. Rendall, 2 Kings Avenue, Seaburn, Sunderland, Co. Durham.
GM6WL	J. W. Kyle, 199 Wilton Street, Glasgow N.W.
G8LX	22 Arundel Road, Kingston-on-Thames, Surrey.
G8LY	Miss Constance Hall, Restawhile, Clanwilliam Road, Lee-on-the-Solent, Hants.
G8RR	R. R. Rogers, 122 Hawley Road, Cove, Farnborough, Hants.
G8SW	R. S. Hennig, 7 Francis Road, Pinner, Middx.
G8WS	F. E. Stallworthy, 8 Beechwood Road, Sanderstead, Surrey.

FIVE METRES

Conditions Hold Up Well
The Relay Contest
European Summary
Activity Reports

By **A. J. DEVON**

BY and large, it has been another very successful month, with plenty of EDX and GDX for the regular operators and many new contacts made. The level of interest and activity, both in this country and abroad, now stands higher than ever before in the history of five metres.

In Europe, this happy state of affairs—which augurs so well for the future development of amateur VHF operation on still higher frequencies—is directly attributable to those pioneering G's whose own results (in every case the reward of patience and hard work) have stimulated and maintained that interest. There can be no doubt that without the present regular operation of so many British stations there would be very little European activity, and so the opportunities for proving the potentialities of 58 mc would have been few and far between, as was the case in pre-war days.

It is also true, of course, that we are now approaching the peak of conditions so far as the expected incidence of sporadic-E in the 11-year sunspot cycle is concerned, *i.e.*, next year may be even better than this, whereas before the war the spor-E openings were not so frequent—or were they? Anyway, in those days we had not got the necessary European co-operation to find out.

Taking the country as a whole, the best dates for spor-E this month have been July 23, 25, 26, 27, August 1, 2, 3, 6, 8 and 15; as indicated in the Summary of European Activity herewith, July 26 and August 3 were the best days in terms of the number of contacts made. But these were both week-end dates, and therefore it would be unwise to assume that the openings on other days would not have given results as good. The degree of activity at any given period is obviously a vital factor; though the average activity index must be much higher this year than in any previous one, the peaks of activity are necessarily outside normal working hours, since most of us have to work for a living and get some sleep occasionally.

In general, spor-E openings occurred for irregular periods at any time between noon and sundown. It can be expected that they will become fewer and of shorter duration at the autumn comes on.

GDX Conditions

As regards the incidence of ducting, the long period of warm, settled weather made GDX and near-European working possible almost every evening, with best conditions obtaining after midnight and in the early hours of the morning—but here again the level of activity at such times becomes a factor! Nevertheless, several operators have found the early mornings extremely good and while this weather lasts a session round about 7.0-8.0 a.m. is well worth trying.

Best days for GDX were July 22, 23, 25, 27, August 2, 3, 6, 9, 10, 11, 12, 13, 16, 17 18, 19 and 20, with the latter dates out-

FIVE-METRE
COUNTRIES WORKED LIST
Starting Figure, 3

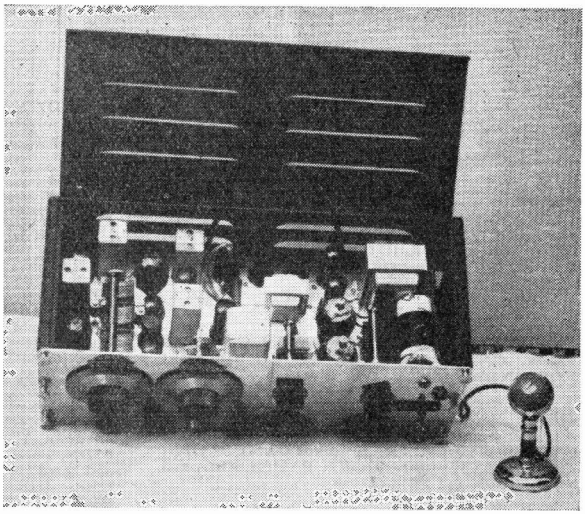
Worked	Station
12	G5BY (F, FA, G, GW, HB, I, OK, OZ, PA, SM, ZB1, ZB2)
11	G6LK (F, FA, G, GW, HB, I, OK, ON, PA, SM, ZB1) G6XM (F, FA, G, GW, HB, I, OK, ON, PA, SM, ZB2)
10	G2XC (F, FA, G, HB, I, ON, OK, PA, ZB1, ZB2) G5BD (F, FA, G, GW, I, OK, ON, PA, SM, ZB2)
9	G2NH (F, FA, G, GW, HB, OK, ON, PA, ZB1) G5MA (F, FA, G, GW, HB, I, OK, ON, PA)
8	G5MQ (F, FA, G, GM, GW, HB, I, OK) G6DH (F, FA, G, I, OK, ON, PA, SM)
7	G3BW (F, G, GM, GW, HB, I, PA) G3YH (F, G, GW, HB, I, OZ, ZB2)
6	G2MR (F, FA, G, I, ON, PA) G3DA (F, G, GM, GW, HB, I)
5	G2KF (F, FA, G, ON, PA) G5IG (F, FA G, ON, PA)
4	G3BXE (F, G, ON, PA) G6MN (F, G, HB, I)
3	G5BM (FA, G, I)

standing. On the evenings of August 19 and 20, conditions were markedly good north-south, and many stations from the Lancashire and Yorkshire areas not normally heard in the Home Counties were getting down to the far south with strong workable signals, steady over several hours.

Conditions Approaching

On the present showing, we can expect good GDX and near-European contacts on ducting for about another two months, though this can only be a guess. But more important than that, we are now getting towards the exceedingly interesting period when there are good prospects of long-range F-layer working in the north-south line ; contacts with 25 may be possible and the reception of W's on 50 mc is a reasonable probability. This was discussed in some detail here last month, when on American predictions the period November 10 to December 5, is suggested as being the most likely for Trans-Atlantics, round about 1530-1730 BST daily. The N-S path may open about the beginning of October.

So much for the general summary on the trend of conditions.



HB9CD has a nice driver unit for his P/P T55 RF amplifier. This end of the job is what he uses on 58 mc.

The Relay Contest

The support for this strikes a sombre note in what is otherwise a bright and cheerful story this month. There were only eight entrants ! By some who did not take part it was held (*a*) that the rules were too complicated. Others thought (*b*) that spor-E working should have been covered, and a few more are understood to be of the opinion (*c*) that by the rules the DX stations held such an overwhelming advantage that it was not worth entering anyway. All this may be true, and no doubt holidays also had something to do with it.

But our quick answers are (*a*) that the rules were in fact dead easy once the basic procedure had been grasped, and (*b*) that the Europeans could not easily have been brought into it without considerable preliminary work and with no certainty that spor-E would materialise during the period. And as for (*c*) it is impossible to devise, for a 5-metre contest, a simple system of rules that gives everyone an *equal* chance, since the factor of geography plays such a large part in determining who is to have an advantage.

This was the first Relay Contest as such ever to be staged in this country on any band. Nevertheless, it was a complete flop ! Where your abashed A. J. D. made an egregious error was in allowing all 12 messages to be cleared to one station ; this was done in the expectation that GDX conditions on any particular long-distance link were unlikely to hold up enough to make it *possible* to pass more than two or three messages. In the event, most stations participating had no trouble at all in clearing all their originators to a good DX contact.

Well, we live and learn ! But apologies are due to the following for our having to declare the Contest void, with only A. J. D.'s thanks for their enthusiastic support, their encouraging comments on the Contest, and their great trouble in sending in score data :

G5BY (8,061 points) ; G5MQ (4,280 points) ; G3DA (1,134 points) ; G8LY (1,044 points) ; G5BD (840 points) ; G2KF (432 points) ; G5JU (432 points) ; and G3BW (86 points).

We gather that they at least enjoyed themselves and got something out of it.

D

SUMMARY OF EUROPEAN FIVE-METRE ACTIVITY

July 22-August 17

July 22

G2NH worked PAØPN. GM3PB heard F9FT, ON4IF, PAØTG. G2XC worked ZB2A. GM6WL heard ON4IF, PAØPN. SWL L. C. Blanchard heard ON4KN, PAØPN, ZB2A.

July 23

HB9BZ worked SM5AI for first HB/SM contact, and heard OZ7G, SM5GQ. L.C.B. heard ON4DJ, ON4IF, OK3ID, OK4IDT. G5ZT worked OK3ID, OK4ID. G3DA heard OK3ID. G3YH heard OZ7G. G2NH worked OK4IDT.

July 24

G2NH worked ON4DJ, PAØPN. L.C.B. heard F8NW, ON4DJ, ON5G, PAØPN. G5BD heard F3JB, ON4DJ.

July 25

G2XC worked ZB1AC and heard ZB1E, ZB2A. G5BD worked ZB2A. G2NH worked ON5G, PAØPN, ZB1AC. G6XM worked ON4KN, PAØPN, ZB2A and heard ON4IF and ZB1AC.

July 26

HB9BZ worked G2BMZ, G3ABA, G3YH, G5BY, and heard G2WS, G2XC, G3IS, G5CP, G5MQ, G5ZT, GM8MJ. G3ABA worked I1XW and heard F3HL, F8SN, F8XT, F9BG, I1AY, I1DA, I1JG, I1MH. OK1VW heard G3YH. G2ADZ heard F3HL, F8CT, F8SN, F8XB, F9BG, F9BN, I1AY, I1JG, I1MH, I1XJ, I1XW. GM3PB worked I1DA and heard F8MG, F8SN, F8ZE, F9BG, HB9CD, PAØXN. G5ZT worked OK1FF. G3DA worked F9BG and I1AY. L.C.B. heard F8NW, F8SN, F9BG, I1AY, I1DA, I1XW, ON4IF, ON5G, PAØPN. GM8AH worked F3OO and heard F8SN, F8MG, F9BG. G3YH heard or worked F3HL, F8SN, F9BG, HB9BZ, HB9CD, HB9CE, I1AY, I1DA, I1XA, I1XW. GM8MJ worked F9BG. G6XM worked I1AY, I1XW, and heard ON5G. GM6WL heard F8SN, F9BG, I1AY, I1DA. G5BD worked F3HL, F8MG, F8ZE, I1DA and heard F8SN, F8XP, F9BG, HB9BG, HB9BZ, I1AY. G2NH worked ON5G. G5BY worked HB1GU, HB9BZ, HB9CD, HB9CE, I1DA, I1PZ and heard F8MG, F9AQ, F9BG.

July 27

G5BD worked PAØDX. G5ZT heard ZB2A. G6XM worked ON5G and heard PAØDX. L.C.B. heard I1AY, PAØPN. G5BY worked ZB2A for first ZB2/G two-way 'phone contact.

July 28

G3DA heard ZB2A.

July 29

G2ADZ heard OK3ID. G5BD heard I1AY.

July 30

GM6WL worked I1DA. G2ADZ heard OK3ID.

July 31

G2NH worked F8NW.

August 1

G5BY worked SM5AI, SM5GQ and SM5KD. G6XM worked SM5AI and OK3IT, hearing SM5SI. G2NH worked ON5G, PAØHQ. G2ADZ heard OK3ID, OK3IT, OK4IDT and ZB2A. G2XC worked OK3IT, OK4IDT. G3YH heard OK3IT. G5BD heard OK4IBC(??)

August 2

G2ADZ heard F9BG, I1DB. G3YH heard ZB2A. G5BD worked I1MAS. G6XM heard F9BG, OZ7G. G5BY worked HB9CD, I1PB.

August 3

G2XC worked F3HL, HB9CD, I1BR. G2NH worked ON5G. G2ADZ heard HB9CD, I1AS, I1ER, I1IRA, OK1RY. HB9BZ worked GW2AVV, G6LK, GW6OK, GM6WL, SM5AI, SM5FS, SM5SI and heard G2XC, G3DA, G4LU, GM8AH. OK-RP2610 heard G5BY, HB9CO, I1IRA. GM6WL worked HB9BZ and heard F3HL, F9BG, F9FT, HB9CD, HB9CE, ON4T. OK2BYX heard G2BC?, G3YH, OZ5XY and several G's not identifiable. G3DA worked HB9CD. G3YH heard or worked F3DN, F9BG, F9FT, HB9BZ, HB9CB, HB9CD, I1BR, I1IRA, I1MAS. OZ5XY worked OK3ID. OK2MV heard G5BY, D4, ON4 and OZ stations. GM3PB worked F9FT and heard HB9CD, I1DA. GM8AH worked ON4T for first GM/ON contact, and also unknown F station signing PIP. G5BD worked F3DN, F3HL, F8CT, F9BG, I1AD, I1ALD(?), I1DA and heard HB9CD, HB9FT. G6XM worked HB9CD, I1BR, I1IRA, ON5G. G5BY worked HB9CD, HB9DC, I1AS, I1BR, I1JG, I1OO, OK1RY, PAØGN. Many G's were heard in OK but could not be identified.

August 4

G5BY heard FA8BG. G5BD heard ON4DJ. G2NH worked F8ZF.

August 6

G5BY worked SM5FS, SM5GQ, SM7CT and heard SM7CW. G5BD worked ON4DJ.

August 7

G5BD worked ON4IF and heard ON4DJ.

August 8

GM6WL heard I1AS, I1AY, I1DA. G3DA worked I1DA. G3YH heard I1AY, I1RL. L.C.B heard I1DA. G5BD worked F3HL and heard F9BG, ON4IF. G2NH worked ON4DJ. G5BY worked I1AY and heard I1AS.

August 9

G6XM worked F8NW and F8ZF. G5BY heard PAØPN.

August 10

G2NH worked F8ZF.

August 12

G2NH worked F8NW, F8ZF, ON5G.

August 14

G5BD worked PAØDX, PAØPN.

August 15

G2NH worked F8ZF. G5BY worked SM5FS. G6XM received several OZ's and SM's.

August 16

G2NH worked F8ZF.

August 17

G6UH worked F8ZF. G6XM heard F8GH and F8NW, worked F8ZF.

Who Did What

G3BW (Whitehaven, Cumbs.) one of the outpost stations of our 5-metre empire, is anxious to give anyone who needs it a new county—he wants a few himself, too! G3BW is on five only, is there every evening with CW on 58·8 mc and has heard G6VX. To get even ten counties he must make contacts of 100-150 miles or more, which is tough going. But as the result of this note he hopes to be attacked from all sides ! Schedules will be welcomed.

G5BY (Bolt Tail, S. Devon) as at August 19 had made a total of 53 spor-E EDX contacts for this summer. He has heard G6OS (Hull) and PAØPN (400 miles) on ducting, a meteor reflection peaking the PA to S6. Hilton's QSO's with ZB1E (Malta) and ZB2A (Gibraltar) were the first two-ways on 'phone between G and those places. In general, G5BY has not found GDX too good down there this month, though he has worked G6MN and G8UZ.

G3DA (Handworth, Ches.) is getting out well and has been one of the EDX workers —*see* Summary of Activity. He gets G3BW quite consistently and on July 27 tried to connect him with G5BY, which would have been a new GDX record. Stations worked by G3DA are G3ABA (Rugby), G3BXE (West Wratting), G4BI (Loughborough), G5YV (Leeds), G8TR (Padgate), with G2RI (Leicester) heard.

G2NH (New Malden) finds the near F's, ON's and PA's are like locals now and has no difficulty in working them most evenings. He thinks, and we agree, that the past month has been the best yet experienced on the band for consistent results. The northerners still on at that time were coming in exceptionally well at G2NH between midnight and 1.0 a.m. August 15-19, and he has also found conditions good between 0700-0930 BST. Ernest never sleeps !

G2XC (Portsmouth) has been away most of the month, but up to August 4 had worked a lot of EDX and some good GDX ; the schedule with G6DH keeps up well.

Up North

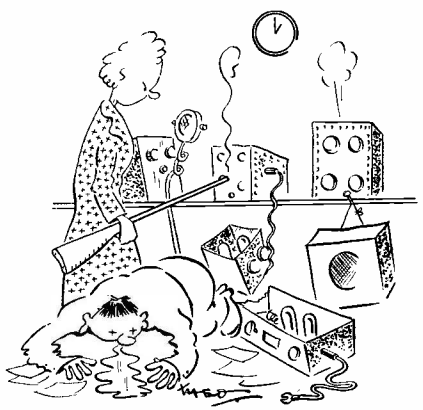
The GM's are very active and are still hoping for G contacts to the far south. G6XM (Farnborough) heard GM6WL on August 3, for confirmed reception. The Scots on every evening are GM's 2DI, 3PB, 5VG, 6WL, 8AH and 8MJ, with several others about not so regularly. They are all particularly anxious that the G's should know that they do beam south ; some of them have done very well with the EDX—*see* Summary—and GM3PB has had reception reports from Austria and Czechoslovakia. SWL J. M. Graham (Glasgow) is our informant on these activities.

G2ADZ (Oswestry) continues to do amazing things with his 0-V-1—*see* Summary and Calls Heard—and is now on the air. He was working stuff to the south on the evening of August 20, so has made a good start with the Tx.

G3ABA (Rugby), in a badly screened location, makes yet another who began on 5 metres and has been on the band for over a year. He had very little luck to start with, but having rebuilt the converter and aerial system several times is now knocking them off with the best. Though G3ABA is still working hard for his 14C, he has at last achieved regular schedule-keeping with G4LU (Oswestry) on an early morning session at 0700 BST. It will be interesting to see how long it can be maintained under the changing conditions.

G5JU (Birmingham) has brought in a number of new stations and has heard for the first time G2AOK, G3AAT, G3BW, G3DA, G4KV, G5AS, G5RS, G6DH, G6LC, G8QM and G8WV. On August 13, G5JU/P was out and among others worked G2RI (Leicester), G3ASC (Oswestry, with his ½-watt " Walkie-talkie ") G5BY and G6OH. The portable gear comprises EP5O-EF5O-QVO4/7 with 14 mc crystal for Tx, and a TRF straight Rx, all fixed up in the car with a 2-element beam and vertical whip aerial.

G3ASC (Oswestry) has been getting quite extraordinary results with the



This station is now QRT.

famous TBY-8 "walkie-talkie" job, actually working I1IRA on August 4. While one knows that it is only spor-E that can make this sort of thing possible, to get R5 S5/6 on 'phone from Italy with a Tx of that kind is astounding. Other Continentals were heard that day on the TBY-8 receiver, but unfortunately G3ASC had to QRT before getting a chance to try and work them.

FIVE-METRE FIRSTS

France :	G2FA/F8NW, March 29, 1936.
Italy :	G5MQ/I1IRA, July 2, 1938.
Holland :	G2AO/PAØPN, August 17, 1939.
North Africa :	G5BY/FA8B, June 24, 1946.
Switzerland :	G5BY/HB9CD, August 22, 1946.
Sweden :	G5TH/SM5FS, May 24, 1947.
Denmark :	GM8MJ/OZ7G, May 24, 1947.
Belgium :	G6DH/ON4KN, May 25, 1947.
Czechoslovakia :	G5BY/OK2MV, June 22, 1947.
Malta :	G6LK/ZB1AB, June 30, 1947.
Gibraltar :	G2XC/ZB2A, July 22, 1947.

G8TS (Farnham) has put up a 3-element beam with greatly improved results ; the Tx is 6AG7 tripler-VT501 doubler-807 PA, the receiver being EF54-EF50-6J5-2 IF 1·6 mc into a 6SN7 detector-amplifier, with noise limiter. He is up most evenings between 2200-2300 BST and is particularly anxious to work north, in which direction there is an immediate hill.

G3WW (Wimblington, Cambs.) reports for the first time with the "usual story—" much trying, no results, then suddenly off he went ; *see* Calls Heard. G3BK and G5IG helped with comparative tests on the G3WW converter, which is now giving results, but not strictly as laid down by the book. However the wheels are turning and with his Type 37 oscillator/832 PA G3WW should be making himself heard. He remarks that the 5-metre Sunday morning 'phone sessions in the Home Counties area would be more useful and interesting to him if the operators would give their callsigns intelligibly ! G3WW also listens from 1900 most evenings and would like schedules.

G2ATK (Birmingham) has added a fourth element to the beam and is getting very much better results thereby. The spacings are : Reflector, 29½ in. ; 1st and 2nd directors, 18½ in. ; Dimensions : Reflector, 102 in. ; aerial, folded dipole, 94 in. long with 2 in. spacing between elements ; 72-ohm feeder ; directors, both 90 in. long. Elements, ⅜ in. diam. thin wall dural tube. This aerial brings him in all the South London regulars with good contact both ways, and G4LU in the other direction is also a consistent signal G2ATK has found that CQ at odd times can give unexpected results—he raised G3ZK (Halifax) and G2FKZ (Dulwich) on week-end mornings. He also passes on a good tip for nearby BCI trouble—a 10,000 ohm grid stopper in the DD triode input, since much BCI is due to direct pick-up on the LF stages ; test for this by varying the receiver tuning and volume control. If the QRM persists under these conditions, the grid stopper may be the cure.

G2KF (Eden Bridge, Kent) has at last got into the Midlands with a good contact with G5JU and has also worked G3BXE, both difficult QSO's from his location. To the south, he is now running a regular schedule with F8ZF (Boulogne) at 2300 nightly, with 'phone working both ways. F8NW is also interested in these tests, by which F8ZF is attempting to prove that they are by extended ground-wave and not due to ducting or other random effects.

On the evening of August 24, G2KF worked G2TK (Scarborough), which represents an excellent GDX contact. G2TK also QSO'd F8ZF.

G6XM (Farnborough) is out to burn the leaves off the trees with a new stacked array ; he is doing extremely well with the existing beam, as the Summary and panels show.

G4AP (Swindon) has got the Rx right at last and is using 6AK5-955-EF50 at the front into a home-built super. He has discarded the long-wire aerial in favour of a beam, which was lined up outside and then had to be re-trimmed when mounted in the rotating position. G4AP is now hearing stuff he never got before and is anxious for contacts north.

Panels—and Geography

When we remarked in May that there would be border-line cases in connection with this Counties Worked business, we hardly knew how right we were ! G8QM/A, whose postal address is Suffolk,

is actually in Cambridgeshire by no more than a few yards—so G6VX loses him and joins the other six stations who have worked 26 counties. Then there is G3YH of Bedminster, Bristol, worked by many stations. He must count for Gloucester, as Bedminster is in the administrative area of the "County of Bristol"—in order to keep the thing on a reasonable basis, the only county of this kind we recognise is the County of London; many of the cities and large towns of England and Wales are county boroughs, but for our purpose are regarded as belonging to the counties in which they are located. This may not be strictly right by definition, but it is fair for everyone, and prevents the most appalling complication.

Counties yet to be worked by the seven top-liners are Denbigh, Cumberland and Durham, in which there are stations active.

G5BY goes to the top of Countries Worked, though even at that he has scope with GM and ON still to bring in.

There has been quite a change in the Counties and Countries panels this month, and a number of additional call-signs appear in both. There is also a slight change in "Five-Metre Firsts"; we attributed the first OZ contact to GM6KH instead of to GM8MJ, now corrected; only a few minutes separated them, and we were misinformed at the time.

FIVE-METRE COUNTIES WORKED LIST

Starting Figure, 14

Worked	Station
26	G6LK (208), G2XC (177), G2NH (170), G6XM (121), G5BY, G5MA, G6VX
25	G2MR (164)
24	G5BD
22	G5MQ, G6YU
21	G4LU
20	G5JU, G8SM
19	G2YL, G3BXE, G5BM, G5IG,
18	G6OH (106), G4IG, G8UZ, G6MN
17	G3DA, G3IS, G6CW
16	G2KF, G2NM, G3AAK, G4AP, G5PY, G8KZ
15	G6FO
14	G2ATK, G2RI

Note: *Figure in brackets after call is total of different stations worked; starting figure,* 100.

Shorts

G6MN (Worksop) noticed the patchy effect of spor-E on August 3; he was working stations that could not be heard in Darlington, 120 miles to the north .... G3BXE (Wratting, Cambs.) now has his P/E set installed but suffers from a chirp due to generator drag. .... G8KZ (Kensingon, London) has worked all his 16C on 'phone, and very nice 'phone it is, too ... G2RI (Leicester) has been on about a month and uses VFO drive to an 813, with an L/W aerial on the Tx and a 3-element for the S.27. .... The mysterious Frenchman PIP is interesting the GM's; he gave GM8AH a report in proper form and then went into a gramophone programme. .... G6SQ (Southport) is getting into GM. .... G8QM says he is going to settle with Suffolk by going portable shortly in that county. .... G5BM (Gloucester) is thinking of sending a missionary expedition over the border to Wales; he just doesn't hear the GW's! .... SWL A. H. Bower (Hull) has taken the whole thing to pieces and has started again with the Rx; having passed his R.A.E., he will be on the air soon—good luck with that Tx you've planned. .... SWL's P. J. Towgood and L. C. Blanchard come in with good reports again, covered in Calls Heard and the Summary. .... G3AAT wants it said that as he does not QSL anybody at all, he would rather not receive reports from listeners. .... G4LX (Newcastle) wonders who it was in the south who heard him 'way back in May or early June; he would like the report, lost in a QSP on 7 mc. .... G5MP (Hythe), cut off from the North, is beginning to hear G's for the first time! For years, his locals have been the F's .... G5ZT (Plymouth) is thinking of putting up fixed reflectors on the hills to the east and north-west of his QTH, with the idea of urging the GDX his way; an ingenious idea which might be worth trying. .... All others reporting are covered either in the Summary or in Calls Heard.

October Date

With but a few hours in hand for the dead-line, your perspiring A. J. D. has time only to say thanks again for the wonderful mail, and please let us hear from you by September 16 latest for the October issue —A. J. Devon, c/o *Short Wave Magazine*, 49 Victoria Street, London, S.W.1. (ABBey 2384). CU 1/10/47.

The other man's station

G3SN

The photograph gives a general impression of G3SN, operated by R. P. Ellis at 7 Sidwell Terrace, Longbrook Street, Exeter, Devon. With the exception of the receiver, all the gear is home-built.

The rack-panel all-band transmitter assembly stands 6 ft. 8 in. high and the sections, built up from the bottom, contain the 1,000- and 600-volt power supplies, and switching circuits, the 100-watt Class B modulator with a pair of 807's in Class AB2, the 6V6 CO stage linked to two 6L6's in a switched three-band exciter unit, an 807 buffer amplifier, and finally a pair of 4304 triodes in the push-pull PA.

Other points to mention are that in the top deck of the rack there are individual coil-condenser assemblies for each of the three bands used, and that the CO stage incorporates 10 crystals which can be selected by the rotary ceramic switch on the front panel.

The aerial in use at G3SN is that described on page 174 of the May 1947 issue of the *Short Wave Magazine*. This gives very excellent results and on 7 mc an outstanding contact was with ZS1FG, who reported G3SN's 'phone at S9 at a time when no other G's could be heard on the band.

G3SN remarks that if a transmitter be built with each unit entirely separate and well screened, it can be very stable and will give most satisfactory results on all bands. Such a form of construction also makes for ease of assembly and servicing, while it remains sufficiently flexible to permit of changes to be made on the various units without disturbing the transmitter as a whole.

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EF50'S tested, 7/-, Ceramic EF50 valveholders, 1/3. List surplus and new goods, 1d.—G8FJ 7 Kingshill Crescent, St. Albans.

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