

The SHORT WAVE Magazine

2/9

VOL. XIX

DECEMBER, 1961

NUMBER 10

a new concept from hallicrafters

a complete AM/CW station . . .

IN KIT FORM

OR

FULLY WIRED AND TESTED



HT 40 TRANSMITTER

This handsome transmitter gives excellent CW and AM performance with easy tuning and neat styling.

Price : HT 40 KIT, £43 Fully Wired and Tested, £52

FEATURES

D.C. output 75 watts T.V.I. filtered. Fully band-switched covering the 80, 40, 20, 15 and 10 metre amateur bands.

VALVE LINE UP

6DQ5, PA; 6CX8 crystal Osc. and driver; 12AX7 speech amp., 6DE7 modulator; silicon H.T. rectifiers.

CONTROLS

Function switch (A.C. off, tune, standby, AM., CW); band selector; drive control plate tuning; plate loading crystal V.F.O. switch; grid/plate current metre; pilot lamp.



SX 140 RECEIVER

This receiver has been designed as a matching unit to the HT 40 transmitter and covers the amateur bands from 80-10 metres and also the American 6 metre band.

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FEATURES

High sensitivity; sharp selectivity; complete with R.F. stage, S-meter, aerial trimmer and crystal calibrator; tuning ratio 25 : 1.

VALVE LINE UP

6AZ8 tuned R.F. amp. and crystal calibrator; 6U8 oscillator and mixer; 6PA6 I.F. amp. and B.F.O.; 6T8A 2nd detector, A.V.C., A.N.L., and 1st audio; 6AW8A audio power amp. and S-meter amp.; silicon H.T. rectifiers.

CONTROLS

Tuning; aerial trimmer; cal. reset; function; band selector; cal. on/off; R.F. gain; A.N.L. on/off; selectivity/B.F.O.; audio gain; S-meter adjust; phone jack.

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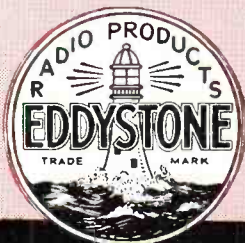


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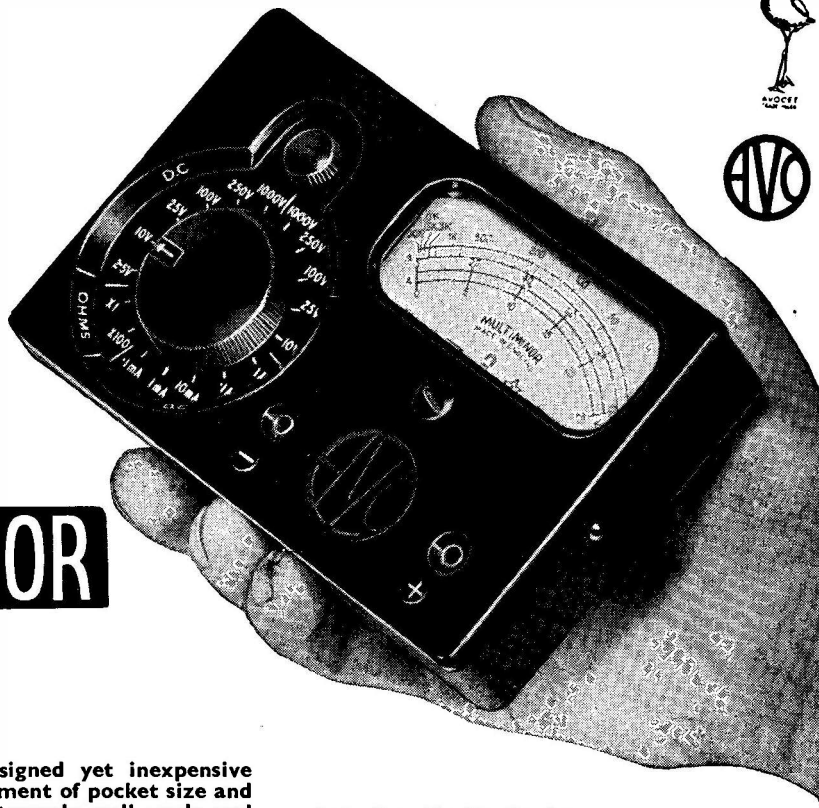


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● Write for fully descriptive leaflet.

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0— 100 mV.	0— 10 v.	0— 100 micro A
0— 2.5 V.	0— 25 v.	0— 1mA
0— 10 V.	0— 100 v.	0— 10mA
0— 25 V.	0— 250 v.	0— 100mA
0— 100 V.	0— 1000 v.	0— 1 A
0— 250 V.		
0— 1000 V.		

Resistance
0—20,000 ohms
0— 2 M/ohms

Sensitivity :

10,000 ohms per volt on D.C. voltage ranges.
1,000 " " " " A.C. " "

Accuracy :

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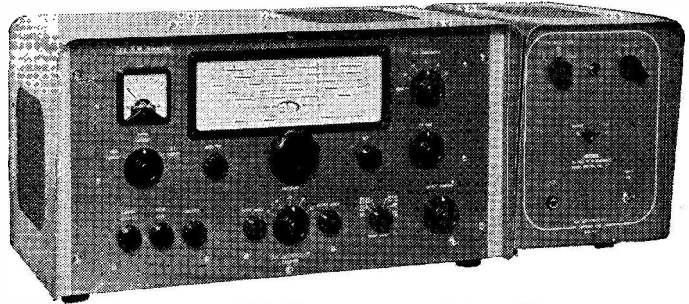
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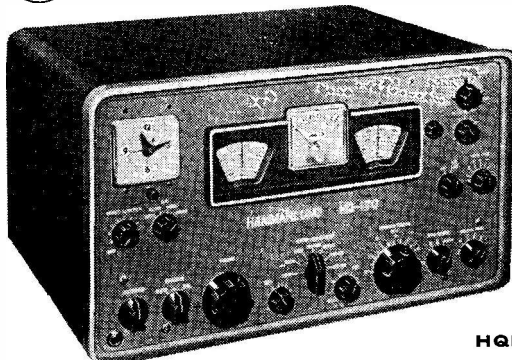
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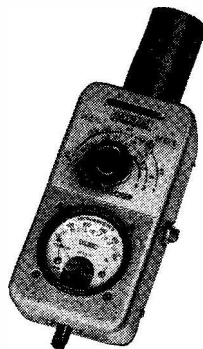
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The
SHORT-WAVE
Magazine

Christmas

Every year at this time it is our privilege and our pleasure to send those who may glance over this space greetings and good wishes for the Christmas season.

We number our readers in all corners of the world, literally from China to Peru and from Greenland to the Antarctic. Many will not be seeing these lines until well on in the New Year. In the realm of Amateur Radio, however, time and space are hardly ever factors of any great significance—for radio amateurs girdle the earth and are in constant communication. And it is in this realm of Amateur Radio that the spirit of Christmas still lives.

So once again we are happy to have the opportunity of offering our good wishes for their happiness and our thanks for their support to all our readers, at home and abroad.

From the Managing Editor and Staff of
SHORT WAVE MAGAZINE

Transistor Converter for Two Metres

DESIGN GIVING 15 dB
GAIN WITH TWO
TRANSISTORS

B. J. P. Howlett (G3JAM)

The author of this article has done a great deal of experimental work with transistors in VHF receiving circuits. The first outcome is the simple design discussed here, capable of giving entirely satisfactory results as a basic two-metre receiver using transistors.—Editor.

THE present offering is a development of the idea of a fully transistorised VHF converter using a low intermediate frequency — but it is one which probably could not successfully be carried out using, for instance, a 12AT7.

The Circuit

Referring now to Fig. 1, the full circuit of this converter, it will be seen to consist only of an RF stage, TR1, grounded base, and a crystal controlled self-oscillating mixer, TR2, also in grounded base configuration. The 11.834 mc crystal is oscillated in overtone at 35.5 mc, feedback from collector to emitter being *via* a 12 $\mu\mu\text{F}$ capacitor C10, the coil L3 being resonant with the strays at this frequency. The IF transformer, L4, L5, almost untuned, covers 2.4 mc and is in series with L3 and the collector; the junction between L3 and L4/5 is partially decoupled by C12. Oscillation can take place even without the crystal connected from emitter to ground, but in this position it does lock the frequency very successfully.

Transistors are not noted for their freedom from harmonics, especially when oscillated in this manner, and considerable 4th harmonic appears at 142 mc, enabling the 144-146 mc band signals to be tuned over 2.4 mc on the main receiver after frequency changing.

The RF Stage

The RF stage has no input tuning, but its collector is tuned (L1, C6) and 5 $\mu\mu\text{F}$ coupling to the emitter of the mixer is provided (C7). If one sorts out the manufacturers' data on these transistors it transpires that, whereas the input to a valve is capacitive, the input to these transistors at this frequency is inductive, or negative capacitive! A simple series capacitor C1 from the aerial can therefore "tune" the transistor, matching being improved by C2, of 8 $\mu\mu\text{F}$, from emitter to ground, and C5 (twisted pair of wires) from emitter to collector.

The collector tuning is quite sharp when C5 is properly adjusted, though if made too large, oscillation can occur.

It must be obvious from the way the circuit is closely interwoven that the dependence of one transistor on the other one is very considerable and quite difficult "calculations" are involved if a satisfactory design is to result.

Performance

Of course, it is perfectly ridiculous to suggest that two transistors will do what five were doing (in a previous design of the author's) only a few months ago. So we won't say that at all; we will just leave it that the present design has now more or less ousted the main station converter. A gain of around 15 dB may be expected with a consumption of 7½ mA at 9 volts, about equal current to each transistor.

If more gain is needed, an IF stage (Fig. 3) could be added, though then L5 at 15 turns might be increased to 20 turns, and a second L4-L5 wound to go after the IF stage.

Table of Values

Fig. 1. Two-metre converter using transistors

C1 = 15 $\mu\mu\text{F}$	R2 = 6,800 ohms
C2 = 8 $\mu\mu\text{F}$	R3, R7 = 680 ohms
C3 = 500 $\mu\mu\text{F}$	R4 = 68 ohms
C4, C8,	R5 = 1,000 ohms
C9, C11 = .003 μF	R6 = 10,000 ohms
C5 = 1 $\mu\mu\text{F}$ (see text)	TR1 = AF102, Mullard
C6 = 2-10 $\mu\mu\text{F}$	TR2 = AF114 (OC171),
C7 = 5 $\mu\mu\text{F}$	Mullard
C10 = 12 $\mu\mu\text{F}$	Xtal = 11.834/35.5 mc
C12 = 180 $\mu\mu\text{F}$	overtone type.
R1 = 1,500 ohms	

COIL DATA FOR TRANSISTOR CONVERTER

- L1 — 3 turns 16g. enam., $\frac{7}{16}$ -in. diameter, slightly spaced.
 - L2 — 34 turns 30g. enam., close-wound on small Neosid dust core.
 - L3 — 12 turns 26g. enam., on $\frac{1}{4}$ -in. nylon former with dust slug, turns slightly spaced.
 - L4 — 50 turns 40g. enam., on piece of $\frac{3}{4}$ -in. aerial ferrite.
 - L5 — 15 turns 32g. enam., wound over cold end L4.
- (Note: Lugs of 22g. tinned copper should be bound to L4, L5 former before winding to make solder connections. These coils are low-Q to avoid self-oscillation).

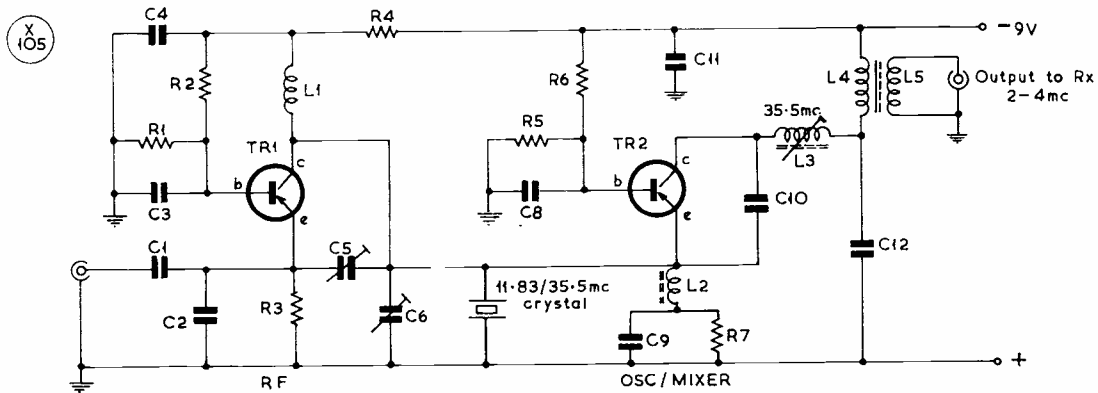
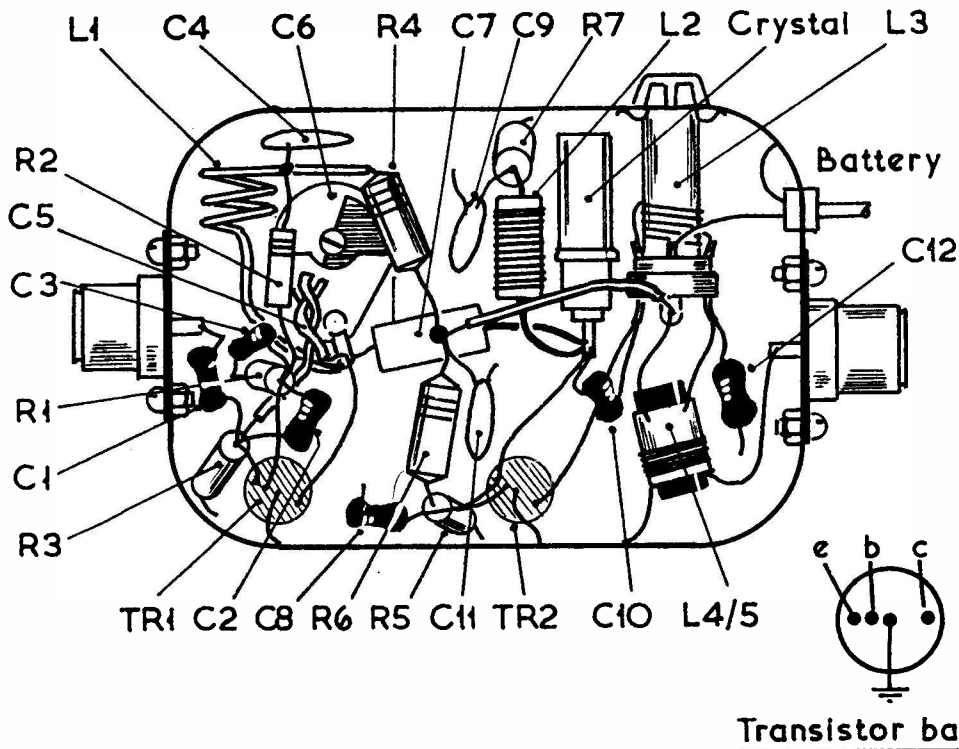


Fig. 1. Circuit of the transistorised two-metre converter designed and described by G3JAM in the accompanying article; all values are given in the table. The actual-size drawing at Fig. 2 (which is made from the model) suggests one way in which it can be constructed. There is sufficient fourth-harmonic in the oscillator to produce enough self-injection for satisfactory operation. Note: C7 should be marked in the gap between the junction of C5, C6 and the crystal.

Future Possibilities

While the transistorised two-metre converter described here represents a practical working design for VHF, there is no doubt that the circuits will be considered primitive by the experts.

For instance, use of a 71 mc crystal would have eased the situation somewhat, as would a UHF transistor, such as the RCA 2N1742, which has an *alpha* cut-off around the 70-centimetre band. However, the writer hopes very shortly to produce a satisfactory 70 cm.



Transistor base

Fig. 2. Drawing to full scale of the G3JAM transistorised two-metre converter. A lozenge box or flat tobacco-tin can be used as the shell, in which case this layout should be followed. The transistors used are modern Mullard types.

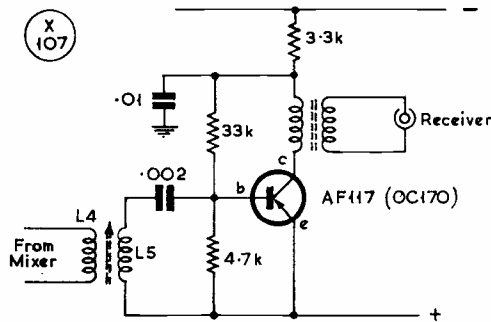


Fig. 3. Circuit of a suggested IF stage for the transistorised converter — see text. Note the inverted form of the bias network, with the limiting resistor in the common base-collector feed; this results in the saving of one decoupling condenser.

converter using similar circuit design principles applied to the 2N1742. By the time that information appears, the art of operating a transistor near its *alpha* cut-off will, it is hoped, have been mastered and a certain amount of rule-of-thumb information become available.

Finally, it might be mentioned that a later version of the present design—using an untuned RF stage with $4 \mu\text{F}$ injection from the collector of the oscillator-multiplier into the emitter of the mixer, instead of inductive injection — is giving even higher gain and efficiency than before. Any further improvements will be notified on another occasion.

POINT OF VIEW

QSL's—A RACKET?

THERE is a very strong feeling among a minority of amateurs that the whole QSL business has got out of control and turned into what is little better than a racket. What used to be a friendly follow-up, or, as some said, “the final courtesy of a QSO,” has now become an enormous business which involves the handling of literally tens of millions of cards every year through the world's QSL bureaux, to say nothing of the many thousands more which go direct.

The competitive side of Amateur Radio is responsible for much of this, since most of the hundreds of awards (many of them pointless and quite worthless) which are available are dependent upon production of proof of contact, in the shape of a QSL.

Many of the more worthwhile awards (including those made available by *SHORT WAVE MAGAZINE* — see pp.490-491, November issue) are now based, however, on check lists — with the proviso that QSL's may be demanded if it is thought necessary.

While one agrees that the newcomer deserves a confirmation from each country that he works (if he can get it!) there seems to be no justification what-

ever for the practice, still widely indulged in, of sending a QSL card for every single QSO, and even following them up if no reply is received. We think that 80 per cent of them are probably unwanted, and although the man at the other end will usually reply out of sheer courtesy, he probably regards the incoming cards as nothing but a nuisance.

An understanding that no QSL is required unless it is specifically asked for during a QSO would almost certainly reduce the unnecessary traffic in cards by 50 per cent or more.

There is another aspect of the QSL situation which is regarded by many as downright vicious, and contrary to the whole spirit of Amateur Radio. This concerns mostly the “rare” countries, where a small handful of active amateurs (or perhaps only one) receive such a colossal volume of cards that they cannot fairly be expected to reply to them all. In such cases they are offered an “inducement,” often in the way of money, or gear of some kind, by those relatively few operators to whom it is vitally important that they should come out on top of all the published lists. Even some of the organised “DX-peditions” are not free from this; and of course it is well known that some of them are financed entirely by amateur contributions.

Though the principle of the latter may seem blameless, one wonders whether anyone would take the slightest interest in a DX-pedition that said, in effect, “we will work everyone we hear, but in no circumstances will we send a QSL card to anyone.”

The possible alternative of tape-recordings of exceptional QSO's has been suggested (call-sign, RST, date and time could be recorded direct from the distant station on a very few inches of tape); inspection of logs does not seem to be considered sufficient. Thus, the QSL might even be regarded as a reflection on the average amateur's honesty.

These views may be unpalatable and unpopular, but it is time they were aired. Is the QSL situation, in these days, just a racket?

U.P.U.

MAY, 1961, RADIO AMATEURS' EXAMINATION

As already announced (p.299, August issue), the pass-rate for this year's R.A.E. was nearly 70%. one of the best figures we have ever had for “Subject No. 55.” The total number of amateurs qualified (including 49 overseas) was 915, compared with 735 in 1960, and 675 in 1959. The Examiner's Report remarks, *inter alia*, that “The standard of papers submitted showed a welcome improvement over that of last year.” This reflects great credit both on students and their instructors. As regards the questions, the Examiner reports that Q.5 was poorly done—surprisingly enough, this was the easy-looking one on Ohm's Law—and the answers to Q.8 and Q.10 were weak. Those interested in the full report can obtain a copy on application, quoting Subject No. 55, to the City & Guilds of London Institute, 76 Portland Place, London, W.1.

Aerial Hints, Tips and Ideas

Based on the experience of

THE OLD TIMER

Part I

In the April-June, 1954, SHORT WAVE MAGAZINE there appeared a series of articles on the general theme of "Aerials and Common-Sense." Many theoretical aspects of antennæ were dealt with and related to the average amateur's problems of space, height and direction. The same contributor will now be covering, in this new series, a variety of practical matters—from the choice of a feed-point to the design of an ATU, from mast erection to the most suitable material for guys and halyards.—Editor.

IT has been remarked, many times, that the most important piece of gear in the amateur's shack is the one outside it . . . and it is generally accepted that a little thought and effort put into an aerial system is repaid more handsomely than almost anything one can do inside.

A good aerial is the making of a successful station, and certainly there is never any lack of interest in the subject, judging by correspondence and by conversations heard on the air.

Lucky indeed is the operator who has the space to play with many different types (although he is generally so fascinated by doing so that his time on the air is much shorter than it would otherwise be); but the man who has to "make do" is up against an absorbing problem, and the many clever solutions one hears of are a tribute to the ingenuity of the average amateur. So are the results he often manages to obtain in what would appear to be a hopeless situation.

As nearly everything that is to follow is the result of personal experience or personal preference (or even personal prejudice!) I am going to break with convention and write henceforth in the first person only. Then it will be quite clear that it is *I* who prefers a doublet to a dipole, or a Vee-beam to a Yagi, or whatever it is . . . but I am never suggesting that *we*, as a body, need think on the same lines or even that *they*, the experts, will agree with us. Take these notes, then, at their face value, as putting forward a true record of some of my own problems and experiences, and the solutions I managed to evolve (whether clever or otherwise). If you can think of better ones I shall be very glad to hear them.

Much of what follows will be written with the beginner, or at least the not-too-experienced amateur in mind . . . but I hope that the more advanced

readers may be able to profit from the odd remark and even pick up a tip or two.

Doublet or Dipole?

It has become the convention in the world of Amateur Radio (not necessarily in commercial circles) to describe an aerial as a *dipole* only when it is an electrical half-wave in length, and when it is fed by an untuned line (72-ohm coax, 300-ohm ribbon and so on). Feed the same aerial with tuned open-wire feeders and it is known as a *doublet*.

There must be many who still don't realise how a true dipole works, otherwise one wouldn't hear such amazing remarks bandied about on the air. "I am using a 20-metre dipole, but it works better on Fifteen" . . . "This 40-metre dipole doesn't seem much good on Eighty" . . . those actual statements have been heard on the bands.

A dipole is a *single-band* aerial and there's nothing one can do about it. (With the exception that a 40-metre dipole will work tolerably on Fifteen, where its length is three half-waves and the mismatch from 72-ohm coax is not too terrible.)

A doublet, whatever the length of the feeders, can be tuned to work on any band of higher frequency than the one for which it is designed. An 80-metre

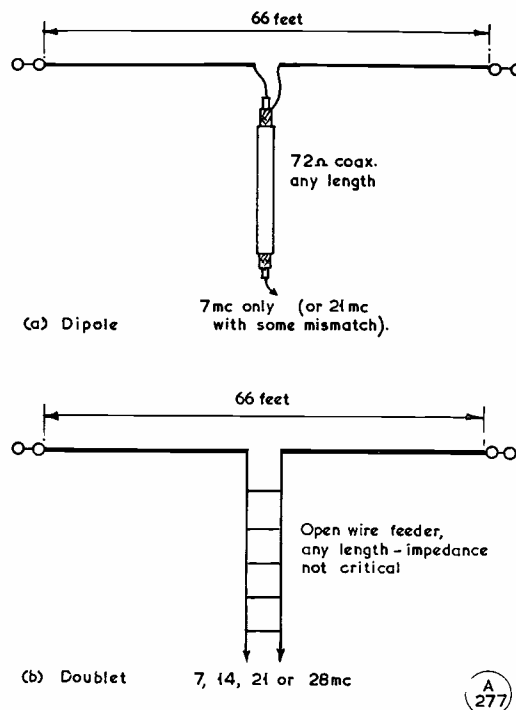


Fig. 1. The dipole, as shown at (a), is a single-band aerial, although a 7 mc dipole will work tolerably as three half-waves on 21 mc, this being the only case in which a dipole can be used on two of our bands. On the other hand, the doublet (b), can be worked on all bands higher in frequency than the one for which it is cut. To put this another way: if the top lengths in these diagrams were 132 ft., the dipole would work on 3.5 mc only, whereas the doublet could be used on five bands.

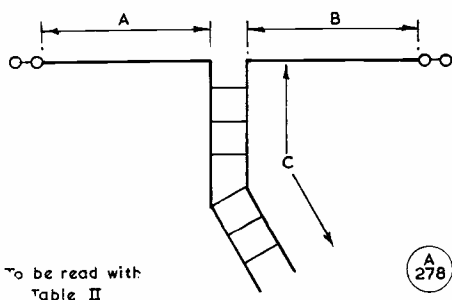


Fig. 2. Diagram to be used in conjunction with Tables I and II. The condition of high- or low-impedance feed at the transmitter end is governed by the length $A + C$ (or $B + C$), A and B being equal. The lengths in Table II have been worked out so that low-impedance feed, the desirable condition, is possible on both 14 and 21 mc. The 28 mc band is a separate case and is not included in this discussion.

doublet will have a top of something between 125 and 135 feet, centre-fed with open-wire line (probably of about 600 ohms surge impedance) and will operate as two dipoles in phase on Forty, two full-waves on Twenty, six half-waves on Fifteen, and so on. Furthermore, the top length isn't even critical when the whole thing is symmetrical, and tuned.

A top of 85 feet, centre-fed with 600-ohm line, has been going around with the wrong name pinned on it for years. It is almost universally known as the "extended Double Zepp" . . . but to me a Zepp is essentially an aerial fed at one end with open-wire line. (The aerials on the Zeppelins of the 1914-18 war were of that type, and the Zepp derived its name from them.) So an 85-footer, centre-fed, is anything but a Zepp . . . it is a doublet, anyway. On Twenty such an aerial behaves in the manner of two dipoles in phase, separated physically from each other and therefore giving a slightly greater gain than if they were absolutely end-to-end, as in a 67-footer. Make the top longer, and by the time you reach 100 or 102 feet (still talking of Twenty) you have three half-waves and the pattern is somewhat changed.

To me a doublet of any kind is worth far more than a dipole, on account of these two features—you can use it on a variety of bands, and its top length is not critical. One could add another advantage—its efficiency does not vary over different parts of the band, because you *tune* it.

Length of Feeders

The idea has somehow got around that, whereas a dipole can be used with a feeder of any length, a doublet needs some specific length of feeder. Quite wrong, this—and probably fostered by various tables that have been published, showing how to tune doublets with arbitrarily-chosen feeder lengths.

The one thing worth remembering, though, is that if you choose your top length and your feeder length with a certain amount of cleverness, you will be able to use the thing on more than one band with a simple form of ATU which does not need much re-adjustment.

TABLE I

Total length of A plus C (or B plus C) in Fig. 2, giving high and low-impedance feed points.

14 mc		21 mc	
HIGH	LOW	HIGH	LOW
ft. in.	ft. in.	ft. in.	ft. in.
33 0	49 6	22 0	33 0
66 0	82 6	44 0	55 0
99 0	115 6	66 0	77 0
132 0	148 6	88 0	99 0
		110 0	121 0
		132 0	143 0

Also remember that it is *not* a nice thing to have a high-impedance (and therefore high voltage) point inside the shack, near the transmitter. It *can* be coped with, easily enough, but when you are using open-wire line it is far easier to attain the state of true balance on the feeders if you are putting in fairly high *current* at a low-impedance point. To determine whether your actual lead-in will be at a high- or low-impedance point (talking now of doublets, not Zepps) all you need to know is the total length of wire from that point to *one end* of the aerial. In other words, the feeder length *plus* the length of one leg.

Table I shows the total lengths that will give low-impedance or high-impedance feed points on 21 mc and on 14 mc (taking 33ft. as the length of a half-wave on 14 mc, and 22ft. on 21 mc). If you habitually frequent either the HF or the LF end of the band you must amend these figures slightly, but 33ft. and 22ft. are useful figures for mid-point or all-band operation.

Table II gives some suggested lengths for both top and feeders—but remember that the top length is *not* critical (as long as both halves are exactly the same length), and if you subtract a foot or so from the top and add it to the feeders, the position will be practically the same as for the actual figures given.

Unfortunately (arithmetic being what it is) we find that it is easy to arrive at total lengths which will give high-impedance feed on both bands (66ft., 132ft. and so on) but impossible to find agreement on the truly low-impedance points. However, one does not need to feed the system precisely at a current loop—the main thing is to avoid the voltage loops. Thus total lengths of the order of 52ft., 80ft. or 118ft. afford very good compromises and show a pretty low impedance on both bands.

The ATU in these conditions need consist only of a series-tuned circuit. Just a plain coil and condenser (or preferably two condensers) are all that are necessary. However, ATU's are a big subject which I must cover in a separate article.

A point worth noting, here and now, is that if you do effect your tuning by a series condenser in each feeder, tuning the whole system symmetrically with a similar capacity on either side, then you are

TABLE II
(To be used with Fig. 2)

LENGTH OF A OR B (A and B are equal)	LENGTH OF C	MODE OF OPERATION Mc Bands	TUNING
16—17 feet	35—40 feet	Half-wave on 14 “Long half-wave” on 21.	Series Series
33—34 feet	45—47 feet or 18—19 feet	Two half-waves in phase on 14; three half-waves on 21. Half-wave on 7.	Series Series Parallel
42—43 feet	38—40 feet	Two “spaced” half-waves on 14; four half-waves on 21. “Long half-wave” on 7.	Series Series Parallel
60—66 feet	50—55 feet	“Long-wire” pattern on 14 and 21. Two half-waves in phase on 7. Half-wave on 3.5.	Series Parallel Parallel

The term “long half-wave” implies that the radiation pattern will be more or less that of a dipole. Two half-waves in phase give a sharper pattern, and in the same direction, as a single dipole. Two “spaced half-waves” resemble two half-waves in phase but give an even greater gain at right angles to the line of the wire. The long-wire patterns will be discussed in a later article.

safe in using a fixed link winding at the centre of the coil. If you tune with only one series condenser the link will have to be displaced from the centre to give true balance. More of this, later, in the discussion on ATU's.

Mechanical Troubles

Although I have always liked the doublet electrically I confess to hating the thing mechanically, particularly if one is lucky enough to have a good long span between aerial supports. An end-fed long wire can be pulled reasonably tight; but once you get a dangling twin-wire feeder right in the middle of the thing, you always have a horrible sag as well as troubles in high winds. For this reason it is worth considering various forms of doublets with a mast at the centre. For instance, one mast only, with a sloping wire on either side; or one mast supporting the apex of a V-shaped aerial, with very small poles supporting the far ends, which are allowed to drop considerably. These types of aeriels have their uses, as illustrated on p.186 of the June, 1961, issue of SHORT WAVE MAGAZINE.

If you are in the majority, though, and have to

have the thing in one straight line between two supports, don't use heavy wire for the feeders. After all, they are tuned; they carry a standing-wave; there is a mismatch where they join the aerial, anyway . . . so why need they be the same gauge as the aerial? Use 14 or 16 gauge wire for the aerial, pull it up as tightly as you can, and use 18 gauge or even lightweight flex for the spaced feeders.

The surge impedance of a feeder is decided by the ratio of spacing to wire diameter, so you can fabricate a 600-ohm line in a variety of ways—it doesn't have to be 14 gauge with 6-inch spacers! It can be 18 gauge with 3-inch spacers . . . both are rough approximations, and after all it doesn't matter whether the impedance of the line is 500, 600 or 700 ohms—it doesn't match anything, anyway, until it is suitably tuned. You have none of the problems of matching a flat non-resonant line. So try short lengths of polystyrene rod for spacers—or even 3-inch lengths of polythene cut from an old unwanted piece of coax. Lightness is a great advantage.

More of this later . . . meanwhile I hope you have a few ideas to put into practice, and that they will all work!

BOOKS FOR CHRISTMAS

For those with radio interests, there can be no better present for Christmas than a book about it. For the active, licensed operator who has not seen the latest edition, a copy of the *Radio Amateur's Handbook* (ARRL), is an obvious choice. For the DX man, the *Amateur Radio Map of the World* and/or the *DX Zone Map* would be useful and interesting operating aids, with a copy of the autumn edition of the Foreign Section (all-world outside U.S.A.) of the *Radio Amateur Call Book*. For the absolute beginner, *Short Wave Receivers* and *How to Listen to the World* would be useful, while, for those wishing really to understand radio as beginners, *Foundations of Wireless* would be a very good book. For the VHF man, or those interested in transistory, mobile operation, sideband working, antennæ or the conversion of American-type surplus, there is also a very wide choice. All these are listed and priced on p.508 of this issue—and available from stock while we still have them. Orders, with remittance, to the Publications Dept.

“AMATEUR BAND D/F RECEIVER” —

CORRECTION

G3HKC (Flat 4, 109 Eachelhurst Road, Erdington, Birmingham, 24), the author of this article in our November issue, writes to say that the value of VR1 should have been shown as 25K, and that T1 is a standard IF transformer (as given in the Table of Values).

More than 80% of all licensed U.K. amateurs are regular readers of *Short Wave Magazine*

TILTABLE MOBILE WHIP

EXPLORING SKY-WAVE
PROPAGATION ON TOP BAND —
FIRST WABC/M GAINED

R. PALMER (G5PP/M)

Our contributor is well-known for his activity on 160 metres — as regards both mobile operation and portable working from rare counties for those pursuing WABC. As an indirect result of the interesting experimental work outlined in this article, he has himself been able to qualify for the first WABC/M Certificate we have yet issued. — Editor.

THE idea of going for a WABC/M was thought to be rather a hopeless objective until a chance contact on Top Band with DL300, who gave G5PP/M RST-579 on mobile CW, made it clear that signals from a mobile whip do "get somewhere" under darkness conditions. Hitherto it had seemed — from the rather irregular long-distance contacts made with G's — that after-dark operation on 160m. working /M was to a large extent a waste of time, except for local contacts.

It was decided, therefore, to make a close study of the performance of whip antennæ during the hours of darkness. It was realised that this would not only take some time, but could also involve driving thousands of miles, with a correspondingly heavy petrol bill. The alternative was to select a fixed location as a "test site," and operate stationary-mobile. (This sounds like a contradiction in terms but, as all mobileers know, what it means is that the normal mobile installation is used, with the vehicle stationary and no external connection of any sort made to it; in other words, the car can be driven away with a QSO in progress.) Accordingly, the site chosen was an allotment garden near the home QTH in the built-up area of Coventry, with houses on three sides.

Aerial System

Since sky-wave phenomena were to be studied, some control over the angle of radiation of the whip seemed desirable. It was achieved by fitting a ball-joint about 30 ins. above the base of the whip (see photograph and diagram). This permitted the long part of the aerial to be tilted up to 40° out of the vertical, at the same time allowing the slanting aerial section to be rotated so that the top could be pointed in any direction over the 360°.

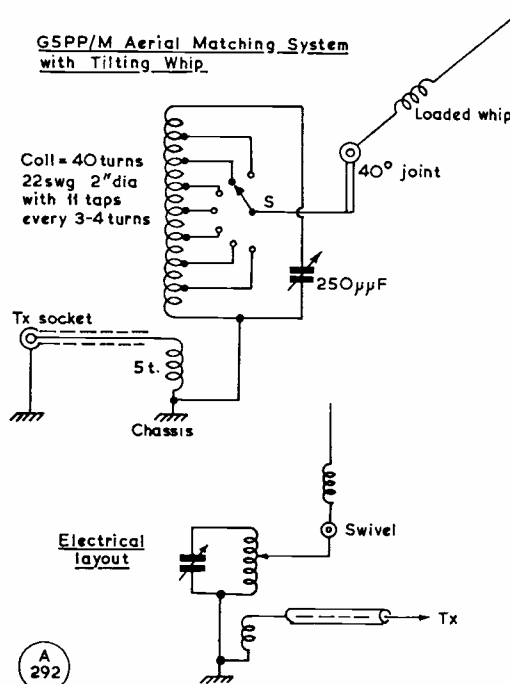
It was at once found that considerable change in signals received from stations at sky-wave range could be obtained merely by tilting the aerial. At the same time, the direction in which the top was

aimed also had a noticeable effect. As an example : During a three-way phone contact with G3LYW in Wilts. and G3LSF near Liverpool, when the whip was pointed towards G3LSF, he received G5PP/M's signals stronger than those from G3LYW; when the whip was swivelled round in the direction of G3LYW, he reported an increase of two S-points, and G3LSF a drop in signal level. Further tests showed that G3LYW could always hear G5PP/M under sky-wave conditions; other stations reporting regular results have been G3GMN and GM3AVA.

General Coverage

Using mainly CW, with phone under suitable conditions, in the first 21 days of the tests from the stationary-mobile site in Coventry, 43 counties and six countries were worked. Nearly all the various /P WABC expeditions during July and August, 1961, were raised, and by the end of August, the total score on Top Band had reached 83 counties and 9 countries, including EI and OK — and all on the whip assembly shown here.

During a trip to Scotland in the early part of July, when the writer was joined on the Isle of Skye by G3GMN, the opportunity was taken to carry out further tests on the tiltable whip. On several evenings, using only the whip, there was no difficulty in keeping the regular schedule with the home-station, G3APA, as well as working the usual WABC crowd. On another occasion, GM3AVA of Larbert (Stirlingshire) was worked in daylight from Skye with



The aerial matching unit used by G5PP/M for his operations on Top Band. This ATU will tune the whip to any part of the band, with consistent results — see text.



In position at the test site in Coventry, showing the tiltable mobile whip with which G5PP/M has been getting such interesting results, as described in the article. The electrical design is shown in the diagram.

GM5PP/M mobile-rolling, the distance being a good 100 miles over the heaviest country in Scotland.

Equipment Used

The G5PP/M equipment consists, for the transmitter, of a home-built ECO/Z77-BA/Z77 into a 6L6 as PA, modulated by a 6L6 driven by a 12AX7, the receiver being a modified Command set.

This gear is all that is used with the whip aerial system illustrated here. This itself has been developed over a long period, and in particular during the many WABC/P expeditions undertaken by G5PP/M during the last few years, when it was found necessary to have a coupling system that would match any reasonable length of wire to the transmitter (as when operating strictly /P with an external aerial).

As the diagram shows, the coupler consists of 40 turns of 22g. enam. wire close-wound on a 2-in. diameter former, with taps taken out about every

3-4 turns, giving in all 11 tapping points. These taps go to a single-pole 11-way yaxley type switch, which has been modified for the purpose; the sliding arm of the switch goes to the aerial (or, in this case, the tiltable whip) and the lower end of the coil is grounded to chassis; a 5-turn link winding couples the coil to the transmitter.

For setting up, a field strength meter is connected to the normal car radio receiving aerial and the outgoing signal is monitored back at the operating position; the adjustment consists of finding the right tapping point on the coil for the (Top Band) frequency required, and then resonating on the 250 $\mu\mu\text{F}$ condenser; obviously, there are two adjustments, worked together, and the final setting is, of course, that which gives maximum deflection on the FSM.

This system overcomes one of the problems with which most T/B mobiles have to contend — namely, changing frequency without altering the whip length. On the writer's layout as shown here, there is no difficulty in resonating the system anywhere between 1.8 and 2.0 mc, and tests made with the assistance of G2CDN/M have shown that the field strength at various frequencies throughout the band is the same, when the system is accurately tuned to resonance.

The writer feels that much of the success he has had is due to this matching unit, which seems capable of getting the RF into the aerial better than the direct coax feed arrangement so often used.

EMERGENCY NETWORKS — CLEARING UP A POINT

Every now and again—and especially since the Editorial comment in the October issue of *SHORT WAVE MAGAZINE*—we are assailed from here-and-there for not supporting the idea of an emergency network on the amateur bands. The fact is that we are altogether in favour of amateurs becoming identified with reserve or emergency communications systems or organisations of any official sort—so long as they are not based upon the *use of amateur frequencies*. That is the point, and it was made perfectly clear in the Editorial in the September, 1956, issue of the *Magazine*. Of course, the Police, the British Red Cross and other bodies welcome the active co-operation of efficient radio amateurs—for they bring in not only their own equipment, but, what is far more important, their own frequencies. Yet the Police are already provided with an ample frequency allocation, and even private organisations like the Automobile Association have their own radio communication system, on reserved frequencies. Logically, there could be no end to encroachment on the amateur bands by semi-official bodies looking for assistance with their communication problems.

It is against this use of the *amateur bands* that our objection is, and always has been, laid. Apart from employing our bands for a purpose for which they were never intended (as is made clear enough by the Geneva Convention) the availability of amateurs with their frequencies is likely to give local authorities quite a wrong impression as to the rights,

responsibilities and function of licensed amateurs. And it is a certainty that if, in those areas where an amateur network is already working with, say, the local police, the amateurs were to explain that their frequencies were no longer available, any police interest in further amateur co-operation would immediately evaporate.

Looked at in the light of the foregoing, it is more than questionable whether any body or group of amateurs has the right to enter into commitments, *entailing the use of amateur frequencies*, with any outside organisation, official or otherwise. On the other hand, every amateur should consider whether there is any way in which he can help official

organisations—such as the Red Cross and Civil Defence—by the use of his skill and knowledge, but on equipment *and frequencies* provided for the purpose.

The Editorial in our October, 1961, issue implied the use of Civil Defence frequencies for C.D. operations. The Editorial in the May, 1938, issue of SHORT WAVE MAGAZINE—in which this whole idea of radio amateur emergency co-operation with the authorities was first put forward—discussed the possibility of amateur enrolment in (what was then known as) the local A.R.P. scheme. In the intervening 23 years, about all that has changed in this context is that for A.R.P. we now read C.D. A.J.F.

BETTER SSB RECEPTION

USING

CRYSTAL-CONTROLLED BFO

J. R. DOWSON

ALTHOUGH most SSB operators regularly use a standard communications receiver and the BFO technique for their reception of Sideband signals, it seems that many of them encounter the same disadvantage—namely, BFO drift, necessitating constant readjustment.

One way of getting round this problem is to use a crystal-controlled BFO, as shown in the circuit, made up as an additional screened unit. Although admittedly this is not a complete answer—for if the receiver's local oscillator drifts it will still necessitate retuning—it does help considerably by eliminating one source of drift.

The CC/BFO, as used by the writer, consists of two conventional crystal oscillators, one working on the lower sideband, and the other on the upper, the correct oscillator (or sideband) being selected by switching the twin-triode's cathode to ground.

Crystal Selection

Obtaining crystals at the correct frequencies may be the main difficulty in making up this unit. The writer was lucky, but those having receivers with an "odd" IF channel may have trouble in getting crystals.

Mainly by trial-and-error, it was found that the crystals should be, *one*, 2 kc above the IF; and, *two*, 2 kc below it. That is to say, with a 455 kc IF, the crystals would be 453 and 457 kc. A slight tolerance either side of the correct frequency is permissible, although it is surprising how much difference a crystal a few cycles off frequency will make.

Construction

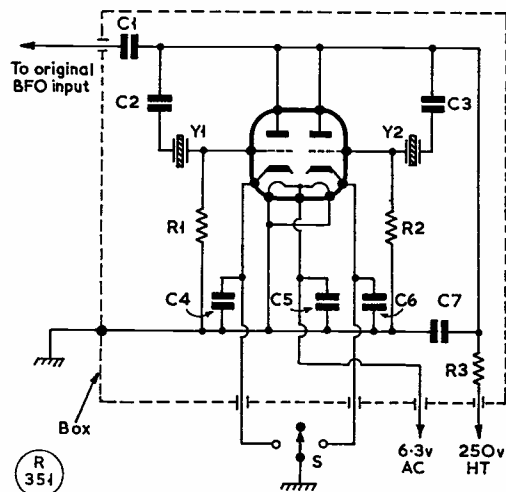
Complete screening is essential, and the CC/BFO should be built into a small metal box, with all leads into the box decoupled at the point of entry. The

output of the unit must be by screened cable to the feed point for the BFO already fitted in the receiver—this tunable BFO should, of course, be disconnected (but not discarded, as it will always have its uses for other receiving functions).

Results

The writer has had the CC/BFO as described here in use for about six months and (as the receiver's own oscillator is pretty stable after a warm-up period) SSB signals can be tuned in easily and accurately, and no tuning readjustment is necessary for periods of half-an-hour and more.

Of course, the idea discussed here only goes part of the way towards obtaining better SSB reception. Much improved results would be given by a phasing-type adaptor and crystal-controlled front-end for the receiver—but for those not prepared to go to such lengths, the CC/BFO suggested here is well worth trying.



The USB/LSB fixed-tune BFO unit described in the article, to overcome BFO drift in SSB reception. Condensers C1-C7 are all .01 μ F; R1, R2 are 4.7K Ω ; R3 is 27K Ω ; the valve is a 12AT7, and Y1, Y2 are the crystals, respectively 2 kc above and below the Rx IF channel. The appropriate sideband is selected by the switch.

AMATEUR-BAND SCALES FOR THE CR-100

By G3OGR

SOME receivers have a vernier scale coupled to the tuning condenser with a geared drive. With the CR-100, a scale marked 0-9 and easily read in 0-100 parts, appears 25 times, in conjunction with a scale marked 0-25. This permits re-setting to 1 division in 2,500.

After using such a receiver for some time, it was decided to fit a direct-reading dial for the amateur bands, to avoid referring to a list of numbered logging points. (Such a dial could probably be fixed to almost any other receiver in which a geared drive allows definite re-setting.)

With the CR-100, the 0-9 scales, which each occupy 180 degrees rotation, and which can be read to 1 part in 100, are fixed to the same spindle as the larger knob of the 2-speed drive. Thus, a dial or scale fixed to the large knob can rotate with the numbered logging scale. In view of the difficulty of fixing a dial or scale inside the receiver, the new scales are fitted externally. The knobs were removed by loosening the grub screws, and it was found that the large knob already had three holes tapped for 5BA screws. This avoided any need for drilling and tapping. Three discs $3\frac{1}{4}$ ins. in diameter were cut, one from thin

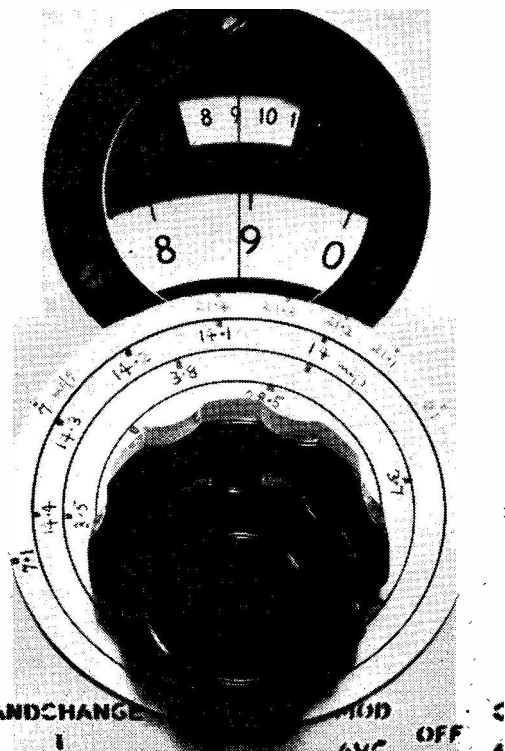
perspex (to avoid fingermarks), one from smooth white card, and one from thin aluminium. The card goes between perspex and aluminium, but the perspex is left off until calibration is finished.

Three or four circles are drawn, for markings, the card and aluminium are screwed to the knob, and the knobs are fixed in place. Reading was against the same vertical line provided for the numbered scales.

Procedure

The receiver should be switched on well in advance of calibration. An "O" is marked on the new dial, in line with the interior "O." Each scale was calibrated at 0.1 mc intervals. This may not seem very useful to owners of receivers with bandspread scales marked at 10 kc or closer intervals, but allows the use of a 100 kc crystal marker, and is a vast improvement over referring to the logging numbers. In practice, it is immediately clear where to tune the transmitter VFO. Interpolation, or a calibrated VFO, would give the 10 kc points.

Markings were originally in pencil, a new line being used where bands overlap. Knobs and scale were removed, and each band marked with coloured ink. The whole is then re-assembled, the perspex being included, and the knob is replaced, the zero mark being lined up with the appropriate "nought" of the internal logging scale. The approximate mechanical bandspread comes out at 260 degrees for 3.5-3.8 mc; 40 degrees for 7.7-1 mc; 105 degrees for 14-14.4 mc; 65 degrees for 21-21.4 mc; and 220 degrees for 28-29.5 mc.



The additional amateur-band logging scale as fitted to a CR-100 by G3OGR — see article.

THE "K.W. ONE-SIXTY"—CORRECTION NOTE

In the report on the new K.W. One-Sixty transmitter in our November issue, it should be noted that on the circuit diagram (p.482) the change-over switch is at "Receive," while Sld should, of course, be shown in the off-position; also, this switch does not cut HT to the modulator screens when in the CW position (last line, p.481).

AMERICAN /MM's ON THE HF BANDS

The U.S. Government is permitting an extension of American amateur maritime mobile (/MM) operation to the twenty-metre band, and also to 40m. and some VHF bands when within the Region II area—which means, roughly, American territorial waters.

SMALL PRICE INCREASE

With effect from the January, 1962, issue of SHORT WAVE MAGAZINE, we much regret that our cover price will have to be increased to 3s., to help meet higher production costs. Similarly, the subscription rate will become 36s. on renewal, or for those new ones taken out with effect from January 1, 1962. Until that date, subscriptions will continue to be accepted at the present rate of 33s. for a year of twelve issues, post free. Existing subscribers are not affected until their subscription becomes due for renewal.

DX COMMENTARY

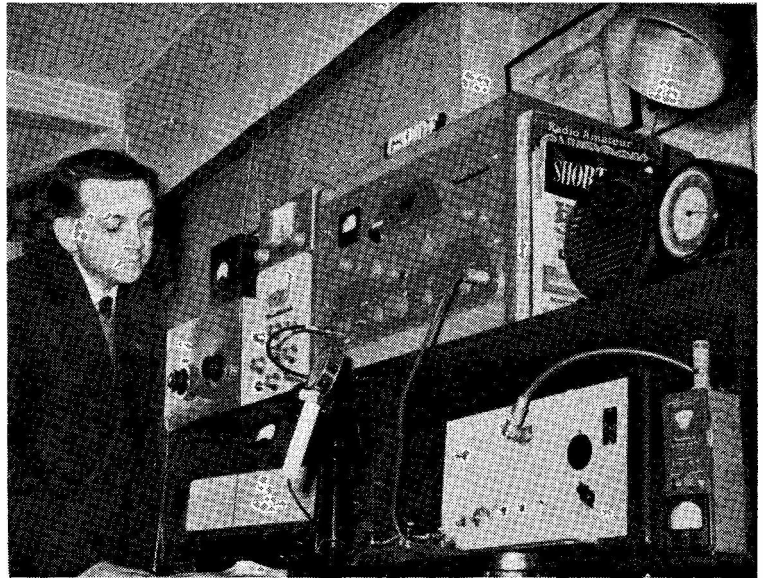
L. H. THOMAS, M.B.E. (G6QB)

WINTER conditions have set in properly, and a few of our newer readers are disappointed to find how early the bands are closing. As a matter of fact they do seem, for part of the period, to have gone out far sooner than one usually expects; on one or two evenings in November the 14 mc band was gone by 1930 or 2000 GMT. This is not really normal, and we can hope for better things.

The bands were in excellent shape at the beginning of the month under review (meaning in mid-October), but on the weekend of the CQ DX Contest (Phone) a really lusty aurora knocked them right out. While our friends on VHF were gloating over the wonderful conditions, we, on the HF bands, found that the supposed KL7 we were listening to was a G3, that 7 mc went completely "watery," and eventually even Top Band was affected.

From this disorganisation the conditions didn't really recover for a week or two, and were still below par right up to the time of writing. However, the DX-chasers were rewarded with some nice activity; 5N2AMS put Dahomey (TY2AA) on the air and 9G1DP was signing XT2Z from Upper Volta. At the time of writing there is a breathless hush, awaiting the arrival of the XF4 station from Socorra, and FW8AS is supposed to appear from Wallis Islands.

The commercials, jammers, creepy-crawlies *et al* are still with us, but for some reason they do seem to have diminished in



G3NOF

CALLS HEARD, WORKED and QSL'd

numbers a little. All bands from Ten to One-Sixty are still worth investigating—the former mostly for North-South paths and the latter for anything from W/VE stations to local working.

DX Around the World

After a dull month as regards DX-peditions, quite a rash of promised events seems to be breaking out. Some of them may have come and gone by the time this is read, but that is inevitable. Around mid-November the big news was of a sortie to *Socorro Island*, signing XE1CV/XF4, mostly SSB and AM. Around the same time *Wallis Island*, FW8AS, was due to show up on the air.

VU2NR reports that he has been assigned the calls AC3NRM and AC5NRM, and he hopes to use them late in January or thereabouts . . . VQ8AP promises operation from *St. Brandon*, signing VQ8APB, probably running

for about three weeks from December 12 onwards . . . YV5GO and some other YV's promise activity from *Aves Island*, YV0AA, in early January, using all modes . . . Danny Weil and *Yasme III* were planning to depart for the Pacific in early November, and he has a permit to sign FO8AN from the *Marquesas*.

DL9PF, who has run so many DX-peditions in Europe at various times, is now looking at *Turkey*, with a second glance at *Corsica* . . . Another one that should have happened in November (if not, in March next year) was a visit to *Navassa Island* by KG4AP; call-sign would be W5HZI/KC4 . . . HB9EO visited *San Marino* early in November, whence he signed M1/HB1EO on SSB, AM and CW, all bands.

Bryan Bisley passes on the following news from the Middle East: The issue of amateur licences in the Lebanon has been

curtailed for some unknown reason; this has, for the moment, cut out WITYQ, WA2AZR, two Lebanese citizens, and Bryan himself; meanwhile he has acquired two more registrations, VQ4IO and ZC4BB, both of which he hopes to use before long.

He has been active from MP4BDA and MP4QAO, and plans to include MP4DAC (Abu-Dhabi) in his trip next month. MP4TAO still operates from the latter place, despite the incorrect call, which was issued to him for Trucial Oman and not for his present QTH. It is hoped that he will apply for an MP4D call shortly.

Rundy, OD5CT, went to French Somaliland as promised, but could not use his FL8ZA call owing to a change of administration; there, also, the new authorities are no longer allowing amateur operation. However, he got on from Addis-Ababa as ET3RS on CW and SSB, and operated during the phone section of the CQ Contest.

G3GJQ (Sgt. R. Handley, 9 South Avenue, R.A.F., Swanton Morley, Norfolk) is the QSL manager for the Kamaran Islands foray, an article on which appears elsewhere in this issue. He describes himself as "general factotum" for the expedition, and says that all cards received from abroad, with IRC, will be answered direct; others will go through the QSL bureaux. Incidentally, we heard from Roy many years ago when he was AP2R . . . remember him?

Brief comment on the Kamaran Is. affair: they made 3362 QSO's on 14 mc, 1314 on 21 mc, 210 on 7 mc, 205 on 28 mc and one (G6ZO) on 3.5 mc. CW accounted for rather more than half of the contacts; SSB about 30 per cent and AM about 15 per cent.

DX News from Readers

From G2DC: Tannu Tuva is now an Autonomous Soviet Republic and as such should have a separate call-sign and score as a country . . . VS9K has been granted country status . . . 5N2AMS has at last got his permit for Dahomey—hence TY2AA and the mammoth pile-ups at the end of October. Mostly

SSB and AM, but just one CW contact—with G2DC! CR10AA cropped up again, working FA8RJ, but couldn't be heard here . . . Danny's sailing for the Marquesas postponed on account of a car smash (nobody hurt) . . . Keep an ear open for KG4AP/KC4 . . . Finally, G2DC heard from KV4AA that his score is now 317 confirmed! Jack himself says he needs one more country on Eighty and then he will have DXCC on five bands—how's that?

From MP4BBW: XT2Z's licence was good for the CQ Contest period, but *might* be renewable for December 25-26; this information from HB9ZY, a personal friend of Louis, 9G1DP, who ran the party. (Upper Volta was the country, in case you haven't yet sorted it out from TZ, TY and the others!)

From GW3AHN: 5N2AMS, now he is all set with TY2AA from Dahomey, promises operation thence for several week-ends, at least; during his first sessions he was mostly on 21 AM during daylight, and 14 mc SSB after dark.

From G3NOF: ZD7SE says he is the only ZD7 at present, but another one may be on shortly; he has been on phone for about eight weeks, all bands from 7 to 28 mc.

From G3HVG: That well-known signal from VU2XG will be heard no more—Peter Windle is now back home—although he may be off again somewhere next year. Meanwhile, he has a few blank VU2XG cards, and also some for VS7XG and 4S7XG. So contact him at G3HVG (7 Sterndale Road, Dartford, Kent) if you have any requests.

View from VK

We are always grumbling about the European short-skip nuisance, and it's rather interesting to read a completely different point of view, from VK6AJ (Perth). He says "You are hemmed in by a barrage of semi-local signals which block your way through to the DX beyond. Now try to imagine what it's like to be on the other side of that barrage—not just beyond it, but thousands of miles beyond. It can still be

heard as hundreds of weak signals forming a faint background against which are a few very solid ones. At first, the change is delightful—no wall of noise, the joy of reading stations solidly without 'fiddling.' But after you've worked about three rare islands and part of South-East Asia, you realise that there is nothing left to do.

"Most of the signals come from

P & Z TABLE

STATION	PREFIXES WORKED	ZONES WORKED
<i>CW Only</i>		
G2DC	467	40
G13NPP	456	40
G3ABG	435	40
G3WP	388	36
G3HZL	379	40
G2YS	379	40
G2BLA	330	39
GW3CBB	289	24
G3JWZ	271	38
G3IDG	247	28
G3LZF	238	34
G2BP	237	33
ZC4CT	223	29
VK6AJ	203	36
GW3MLU	202	31
G2HLU	154	25
ZC4SG	146	27
G3OQK	145	17
<i>Phone Only</i>		
G3DO	646	40
MP4BBW	486	40
G3NWT	405	39
G3GHE	400	39
GB2SM	370	37
G3MCN	352	38
G3LKJ	347	38
G3BHI	336	37
G3NFV	294	37
G3ABG	288	32
G3JWZ	173	36
G3HZL	140	26
GW3MLU	138	26
G2BLA	115	21
G2FQW	99	6
G3WP	80	25

Note: This Table closes w.e.f. January issue.

14 mc DX WORKED

SSB

MP4BBW: 9M2GA, EA6AZ, VQ3HH, KC6AY, CX8BM, HC3WE, TI2HP, KW6DB, ZS7P, VU2NR, 5N2AMS, XU6AL, CR9AH, VS6AE, XW8AS, HK2YO, DU7IM, ZD6HK, ET3RS, HV1CN, CESEF, HS1B, PJ2AA, BV1US, HM4AQ, KX6BU, KA7FT, K6CQV/KS6, FK8AC, 3V8CA, XZ2SY, TY2AA, 5N2JAH, ZK1BS, VR2AP, VR1B, ZP5OG, VP3YG, KX6DB, KW6CGA.

GM3JDR: CE8AG, CR6CA, EA6AZ, EP2AG, ET3RS, FP8BV, HH2JK, HE9LAA, HV1CN, KA2MA, OD5CN, OD5CW, PJ2AA, 2AF, 2PJ, PZ1AX, SV0WT, 0WV, VP3YG, 5BL, VQ3HH, 4RF, VS9AAC, 9APH, VS9K's, XT2Z, ZB1A, ZS7P, 3V8CA, 5N2AMS.

G3NWT: ZS7P, CT1EY, EA6AZ, HZ1AB, MP4BBW.

GW3AHN: DU7IM, ET3RS, HV1CN, PZ1AX, TY2AA, VS9KPH, XT2Z, ZB1A, VK, ZS.

G3NOF: EA6AZ, ET3RS, HH2AID, HV1CN, KG6AKN, 6J (Twojima), TI2RFT, VESQC, 7G1, VP5BL, VS9APH, XT2Z, ZS7P, 3V8CA, 5U7AH, 9K2AM.

CW

GM3JDR: TF5TP, UD6BE, G3GJQ/V S9K, ZP5CF, 5N2RDG.

G2DC: EP2BV, FB8XX, M1/HB1EO, KC6BD, SUIIM, VU2MD, 2KU, 2JA, VR4CV, ZD7SE, ZK1AR.

G5BZ: KH6EDY, BV1US, LUIZN, FP8BD, JA's, ZP5OG, KH6's, VP8CC, DU7SV, HK1FF, YV5BKA, 5BZ, XT2A, VP5BL/5, XZ2TH, JZ0ML, G3GJQ/V S9K, ZD8JP, VP7NP, SM5ARQ/9Q5.

G3NWT: 5N2JKO, 2LKZ, FB8ZZ, 5R8AD, SV0WT, VQ4, VK, HV1CN.

G3NOT: EA9AA, HK3JK, JA2AEY, LX1DV, PY's, TU2EC, TY2AA, VQ2WZ, YV2DW, YL2BB (?), ZL3UY, 1AVN, ZS.

CW

G2DC: BV1USA, KR6NG, 6NJ, M1/HB1EO, TY2AA, TT8AE, VS9MB, VQ8BC, ZE3JZ/S9, JA1-7, VK2-7, ZL1-4, W1-0, VE1-7.

G5BZ: JA's, 5R8BZ, VR2EA, HK1AAK, HC1LE, LX3KP, TU2AL, SV0WZ, VP4TR.

GW3AHN: HC2IU, H18DGC, KP4APY, LUIZL, VP5MJ, G3GPE/V S9K, VK, ZL.

28 mc DX WORKED

AM

G3JOC: EL6F, FB8XX, FR7ZD, HC1AH, HK1ZU, HR1LZ, JA's, KR6MF, KZ5WE, M1/HB1EO, OD5CU, PY's, TF3KA, TT8AD, TU2AC, TY2AA, VK9NW, VQ2, 4, 5, VR2DS, VS1FE, VS9AGA, 9KPH, YV3BD, ZL, ZS, 5N2BRG, 2DMS, 2JKO, 2LKZ, 6W8CY, 9G1CC. (All 0730-0830 and 1330-1415).

G3NOF: EA0AB, G3NAC/V S9K, M1/HB1EO, TY2AA, VE3BQ/SU, VQ2 and 4, 5N2AMS, 2DMS, 2JKO, 2LKZ, 2RSB, 6W8CY, 9G1CC, 1YL.

G3BHJ: EA6AZ, EP2BD, G3NAC/V S9K, M1/HB1EO, TT8AD, TY2AA, VP6WR, 6ZX, VP9DL, VS9AGA, 5A2TC, 3CAD, 5N2AMS, 9G1YL.

G3NWT: ZD7SE, VQ8AV, VQ3PBD, 5N2JKO, 2BRG.

G3NOF: VQ2KF, 2WM, 2WZ, ZD7SE, ZE7JV, ZS, 5N2JKO, 2LKZ, W1F.

G3NOT: CX9BO, CR7EA, 7CI, 7AG, FB8XX, LU's, PY's, VQ2DL, 2WR, 2WZ, VQ3PBD, 4RF, 4HX, VQ8AV, VS9AGA, ZD7SE, ZB1, ZE, ZS, ZS7L, 5A2CX, 3TQ, 3CAD, 5N2RJO, 2BRG, 2JKO.

SSB

G3NOF: LU8MI, VQ2JM, W1WWA/EL, ZS6UR, 6ZZ, W's.

CW

G5BZ: EL4YL, W5, 9, 0.

our own country—and they are not on 14 mc to work you—they want to work DX. So you look around and find yourself in a peculiar situation. To the East, nothing but ocean for four or five thousand miles; to the North, the same few stations you have worked over and over again; to the West, desert and sparsely populated areas for two thousand miles, and after that VK's and ZL's; to the South, the Pole with its magnetic barrier which cuts off South America completely. You suddenly realise that you are out in the Great Silence! And so, on 14 mc, you set to work to break through the great European and American hubbubs, which, with 40 watts and a ground-plane, takes some doing."

VK6AJ adds that when he does get through with a really solid contact, the chances are that the other fellow is also using a ground-plane. We have noticed this effect repeatedly, although it cannot be explained merely by the fact that the signals are ver-

tically polarised—they don't stay that way for long.

Contests and Awards

We are asked to give a short pre-warning of the YL/OM Contest, organised by the YLRL, which happens on February 24-25 (Phone) and March 10-11 (CW), 1300-midnight (35 hours in all for each half). Fuller details will be published later, but there has been discontent in the past because the dates were not announced early enough. So there they are.

For those who hunt Sheepskins, here are two from the Ontario DX Association. The St. Lawrence Seaway Award is for those who work ten VE stations located along the route of the Seaway (any band, any mode, July 1959 onwards). The Canadian Award is for five contacts with each Canadian Call Area, five with VO1 or VO2, and one with a VE0 maritime mobile. Any post-war contacts count for this one. Full details of both from

VE3BQP. (QTHR.)

Yet another one (a late arrival): GM3NQB (Thurso) mentions the WBT (Worked Bad Tolz) award—for working five DL4's who are members of the Bad Tolz Radio Club. Details from DL4HN: Sgt. R. Lewis, HQ Co. 10th Special Forces Group, APO 108, US Forces, Europe.

We are sorry not to be able to publish complete information about all these awards, but there are now about 600 of them (mostly trivial) and the total grows monthly. (SM5WI told us over the air the other day that he now has his CHC for collecting 200 awards!)

The HF Bands

MP4BBW (Awali) seems to live in a place where the skip is always favourable for what we at home would call nice DX. Look at his SSB list! Ian admits that it is "quite a fair bag" this month, but says that contest conditions were poor (as usual). Even so he bettered last year's score in the

CQ DX Contest (Phone) with 293 contacts giving over 83,000 points—in twelve hours' operation on 14 mc SSB. This score included only about 12-15 North Americans. He is putting in for a WPX (Phone) together with a few stickers, and says his revised WPX listing might put him at the top of the sideband list.

GM3JDR (Caithness) was also in the Phone contest on a 14 mc SSB-only basis; he made 27,000 points and thought the band very poor. (It was the week-end of that Aurora, which was clearly visible down south, so it must have been tough in the Frozen North!) He has now worked 163 countries on 20 m. SSB since March 7, and the QSL's are still coming in.

G2DC (Ringwood) is delighted to report the disappearance of some of the marauding commercials, so he turns his wrath on some of the "sinkers" heard from amateur stations and is now telling some of them where to get off. He started with UA3KAA, the official Hq. station which broadcasts amateur news to the USSR, and told him that his key-clicks spread over 75 kc. (Reply: "every station gives me T9.") Jack adds that the promising Pacific DX has now receded and even some of the VK/ZL stations have to work for QSO's.

G3NWT (Sandiacre) says there will be no rhapsodies from him about conditions, and he would have been content to see the summer level maintained throughout the winter. He suggests that winter conditions are said to be better "because more shacks are occupied for longer periods." G5BZ (Woldingham), on the other hand, says "conditions have been pretty good and there has usually been something to chase." During his holiday in Spain he had a brief look at Andorra, and says "what a wonderful spot from which to work DX — and how amazingly cheap everything is!" (But the ticket is very difficult to get.)

GW3AHN (Cardiff) still turns in the best lists on 21 mc SSB—strange how neglected this is, and how fruitful it can be if you persevere. G3JOC (Norwich) is a new correspondent, and his list of



The LX3DX station set up for 40-80m. during the ON4 DX-pedition to Luxembourg. Left to right: ON4QX, ON4OK, and ON4QV, with ON4NW being beaten up for calling LX3QX, covering the other bands in the same room! The ON4 boys had a good time, but they struck a period of poor conditions. However, with a total of 12 operators, they kept two stations on the air covering 15-80m. and made 805 QSO's in 62 countries and 24 zones — in spite of 15/20m. going out altogether during the three nights they were on. Special QSL's are being sent out for all cards received.

21 mc AM makes good reading.

G3PEK (Stockport) is now covering four bands, has got his phone going, and has worked his first W7 and KL7 on 14 mc. He worked during the Phone Contest with 10 watts "to a piece of wet string," raised UA1 and CT1, and claims the *lowest* score in the Contest—120 points!

W6AM (Long Beach) is up to 300 confirmed on phone, but was away from home during two DX-peditions and says "now W6AM is out of the top running for good." Shows that you mustn't even leave home if you want to keep in the Top Spot!

EI7AE (Co. Cork), referring to 28 mc, says "running a British Counties Ladder on this band ought to be worth a try, especially as you can sometimes work interesting DX painlessly." His job (aboard m/v *Salinas*) keeps him QRT for long periods, otherwise he would be on the band a lot more.

G3NOT (Catterick) again puts in a nice list of DX on 28 mc AM, and on 21 mc (although a shorter list) he worked a character signing YL2BB — any clues, please?

G3PGQ (Nelson, Lancs.), and very recently licensed, describes the thrill of his first QSO, with his 7040 kc CC transmitter "running on medium burn," as he puts it. In the excitement, he lost the GI3 who had come back to his first call. However, since then he has made about 70 contacts in ten EU countries, all on just the 6L6 CO. Coming along is a PA and a VFO. G3PGQ will be sticking to CW for a while—and very wise, too.

Top Band DX

The first "crossings" of the season, as far as we can find out, were made by GD3UB/VE1ZZ (October 8); G3KOR/K3MBF and G6BQ/K2DGT (October 10); G6HB/K2DGT, G3PU/W2FYT and G3PU/W2KQT (October 15). Quite a few more have followed since then. But the W and VE stations have been logged over here at various dates all through the summer, so there is little doubt that we are in for a very good season on 160 metres.

Don't forget the "official" dates for Trans-Atlantic Tests: December 3 and 17, January 7 and 21, February 4 and 18. 0500-0730

GMT, and do not call in the American sector, 1800-1825 kc.

There is a strong body of opinion in favour of organising an International Top-Band Year to

TOP BAND COUNTRIES LADDER

Station	Confirmed	Worked
<i>CW and Phone</i>		
G3JEO	98	98
GM3OM	98	98
G2NJ	98	98
G3IGW	97	98
G6VC	96	97
GM3COV	96	96
G3KOR	95	98
G3APA	92	93
GM3AVA	91	92
G2CZU	90	90
G2DF	89	91
GM2HIK	88	90
G3LWQ	86	90
G3NFV	82	83
G3NPB	80	82
G3NNO	78	90
G3MXJ	78	81
G3OSE	74	81
G3OHX	72	82
G3NNF	64	70
GW3CBY	52	62
G3MGI	48	60
G3ISX	48	54
G3IDG	44	59
G4JA	40	53
G3PDM	35	59
G3PGN	32	47
G3PEK	4	20
<i>Phone only</i>		
GM3AVA	89	89
GM3OM	87	89
G3FS	85	85
GM2UU	80	81
G3NPB	79	81
G3NBT	70	74
G2CZU	69	69
G3NAA	64	65
G3NNF	55	58
G3NNO	45	68
G3NFV	36	48

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

coincide with the International Quiet Sun Year, 1964-65. Top-Band investigations on a world-wide basis could provide some valuable information that has hitherto been lacking . . . but would the various licensing authorities co-operate? (Most administrations do not licence their amateurs for Top Band.)

W1BB plans to operate quite frequently from W1BB/1, with two new aerial systems entirely over salt water—one a 260-ft. Zepp and the other a 260-ft. Vee. In addition to the salt-water advantage, the location is quieter than the home station. Stew never has any trouble getting his fine signal outwards—it's the collection of our puny ten-watters that is the real trouble.

W0CDP states, via G3KMQ, that he is very active every Sunday morning, 0300-0700, on 1999 kc, looking out for all and sundry . . . G3PGN (Basildon) heard K3MBF and W1TS (569 and 579) on November 5 at 0500. He has a half-wave up, and will be chasing every Sunday morning until he gets one for himself!

Top-Band in Europe

The versatility of One-Sixty is really surprising. We have to chronicle genuine DX contacts under a separate heading, and then we have the usual news of GDX, of non-DX county-chasing and local nattering, and now the surprising daylight results that are becoming possible.

Rudi Stuber, HB9T, has been a popular user of the band for a long time, and he writes to say that he began his regular seasonal activity on October 21 with a series of G contacts starting as early as 1730. But on November 4 he heard G3NPI at 1400, and at 1414 he worked G5XB. Later, but still before 1500, he worked G3NPI, G5AQ and G3CMJ. On November 5 he raised G3MZW at 1345, OK1ACC at 1355 and G3NQF at 1401 GMT.

Eight years back Rudi worked G3HYJ at 1134, G3IVH at 1145 and GM3IGW at 1414—it looks as though similar conditions are now in force. Listening at G6QB, on the South Coast, one can generally find stations as far north

as Liverpool and Sheffield (both CW and phone) at 0900-1030 on Sunday mornings, and the daylight DX is audible again in the early afternoons. Probably the only reason for not hearing it all the time is the high activity from local and semi-local stations throughout most of Sunday morning—a traditional form of Top Band usage which will always be with us. But the daylight GDX is there.

Those who still want Hereford for their WABC had better chase G3OSE . . . he writes "after some months on Top Band from this rather rare county, I am wondering whether to stay, move to the HF bands, or completely remove myself from the QRM and evacuate to VHF." But he will still be around on One-Sixty for a while. He's looking for Co. Antrim to complete his GI counties and is sorry that the /P season is over.

G3OGO (Croydon) is now very keen on One-Sixty, and says he spends a lot of time listening to exasperatingly weak nets, hoping to be able to break in and score a new county. He will soon be moving to a new QTH (near Brighton). G2CZU (Bath) puts his score up to 90/90, although he missed some of this year's expeditions. But he did catch GC3APA (Sark).

G3PDM (Durham City) comes up on the Ladder with the astonishing score of 59 worked (although only 35 are confirmed as yet). He's reading all the literature he can find with a view to cramming a Top Band aerial into a 62-ft. garden for the Trans-Atlantic tests. He favours a G3P-- Top Band table and a fresh start as from January 1, so as to make a real competition for the comparative newcomers.

G30/G3P Marathon

In deference to some of the G30's, and also with a view to increasing the number of contestants, we have decided to make it open to G30-- and G3P-- stations—but the G30's cannot use the start they already have, since everyone begins level as from the first day of the New Year.

Top Band Marathon for G30-- and G3P-- stations only! That's

what it will be, on the basis of Counties Worked and Countries Worked—not confirmed, although we hope they will be. Get ready to start logging as from January 1, but the first Ladder will not appear, of course, until our February issue. When you do send in your score, we shall want just three columns: Call-sign, Counties and Countries. And may the best man win!

Eighty and Forty

There's no shortage of DX on Forty these evenings, and Eighty, though hopelessly cluttered up, is also interesting for those who don't mind late hours. G3NYQ (Ikley), working Eighty CW, netted ZB1FA, OY1R, VE1-3 and W1, 3, 5 and 8. On Forty he raised HK1AAF (calling "CQ Europe" without much luck) and G3GPE/V59K.

G2DC, now desperately chasing one more country for his hundredth on Eighty, worked M1/HB1EO, KG1FD, W1-5, 8 and 9, VE, VO and ZL. On Forty, too, he collected M1/HB1EO as well as JA3ZZ, PY7AJO, VK2QL, 3AD, 3XB, 7SM, ØTC, ØVK, VP8EN, W1-Ø, VE1-3 and VO. G2YS (Rickmansworth) worked M1/HB1EO and SVØWZ (Crete), both on Forty.

SWL Neville Bethune (London, N.14) covered the Phone Contest on the LF bands, listening mostly for SSB. On Eighty SSB he logged HV1CN (Ø235), VP7BP (Ø510), VO1DN (Ø630), as well as YV3HB on AM. On Forty SSB he caught VS9AAC (2250), 4X4DK (Ø220), ZC4AK (1930), 5A3CAD (AM, 2100); and on CW, JA1LZ and 6ACZ (2230), MP4BBE and 5N2RDG (2100). He has found the W6 and W7 signals very good in the mornings (Ø500-Ø800) with W6RW and W6JIN the best.

G3PEK, with his QRP, has worked 19 countries on Forty, including an SP who said "Rx here is R.1155a,"! For Eighty he has just got up a half-wave aerial and can work all over the British Isles with 7 watts—best DX as yet is SM.

G3PDM says he has finished his doubling and quadrupling tricks, and now has a separate transmitter for 80 m. and 40 m.: no real DX yet, but plenty of EDX on Forty.

Things They Say

Neither agreement nor disagreement with the following "quotes" is implied! They are reproduced to serve as a key to other people's thoughts:—"One W1 wanted to act as our Master of Ceremonies, promising to line up the boys by serial number, like those given out in a hardware store. We laughed over that one for two days. What a way to work DX!" (W9EVI/HKØTU, in *QST*.)

"The excessive use of phonetics in circumstances where you are putting through a Q5 signal immediately stamps you as a poor operator, the common name for which is 'lid.'" (K2HEA/K2MGE, in *CQ*) . . . "To the majority of us, Amateur Radio is just a hobby; it does not bless us with super-learning, wisdom or a grasp of the entire electronics field." (W5IRJ, in *Western Radio Amateur*.)

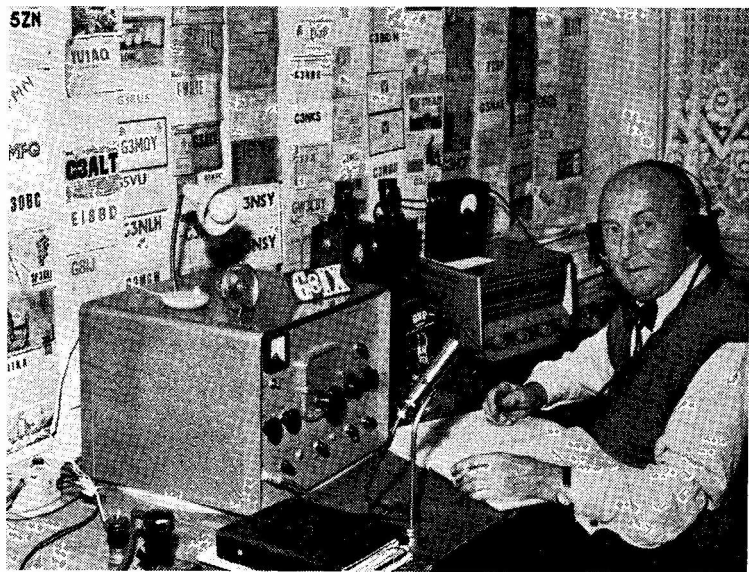
"It is this very willingness to question accepted theories that gives Amateur Radio life and helps to make it the common interest of so many differing individuals." (G3NIM, in *QUA*, South Hampshire Group) . . .

"Working DX is not just the piling of RF into a wire and talking. The operator must know something of conditions and operating procedure on the DX bands, and this can *only* be learned as a listener" (Grimsby *A.R.S. News Sheet*).

Miscellany

G3IDG wants to know the significance of "B" after a tone report. An OH recently gave him RST 599B. (In case some don't know, X means "crystal," C means "chirpy" and K means "key-clicks . . . there *must* be some word beginning with B!")

South Birmingham Radio Society is one of the Clubs interested in organising DX-peditions of various kinds. They ran two Top-Band sorties and two VHF outings during the past season; the former were GB3SB/GW from Merioneth in July, and G3OHM/GW from Montgomery in September. They also hope to enter the *CQ* DX Contest again, having already received a certificate for their entry last year. (We mention this because we have often felt that there is room for more Club efforts in the big



The station of G8IX, G. H. Tagg, 11 Botteslow Street, Hanley, Stoke-on-Trent, Staffs., who served many years in the Royal Navy; he is now chairman of the recently-formed R.N. Amateur Radio Society. He has worked across the Atlantic from both sides—the first time with the old Poulsen arc transmitter at St. John's Newfoundland, to the Admiralty station at Pembroke Dock. Latterly, of course, G8IX has been working the other way by Amateur Radio.

contests.)

G3NWT says he has seen a report that SM5BUG/9Q5 was killed in the same air crash as Dag Hammarskjöld. . . . He heard a great pile-up of W's on 21 mc AM calling TY2AA, but wasn't sure whether the prefix was PY or even PI. He says "just when you want phonetics, you don't get them." . . . Talking of some of the really ambitious awards, he says that this Worked All USA Counties might be cleaned up if he bequeathed his call-sign and his log to possible great-grand-children. Worked All HM Call Areas (ten of them) seems almost in the same category. . . . Finally, he remarks that after a spell of tuning weak SSB signals in among those forty-over-nine standing carriers, it's a positive pleasure to go back on the AM band—"like the Trout Quintet after a spell of Shostakovich!"

If anyone still wants a QSL from last year's VK5BP/8 expedi-

tion, G3PAH is the man to chase (Ben Pooley, Scowles Manor, Corfe Castle, Dorset). He still has all the logs, and can also cope with previous VR2DG activity. G3PAH is ex-VE7AFP, VR2DG, VK4DE and VK5BP.

Last month we inserted a very short note asking if ex-ZC5AF, known to be in the U.K., would contact GW3LQP (Pontypool). The latter was overjoyed at the result thereof—ex-ZC5AF *walked into* his QTH a few days later! He says that all the VR1M QSL's have now been despatched, either direct or *via* the bureaux. And a moan—a great number of stations sent him a card direct, expecting one back direct, with neither s.a.e. nor IRC enclosed. *Not good enough!*

G2VV (Sunbury) worked a character signing ZI10 (zed-eye-one-oh) on 21 mc, but lost him in the noise—now who or what? He managed to raise HK0QQ on San Andres (same band), after passing on the news from HK1QQ a couple of months ago. And Jim says he hears lots of UA stations calling or signing "DISW"—what's this? Maybe a kind of Russian FOC?

G3NOF, referring to G3IDG's statement last month, points out that though cards in unsealed envelopes now require 2½d. stamps (in the U.K.) this does *not* apply to cards going overseas—the printed paper rate is still 2d. up to 2 oz. (Silly, isn't it?) Postcards for overseas are 2½d. for British Commonwealth and 4d. for foreign countries. No arguments about these figures—they are straight from the new G.P.O. list.

Quotes from Readers

"Although your news is pretty old by the time I get it (have only just read the September issue) it's a breath of home and keeps in touch with what is going on in G-land. I don't suppose you have ever looked on it as 'home news for expatriates', but, *inter alia*, it is (VK6AJ) . . . "Why do some Top Band operators treat SSB stations as a kind of disease? Bury their heads in AM and hope that the nasty ol' sideband will go away! They'll soon realise that he went." (G3OGO).

"We're all familiar with the 'Roger, OK, Solid, FB' stuff, but how about 'R, all understood' (spelt out in full on CW) and 'R, R, R, R, R, R, OK' from another station?" (G3IDG). (Perhaps we may quote once more the case of a commercial op. who copied about ten columns of Press, and at the end of the whole lot replied simply (and quite correctly) "R.")

"Am now set up for Two—so any time I feel like talking to myself I only have to pick up the other mike" (MP4BBW) . . . "To spend a whole week-end rattling off contest QSO's and, at the end, to have worked several hundred operators without knowing the first thing about one of them doesn't seem to me exactly full of point" (G3IDG); "In the WSEM Contest, every QSO I checked, both stations gave each other T9, but there was hardly a note as good as T8 among them" (G2DC).

Story from Pitcairn

Some very interesting news about VR6AC comes from G4JA (Baschurch), who met him on the island in 1948. Alan, G4JA, was at sea at the time, on the U.K.-New Zealand run *via* Panama, and to give the passengers a break they used to call at Pitcairn. Thus he got to know Floyd McCoy, VR6AC, very well, although he first met him in New Zealand in 1930, when he had the job of taking some 6-volt batteries under his special protection for landing on the island—they were for the only radio equipment there at the time, which was an old ship's lifeboat spark transmitter. Call-sign PITC, range about ten miles, and no batteries—no radio!

However, the present position is that VR6AC is on three nights a week—Monday to Wednesday, 0500-0700 GMT. He won an HT-37 in the U.S.A. last year and therefore concentrates on SSB, either 14125 or 14275 kc; he uses a dipole, but has sent to New Zealand for a telegraph pole (!) and to the States for rotator gear, after which his Mosley tri-bander will be put into use.

G4JA actually put in for a job on Pitcairn in 1948 (one solitary op. was responsible for VRP,

L F BANDS TABLE

(Countries Worked)

Station	3.5 mc	7 mc	1.8 mc
G2DC	99	131	12
G3FPQ	85	134	19
G3FXB	78	152	9
G2YS	73	94	20
G3JWZ	52	62	9
G3IGW	51	95	19
G3HZL	44	81	8
G4JA	41	57	9
GW3CBY	33	52	14
G3NYQ	28	31	11
G2DHV	25	35	5
G3NYA	23	32	9
G3NNO	23	24	10
G3IDG	16	22	9
G3DRN	13	42	9
G3NFV	13	27	16
G3PEK	9	19	2
G3NPB	8	21	9
G3PDM	8	22	7
G3OQK	5	23	7
G2FQW	4	33	1

This Table derives from Countries Worked. Order is based on band in first column, changed monthly.

quite a large commercial installation). But by the time the papers came through he had acquired the hostelry which he has been running ever since—see p.29, March, 1961 issue. G4JA often wonders what the other job would have been like—sitting on a very choice piece of DX for some years. And now we can all look for VR6AC on Pitcairn again . . .

Table Plans

We have already mentioned the fact that we shall be running a Top Band Marathon ladder for G3O's and G3P's only, starting in the New Year. At the same time we are dropping the "P & Z Table," which has attracted support from only the same little group of people, some of the scores thereon having remained static for months.

Our second new Table for 1962 will be called the "14 mc DX Marathon," based on countries worked as from January 1st. *Europe will not count*—and we have decided on this to relieve the customers of the necessity of

winkling out all the EU countries all over again. Anything outside Europe—14 mc only—one ladder for Phone Only and another for Phone and CW. Start sending in your scores in time for the February issue—and you will have a reminder next month.

Once more, then, to the sign-off, but this time with the additional and pleasant necessity for wishing all our correspondents and readers a Merry Christmas and a highly successful and Happy New Year. May all your DX be interesting, and may all your QSL's arrive.

Acknowledgments and thanks, this time, to the WGDXC *Bulletins*, the NCDXC's *DX-er* and all our far-flung correspondents who provide such a mixed bag of detail. Deadline for the January issue is **first post on Wednesday, December 13**. Please note the date and make sure you are on time—we have to try to beat the inevitable Christmas mail delays. Address everything to "DX Commentary," *Short Wave Magazine*, 55 Victoria



Operators on VR1M, Tarawa, Gilbert and Ellice Is., September, 1961. Left to right: VR1B, VR1M (G3JFF), and VR1A.

Street, London, S.W.1. And, from your conductor, 73, Good Hunting and—"MX."

JOINING A CLUB

If there is an active Amateur Radio club in your district, you should be a member—so much can be learnt from listening to the talk of others, even if you do not feel like asking questions or joining in the discussion yourself. Every issue of *SHORT WAVE MAGAZINE* has a list, in the "Month with The Clubs" section, giving the names and addresses of anything from 30 to 50 local Club secretaries. Any four issues of the *Magazine* cover just about all the active Clubs there are—this is because all Club secretaries do not write in for every issue. If you are interested in forming an Amateur Radio club in your neighbourhood, a paragraph in the local paper will always start the ball rolling.

TRANSMISSION OF HIGH-VOLTAGE DC

A very interesting talk in the BBC's "Science Survey" programme recently dealt with the problems of inter-linking the grid systems of France and the U.K. Though the DC cable is to operate at 200,000 volts and AC/DC converters and inverters are involved at both ends of the cross-Channel link, it was shown that this is the only practicable solution. To use AC throughout would involve

enormous problems of frequency-control of the two systems, as well as the difficulty of a long AC-carrying cable acting as a condenser. The AC/DC conversion is carried out by very large grid-controlled mercury-vapour rectifiers—and, in this context, "very large" means that the bulb encloses a space for the ionised gas of about 650 cu. ft.—the capacity overall of each rectifying station being 800 amps. at 200 kV. The terminal points of this interesting system are at Lydd and Boulogne, and the intention is that it should back up on the peak loads, which occur at different periods here and in France.

"NEW QTH" SECTION

Readers recently licensed or involved in a change of address are reminded that they should notify us of the new call sign/address as soon as possible—with the "Foreign Section" of the *Radio Amateur Call Book* now appearing quarterly, any unnecessary delay means that an issue can be missed. And, in reply to a number of enquiries, we print call sign/addresses in the regular "New QTH" feature as they are received—in other words, if your call is an earlier issue than some you see in print, it is because they reached us before yours did!

You can get *Short Wave Magazine* to order through any Newsagent

Simplified 150-Watt Transmitter and Modulator

GENERAL CIRCUIT ARRANGEMENT

D. E. Pasfield (G5NH)

The intention of this article is to provide, without complication or unnecessary detail, the essential information on the circuitry for an HF band AM transmitter running full input. The design covers two important requirements for such a transmitter—adequate drive on all bands, and ample modulating power. The author also discusses some cogent points as regards aerial coupling and feeding.—Editor.

FROM time to time designs for 150-watt transmitters have appeared, of varying degrees of complexity. The writer is of the old school of thought—that the simpler a thing is the better it will work and probably will be more efficient!

The design described here is based on this concept of simplicity and it is doubtful if any single component can be omitted. Switching is reduced to the minimum and although this transmitter can be a “table topper,” it is not designed for split-second band changing. In fact, the final stage tank coil is plug-in and so must be physically changed, in the interest of efficiency. Many may question this, but to get things in perspective, it only takes a few seconds and in the majority of stations the ATU has to be changed anyway so things become about even.

However, the point is that the efficiency is so much the better when the usual *pi*-network switch is avoided, as has been proved by actual measurement.

The VFO is not included as most amateurs have their own ideas of this, but it is to be preferred that the output frequency be around 1.7-2.0 mc.

The exciter is a little different from modern practice as all necessary frequencies between 3.5-28 mc are obtained in three stages instead of the usual four, being achieved by the use

of the very efficient 5763's. The sequence is shown in the Table, assuming 1.75 mc drive into V1.

In the original version of this transmitter an 813 was used and the *maximum* recorded drive available was as follows (with PA loaded): 3.5 mc-15 mA; 7.0 mc-25 mA; 14.0 mc-15 mA; 21.0 mc-25 mA; 28.0 mc-25 mA.

As the normal drive requirement for an 813 is between 6-9 mA, more than adequate drive is available and never has the drive control been fully open. (This would appear to be the answer to the people who complain about “lack of drive on 21 and 28 mc”!)

Exciter Section

Each exciter stage is switched in turn for HT supplies and PA grid, so each exciter valve is working only when required and thus no “idling” can take place (this can be a cause of much elusive TVI). The exciter circuit is self-explanatory but a certain amount of care is needed with L2 so that it resonates at 14 and 7 mc, at each end of C2; if L2 is wound so that the turns can be expanded or compressed it should tune normally at 14 and 7 mc. Similarly, the same applies to L3 for 21 and 28 mc.

It is, of course, essential that thorough screening is used, particularly of the exciter including *valves* and *meters*, and *all* leads should be screened including filaments; cathode leads should be copper strip to chassis, not just 16g. wire.

RF Amplifier

The PA stage is the conventional *pi*-network with interchangeable coils and with a fixed bias supply (part of which supplies the doublers). This obviates the use of a clamper.

As a refinement a bias potentiometer R9 is included in the PA bias line in order that the PA can be checked in Class-A (with no drive) for parasitics. *Every* PA should be tested in this manner before going on the air, as these parasitics can cause severe TVI, particularly in Band III. Of several PA's built it was found that such parasitics were always due to the inductive effect of the cathode lead to chassis; it is essential that this lead be copper strip at least one inch wide, about 16g., and as short as possible. The *pi*-output tuning condenser should be mounted underneath the chassis, as is the usual practice.

This PA stage was found perfectly stable when run in Class-A with 100 mA standing current and operation of all tuning controls

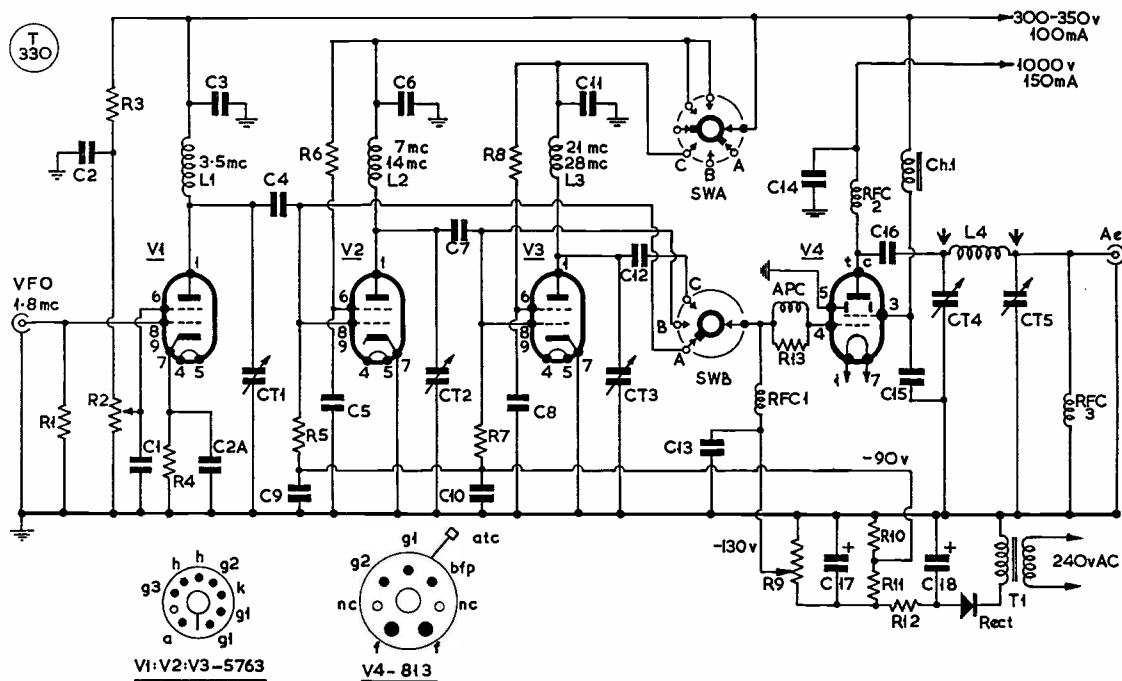


Fig. 1. Circuit of the RF section of the 150-watt HF band transmitter discussed in the text. It can be made to operate on any band from 80 to 10 metres. The exciter section V1-V3, using 5763's, gives ample drive into the 813 PA on all bands. For efficiency on the output side, the PA tank coil L4 is made plug-in for the band required, to avoid lossy switching. The PA bias is supplied by the separate silicon rectifier circuit and is adjustable by R9. A suitable modulator for this transmitter is shown in Fig. 2.

Exciter Sequence

V1	V2	V3	PA Grid
3.5 mc	—	—	3.5 mc
3.5 mc	7.0 mc	—	7.0 mc
3.5 mc	14.0 mc	—	14.0 mc
3.5 mc	7.0 mc	21.0 mc	21.0 mc
3.5 mc	14.0 mc	28.0 mc	28.0 mc

Table of Values

Fig. 1. Circuit of the HF Band Transmitter

- C1, C2, C2A, C3, C5, C6, C8, C9, C10, C11, C13 = .01 μ F ceramic
- C4, C7, C12 = 30 μ F, s/m 500v. wkng. μ F, mica
- C14 = .001 μ F, mica, 2 kV wkng.
- C15 = .001 μ F, mica, 1 kV wkng.
- C16 = .002 μ F, mica, 3 kV wkng.
- C17, C18 = 32 μ F, 200v. elect.
- CT1, CT2 = 150 μ F, tuning
- CT3 = 40 μ F
- CT4 = 250 μ F, HV transmitting type
- CT5 = 500 + 500 μ F, twin
- RFC1, RFC3 = 2.5 mH RF chokes
- RFC2 = Pie-wound 250mA RFchoke
- Ch.1 = 10 Hy 50 mA choke
- R1 = 100,000 ohms, $\frac{1}{2}$ w.
- R2 = 50,000 ohms, 1w., drive control
- R3 = 25,000 ohms., 1w.
- R4 = 200 ohms, 2w.
- R5, R7 = 30,000 ohms, 1w.
- R6 = 47,000 ohms, 1w.
- R8 = 15,000 ohms, 1w.
- R9 = 3,000 ohms, 5w., bias set (see text)
- R10 = 2,000 ohms, 5w.
- R11, R12 = 500 ohms, 5w.
- R13 = 50 ohms, 1w.
- L1 = 3.5 mc, to resonate with CT1 at half-mesh
- L2, L3 = see text
- L4 = Plug-in, for bands required
- V1, V2, V3 = 5763
- V4 = 813
- Rect. = Silicon, 150v.

had zero effect in the undriven condition.

TVI Tests

The Tx has been operated on all bands without a low-pass filter. No TVI is discernible with a TV set 4 ft. from the transmitter, using a single indoor Quad for Ch.4, 18 ft. high and 40 miles from Sutton Coldfield. This does not mean, of course, that a low-pass filter may not be required in certain areas, but the writer is fortunate in having a centre-fed balanced aerial (100 ft. long, 38 ft. feeders, open-wire) right to the transmitter, and coax is out. To digress for a moment on this question of coax fed aerials: A little thought will show that any balanced aerial fed with coax (without a balun) is inherently an unbalanced device; it

seems to be the practice these days to go right out of the *pi*-network into a balanced type of aerial, or a dipole. The writer has found that this is a probable source of TVI. It is therefore recommended that a *balanced* ATU be used—even if some loss of power is experi-

enced—in order to get a non-radiating feeder as far as possible.

A very severe form of TV Rx blocking was found to be due to coax feeding; the substitution of an ATU into a balanced feed-line in place of the coax completely eliminated the trouble.

Of course, an SWR indicator is essential with a tuned feeder type of aerial, and even if a little patterning is evident this will probably disappear once the ATU is adjusted for minimum SWR.

Modulator Side

The modulator used with this transmitter is a little more complex, but once it has been built it will serve for any transmitter! KT88's (or TT21's) in Class-AB2 are used and will give well over 100 watts of audio. The only heavy iron-cored items involved are the modulation transformer and modulation choke. This contributes to overall stability and freedom from parasitic effects.

No speech pre-amplifier is included as this depends on the microphone used and readers have their own ideas on these, too. It can be said that this modulator will reproduce faithfully everything put into it, good *and* bad! The modulation transformer secondary is

Table of Values

Fig. 2. Modulator for the HF Transmitter

C1, C4, C5, C7, C8 = 0.1 μ F, 500v.	R14, R19 = 270,000 ohms, $\frac{1}{2}$ w.
C2, C3, C6 = 16 μ F, 500v. elect.	R15, R16 = 10,000 ohms, $\frac{1}{2}$ w.
C9 = 0.25 μ F, 350v. elect.	R20 = 3,000 ohms, 10w.
C10, C11 = 32 μ F, 200v. elect.	R21 = 3,000 ohms, 10w.
C12 = 4 μ F, 2 kV wkng.	R22 = 500 ohms, 5w.
R1 = 100,000 ohms, $\frac{1}{2}$ w.	T1 = Woden UM3 mod. xformer
R2 = 470 ohms	T2 = 120v., 50 mA
R3 = 47,000 ohms, $\frac{1}{2}$ w.	Ch.1 = 10 Hy, 250 mA choke
R4 = 33,000 ohms, $\frac{1}{2}$ w.	V1, V2 = 12AT7
R5, R6, R7, R17, R18 = 22,000 ohms, 1w.	V3 = 12BH7
R8, R10 = 470,000 ohms, $\frac{1}{2}$ w.	V4, V5 = KT88, or TT21
R9 = 1,000 ohms, 1w.	V6, V7 = VR-150/30
R11, R12 = 100,000 ohms, 2w.	Rect = Silicon, 120v. 80 mA
R13 = 5,000 ohms, 5w.	

(Note: R21 is adjusted to give a total screen-anode standing current of 80 mA on V4, V5 together).

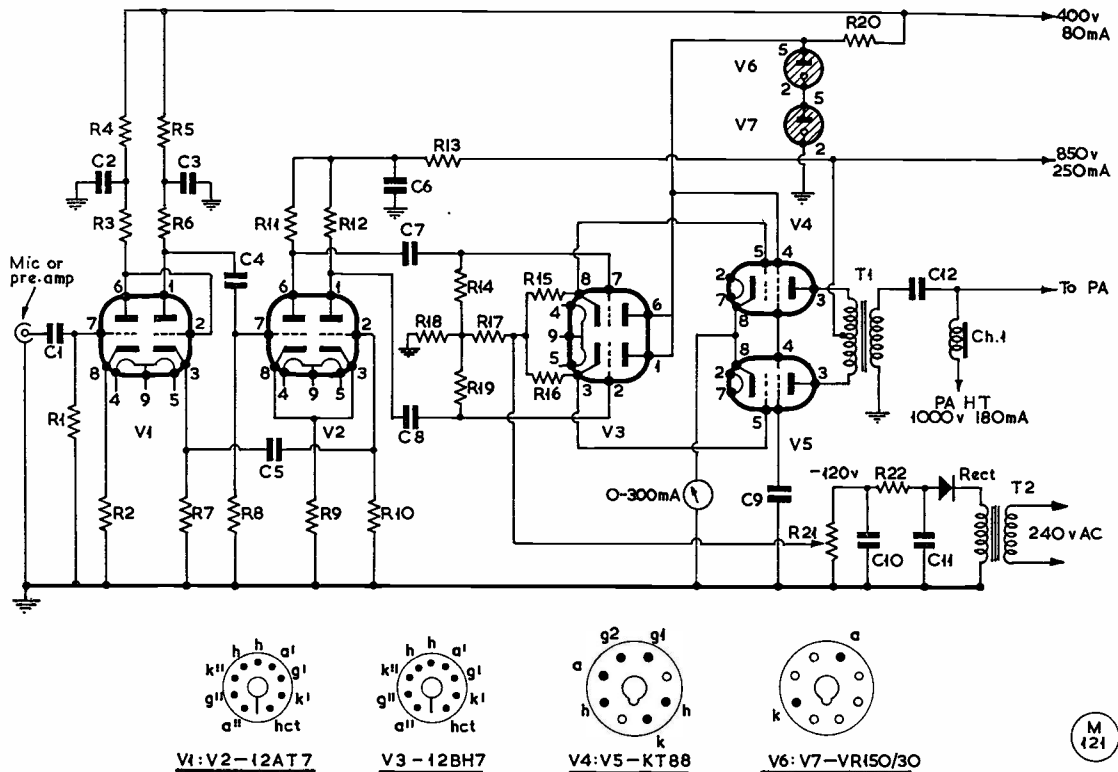


Fig. 2. The modulator for the transmitter shown in Fig. 1 takes a pair of KT88's and in this circuit they will give well over 100 watts of audio. For linearity the plates of the driver stage V3 and the screens of the output valves V4, V5 are on a stabilised HT line. The coupling for modulator into PA is by parallel feed, which means that C12 must be rated around 2000v. DC working, while Ch.1 should be at least 10 Hy. at the maximum PA plate current. This modulator will give very good speech quality and is designed to be linear from microphone to output stage — see text.

isolated, and the PA is parallel fed.

Present-day commercial practice is for cathode coupled drivers, as shown in Fig. 2, and the circuit is not critical provided the values are adhered to (*plus* or *minus* 10%). The cathode coupled circuit has two main advantages:

- (1) The source driving impedance is extremely low, essential for AB2 operation,
- (2) The load variation of the driving stage is also low, and the driver input impedance is very high.

As the bias supply is virtually in parallel with the cathode circuit the bias variation is negligible.

It will be seen that V2 gets its HT feed from the main modulator supply. This is, of course, essential as this valve has to supply the grid-grid input of V3, which is virtually the grid side of the KT88's. V3 anode supply is also regulated.

If a source of about 300v. stabilised is available, this could be used to feed the anode of

V3 and the screens of the KT88's.

Individual bias supplies are provided for the RF and modulator sections; although probably one would suffice, the extra one is worth while to make both sections independent. Segregation of power supplies is *always* a good thing and perhaps the writer—dealing with commercial transmitters daily—has been brought up to this idea.

Compliments on the modulation quality have been received from stations all over the world; although the frequency-response is wide, the more essential requirement of low distortion in the modulator has been met. In the writer's opinion, more side-band splatter is caused by modulators having a high harmonic content than has ever resulted from wide frequency range.

The point is that the *overall* distortion of the transmitter can be as low as 2%. It would be a good thing if we *all* did a check on our modulators both for effective power output and distortion. This would certainly make the AM phone areas happier!

RTTY Topics

NEW STATION ACTIVITY—
SWEEPSTAKES
CONTEST EXPERIENCES AND
RESULTS—
DX NEWS AND COMMENTS

W. M. Brennan (G3CQE)

This feature appears every other month. Some technical discussions in previous issues have included a description of the Creed Model 7B Teleprinter (June); keyboard layouts and automatic frequency control (August); and notes on keyboard modifications (October). The feature also regularly covers radio teleprinter operating news and DX results.—Editor.

WITH the arrival of the longer nights, activity on RTTY has shown a great increase and, apart from the recent RTTY Sweepstakes Contest highlights, it is good to be able to report new European activity. During early October, several stations reported that 11RIF (Milan) was operating RTTY on a one-way basis by transmitting RTTY and taking replies on SSB or AM. It appears that a TU was being built to complete the receiving set-up, but was not ready at the time. By pure coincidence, the

writer happened to be around on 20 metres when 11RIF connected the TU to his receiver for the first time, and a mutual country exchange took place in a matter of seconds. As if this wasn't enough, a break-in station half-way through this contact proved to be none other than LA6J to add some more "firsts" to the mixture! Since then, OZ5EL has likewise added to the "firsts" and LA5LG has joined LA6J—all on 20m. and all adding to the joys of RTTY on the DX bands as the U.S. RTTY'ers join in the chase. At one time, RTTY QSO's took place on the DX bands mainly at week-ends. Now, however, it seems that QSO's can be had morning, afternoon and evening, weekdays or week-ends.

The set-up at 11RIF is one that would make any amateur envious. In the first place, to use the word "shack" to describe the operating room is misleading, to say the least. On RTTY, 11RIF has a Rohde & Schwarz SK-050 transmitter taking an input of 300 watts, whilst on the receiving side is an R. & S. EK-07 (27-valve) receiver. The teleprinter itself is an Olivetti machine of recent manufacture. In addition to this, the station is equipped with an elaborate aerial system, including a six-over-six rotary beam at a height of more than 100 feet, not to mention a 5-over-5, a 5-element, a 4-element, a 3-element, and a Triband beam! Some of this equipment is divided between two QTH's, but the main station consists of many items of apparatus, such as a Collins KWM-2, Hallicrafters HT-32A, SX101A, T.M.C. GPR-90 receiver—and so on! It is hoped that some pictures of this station will be available for the next "RTTY Topics." Although a newcomer to RTTY, 11RIF quickly proved that he could make maximum use of

his equipment, and during the RTTY Sweepstakes contest sorted out some of the most appalling pile-ups with a speed and skill that was a joy to behold. When the contest ended, his score was 25,040 points, at least double that of any other European station. He is to be congratulated on a fine performance, and he is certainly a welcome newcomer to the RTTY scene. Anyone looking for a QSO with IIRIF should have little difficulty on 15 or 20m.!

More New Stations

LA6J commenced RTTY operation using a Lorenze T36LO tape T/P, but a short time later he obtained a Teletype Model 15 page printer, a Model 14 typing reperforator, and Transmitter Distributor (auto transmitter). None of this equipment was in working order when it arrived, but it was all fixed and airborne in a very short time! LA6J is active on 15, 20 and 80m. in the evenings during the week and, of course, during the day at week-ends. G2UK (Lowestoft) made what must have been the first 80m. two-way RTTY QSO between LA and G with LA6J, too. LA5LG can often be heard working LA6J on 20m., and the latter is also running a Teletype Model 15, the rest of the gear being a K.W. Electronics "Viceroy" Tx followed by a Johnson Courier PA running at 150 watts input. The aerial for 20m. is a 3-element beam, and the receiving set-up comprises an HRO-5A followed by a W2PAT-type TU. Copy sent along by LA5LG proves that it is all working very nicely. In common with most owners of SSB gear who operate RTTY, LA5LG produces FSK by keying a two-tone audio oscillator and feeding this into the audio section of the K.W. "Viceroy," thereby avoiding making modifications to the original circuit of the Tx.

OZ5EL has been operating on 20m., giving many of the "regulars" a contact with Denmark. Although he appears to be on mostly in the evenings when the skip is not too favourable for OZ to G working, it can be done—or, alternatively, try 3-6 mc in the evenings.

The RTTY Contest

The boiling waters created by this event have now subsided a little! Although at the time of writing there are still many logs not in, sufficient have reached the *RTTY Magazine* office to produce a fair picture of the event. However, all scores mentioned here are, of course, subject to scrutiny and the placing of the top stations may be altered. Mention is often made of a WAC award in RTTY circles; this is because a special RTTY WAC Certificate is issued by *RTTY Magazine*. Naturally, a lot of interest has been focussed on the Sweepstakes Contest to see if anyone would achieve a QSO with each of the six Continents during the Contest. So far, it seems that at least four stations did manage it: W0NFA, W7ESN, TG9AD and W5BGP have all claimed contacts with all Continents. Conditions on the HF bands could only be described as fair during the contest period, and so this represents no mean feat, bearing in mind that there are as yet few

active RTTY stations in Asia, South America, and Africa. Other stations will have completed their WAC's during the contest; ZS1FD, K3GIF and W8JIN are in this category.

The leaders in the contest look like being W0NFA, with 6 Continents, 23 Countries, 31 States, for 33,738 points; W7ESN, 6 Continents, 19 Countries, 30 States, 30,270 points; and TG9AD, 6 Continents, 21 Countries, 27 States, 29,574 points. These scores do not give any indication of the actual QSO's, but W7ESN made about 130. W2RUI won a previous contest with both hands bandaged after an accident; as he was active in the recent contest, too, until his score is known it would be unwise to try to name the first three!

In Europe the real difficulty was in finding gaps in the wall of QRM from the East Coast U.S. stations in order to work the States further west and so collect more bonus points. Also, of course, competing with W stations for the attention of such stations as YV1EM, TG9AD, KZ5KR and XE1BI, all of whom are practically on the W doorstep. Both TG9AD and KZ5KR were hunting countries for their own score, and so their beams often were turned this way and contacts made, but several European stations spent a great deal of time trying to print YV1EM for a South American contact — without success. KR6MF was a different matter altogether; he was a 599 signal on 21090 kc and practically the only signal on the band at 0830 GMT. It was possible to have a pleasant hour's ragchew with him undisturbed! G3GNR (Amersham) also collected his Asian contact with KR6MF on 20 metres, and G3BXI (Chigwell, Essex) did the same on 15 metres a little later on. G3GNR heard both VK3KF and ZL3HJ working the West Coast U.S. stations, but could not make break in. G3CQE (Norwich) started a contact with VK3KF on 20m., but signals both ways were weak and it was just not possible to get any copy through a UA "All Red Comrades Only" CW contest that was plaguing the band. Conditions to ZS were poor and both ZS1NE and ZS1FD found the going very rough indeed. As some consolation, ZS1FD did get his much-needed QSO with Asia soon after the fray began. GM3IQL and GM3ENJ (both of Dunfermline) joined forces to operate GM3IQL's station and came up with 3,200 points and some new countries. GM8FM (Edinburgh) had trouble with a spinning typehead and had to waste a lot of valuable time stripping down the combination head of his T/P—not a nice job to do in a hurry! However, he managed 2,200 points and enjoyed himself, anyway; and, after all, that is the

RTTY operators and all interested in the subject are invited to write in for this feature, the next appearance of which is in the February, 1962 issue. Photographs of RTTY stations are also welcome, and those used are paid for on appearance. Address to "RTTY Topics," c/o The Editor, Short Wave Magazine, 55 Victoria Street, London, S.W.1., to arrive by December 31.

main idea behind the whole exercise! G6CW (Nottingham) printed many of the stations in the contest, but had trouble on the transmitting side and could not join in. G3GNR made 3,300 points; G3CQE notched up 10,410.

W6CG of *RTTY Magazine*, spent most of his time chasing new ones and looking for flaws in the new rules. Final score after working KH6 on four bands and TG9, XE on three, was 16,800. In the intervals when she could entice the OM away from the rig, his xyl, K6OWQ, collected 6,090 points for herself!

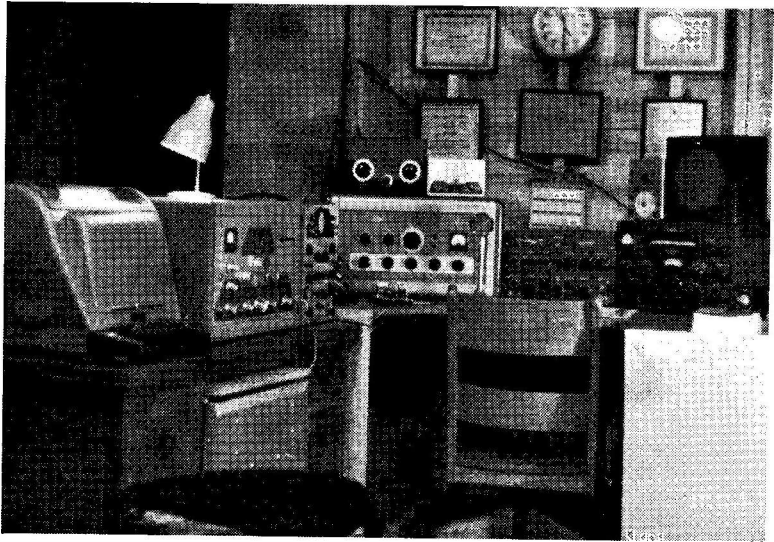
VE7KX wrote in to say that although he worked ZL, VK, ZK, KR6, KH6, KL7 and, of course, W/VE, he heard no Europeans at all during the contest; W stations working each other blotted out any hopes of hearing DX underneath. He suggests that in future contests each Continent could be allocated a 10 kc slice in which to work. However, this would mean that at least 60 kc of band space would be taken up (even if only for one week-end per year). It's also most certain that the W's could not be crowded into 10 kc, anyway, and would soon spill over on to other frequencies. Perhaps the real solution would be for U.S. stations to use, say, 14090 kc and below, and others to use 14090 and above? This would, of course, mean that two channels were in use for one contact and also that all stations would have to be able to use DC local copy instead of RF loop copy.

Comments in a similar vein come from W6TPJ, who says: "Over here it was impossible to hear much of the DX except during the odd hours when the W stations were either sleeping or had gone to church"! W6TPJ did, however, wind up the contest with five continents, a nice even 100 QSO's and 28,319 points.

Some of the countries taking part in the contest were KM6, KR6, KH6, KZ5, KL7, VK, ZL, TG, XE, YV, PY, ZS, OZ, DL, G, GM, LA, I, PAØ, VE2/3/4/6/7 and, of course, all U.S. call areas. Comments on the contest all seem to be favourable, and any changes in the rules will only be minor ones, according to W6CG. It was a pleasant week-end, with some new countries around for those who like to chase them, and KR6MF's comment, "I thoroughly enjoyed it. When's the next one?" just about sums up the general opinion.

Other News

PAØFB worked YV1EM for another "first." YV1EM is on 15 metres, looking for European RTTY stations from 1200 to 1400 GMT every week-end; this information comes direct from YV1EM.



An interesting RTTY station is VE3OE, L. F. Jennings, 37 Thornbeck Drive, Scarborough, Ontario, where the transmitter is a Heathkit DX-100U, the receiver a Collins 75A4, and the printer a Teletype Model 26 (left).

KR6MF says he also is looking for Europe around 0830 GMT at week-ends. Recent schedules with the writer show that the band is open most days and that KR6MF is there at that time almost every day of the week. KR6GF has now joined in as well. KZ5DS, also, on 21090 kc, turns the beam to Europe at week-ends between 1600 and 2000 GMT. KM6BU is on the same frequency from 0800 GMT, according to W4BOC. So is ZK1BS. VE7KX has put up a Vee-beam aimed on Europe, but 0500 GMT seems to be the best time for him on 20m.; he hears many Europeans but no G station—no prizes for guessing why! VK3KF has been active mostly on 20m., but is keeping an eye open on 15m., too. G3FHL recently paid a visit to G3LAY to deliver some RTTY paper and was much impressed with the fine R-T/P set-up there for FSK on two metres. G3LAY recently gave a lecture to M.A.R.S. on RTTY. It was well received, according to an innocent bystander!

As usual, space runs out before the news does, so your conductor must sign—with many thanks to all who have written, reperfed, and passed information over the air and in person. At this time of the year, one of the compensations for writing this column is to be able to send greetings to so many people at once. A Really Merry Christmas To You All and may you have twice as much enjoyment in 1962.

HOW ABOUT IT?

A correspondent writes: "How about a typical, madhouse sort of amateur shack for 'The Other Man's Station'? We are not all so neat and tidy as this makes us out to be!" Not a bad idea—so what about it?

NEW BBC HF TRANSMITTERS TO USE TRAPEZOIDAL MODULATION

HIGH-LEVEL AUDIO SYSTEM
GIVING
BETTER INTELLIGIBILITY
AGAINST INTERFERENCE

*By Courtesy of
Marconi's Wireless Telegraph Co., Ltd.*

This is one of our periodical general-interest articles to keep readers informed of what is happening in the world of short-wave communication outside Amateur Radio. It will be evident that what is known in commercial circles as Trapezoidal Modulation could have considerable practical application on the amateur bands. Indeed, it is not unknown for AT stations to use enhanced AM control with heavy clipping on the output side of the modulator, aimed to narrow the sidebands while giving deep modulation.

—Editor.

THE British Broadcasting Corporation has placed an order with Marconi's Wireless Telegraphy Company Ltd. for the supply and installation of ten high-power (250 kW) short-wave sound broadcasting transmitters of a new type which, when they come into service, should very materially improve overseas listeners' reception. Six of these transmitters will be installed at the "Voice of America" relay station at Woofferton. Two more will go into service at the BBC station at Rampisham and the remaining two at Daventry.

The transmitters are specially designed to combat the ever-increasing amount of interference experienced on the short wave broadcast bands. This is achieved by employing trapezoidal modulation, proved to give an intelligibility at the receiving end which could only otherwise be brought about by more than doubling the transmitter power.

MARCONI 250 kW HF SOUND TRANSMITTER, TYPE BD-272

This design embodies many new techniques, the aim being to provide a highly efficient, reliable broadcaster which requires the minimum of supervision in routine operation over the frequency range of 3.95 - 26.1 mc.

The important technical features are the following:

- (1) Continuously variable control of the modulation from sine-wave to trapezoidal; this enables the character of the transmission to be adjusted to the

optimum condition for working through interference of a given degree of severity. A built-in envelope monitor displays the outgoing modulated waveform.

- (2) The use of wideband circuitry in two of the three early RF stages and the penultimate RF amplifier cathode eliminates tuning in those stages, simplifying the process of changing frequency. Quick-release chuck-type coil holders are incorporated to speed a coil-changing operation.
- (3) The incorporation of a new system of vapour-cooling for the main valves which makes valve changing easier.

The Modulation System

Whilst the BD-272 transmitter can operate under conventional AM conditions, one of its special features is that it can be set up to provide a much higher average depth of control than is possible with normal design.

This is achieved by arranging it to accept an audio signal of a level which is 9 dB above that required for 100% sine-wave modulation, and then clipping and shaping in the audio input circuits to give 95% modulation. The resultant output from the modulator is consequently no longer sine-wave, but rather a pulse with sloping leading and trailing edges—the wave shape termed "trapezoidal." The modulated carrier envelope is likewise no longer a sine-wave.

It has been established by experimental investigation that under these conditions the intelligibility of the signal at a distant point is increased at least 3.5 dB above that given by sine-wave operation at equivalent output power.

Trapezoidal modulation cannot readily be incorporated in existing transmitters using conventional sine-wave control. One reason is that the clipping process can introduce "overshoot" and "tilt" into the waveform at the modulation output; these effects tend to peak the modulation level beyond 100%, the point at which the transmitter is designed to trip by overload.

This has been obviated in the BD-272 by the introduction of a phase-correcting network in the sub-modulator. The network intentionally introduces distortion into the "trapezoidal" signal; this distortion, when it reaches the modulator output stage, is arranged to be equal in amplitude but opposite in phase to the overshoot and tilt produced at that point, thus nullifying it. The intermediate amplifying stages and the cathode follower must therefore be designed to handle with fidelity the intentionally-distorted waveforms, as these would overload a conventional modulator amplifier.

Furthermore, although a "clean" signal is produced at the modulator output, the power content of the clipped wave is more than 1½ times that of a sine-wave of equivalent modulation level and, as a

consequence, a modulator of increased power-handling capacity has to be provided. The main HT rectifier (which supplies the PA and modulator stages) must also be capable of delivering more power, for whereas with 100% sine-wave operation the audio power delivered to the modulated RF stage is 0.5 of the DC input to that stage, in the case of 95% trapezoidal modulation the value increases to more than 0.75. Similarly, whilst the RF output with 100% sine-wave modulation equals 1.5 times the unmodulated carrier power, the figure for 95% trapezoidal modulation is 1.75 at least. These figures prove the advantage of the system.

Harmonic Suppression

In the Marconi BD-272 transmitter, extensive precautions are taken to ensure that the harmonic and spurious radiation content is extremely low. The entire RF amplifier cubicle is totally screened, ensuring that the various electrical and mechanical connections to this cubicle are out of resonance and cannot act as radiators.

A harmonic filter unit connected between the output coupling unit and the aerial feeder brings the transmitter well within the requirements of the 1959 Geneva Regulations for suppressing harmonic radiation. In addition, filters are also incorporated further to reduce the radiation in Bands I and III.

Radio Frequency Drive Unit

The design of this unit represents a very considerable step forward in the matter of a rapid change of frequency. In the BD-272, wideband amplifier techniques eliminate much of the retuning processes. A change of band can be effected by one technician only. Two can carry out the entire operation in less than five minutes.

Of the three radio frequency driver stages, the first uses a 4CX250B valve in a wideband transformer-coupled circuit which needs no tuning over the frequency range 3.95 to 26.1 mc. The second stage is a distributed amplifier of special design, consisting of five 4CX250B's; it also needs no tuning over the range. It provides an output of 200 watts to drive another 4CX5000A valve in the output stage, where the circuits are conventionally tuned to give an average output power of 5 kW to the input of the penultimate RF stage.

Penultimate RF Amplifier

This consists of two English Electric vapour-cooled triodes type BY-1151 operating in Class-C push-pull in a grounded grid circuit. Drive from the wideband amplifier is applied *via* a wideband transformer (no tuning required) to the AC heated filaments, which are held off earth potential by RF chokes in the legs of the filament supplies. This stage has 50% amplitude modulation applied to the anodes.

Final RF Amplifier

This stage uses two vapour-cooled English Electric BY-1144's in Class-C push-pull, with anode

modulation. Again, AC to the filaments is supplied *via* RF chokes, so that the preceding amplifier output can be applied to the valve side of the chokes. Variable vacuum condensers of English Electric manufacture—see SHORT WAVE MAGAZINE, September, p.367—are used for tuning purposes. The output coupling unit is inductively coupled to the final stage, with plug-in coils mounted on a coupling truck. Adjustment of coupling is provided by traversing the truck along rails by means of a motor drive controlled from the transmitter front panel; this does not affect the output tuning. Tuning of the output coupling unit is by variable vacuum capacitors.

The feeders are coupled to the truck by a sliding telescopic connection which accommodates the truck movement but does not affect the feeder impedance.

The Sub-Modulator

The audio input line is taken to the sub-modulator unit, where it first passes through an attenuator which is adjustable in 0.5 dB steps. From the attenuator the signal is fed to the phase correction unit mentioned earlier; thence to an audio pre-amplifier.

The output of the pre-amplifier gives two further stages, both voltage amplifiers. The first of these consists of two TT21 valves in push-pull, and the second uses four TT10's in parallel push-pull. The output of the latter feeds into a cathode follower made up of four vapour-cooled VCT110's in parallel push-pull.

The Final Modulator

This consists of two vapour-cooled English Electric valves, type BY-1144, operating in Class-B, each driven by a pair of sub-modulator cathode followers in parallel with direct connection to the respective modulator grids to permit individual adjustment of bias on each.

The modulator output is applied *via* a transformer/reactor/condenser combination into the anode circuit of the final RF amplifier, with 50% of this modulator power also applied to the penultimate stage. A voltage derived from a potentiometer network between the final modulator anodes and earth is passed as negative feedback to the sub-modulator pre-amplifier.

Transmitter Cooling System

As stated earlier, the high-power valves are vapour-cooled and the smaller valves radiation-cooled, with an extractor fan drawing off the radiated heat from the cubicles.

The BD-272 transmitter employs a "vapour-down" system, in which a header tank provides a "head" of water fed to the valve boilers. In the boiler or jacket is a "weir" which keeps the water level constant. The heat generated by the valve passes into the water and produces the water-vapour; this, together with any over-spill of water from the weir, is taken through a relatively large bore pipe which slopes down to a low-level vapour separator tank. The vapour is then taken to a heat exchanger, and the resulting condensate is pumped back as water to the high-level tank.

AMATEUR RADIO EXHIBITION

LONDON, NOVEMBER 22-25, 1961

ORGANISED and managed by P. A. Thorogood, G4KD, in association with the Radio Society of Great Britain and supported by some 30 stand-holders, the "Radio Hobbies" (Amateur Radio) Exhibition was again a great success. But we have become accustomed to this at the Horticultural Hall—where the Exhibition was again held. In his inaugural address, Mr. Henry Loomis (of "The Voice of America") remarked upon the similarity of interests as between amateurs and professionals in the field of short-wave radio communication, and the variety of problems presented. He was accompanied on the platform by a number of leading personalities in the world of Amateur Radio.

This is necessarily a brief and very condensed review, as it had to go to press before the Exhibition closed. However, it is hoped that from it readers who were unable to make the journey to London will get some idea of what there was to see.

As usual, the firm of **Daystrom, Ltd.**, manufacturers of the famous Heathkit range of equipment which sells so well in the U.K., had a good showing of their amateur-band apparatus, which included the DX-100U with the SB-10 sideband adaptor; the Mohican amateur-band transistorised receiver; and a variety of auxiliary equipment (such as grid dip meters, calibrated VFO unit, RF and audio signal generators, valve voltmeter, capacity meter, and audio wattmeter). It should be noted the SB-10U can be used with most AM transmitters, and not only the DX-100U. All Heathkit gear is very well designed, only the best parts are used, and the constructional information is complete.

The largest commercial-equipment stand at the Show was that of **K.W. Electronics, Ltd.**, who have a steady development programme, a very high standard of design and manufacture, and enlarged production capacity—all to cope with increasing business, at home and overseas. The item of outstanding interest on this stand was their new K.W.77 triple-conversion receiver, incorporating a crystal-controlled front end for all amateur bands 10-160 metres, crystal calibrator, USB/LSB selection, vernier BFO control, and 1.4/2.8 kc pass-bands; the last IF channel is at 50 kc. It is certain that this receiver will find the discriminating market. Also on view was the new version, Mk. III, of the K.W. "Viceroy" AM/CW/SSB transmitter, now with the power supply, using silicon rectifiers, in the same cabinet. An entirely new piece of apparatus was the K.W. SSB Receiving Adaptor, suitable for connection into the last IF stage of a receiver such as the AR88, or Eddystone 888; this consists of a mixer-filter arrangement with a product detector. Also available now from **K.W. Electronics** is the Tx SSB Converter, as used in the "Viceroy," as a separate unit with its own power supply; a transmitter RF section can be driven on 3.5 mc, or

converted to the other bands using the "Viceroy" circuit arrangements; this SSB converter is probably the cheapest way by which a newcomer can get out a good SSB signal without becoming too involved in technicalities. Again on the receiver side, **K.W. Electronics** were showing the new American Drake 2B, which they handle for the U.K. and which is acquiring a high reputation, and the Mosley CM-1, a new product which has many attractive features, not least of which is its very reasonable price. The total value of the equipment shown on the K.W.E. Stand—which also included Hallicrafters and Hammarlund apparatus—was about £10,000.

One of the oldest and best-known Amateur Radio supply houses in the U.K., **Webb's Radio**, of Soho Street, showed a range of Eddystone equipment, including the very interesting new 840C general-purpose communications receiver; this has a tuning coverage of 480 kc to 30 mc, a good electrical specification and performance, and very attractive styling; at its low U.K. price, it will be very interesting to newcomers (both SWL's and AT operators) who want a good station receiver. The Eddystone transistorised communications receiver was also attracting much attention.

On the stand of **Minimitter, Ltd.**, we saw their new SB Transmitter, type SB7MT, which has some design features of particular interest, and is a smartly-styled job which will attract much attention from those thinking about a commercial SSB transmitter. **Minimitter** also had on view the re-vamped MR44 communications receiver, the MR44/II, and probably one of the cheapest specialised amateur-band receivers available on the U.K. market. Another new item of **Minimitter** equipment was a transmitter, the "Top 2/7," a compact and very moderately priced design running up to 24w. on the three LF bands. Some new aerial devices, claimed to give high gain in multi-band working, were also displayed by this firm.

Last year, **Electroniques (Felixstowe), Ltd.**, showing for the first time, had a range of coil units and a Top Band transmitter. Their "Stabcoil" design has now been extended to cover over 100 different types, all having the features of built-in adjustable capacity trimmer, core and temperature compensation; the range also includes many different types of RF chokes and filter units, as well as coils for the BFO and Q5'er positions, and high-Q, high-selectivity IF transformers for the 85 kc to 1.6 mc ranges. Amateur receiver band-spread "Coilpax" can be supplied as complete units. Now in association with **Copp Communications Co.**, the "Pathfinder" Top Band transmitter was again shown; it is claimed to have an unequalled specification and to be the finest value ever offered to the amateur. This firm also is entering the sideband field with an SSB drive unit.

In addition to their established range of VHF

equipment, **Withers Electronics** had two new items of exceptional interest — a highly-stable VHF/VFO, illustrated here, and a fully-transistorised tunable converter unit giving coverage of Top Band and two metres; this can be used as a basic LF band receiver; it incorporates NL/BFO and RF gain and gives IF output at 460 kc; of small dimensions and very neatly put together, using pre-fabricated printed-circuit units, it is the answer for those who want to go portable/mobile on two bands; the audio output is one watt maximum, good enough to overcome most car noise. The two-band receiver complete involves in all 14 transistors, and it can be supplied for either 6v. or 12v. systems, positive earth.

Good friends of the radio amateur for more than 30 years, the well-known firm of instrument makers at the sign of the Avocet—**Avo, Ltd.**—had a representative display of their meters and instruments, and a working demonstration showing the assembly of an Avometer.

B.A.T.C. Colour TV

The British Amateur Television Club had an ambitious display, their whole stand being devoted to Colour TV. The colour camera and the 21-in. shadow mask monitors were all built by members, as well as the pulse generator used to run the stand at the Exhibition. Not unnaturally, there were some teething troubles in getting all this complex of apparatus working properly, and it cannot be said that a colour picture was always available to the chance visitor. However, the whole project was an undertaking of which the B.A.T.C. boys can be justly proud.

Part of the **M-O Valve Company's** stand — on which a wide range of valves of amateur interest was to be seen — was occupied by equipment developed by G3LRH; this consisted of an X-band radiometer using the Dickie method of gain-stabilisation, and the exhibit as a whole was intended to serve as a demonstration of the principles involved in Radio Astronomy (entirely different from the problems of conventional radio reception). At the other end of this same stand, G3HBW was giving a UHF/VHF noise-measurement demonstration on equipment calibrated for the range 70-1250 mc, using a CV-2341 coaxial diode.

Incidentally, Arnold Mynett, G3HBW, won the home-constructor prize for his splendid transistor communication receiver. Constructional prizes were also awarded to GM3FYB (SSB Exciter) and to GM3IAA.

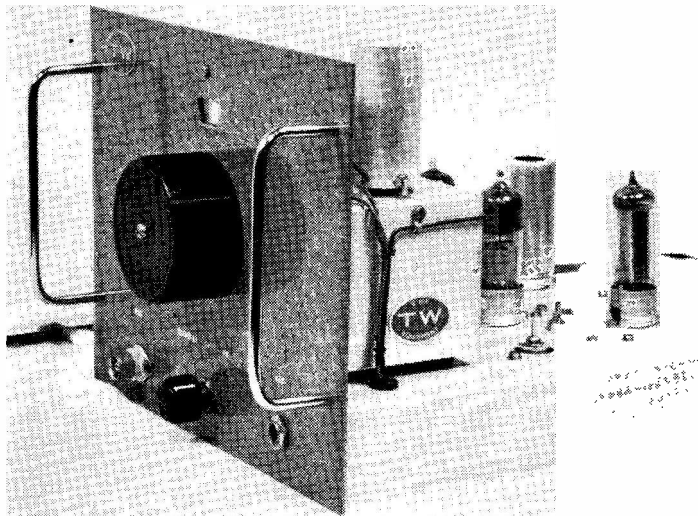
Another very interesting stand was that put on by the Research Branch of the G.P.O., covering

some of the work carried out at the famous Dollis Hill establishment; examples were valves for submarine repeaters (which have to last more or less for ever), TVI filters, SSB filters, and frequency standards. Post Office representatives were also available to answer inquiries about licensing matters.

Among the Amateur Radio associations represented—in addition to the Radio Society of Great Britain, with a large display and a station, GB3RS, on the air—were the Amateur Radio Mobile Society; the Royal Air Force Amateur Radio Society (with a display illustrative of the VS9K DX-pedition reported in this issue), and the Radar & Electronics Association, membership of which is open to all engaged in the electronics field. The Royal Navy was also represented, with a stand showing the work of the R.N. Reserve. As last year, the Army was represented by the 65th Signal Regiment, T.A. — so that again we had all three Services at the Exhibition.

Other firms with displays covering their activities were Enthoven Solders, Ltd. (who ran a stand competition); Sound Vision Service (masts, towers and structural work for beam assemblies); Philpott's Metalworks (cabinets, chassis and associated hardware); Diatronic, Ltd. (oscilloscopes), and a number of publishers of radio books.

At the moment of writing, it is not possible to give the final attendance figures—but certainly the business done on the first day was well up to last year's results for the opening day. As for ourselves, it was all interesting, amusing and worth-while, and we were glad to welcome to the stand so many old friends and new readers—who will, we hope, become old friends in their turn.



The new T.W. (Withers Electronics) two-metre VFO is claimed to give LF-band stability on VHF, by virtue of the fact that essentially it consists of a parallel-line oscillator on 72 mc. This is link-coupled into a wide-band amplifier, giving ample drive (at 72 mc) for a doubler stage, and flat over the entire two-metre band. The VFO itself is TVI-proof, it can be keyed direct for CW, and also incorporates the NBFM facility for low-level audio control on two metres. As this illustration suggests, it is an outstanding technical contribution to our VHF operating techniques.

AFTER all the ground covered in the last two months, one might have thought that we had had our share of DX openings for the time being—but No. What has come to be called “Aurora Saturday” burst upon us on October 28, giving not only a magnificent visual display of the Northern Lights, but full *Ar* conditions lasting almost 12 hours, from around 1300 till after midnight on the 29th.

Reports vary somewhat as to the duration and intensity of the workable sessions over this 12-hour period—that is to say, while the condition persisted, signals came in and went out again at intervals of a few hours; these workable sessions were not the same for all parts of the country, though it is generally agreed that the “thinnest” period was between about 2000 and 2330 GMT, all auroral effects ceasing by 0030.

Various other interesting facts are also brought out by the reports. The EU’s faded away comparatively early (by 1900 or so for the Midlands stations) but the GI’s and GM’s, who were particularly numerous, were very strong right up to the close. Furthermore, the heading for working the Europeans was found to be about E-NE, and for the GI’s and GM’s, NE-N. This has often happened before, but not with such a marked directional difference, amounting to about 45°.

An actual plot of stations worked-heard, made by G3BDQ (St. Leonards, Sussex) shows two distinct propagation paths—one in the direction of GI, and taking in G’s right down into the Midlands, and another headed up the East Coast into Scotland. Between these two paths, there is a marked “dead area,” from which nothing was heard or worked. To appreciate the point of this, you need to draw on your map a line from Hastings to Belfast, and another from Hastings to Dundee. It was generally along these two paths that G3BDQ was getting *Ar*-type signals. The best heading for Europeans was much more round to the east.

The EU countries available included DJ/DL, ON, OK, OZ,

VHF BANDS

A. J. DEVON

**Big Aurora Manifestation,
October 28—**

High Activity Again—

**Interesting Four-Metre Results—
Station Reports and News—**

and PA, and there were literally dozens of G’s on, with considerable congestion—as G2CIW puts it, “two or three GM’s on the same frequency with *Ar* notes take some sorting out.” The general level of signal strength was high, even from the lower-powered stations, so that everyone was more or less in the same boat so far as QRM was concerned. The G’s were mainly interested in working the GI’s and GM’s—G3EHY (Banwell, Som.) alone logged 16 GM’s, his list including the less-frequently heard calls like GM2FXN, 3KGJ, 3KPD, 3LCP, and 3PGJ (who might like to know that they were strong signals in south-west England). The GM’s were getting into Europe all right, mainly DJ/DL, and possibly OK and OZ as well. Those two very well-known European operators, ON4BZ and PAØFB, were banging away, and between them worked much GDX.

Another interesting result is reported, by GI3HXV (Belfast) who was on four metres during the Auroral period; he worked G3OHH (Macclesfield) for the first G/GI contact on the 70 mc band.

Some Individual Reports

G3LTN (Andover), though he heard and called many GDX stations, could not raise anybody—he first noticed *Ar* reflection at 1755 on October 28, on signals from G3PLS (Birmingham). G3KPT (West Bromwich) was finding auroral reflection effects over a sector from 340° round to 90° and got a good visual on it at 6.30 p.m.; stations worked included GI3OFT for Co. Armagh, and two GM’s for new counties. G3JAM (Woodford Green) heard the GI/GM stations, and also G3IOE, who was called without response.

G2CIW (Birmingham) worked on *Ar*, among other nice DX, OK2BDO and OZ9AC, for two new countries; he had nine GM contacts, one GI, and DL6SS. His heard-list looks like 40m. on a Sunday morning, with nine DJ/DL’s, DM2ADJ, OK1DE, and about a dozen more GI/GM’s.

G3EHY raised GM3KGJ for a new county (Ayrshire), and had solid contacts with eight GI/GM’s; Louis remarks that the number of GM’s he heard is proof that there is much more two-metre activity in Scotland than one might think.

VHFCC Elections

We must pause to get this position up-to-date. Since the last list appeared, in the August issue, the following have gained their VHF Century Club Certificate: Ernst Kuhn, DJ2QZ, of Friedberg, No. 307, all his QSO’s being DJ/DL. VHFCC No. 308 goes to M. D. Johnson, G3GKH, of Reading, who shows 92 cards from G stations, and the rest from DL, ON and PA; he says it has taken him three years to collect this little lot, and that VHFCC is his first amateur award.

VHFCC Certificate No. 309 goes to B. S. Freeman, G3ITF, of Basingstoke, with an all-G list; as a matter of interest, he selected some of his oldest cards, going back to 1953, and including call-signs like G2IT, G2YB, G5WW and G8OU.

The second VHFCC/M is awarded to H. Jones, G5ZT, of Plymouth, with Certificate No. 310 carrying the mobile endorsement.

He is well known for his interesting work in this field, and though he has had /M contacts at up to 80 miles while rolling, most of his QSO's have been under mobile-static conditions (and we don't have to explain what "mobile-static" means). His /M rig runs a QVO3-10 in the PA, with 7w. input, the receiver is a 6BQ7 CC converter into a BC-454, and the aerial a 5-ele Yagi mounted on the luggage rack.

D. Nasey, GW3ATM, of Ports-kewett, Glam. gets Certificate No. 311, and is active on both VHF bands, with F8MX/A worked on 70 cm.; his transmitter for that band is an 832A tripler running 10w., and the converter feeds into

a CR-100 tuning 22-29 mc. J. E. Robson, G3OPR, of Cranleigh, Surrey, is awarded Certificate No. 312, his lot being almost entirely G cards; licensed comparatively recently, he has done well to make VHFCC so soon.

For Certificate No. 313, G. V. Haylock, G2DHV, of Sidcup, Kent, showed a mixed bag of cards from 1948 onwards, and including some for 5-metre contacts. G. H. Grayer, G3NAQ, of West Bromwich, Staffs., listed cards under five G-prefixes for Certificate No. 314; his present Tx has a QQVO6-40 in the PA, taking 100w., the beam is a slot-fed 6/6, and his CC converter has a 6CW4 in the first stage, with the IF tuned on an R.208.

W. Walsh, G3HZJ, of Dorking, Surrey, gains VHFCC Certificate No. 315, and runs 30w. to a QQVO6-40A, with a slot-fed 6/6 beam, and CC G2IQ-type converter having a 6CW4 pre-amp. The last issue in this batch is Certificate No. 316 to G. C. Hill, G3DFL, of Smethwick, Staffs.

Success on Four Metres

The Ar contact on four metres between G13HXV/G3OHH has already been mentioned. On November 5, G13HXV worked GM3EGW on 4m., also a "first" for GI/GM on that band. This QSO was made (and it has been repeated since) under normal conditions, the path-distance being about 150 miles. G13HXV uses a modified SCR-522, on 70-29 mc, with 25w. in a QQVO3-20A as PA; his receiver is a CC converter into an S.640, and the aerial a 3-ele beam at 25 ft. GM3EGW runs 35w. to a 2-ele beam, and a CC converter. G3OHH is on 70-26 mc, with an 829B PA taking 30w., the Rx is an RF-27 unit into a 19 Set receiver, and the aerial a 3-ele beam at 30 ft.

As you see, quite simple gear, and yet capable of giving very interesting results on our least-used VHF band—though it is true to say that there is a good deal more 4-metre activity than many people think, especially on a Sunday morning. (And we would like to see some more reports about this activity.) The easiest way to get started on four metres is to acquire an RF-27 (which

tunes the band) and put up a simple two- or three-element beam; some careful listening around 70 mc (during those two hours before lunch-time on a Sunday) will disclose much of what is going on.

G3OPR (Cranleigh, Surrey) reports a start on 4 metres, with about a dozen stations heard or worked; he has a 4-ele Yagi, and the receiver is a G2IQ-type tunable converter; the Tx is under way, and contacts are being made cross-band 4/2 in the meantime.

More Station Reports

G3KPT says the Midlands boys still keep active on 70 centimetres, and are to be found after about 8 p.m. any evening—schedules welcomed, and contacts with G3CCH, G5QA, G6GN and GW3ATM particularly wanted. G3KPT himself is just about ready to receive on 23 centimetres—and is still keen on seeing an annual 70 cm. table. So are we, but nobody makes any claims, beyond those mentioned last month.

F3XY (St. Remy, S. & M.) has been a reader of this piece for about 10 years, and—you would never guess—writes in to claim his footing in our All-Time Counties table! Having now got up to 16 U.K. counties, worked since 1952, he asks to be included. And so he shall be; we are very glad to have him in. F3XY is located in a small village about 50m. east of Paris, and has a good VHF site, 500 ft. a.s.l. He runs 80w. to a valve which is a near-equivalent of our QQVO6-40A, and the beam is an 8-ele long Yagi. Robert has worked about 200S on two metres, is also active on 4 metres (72 mc for the French), and is getting ready for 70 centimetres. He is also preparing his VHFCC claim—and we shall be very interested to see that, too.

Talking of the All-Time Counties table, shown last month, apologies are due to G5YV, who should have been marked up to 82, and to EI2W, who can now claim 80. These also will be included in the next showing.

G3EHY reports that he and EI2A maintain their nightly

TWO METRES

COUNTIES WORKED SINCE
SEPTEMBER 1, 1961

Starting Figure, 14

From Home QTH Only

Worked	Station
50	G5MA
47	G2CIW
43	G3KPT
40	G3NNG
38	G3OJY
37	EI2A
34	G5DW
33	G2AXI
22	G3CO, G3PBV
21	GW3MFY
20	G3GSO
19	G3JWQ
18	G5QA
17	G3LTF
15	G3FLJ, G3OSA, G8VN, GW3ATM

This Annual Counties Worked Table opened on September 1st, 1961, and will close on August 31st, 1962. All operators who work 14 or more Counties on Two Metres are eligible for entry in the Table. OSL cards or other proofs are not required when making claims. The first claim should be a list of counties with the stations worked for them. Thereafter, counties may be claimed as they accrue. Note: While new claims can be made at any time in the period from now to end-June 1962, all operators are asked to send in amended scores as often as possible, in order to keep the Table running up-to-date. After June 30, 1962 (with two months still to run to the end of the 12-month season), only amended scores from those already standing in the Table at that date will be accepted, unless they are new claims from operators licensed w.e.f. June 1962.

schedule over the 230-mile path, having had only four failures in the last period of 30 days; contact is possible under almost any condition of Wx or mb. G2CIW says that G3IOE is mistaken in thinking (*see* last month) that people do not tune the HF end of the two-metre band; Jack himself has not only worked 16 GM's and 6 GI's at the HF end, but has also heard G3IOE at S8 on phone, working a local!

An interesting report from G3PBV (Wolverton, Bucks.), who got his call in July, after having been a VHF listener for a number of years; he came on two metres right away, and since then has worked 38 counties and 12 countries! As he says, he has been lucky with the openings, and has enjoyed himself. The present PA is QQVO2-6 taking 8w. only, but a QQVO6-40A RF amplifier stage is in hand; the beam is a slot-fed 6/6 at 28 ft., in a good VHF location; and the Rx is an E88CC cascade, tuning 4-6 mc on the main receiver.

We were very glad to hear again from G5QA (Exeter), recovered once more, and back on both bands; on Mondays, Wednesdays and Fridays at 2130 there is a 70-cm. get-together between G3OYM, GW3ATM and G5QA, and never have these schedules failed; Herbert says he is now more interested in 70 cm. than two metres, and would welcome further skeds.

Another to come up again after some time is G8VN (Leicester), who is still using an indoor beam, consisting of two 4-ele Yagis in phase, with 16w. to an 832. He gets into the Annual with 15C, and has worked about 150 stations since December 1958, when he started up from Leicester. Before that, G8VN was in Rugby, also with an indoor beam, and that has proved to have been the better QTH. G8VN reports several new stations on two metres in the Midlands, and mentions a QSO with G3HRH/M, on the A5, returning from the Manchester VHF Convention in very foggy conditions; it must have been a hard drive for those boys that night.

G2AXI (Basingstoke) claims for

the tables, and reports some excellent EDX worked during the recent openings—still with only 20w. to a QQVO3-20A in the PA. G3OPR now has 114S worked in 23C, running 15w. to a QQVO3-10 modulated by a pair of 6BW6's in parallel; his Rx is a G2IQ-type tunable converter into four stages of 5 mc IF, and the beams a super-turnstile at 30 ft. and a rotatable 6/6, slot-fed, at 20 ft.

G3OJY writes from a "c/o" address in Cornwall, to say that when he gets settled into the new QTH he will be about as far west as one could be, as it is only about 10 miles from Lands End; it looks to be a good site, as it is 280 ft. a.s.l. and open in all directions—so he hopes to make G3OJY heard over Southern England again soon. (It will be interesting to know in due course whether GLD's harmonics are going to be a nuisance on the two-metre band.)

CTI Activity

CTICO (Manuel Antunes, Avenida Luis Bivar 77, 4D, Lisboa, 1) writes that he is active on two metres—144.04, 144.45, 144.90 and 145.92 mc—running at the moment a QQVO6-40A PA, with a 10-ele long Yagi. The PA is shortly to be a pair of 4X150A's, and CTICO says that he "seems to be on a good site VHF-wise" and that he has hopes of working into the U.K. "one day." Though the best time has probably now passed until the early summer of next year, it is at least encouraging to know that there is yet another European country with a VHF operator keen on EDX.

Out in the Middle East, we have a report from G3OFI (who holds many local callsigns) that regular two-metre working is possible between OD5CG, OD5CT, OD5CU and ZC4MO and ZC4WR, who operate 1500-1730 GMT daily, the distances being about 150 miles. G3OFI will be signing MP4BDA, MP4QAO, MP4TAE and MP4DAC on his travels in those parts, and hopes to work MP4BBW (who is also on two metres now) from all these locations. G3OFI says that though the distances involved are around 300 miles, it is a good deal easier



Well-known on the two-metre band: G5DW, Ashcott, Somerset, photographed by G5CP (who owns the car and is /M on two metres).

than one might suppose, as ducting effects are widespread and common-place in the area; it is usual to hear aircraft on the ground, and QRP ground stations, at up to 400 miles on 120 mc.

In Conclusion—

That seems to be about it once again, and it only remains for your A.J.D. to give you the time for the next appearance: It must be **Monday, December 18**, without a peradventure, as we have the Christmas mail situation to contend with—to say nothing of the fact that once again your A.J.D. will have to be hard at this job over the Christmas period, because the calendar says the next issue is due on January 5. Never mind, it's all part of the fun, or something (the Editor says)—and as for A.J.D., he sends you every good wish for a very happy Christmas. Don't over-cook the turkey, and leave some in the bottle for the New Year. *73 de A.J.D.*

DX-PEDITION TO KAMARAN ISLAND, RED SEA

R. A. F. AMATEUR RADIO
SOCIETY, OCTOBER 5-16, 1961

J. M. Hern (G3NAC), F/O, R.A.F.

TOWARDS the end of 1960 it was decided to organise an R.A.F. Amateur Radio Society Dx-pedition to a country from which there had been little or no amateur activity. It was to be made up from R.A.F.A.R.S. members, and of course had to be in an area which was accessible to aircraft of the Royal Air Force. After a study of the *DX Zone Map* Christmas Island was selected. From the propagation charts the period had to be either February 1961, October 1961 or February 1962. February 1961 was too soon owing to the limited time available—therefore, a proposal was put up to the Air Ministry for approval to launch a Dx-pedition to Christmas Island late in 1961. This was approved in principle, but as a special aircraft would have to be put on, Christmas Island became out of the question.

Thus in April of this year we had still to find a suitable *locale*. It was known that the party from the United Kingdom and their gear could get to Aden fairly easily by R.A.F. transport. Therefore, the area around Aden was selected and French Somaliland was chosen.

G3NAC was in daily contact with VS9APH at R.A.F. Khormaksar in Aden and it was *via* these schedules that further expedition details were thrashed out. The local government in French Somaliland had signified that the licence to operate would be available, and the date fixed was October 4-16, 1961.

The information was duly publicised, and by this time the expedition members had been selected. They were, from the U.K., G3GJQ, G3NAC and G3OLV, to be joined in Aden by VS9AAC, VS9AGA and VS9APH. In Aden all the necessary camp supplies were to be added to the already large crates, and the lot was scheduled to be flown to Djibouti by the R.A.F.

While all these details were being planned, a letter had gone to the French Government in Paris for the diplomatic clearance which (we had been told) would eventually be given. And on September 25, a telegram arrived stating that the French Government had given their diplomatic approval — but not before January 1962! Where to go to now! We had the gear and the transport and had to find somewhere accessible to which, as Service personnel, we could get

permission to go at very short notice! Needless to say, by this time the schedule with Aden had developed sometimes into three contacts daily. Urgent messages finally suggested a possibility: Kamaran Island—British territory about 200 miles from Aden in the Red Sea. It has an airstrip, and it might possibly be accepted as a new country. The necessary permission was obtained to go to Kamaran Is., and at last the expedition was on its way.

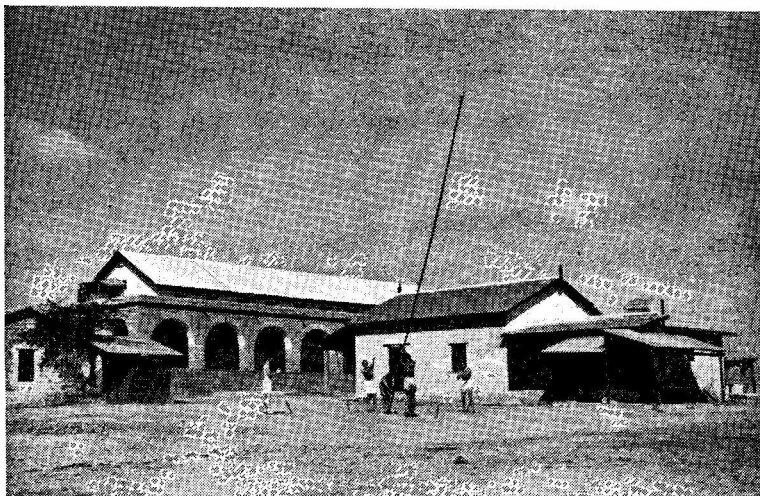
Meanwhile, in Aden, the stations of VS9AGA and VS9APH were packed and all the food and gear collected for transport to Kamaran. A seventh operator, G3GPE, also arrived from Kenya to swell the ranks.

Kamaran At Last!

Early on October 5 we all left in a Shackleton of 37 Squadron. The gear, weighing 2000lbs., was loaded "somewhere on board" and seven hours later we landed at Kamaran—having gone a long way up the Red Sea first on a search-and-rescue flight.

We were met by the local postmaster, and a 3-ton lorry. We were unloaded and transported to the operating site in half-an-hour. The Commissioner of Kamaran, Colonel R. G. Alban, O.B.E., had very kindly placed a rest-house and a 10 kVA generator at the disposal of the party, and the two thirty-foot masts were soon up. Local help was unstinted and the Mosley TA33 Jr. beam was in position just at dusk on the 5th. (The temperature at that time was a cool 90°F.!) In addition, two tuned doublets were erected between each mast and the house. That evening, the 5th, all seven operators were invited to a very pleasant dinner with the Commissioner. Then the work started in earnest and did not stop until the 16th.

Apart from minor problems, everything went well. The KWM2 was moved about half-a-mile away on the second day to cut out some interference—and, indeed, at one time the KWM2 was on 14.285 mc, the DX-100U on 14.310 mc and the K.W. Victor on 14.050 mc, all without mutual interference. It is thought that



Up-sticks on arrival at Kamaran Island, Red Sea, on October 5. The photograph gives a good impression of the site conditions.

some DX operators were calling one station on another's frequency at times, but QRM was terrific nearly all the time.

On October 16 everything was packed up for return to Aden. Getting back there, QSL's had already arrived and more came in with every mail.

Operating Points

On operating, SSB appeared to achieve more contacts-per-hour over the whole trip, but the maximum number of QSO's in one hour was made on CW by G3GPE. Generally, the standard of operating in the pile-ups was good. North American stations were very good and, after a few attempts at MC'ing, which were refused, all went well. Unfortunately, some European stations were not so well-mannered, and an awful lot of QRM resulted. It was annoying how many people in a European pile-up wanted to know the operator's name, QTH and practically his life history. When a pile-up is 100 deep, and 50 to 100 kc wide, it is impossible to have chatty QSO's. Whether on CW, SSB, or AM, the same trend was apparent. Indeed, on AM it was worse, because the impatient operators caused carrier QRM.

QSL's will have been printed and despatched *via* the Bureaux by about the time this appears. Also all stations sending s.a.e.'s and IRC's will receive a second QSL direct. Seven very weary operators hope that this VS9K Dx-*pedition* gave many a new country—and there are already ideas that perhaps another will be mounted next year.

Equipment Used

"A" Station: KWM2, doublet and 20m. dipole, on 15-20m., CW and SSB.

"B" Station: K.W. Victor, AR88, tuned doublet, on 10-80m., AM and CW.

"C" Station: DX-100U, SB10, G.209R, TA33 Jr. with CDR rotator, on 15-20m., AM and SSB.

Languages used were English, French, Danish, German, and attempted were Spanish and Italian. The 100th country was raised on the 4th day and some rare ones were worked.

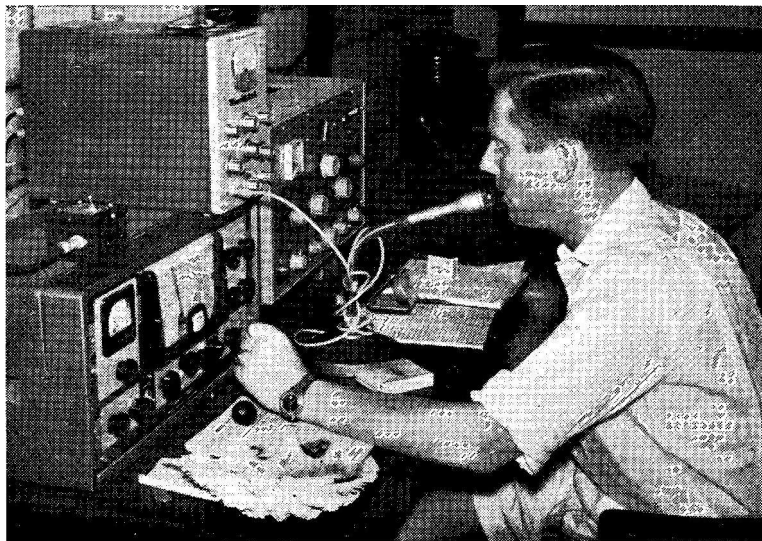
Towards the end of the stay, the phone operators tended to work on CW on alternate stints because voices were getting very croaky!



The gear and the operators for the R.A.F. Amateur Radio Society's recent expedition to Kamarin Is. were flown over from Aden in an R.A.F. Shackleton.

Summary of Results

The log analysis shows a total of 5092 contacts made in 135 countries and 38 zones. The five bands 10-80m. were worked, the great majority of QSO's (3362) being on 20m. The mode breakdown is: AM phone, 854 QSO's; SSB, 1508; and CW, 2730, of which 1987 contacts were on 20m. The totals of QSO's by bands were: 10m., 205; 15m., 1314; 20m., 3362; 40m., 210; and 80m., one (G6ZO). The first QSO on the 5th was with VQ4HX, and the last, on October 16, with UA3HL. Of the SSB total, 1371 contacts were made on 14 mc.



One of the operating positions when the R.A.F.A.R.S. boys were on Kamarin Is., showing the Heathkit equipment and a Geloso G.209 receiver. Three stations were kept on the air on five bands, and some thousands of QSO's made by seven operators, working in shifts of two hours on and two hours off — see story.

NEW QTH's

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

- G2FTB**, F. Baker, 63 Newbury Gardens, Stoneleigh, Ewell, Surrey.
- G30VQ**, K. J. Morton, 58 Burns Road, Coventry, Warks.
- G3PAG**, J. J. Davies, 139 The Fairway, Leigh-on-Sea, Essex. (Tel.: *Southend-on-Sea 525806*.)
- G3PBO**, R. F. W. Collins, 15 Rochdale Road, London, E.17. (Tel.: *LEY 2782*.)
- G3PFO**, C. D. Barr, 7 Boxtree Lane, Harrow Weald, Harrow, Middlesex.
- G3PGM**, E. Davies, 11 Tape Lane, Hurst, Reading, Berks.
- G3PGN**, H. A. Buckenham, Steeple View Farm, Arterial Road, Laindon, Basildon, Essex.
- GM3PHB**, J. W. Nisbet, 177 Randolph Drive, Clarkston, Glasgow. (Tel.: *MERrylee 9359*.)
- G3PHE**, D. A. Southall, Howes Farm, Martlesham, Woodbridge, Suffolk.
- G3PHO**, P. Day, 28 Oxford Street, Sheffield 6, Yorkshire.
- G3PIC**, G. McLean, 109 Oakhill Road, Liverpool, 13.
- GM3PIP**, P. I. Park, 50 High Street, Strichen, Aberdeenshire. (Tel.: *Strichen 224*.)
- G3PIR**, T. L. Rogers, 42 Holland Road, Luton, Beds.
- G3PIU**, M. J. Cunningham, 21a Studley Road, Luton, Beds.
- G3PIZ**, T. G. Watts, 16 Chiltern Road, Sutton, Surrey (Tel.: *VIG 4828*.)
- G3PJB**, P. J. Bailey, 8a Chalsey Road, Brockley, London, S.E.4.
- G3PIG/T**, J. F. E. Grogan, 12 Downs View, Isleworth, Middlesex. (Tel.: *ISL 5727*.)
- GM3PJP**, Buchan Amateur Radio Club, 20 Queen Street, Peterhead, Aberdeenshire.
- G3PKD**, R. L. Sharples, 111 Sutton Oak Road, Streetly, Sutton Coldfield, Warks. (Tel.: *STReetly 2716*.)
- G3PKL**, C. A. Fox, DFC, Heath Cottage, Rossmore Road, Parkstone, Poole, Dorset. (Tel.: *Parkstone 5264*.)
- G3PKO**, H. R. Poole, Rockcliffe, Start Lane, Whaley Bridge, via Stockport, Cheshire.
- G13PKP**, E. Wishart, 95 Cherryhill Road, Dundonald, Belfast.
- G3PKW**, A. Choraffa, 150 Princes Road, Princes Park, Liverpool 8, Lancs. (Tel.: *Lark Lane 1228*.)
- G13PKY**, Rev. P. J. O'Kelly, St. Joseph's Training College, Trench House, Belfast, 11.
- G3PLA**, E. B. Ullathorne, 16 New Street, Shirland, Derbyshire.
- G3PLB**, R. W. Howe, 162 Victoria Road, Wood Green, London, N.22.
- G3PLD**, R. E. Milner, 47 Sneyd Lane, Bloxwich, Walsall, Staffs. (Tel.: *Bloxwich 76564*.)
- G3PLF**, T. D. Howe, 162 Victoria Road, Wood Green, London, N.22.
- G3PLP**, R. W. Cox, 205 Musgrave Road, Hockley, Birmingham, 18.
- G3PLQ**, J. F. Walton, 32 Campbell Road, Salisbury, Wilts.
- G3PMF**, W. F. Craine, 110 Rocky Lane, Childwall, Liverpool, 16.
- G3PMJ**, S. Revell, 11 Burstard Street, Abbey Hey, Gorton, Manchester, 18.

CHANGE OF ADDRESS

- G3BHT**, B. G. Meaden, 38 Oakhill, Surbiton, Surrey.
- G3DXK**, C. R. V. Spencer, 30 Drovers Way, Bullbrook, Bracknell, Berks.
- G3EFP**, J. C. Pennell, Dendros, Parrotts Lane, Cholesbury, Bucks, via Tring, Herts.
- G3EGV**, R. Staniforth, 26 Winslow Road, Preston, Weymouth, Dorset.
- G3FZR**, M. W. Capewell, 1 Parnell Road, Spital, Bebington, Wirral, Cheshire.
- G3HAG**, R. P. Hughes, The Nook, Higher Lane, Dalton, nr. Wigan, Lancs.
- G13ILV**, J. Thompson, Albany, Newry Road, Armagh, Co. Armagh.
- G3IOR**, P. J. A. Gowen, 17 Heath Crescent, Hellesdon, Norwich, Norfolk, *NOR.58.N*.
- GW3ITD**, M. R. Davies, 5 Hillfield Place, Parcllyn, nr. Aberporth, Cards.
- G3IWE**, A. M. H. Wyse, 36 Wilmslow Crescent, Thelwall, Warrington, Lancs. (Tel.: *Grappenhall 1278*.)
- G3JPN**, P. West, 188 Warwick Road, Sparkhill, Birmingham, 11.
- G3KQK**, T. A. Dugdale, The Hill, Sandbach, Cheshire.
- G3KXJ**, H. E. Vincent, The Garden Cottage, Green Drive, Southlands Road, Wokingham, Berks.
- G13KYP**, A. D. Patterson, 24 Cyprus Avenue, Belfast, 5. (Tel.: *Belfast 658333*.)
- G3LYK/A**, W. McLardy, c/o Officers' Mess, R.A.F. Station, Shawbury, Salop.
- G3MZY**, J. D. Last, B.Sc.(Eng.), 47 Loveday Road, Ealing, London, W.13. (Tel.: *EALING 6314*.)
- G3NGC**, M. Bell, 19 Birdhill Road, Woodhouse Eaves, nr. Loughborough, Leics.
- GD3NRO**, P. Gill (*ex-G3NRO/VK5HB*), 1 First Avenue, School Road, Onchan, Isle of Man.
- G3NUR**, W. H. Tucker, 130 Frankley Beeches Road, Northfield, Birmingham, 31.
- G30EQ**, D. Bunn, 32 Avondale Road, Lowestoft, Suffolk.
- G30GS**, R. L. Bellows, Casa Jora, Biggin Hill, nr. Westerham, Kent.
- G3OHL**, A. R. Batty, 29 Silverdale Road, Gatley, Cheadle, Cheshire.
- GM30JM**, C. E. Mahoney (*ex-G30JM*), Staff Hostel, Chapelcross, Annan, Dumfries-shire.
- G3OTH**, C. A. R. Cook, 1 Windsor Terrace, Great Lumley, Chester-le-Street, Co. Durham.
- G30XO**, P. E. Morrison, 7 Delkin Road, Dursley, Glos.

THE MONTH WITH THE CLUBS

By "Club Secretary"

(Special Note: No Club Reports for Next Month — MCC Results Only)

ONCE more we must remind Club Secretaries that no Club reports are needed for the January issue, since this space will be devoted to a full report on the Sixteenth MCC (*Magazine Club Contest*). For this reason, the activity reports this month include details of the January meetings as well as those for December—where we have been given sufficient particulars by the secretaries and scribes. Deadline for the next Club reports, to be summarised in the February issue, will be *Friday, January 12th*.

The first half of MCC took place just before these notes were compiled, and it was obvious that there was again a heavy entry. A rough estimate suggests that at least sixty Club stations were taking part—probably more—and that if they all send their logs in on time we shall once more have a record entry to cope with. (The date for logs was December 1—publication day—so that this is too late to serve as a reminder. We hope *yours* is already in!)

Your Club Secretary would like to thank all those who, in the course of letters, have sent Christmas greetings, and also to wish *all* Club secretaries, officers, committee-men and members a very Merry Christmas and a Prosperous and Successful New Year to follow. For some reason 1961 seems to have been a vintage year for Club activities—we cover about 50 Club reports in this issue alone—and we sincerely hope that 1962 will be even better.

Bradford hold their only December meeting on the 12th, when Mr. W. Barton, F.B.H.I., will talk to them on Time Measurement. Future meetings are on January 2 (Amateur Receiver Construction) and January 16 (Electronic Organs). **Burton-upon-Trent** have a talk on Valves and How they Work booked for December 13; and on January 10, Mr. W. Hazeldean will discuss Aerials for Transmitting and Receiving.

Crystal Palace holds a Junk Sale on December 16, and a lecture on the Construction and Finish of Amateur Equipment (G3IIR) on January 20. Morse classes and so on are held at the QTH of G3IIR on December 5, and G3FZL on January 2.

Derby have a full programme booked, as follows: December 6, Surplus Sale; 13th, Open Night and Management Committee meeting; 20th, Annual Christmas Party; 27th, no meeting but Net on One-Sixty; January 3, Surplus Sale; 10th, The Year in Retrospect; 17th, Receiver Comparison; 24th, Constructors' Exhibition Night.

Dorking have an informal meeting at The Wheatsheaf on December 12, and their Christmas Dinner at the Parrot Inn, Forest Green on December 19. January 9 is another informal meeting and the 23rd their AGM, at

the Star and Garter.

East Kent will hear about the signals and communication set-up at Dover Marine, from G3KKF, on December 5; the 12th is their Committee Meeting and natter-night; 19th, Club "on the air"; January 16, the opening night for the 1962 season; and January 23, another meeting, as yet unplanned.

Gravesend are holding an Open Contest on Eighty Metres, both transmitting and receiving, on January 7 and 14 (CW and Phone Sections); full details of this may be obtained from the secretary, whose QTH appears in the panel on p.550.

Guildford meet on December 14 (subject to be announced). All their meetings are now timed for 8 p.m. at the City Cafe, Onslow Street. **Macclesfield** held their AGM and elected G3GAH chairman, G3LDT vice-chairman and G3MKR secretary; they meet on alternate Tuesdays at 42 Jordansgate, Macclesfield, 8 p.m., the intermediate Tuesdays being devoted to special meetings for SWL's and novices.

Halifax will be hearing about Efficiency Modulation, from G3ADG, on December 5; the 19th is booked for a Ragchew; on January 2 Mr. Frank Williams will give them The Life Story of a Reporter; and February 6 is the date for the Annual Dinner.

Hastings held their AGM in November and reported a membership of well over 80, compared with 20 only two years ago. On December 5 members will speak on their impressions of the Radio Hobbies Exhibition; on the 19th there will be a VHF Discussion. On January 2 G6KD will be talking on Electronics in Warfare; on the 16th, G3MQT on Interference Suppression; and on the 30th, G6QB on Forty Years of Amateur Radio.

March report that they are now running with increasing vigour, and their meetings are arranged for some

CLUB PUBLICATIONS RECEIVED

We acknowledge, with thanks, receipt of the following Club Publications: **ARMS** (*Mobile News*, October); **BARTG** (*News Sheet*, November); **Crystal Palace** (*Newsletter*, October); **Derby** (*Newsletter*, No. 5); **East Kent** (*The Carrier*, No. 1); **Enfield** (*Lea Valley Reflector*, October); **Grimsbly** (*News Sheet*, November); **Hastings** (*Natter-Net Notes*, November); **March** (*News Letter*); **MARS** (*News Letter*, October); **Mitcham** (*Newsletter*, October); **Reigate** (*Feedback*, October); **South Birmingham** (*QSP*, October); **Wirral** (*Newsletter*, September); **Wolverhampton** (*Newsletter*, November); **RAIBC** (*Radial*, November); **Southgate** (*Newsletter*, November); **Guildford** (*Monthly Natter*, November); **Surrey** (*Monthly News*, November); **Slade** (*Contact*, October); **South Hampshire** (*QUA*, November); **IRTS** (*ET News*, October); and **North Kent** (*Newsletter*, November).

time to come. On December 5, G3WW will give an illustrated talk on his visit to the USA; on January 2 the subject will be Amateur TV (G3KKD/T), when the lecture may be either live or given over the 70 cm band. **Northern Heights** will have a Ragchew on December 13, and on the 27th an "Any Questions?" session. Their meetings are held at the Sportsman Inn, Ogden, 7.45 p.m. Recent activities have included a lecture on Two Metres (G8CB), a Hi-Fi and Stereo demonstration, a Supper (with a record attendance) and activity in connection with the recent Jamboree-on-the-Air.

Peterborough opened their winter session with a talk on D/F receivers, and held their AGM early in November. They have a talk on Aerials on December 1 (publication date), and the future includes a New Year Party on January 5. **Reigate** are holding a Juniors' Meeting on December 2 and a demonstration of Members' Equipment on the 16th. January 6 will be another Juniors' session, and January 20 their AGM. A Top Band Ladder has been instituted in the Club, and there is keen competition.

Rotherham will be devoting the December 6 meeting to R.A.E. and Morse instruction, and to practical work; on the 13th G3MBQ will give a demonstration of RTTY, and the December 20 meeting will include the judging for the G3KUH Shield (home-built equipment), a Junk Sale and a Christmas Raffle.

Slade have a talk on D/F Developments on December 1; "Fun and Games" on the 15th, with the YL's and XYL's invited; and a Criss-Cross Quiz on the 29th. **South Birmingham** meet on December 14 to hear G3GVA give the third part of his talk on Two Metres.

South Manchester have an Open Night on December 1, a Hot-Pot Supper on the 8th, a "G3HZM Quiz" on the 15th; there is no meeting on the 22nd. At their recent AGM they elected G3JRK chairman, G3KIQ vice-chairman, G3HJM secretary and A. B. Gillanders Junior Representative. Their Hq. address is now Fallowfield Bowling and Lawn Tennis Club, 81 Wellington Road, Manchester, 14.

Sutton Coldfield have a discussion on Operational Layout on December 14, led by Len Hall. On Christmas Day their net will open at 1000 GMT, on 1980 kc; and on the 28th they have a mysterious item called "Post-Christmas Net on VLF—some thoughts and demonstrations."

Tees-side are running their Annual Dinner on December 9, at the Corporation Hotel, Middlesbrough, 8 p.m.; last year they had an attendance of 60, and they are hoping for an even greater number this time. Normal meetings are held fortnightly in the Settlement House, 132 Newport Road, Middlesbrough, the next dates being December 1 and 15.

Wirral, at their AGM, elected G3CSG chairman, G3FOO secretary and G3NPJ News Letter editor; the vice-chairman is G3KXR. December 6 is quoted for a "possible" lecture on SSB.

Wolverhampton meet for a talk on Loud Speakers on December 4, and their Home-Constructed Equipment Competition is booked for the 18th. On January 8 they are holding a New Year's Party at the Rose and Crown, Penn Road.

Cannock Chase will meet on January 4 at The White Lion Inn, Bridgtown, when a film on The Manufacture of



When the Southend & District Radio Society was invited to take part in the local carnival procession, they went in with a decorated float depicting the practical aspects of Amateur Radio. They admit that while most of the gear on view was not actually connected up to work, they did have a /M rig in the tent, which kept them in touch not only with local control but also with a number of AT stations in Kent and Essex. The flecks round the lower drape are, of course, QSL cards. We understand that much money was raised for charity, and Southend & D.R.S. is to be congratulated on a very enterprising effort.

Radio Valves will be shown. Visitors will be welcomed at this meeting.

Dudley, a recently-formed Club, meets at the Dudley Art Gallery, 7.30 p.m. on alternate Fridays. At the inaugural meeting 22 members were present, and G5KS was elected president, G3MHS secretary, G3LZT programme secretary and G3LFY treasurer. (Owing to a clerical error we received only the details of meetings up to September 30, so cannot give any forward information.)

Harrow have started a monthly contest on the air—14 mc CW on the first Sunday of the month (0800-1000) and Top Band CW on the first Wednesday (2000-2100). The object is to stimulate activity by members and also to give some practical experience of contest-type working to those not yet acquainted with it.

Hull announce their programme, as follows: December 12, Talk on Two-metre PA Stages (G3FCY); January 9, Aerials for Top Band (G3LIQ); January 30, AGM. All meetings at the Royal Oak Hotel, Ferensway, Hull.

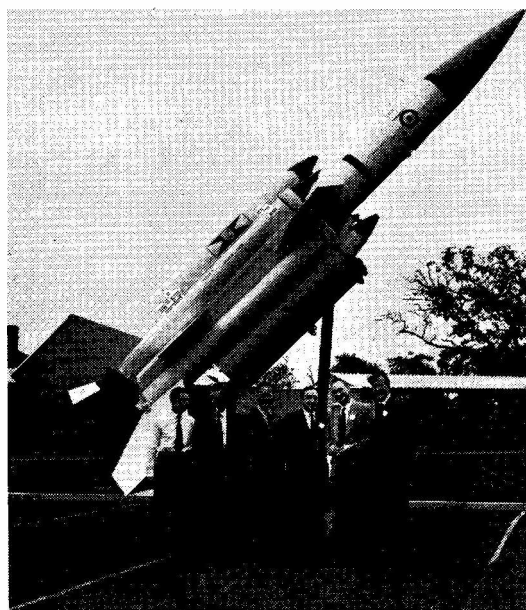
Southgate, Finchley and District hold their AGM on January 14; recent meetings included a very successful Junk Sale which raised a record sum, and their G6QM Trophy Meeting (judging home-built equipment), which was held in November, but of which we have no details as yet.

Acton, Brentford and Chiswick will meet on December 19 for a second talk on Receiver Design for SSB, by G3NEH. Venue, as usual, the AEU Club, 66 High Road, Chiswick, W.4.

Cornish, at recent meetings, heard about radio-controlled aero-models from Col. Larcombe, and about

Names and Addresses of Club Secretaries reporting in this issue :

ACTON, BRENTFORD & CHISWICK: W. G. Dyer, G3GEH, 188 Gunnersbury Avenue, W.3.
 A.R.M.S.: N. A. S. Fitch, G3FPK, 79 Murchison Road, London, E.10.
 B.A.R.T.G.: Dr. A. C. Gee, G2UK, East Keal, Romany Road, Oulton Broad, Lowestoft.
 BRADFORD: M. Powell, G3NNO, 28 Gledhow Avenue, Roundhay, Leeds 8.
 BRITISH TIMKEN: J. B. Johnson, G3JJW, 44 Castle Avenue, Duston, Northampton.
 BURTON-UPON-TRENT: J. Adkin, 25 Huntingdon Road, Stepenhill, Burton-upon-Trent.
 CANNOCK CHASE: N. H. Hyde, G3PJM, 91 Pelsall Lane, Rushall, Walsall.
 CHELTENHAM: J. H. Moxey, G3MOE, 11 Westbury Road, Leckhampton, Cheltenham.
 CIVIL SERVICE: G. Lloyd-Dalton, 2 Honister Heights, Purley, Surrey.
 CLIFTON: E. Godsmark, G3IWL, 211 Manwood Road, London, S.E.4.
 CORNISH: W. J. Gilbert, 7 Poltair Road, Penryn.
 CRAWLEY: R. G. B. Vaughan, G3FRV, 9 Hawkins Road, Tilgate, Crawley.
 CRYSTAL PALACE: G. M. C. Stone, G3FZL, 10 Liphook Crescent, London, S.E.23.
 DERBY: F. C. Ward, G2CVV, 5 Uplands Avenue, Littleover, Derby.
 DORKING: J. Greenwell, G3AEZ, Wigmore Lodge, Beare Green, Dorking.
 DUDLEY: D. H. W. Pratt, G3MHS, 23 Kent Street, Upper Gornal, Dudley.
 EAST KENT: D. J. Bradford, G3LCK, 42 Mount Road, Canterbury.
 ENFIELD: V. Croucher, G3AFY, 15 Nelson Road, London, N.15.
 GRANADA-TV: L. Ledward, G3PMS, Granada-TV Network Ltd., Manchester 3.
 GRAVESEND: W. Young, G3NZR, 99 Darnley Road, Gravesend, Kent.
 GRIMSBY: P. Mason, G3NNN, 213 Clee Road, Cleethorpes.
 GUILDFORD: J. R. Barker, G3PDX, 35 Banders Rise, Merrow.
 HALIFAX: G. Sunter, 24 Booth Fold, Luddenden Foor, Halifax.
 HARROW: A. C. W. Biddell, G3GNM, 114 Kingshill Avenue, Kenton, Middx.
 HASTINGS: W. E. Thompson, G3MQT, 8 Coventry Road, St. Leonards-on-Sea.
 HULL: G. G. Wray, G3MVO, 93 Wolfreton Lane, Willerby, Hull.
 I.R.T.S.: T. O'Connor, EI9U, 280 Collins Avenue, Whitehill, Dublin, 9.
 MACCLESFIELD: B. Haywood, G3MKR, Penarth Cottage, 15 Tunnicliffe Street, Macclesfield.
 MARCH: Sgt. R. E. Ludman, The Police Station, March, Cambs.
 MIDLAND: C. J. Haycock, G3JDJ, 360 Portland Road, Birmingham 17.
 MITCHAM: M. Pharaoh, G3LCH, 1 Madeira Road, Mitcham.
 NORTHERN HEIGHTS: A. Robinson, G3MDW, Candy Cabin, Ogden, Halifax.
 NORTH KENT: B. J. Reynolds, G3ONR, 49 Station Road, Crayford.
 PETERBOROUGH: D. Byrne, G3KPO, Jersey House, Eye, Peterborough.
 PRESTON: G. Lancefield, G3DWQ, 35 Brixton Road, Frenchwood, Preston.
 R.A.I.B.C.: W. E. Harris, G3DPH, 4 Glanville Place, Kesgrave, Ipswich.
 REIGATE: F. D. Thom, G3NKT, 12 Willow Road, Redhill.
 ROTHERHAM: S. J. Scarbrough, 25 Crawshaw Avenue, Sheffield 8.
 SALISBURY: E. J. Spicer, 43 Vale View Road, South Newton, Salisbury.
 SLADE: C. N. Smart, 110 Woolmore Road, Birmingham 23.
 SOUTH BIRMINGHAM: T. W. Legg, Flat 3, 80 Alcester Road, Birmingham 13.
 SOUTHAMPTON: B. E. Fox, 1 Cambridge Court, Alma Road, Southampton.
 SOUTHGATE: R. Pedder, G3NEE, 6 Greenall Close, Cheshunt, Herts.
 SOUTH HAMPSHIRE: E. Bassett, 42 Norham Avenue, Shirley.
 SOUTH MANCHESTER: M. Barnsley, G3HZM, 11 Cemetery Road, Denton, Manchester.
 SURREY (CROYDON): S. A. Morley, G3FWR, 22 Old Farleigh Road, Selsdon, South Croydon.
 SUTTON COLDFIELD: L. E. R. Hall, G3IGI, 24 Calthorpe Road, Walsall.
 TEES-SIDE: A. L. Taylor, G3JMO, 12 Endsleigh Drive, Middlesbrough.
 WIRRAL: A. Seed, G3FOO, 31 Withert Avenue, Bebington.
 WOLVERHAMPTON: J. Rickwood, 738 Stafford Road, Fordhouses, Wolverhampton.



At the Lincoln Hamfest on September 17, the R.A.F. came along with a "Bloodhound" defence guided-missile. The group in this photograph includes G3GKI, G3ESR, G3GEW and G3BCA.

the Poldhu arrangements for the Marconi Sixtieth Anniversary from G3AET. Next meeting will be at the Ambulance Hall, Redruth, on December 6 at 7.30 p.m. — visitors welcome.

Crawley hold their second AGM on December 27 at the West Green Centre; members have recently paid visits to the West Kent ARS and to the new Crawley STD Telephone Exchange.

Preston, who were entering for MCC, hoped to put up a good score under the new zonal scoring system. They meet on December 12 for AC4RF's Tape Lecture on Tibet; the second December meeting is cancelled. Morse practice will be reintroduced at all future meetings, beginning 7.30 p.m., at St. Paul's School, Pole Street, Preston.

British Timken have their Club night on Tuesdays and a Top Band net on Fridays, 2100 hrs. on 1925 kc. They have put up a new 260-ft. aerial for the Club station, now modified and hotted up for contest work—G3NIB was certainly putting out a good signal on the first leg of MCC.

Civil Service meet at the Science Museum for a Film Show on December 5, an Informal Meeting with

A RADIO CLUB FOR HOUNSLOW

A meeting was recently held to discuss the formation of a Radio Society for Hounslow and District, which would be open to all radio enthusiasts of both sexes. All interested persons in the district are asked to get in touch with Mr. and Mrs. J. Grogan (G3PJG), 12 Downs View, Isleworth, Middx. (Tel.: ILS 5727).

Christmas Festivities on the 19th, and a talk by G3BCM on TVI and BCI on January 2. Their lectures are now being recorded on tape, and can be sent on loan to out-of-town or absent members.

Cheltenham are interested in publishing a monthly news sheet, and roughly 120 people have signified their approval (including many members of the neighbouring Clubs). The accommodation problem is also on the way to being solved, but with no final decision as yet. Two new call-signs within the Club are reported.

Clifton will be holding their annual Constructional Exhibition and Contest on December 15, and on the 29th there will be a Quiz, run by G3OAW. **Granada-TV**, first founded two years ago, has now been re-formed, and will hold a re-opening meeting on December 11, when three Mullard films will be shown; the Club has fourteen licensed members and holds the call G3LZA.

Surrey meet on December 12 for a talk by G2CKQ on the Decca Navigator system; all interested local readers will be welcome, at The Blacksmith's Arms, Croydon. **Salisbury** are running a series of film shows at fortnightly intervals, probably alternating with taped lectures. Morse classes are given most weeks, and theory discussions are part of the normal club activities. The club premises are being cleaned up and re-decorated, the younger members in particular co-operating in this work.

Mitcham have booked January 12 for a talk on RTTY by G2UK, visiting from Suffolk; and on January 26 they will have the postponed lecture on Aerials, by G3HRH. **Southampton** meet on the second Saturday of each month at the Engineering Lecture Theatre, Southampton University, at 7 p.m. The January meeting is for the annual film show, and February 17 will be a social occasion.

SCOUT INTERNATIONAL JAMBORÉE

EVENT ON-THE-AIR,
WORLD-WIDE,
21/22 OCTOBER, 1961

IT was in 1958 that, due to the initiative of G3BHK, the U.K. Scout movement was brought in touch with the idea of a world-wide jamboree by Amateur Radio. The event held this year, the fourth in the series, was a great success in terms of Scout and Scout-affiliated station participation, even if radio and weather conditions (for those working from tented camps) were not so kind.

DX openings were few and patchy, and the paths to W and VE were seldom open for the long periods expected. Activity in Great Britain showed a marked increase, with a total of some fifty Scout stations on the air. At times, the "Jam" in the "Jamboree" became evident on 80 metres, with so many stations in operation. It has been suggested that more use should be made of the 160- and two-metre bands for local contacts during future Jamborees. (G2DHV was operating GB3RES on two metres, and made about 12 contacts.)

Overseas Scout stations heard, or worked from the U.K., were on the air from EI, SM, ON4, DJ, OE, I, CN8, OD5, 5N2, VK, ZL, VE and W. There was a considerable increase in activity

in VE and W, and it was a great pity that the Atlantic path was open so seldom that G stations could not take full advantage of this opportunity. One VE operator reports hearing *six* Scout stations replying at once to a "CQ Jamboree" from a W station.

5N2SMW, with members of a Lagos Scout Troop in the shack, put a fine 15m. signal into the U.K. for long periods and passed on greetings from the Chief Commissioner of Scouts in Nigeria. VE3JAM, the Headquarters Station of the International Scout Bureau, at Ottawa, ran two transmitters simultaneously. One operated almost exclusively on 75 metres, working VE Scout stations. About 250 contacts were made, but they suffered from a complete radio blackout during the early hours of each morning (EDST)! It seems from reports available that the signal from VE3JAM was not



On the occasion of the recent Jamboree-on-the-Air, one of the active Scout stations was G3MVH, Ogden, Halifax. The operator in this photograph is Mrs. Mary Shaw, G3OAW, who was able to give visitors to the station a convincing demonstration of Amateur Radio — she climbs masts, too; we have a photograph to prove it! Gear used included a Panda Cub and an Explorer, an HRO and an Eddystone S.640, with, says G3OAW, "quite a forest of aerials."

heard over here south of a line drawn across central England. GB3ISM, the station representing the International Scout Club in Manchester, did manage a QSO on 15 metres, and several other stations in Northern England reported hearing VE3JAM.

As mentioned in October issue (p.411), GB3BPH was in operation at the British Scout Headquarters at Baden-Powell House in Kensington, S.W. London. This station was operated by G2CAJ, G3BHK, G3KSO, G3KYH and G3PLR. They were assisted by Scouts of the 19th (Kensington) Troop, with members of the staff of B.-P. House, and in the course of the proceedings several hundred visitors were welcomed.

The station was equipped with a K.W. "Vanguard" and an 8KW trap dipole (both kindly loaned by the makers). On the receiving side, an Eddystone 888 was used. It is a credit both to the equipment and the operators that, under such poor conditions, the station was so successful; some 150 contacts were made in 22 countries. These figures include no less than 30 British and five overseas Scout stations. Although no contact was made, an SWL reports hearing a station in ZL calling GB3BPH. One U.K. Scout station reported early on Saturday morning that the operators and assistants at their station had consumed up to that time 78 cups of tea!

The B.-P. House station was honoured by a visit from the Mayor and Mayoress of Kensington on the Saturday evening, and from the Chief Scout, Sir

Charles Maclean, on the Sunday evening. G3PLR, a senior scout of the 19th Kensington Troop, one of the operators on GB3BPH, only received his licence about 24 hours before the commencement of the Jamboree. G3PLR became interested in Amateur Radio during the first Radio Jamboree in 1958.

Some of the operators on GB3BPH were interviewed by the BBC and featured in part of a programme transmitted in the BBC's Overseas Service. Operators of GB3YW, connected with the Birmingham District Scouts at Yorks Wood, also featured in a BBC Midlands Region broadcast.

Reports of Scout stations worked and any further items of interest in connection with the Jamboree-on-the-Air will be welcomed by G3BHK. Participation Certificates for U.K. stations are available, on request, with an s.a.e., from: L. R. Mitchell, G3BHK, Katoomba, Tyneham Close, Sandford, Wareham, Dorset.

And, just as this was going to press, we had an airmail from VS6EK, hon. secretary of the Hong-Kong Amateur Radio Transmitting Society, to say that during the period December 27 to January 1, VS6AJ/A will be on the 15-20m. bands, with CW and phone, looking for Scout stations, world-wide, in connection with the Hong-Kong Scout Jubilee celebrations. VS6AJ/A is to be operated from the camp site, and a special QSL card is being produced for the occasion. Reports will be welcomed from those hearing VS6AJ/A.

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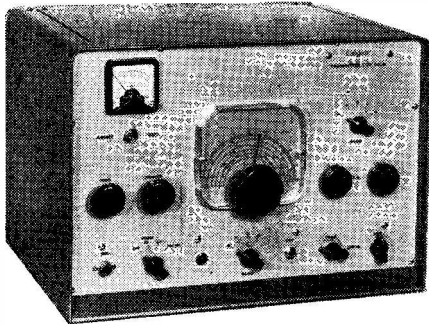
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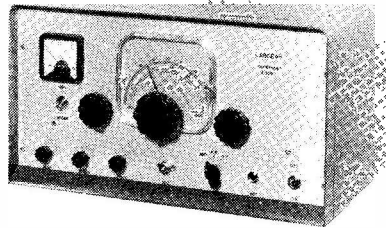


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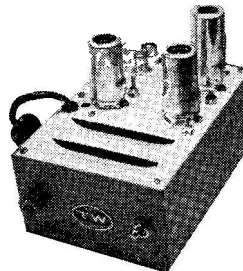
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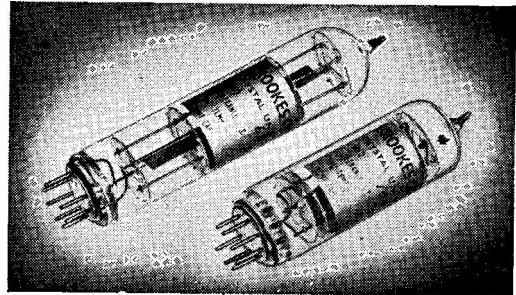
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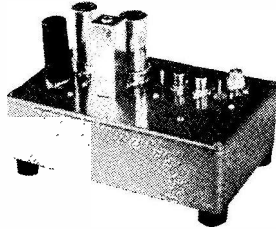
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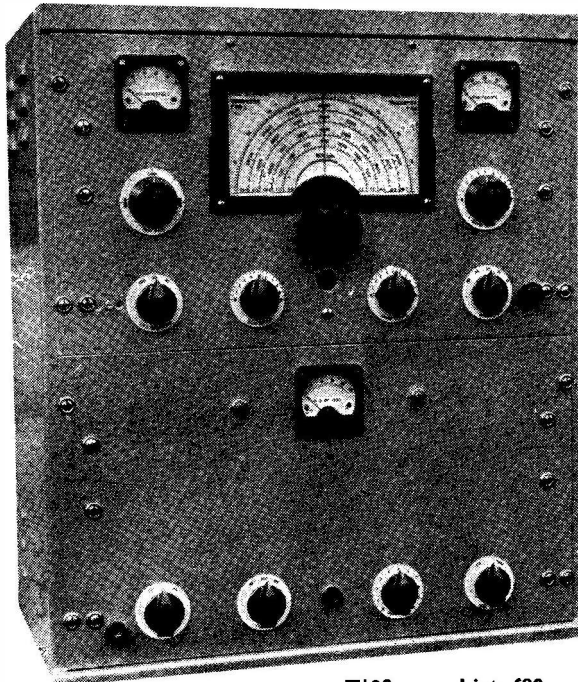
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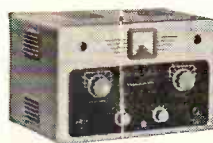
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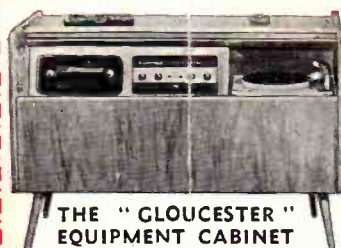
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