

# The SHORT WAVE Magazine

VOL. XX

NOVEMBER, 1962

NUMBER 9

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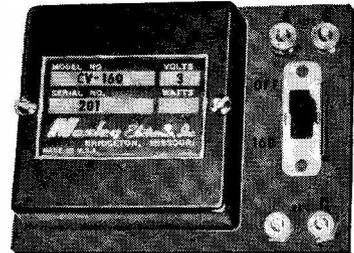
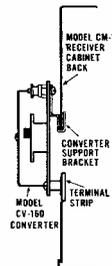
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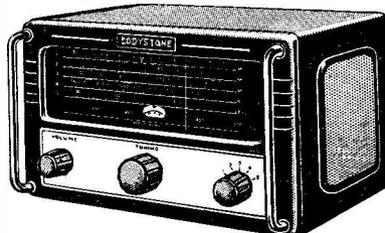
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*Published on the first Friday of each month at 55 Victoria Street,  
London, S.W.1. Telephone : Abbey 5341/2*

*Annual Subscription : Home and Overseas 36s. (\$5.25 U.S.) post paid*

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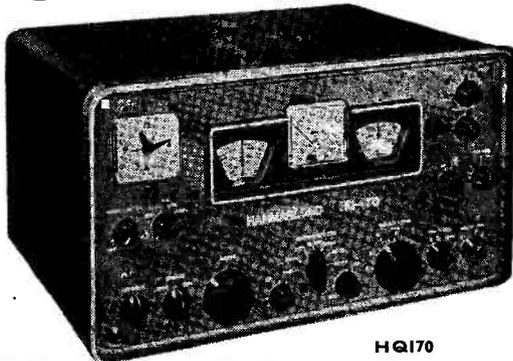
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# The SHORT WAVE Magazine

## EDITORIAL

### **Awakening**

*If there is a season for Amateur Radio, when activity rises and interest is keener than at other periods of the year, that season is starting now — though those whose leanings are for the Mobile Rally or outdoor work with VHF gear might feel that, for them, their active period is closing until the spring comes round again. And, incidentally, it is this diversity of interest which shows the scope there is for the Amateur Radio operator — always, there is something useful to do, either on the air or on the bench.*

*Though at the moment of writing clouds of heavy anxiety hang over the world, the winter is upon us. Apart from the fact that (unless the fighting is by ICBM) winter always slows down the processes of active war and reduces them to a state of “international tension” — with which we have anyway been living for the last 15 years — what the coming of winter also means (and here we get back to the real theme of this piece) is that the DX season is opening once again.*

*DX means different things to different people, and always has done. The categories of AT station operator are many and various. For some, DX means the excitement of working across the Atlantic on Top Band; for others, it is SSB contacts with VK's on 80m.; for quite a number, it is finding the phone areas of the 15 and 20 metre bands open for communication with the Far West or the Far East; and some will be looking for African DX in the quiet spaces of the 10-metre band.*

*But what is certain is that too few of the U.K. licensed fraternity will be seeking their DX on CW. It has been said here before, and it is still just as true, that not only is all the consistent DX worked on CW, but also that CW is by far the most efficient, the most reliable, and (many would say) the most interesting way of communicating on any amateur band, from 160 metres right up into the VHF regions. There are many reasons for this, which it would be tedious to go into now.*

*This is not meant to be an indictment of phone working, as a bad thing or an undesirable activity on the amateur bands. Anyway, most amateur stations are already using phone almost exclusively, and want to carry on like that. Rather, the suggestion merely is that you give up phone working altogether for a while and see whether you can do any better, in terms of DX worked over a reasonable period, by plugging in the key and really studying the opportunities in the CW areas of the DX bands. And if your main interest still lies in working loud local phones, on whatever band, come up on CW (or even MCW) every now and again, just to show them you can do it!*

*Austin Foley  
G6FO.*

## DESIGN FOR A TWO-METRE TRANSMITTER

VFO/XTAL CONTROL—90-WATT  
POWER RATING—CW/PHONE  
WORKING—CIRCUITRY  
CONSTRUCTION & ADJUSTMENT

### Part I

A. J. REYNOLDS (G3NNK)

*This article describes an up-to-date transmitter for two metres, incorporating several interesting features—in particular, that of optional crystal or VFO frequency control, using a Franklin oscillator, which is shown to give extremely stable output as an RF drive source multiplied up for two metres. While the layout as shown here can be adopted in detail and entirely as described by our contributor, the probability is that for most readers active on VHF—or proposing to embark on two-metre operation—his design will be mainly suggestive of ideas in relation to their own gear. And it should be mentioned that the author of this article is not what is known as a “professional amateur”—his equipment is built under what might be called kitchen-table or amateur work-bench conditions—that is to say, he has no more than the tools, test equipment and constructional facilities available in the average amateur station.—Editor.*

THE equipment to be described has been built around the QQV06-40 as the PA. For a couple of years a crystal-controlled 832 transmitter had been in use for two metres, with good results, when it was decided to build a VFO. It was soon realised that the various tuned circuits, peaked for maximum drive on one operating frequency by pre-set capacitors, were not good enough for VFO control.

A transmitter was designed with the foregoing in mind, having front panel control of the tuned circuits in the multiplier stages in addition to the PA tuning. It was decided to increase power input to the PA and increase anode efficiency by using a QQV06-40—and also, having a VFO, to try NBFM.

An existing power supply was to be used, which meant that there would be no reserve for an anode-and-screen modulator to deliver between 60 and 70 watts of audio. Series-gate modulation was decided upon and the results with this system have been very encouraging. Signal reports have been good and the saving in the more expensive components such as the modulation transformer and power supply is a worthwhile consideration.

A clipper-filter unit was included in the small

modulator for optional use on NBFM, to give the signal more “punch” when using this system, but experience has shown that the unclipped signal is preferred. (Adjustments to the filter unit are being made to modify its frequency response.)

The three units, transmitter, VFO and modulator are housed in separate cabinets but with the panels designed as matching equipment.

No originality is claimed for the circuit, ideas having been taken from various published designs.

### Circuit Description—Transmitter

The transmitter starts with a 12AT7 using one half as a 6 mc crystal oscillator, or VFO. The grid and cathode circuits are switched for CC/VFO. Provision is made for switching either of two crystals into circuit. It will be observed that it is *not* an overtone circuit, as difficulties sometimes arise when changing crystals in that the activity of surplus FT-243 types varies considerably. Some will not oscillate in the overtone mode and others tend to go unstable due to the necessity of circuit adjustments, which are not practical when switching crystals. The primary drive circuit illustrated in Fig. 1 is preferred for transmitters, although the writer uses overtone circuits in converters—see pp.458-459.

The HT supply to the oscillator is stabilised by a CV287 obtainable on the surplus market; it has a B7G base and is rated for 150v. at 20mA. Of course a VR150 or any equivalent could be used. Stabilisation was found necessary to eliminate a slight chirp on keying. The anode circuit of the oscillator triples to 18 mc and the second half of the 12AT7 acts as a doubler to 36 mc, followed by a 6BW6 doubling to 72 mc. A 5763 is used as a buffer amplifier at 72 mc and the screen supply is keyed for CW. A simple key click filter is included consisting of Ch.1, C22, and R14.

A safety bias of -12v. is applied to the 6BW6 and the 5763 as a safeguard in the event of loss of drive. At 72 mc the 5763 can be used at full ratings and ample drive is available at the grids of the driver stage, which is a TT15 operating as a push-push doubler. The use of a TT15 may appear rather extravagant, but the writer prefers to under run a driver stage in order that ample drive to the PA is always available.

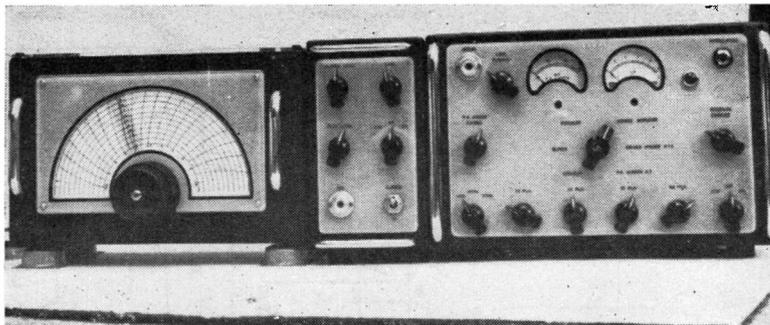
A drive control R22 is included in the screen supply. An alternative valve to use here would be the QQV03-10, thereby taking up less space. The 144 mc doubler anode circuit L7 is link coupled to the grid circuit of the QQV06-40 PA by a short length of 80-ohm twin feeder. A combination of fixed and RF grid resistor bias is used in both the driver and the PA stages. The fixed bias can be set to any desired voltage by R26 in the network across the stabilised supply of 105 volts negative. The anode circuit of the PA is tuned by an 8+8  $\mu$ F split stator capacitor across a four-turn coil made of  $\frac{1}{8}$  in. diameter silver plated copper tubing.

The gating valve V6 is a 12BH7 which varies the screen voltage applied to the PA.

### Constructional Details

The transmitter is built on a 16g. aluminium chassis measuring 10 in. by 11 in. by 2 in. deep. The oscillator and multiplier stages are mounted in sequence along the rear part of the chassis, from left to right, finishing with the TT15. An aluminium screen measuring 9 in. by 1 $\frac{7}{8}$  in. is fitted underneath the chassis which serves to mount the tuning condenser and the various feed-through capacitors. Two smaller screens, of 3 $\frac{1}{2}$  in. by 1 $\frac{7}{8}$  in., go across V3 and V4, as shown in Fig. 2, p.460. Tinplate is used for these screens as it is cheap, effective and easy to solder. The switch S1 is a miniature 3-pole 3-way ceramic type mounted on a long shaft to keep short leads to the crystal socket, this being a ceramic octal valveholder with alternate sockets removed; it makes a neat mounting for two FT-243 type crystals.

Coils L1, L2, L3 and L4 are wound on Aladdin  $\frac{1}{4}$  in. diameter formers and are mounted in cans above the chassis. The remainder of the coils are self-supporting. The two 72 mc coils L5 and L6 are mounted at right angles to each other to minimise coupling effects; they are both wound with 16g. enamelled copper wire and centre-tapped. The HT feed-through to L5 is *via* a choke, whilst that of L6 is through a 2,200 ohm 1-watt resistor. It is important that the components associated with the grid circuit

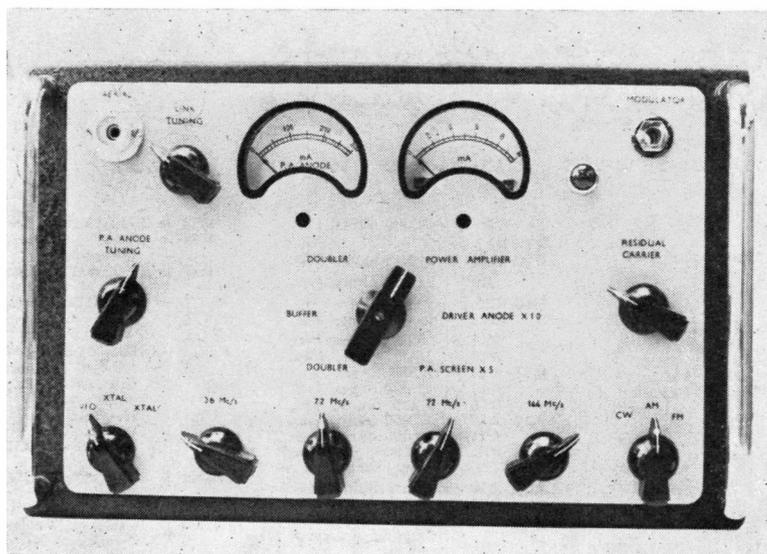


The complete two-metre layout as designed by G3NNK and described in the article. The units, left to right, are: VFO, with its scale drawn to give 10 kc reading-off points through the whole band; the Modulator, for either series-gate operation through the V6 stage in Fig. 1, or NBFM on the VFO; and the transmitter itself, which runs 90 watts on full CW input. All the constructional work was done with normal amateur-station facilities only.

of the driver stage (TT15) are balanced as near as is possible.

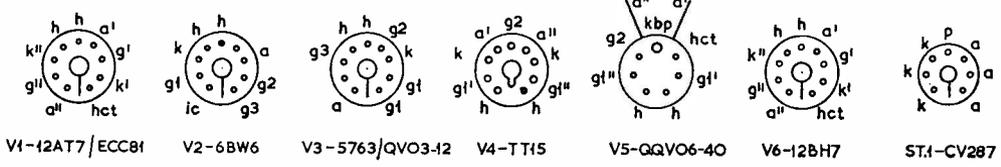
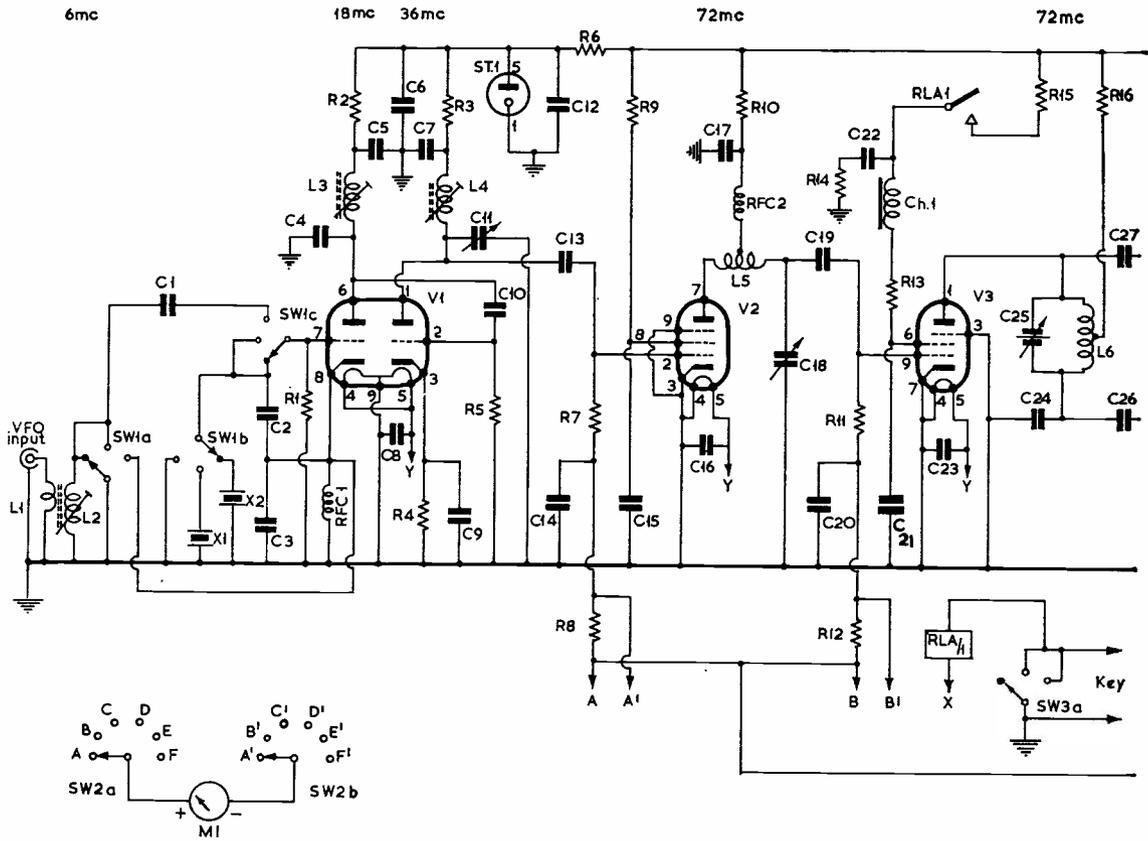
We now come to the anode circuit of this stage. The anode capacity of the TT15 is 7.3  $\mu\mu\text{F}$  per section. With both anodes strapped the capacity of 15  $\mu\mu\text{F}$  is used in series with C33 and L7, which consists of 4 $\frac{3}{4}$  turns of 14g. silver-plated copper wire tapped 1 $\frac{1}{2}$  turns from the anode end, with a space of  $\frac{1}{4}$  in. left at the tap for the two-turn coupling link L8.

Details of the PA compartment are given in Fig. 2. It will be seen that it is divided into two sections, with the valve mounted through a 2 in. diameter hole in the screen. To afford adequate ventilation, a rectangular hole 5 $\frac{3}{8}$  in. by 3 $\frac{1}{4}$  in. is cut in the main chassis below the PA compartment and covered underneath by a piece of expanded aluminium. Another piece measuring 14 $\frac{1}{4}$  in. by 4 $\frac{1}{4}$  in. is bent at a right angle to cover the top and the grid end of the compartment. The PA anode coil is made in accordance with Fig. 3, p.460, connections to the anode of V5 being by  $\frac{1}{4}$  in. wide copper strips to which are soldered inserts from an electric lampholder and afterwards silver plated. The link L12 consists of three turns of 16g. enamelled wire  $\frac{3}{4}$  in. diameter and mounted on a 3 $\frac{1}{2}$  in. length of  $\frac{1}{4}$  in. diameter polystyrene rod; this passes through a bush fitted in the PA compartment with a small knob attached for adjustment for aerial loading. The 8 + 8  $\mu\mu\text{F}$  split stator capacitor C37 forming the PA anode tuning is mounted on a ceramic end-plate from a discarded condenser. Front-panel control is by means of a pair of right-



Front panel layout of the G3NNK two-metre transmitter, with controls at actual settings for operation. The right-hand meter is suitably switched for current readings at all necessary points, the other meter being in the plate of the QOV06-40 PA stage. Main layout details are discussed in the text.

*[continued p.460]*

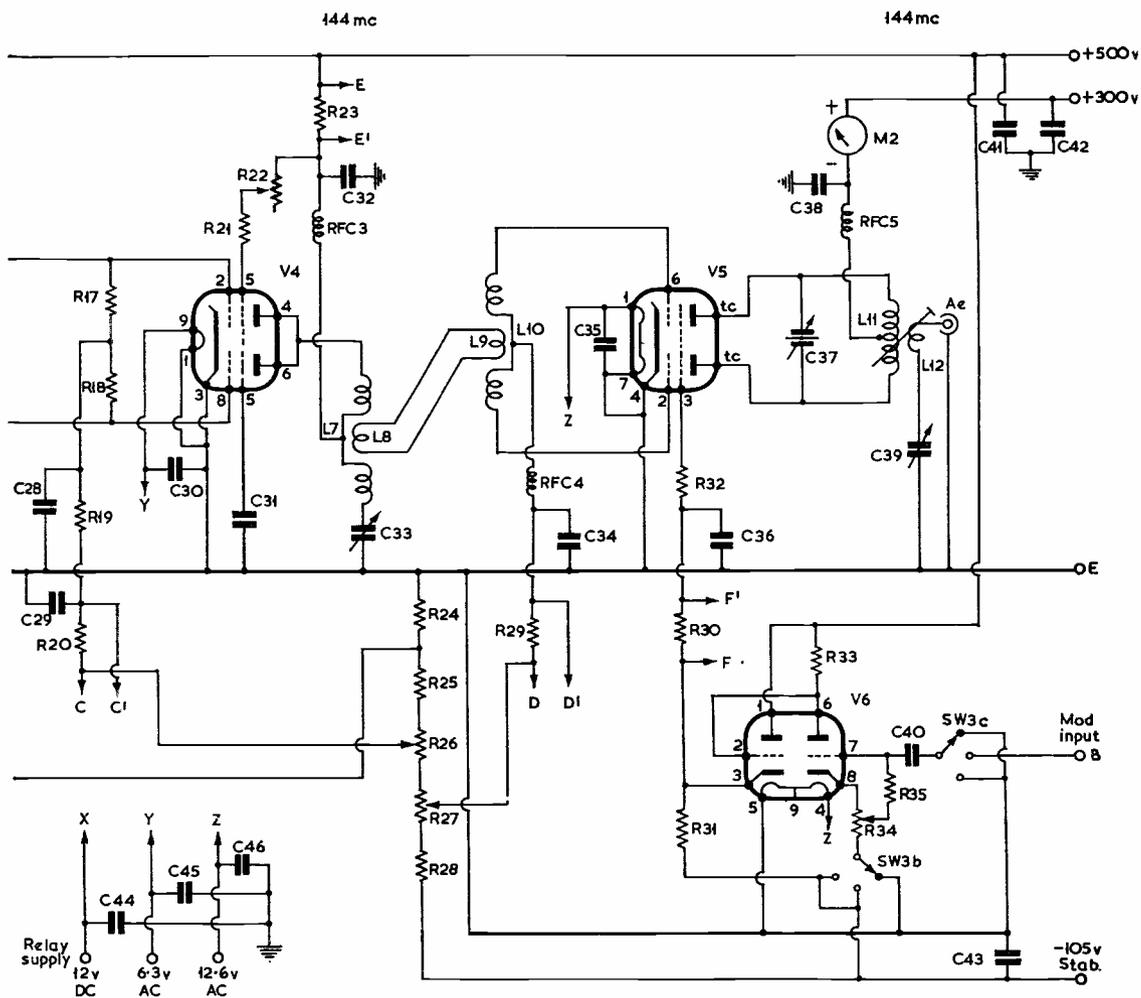


**Table of Values**

Fig. 1. Circuit of G3NNK Two-Metre Transmitter

C1, C2, C3, C10 = 82 $\mu$ F, silver mica or ceramic	C14, C20, C29, C32, C34, C36 = .001 $\mu$ F, feed through	R7 = 68,000 ohms, $\frac{1}{2}$ -w.	R33 = 175,000 ohms, 2-w.
C4 = 12 $\mu$ F, silver mica or ceramic	C22 = .05 $\mu$ F, paper	R8, R12, R20, R29 = 310 ohms, $\frac{1}{2}$ -w.	R34 = 25,000 ohms, potentiometer
C5, C7, C8, C9, C15, C16, C21, C23, C28, C30, C31, C35 = .001 $\mu$ F, ceramic disc	C24 = 5 $\mu$ F, ceramic	R9 = 22,000 ohms, $\frac{1}{2}$ -w.	R35 = 1,500,000 ohms, $\frac{1}{2}$ -w.
C6, C17, C40, C42, C43, C44, C45, C46 = .005 $\mu$ F, ceramic disc	C25 = 5 + 5 $\mu$ F, split stator	R10, R25, R28 = 1,000 ohms, 1-w.	RFC1 = 2.5 mH RF choke
C11, C18 = 25 $\mu$ F, variable	C26, C27 = 20 $\mu$ F, tubular ceramic	R11 = 68,000 ohms, $\frac{1}{2}$ -w.	RFC2, RFC3, RFC4 = 100,000 ohms, $\frac{1}{2}$ -w. resistor wound full with 28g. enam. wire
C12 = .01 $\mu$ F, paper 350v. wkng.	C33 = 15 $\mu$ F, variable	R13 = 2,200 ohms, $\frac{1}{2}$ -w.	RFC5 = AF choke
C13, C19 = 50 $\mu$ F, ceramic	C37 = 8 + 8 $\mu$ F, split stator	R14, R19 = 2,200 ohms, $\frac{1}{2}$ -w.	Ch.1 = Ohmite Z-O 144 mc. (ex. SCR 522)
	C38, C41 = .0018 $\mu$ F, 5000v. wkng.	R15 = 15,000 ohms, $\frac{1}{2}$ -w.	X1, X2 = 6 mc crystals FT-243
	C39 = 50 $\mu$ F, variable	R16 = 2,200 ohms, 1-w.	SW1 (ABC) = Single wafer, 3-pole 3-way ceramic
	R1 = 47,000 ohms, $\frac{1}{2}$ -w.	R17, R18 = 22,000 ohms, $\frac{1}{2}$ -w.	SW2 (AB) = Two-wafer, six-way break before make (ex. SCR 522)
	R2, R3 = 1,000 ohms, $\frac{1}{2}$ -w.	R19 = 2,200 ohms, 1-w.	
	R4 = 330 ohms, $\frac{1}{2}$ -w.	R20, R29 = 310 ohms, $\frac{1}{2}$ -w.	
	R5 = 82,000 ohms, $\frac{1}{2}$ -w.	R21 = 40,000 ohms, 1-w.	
	R6 = 3,300 ohms, 5-w., 10%	R22 = 100,000 ohms, 3-w., variable	
		R23, R30 = Meter Shunts	
		R24 = 400 ohms, 2-w.	
		R26 = 1,000 ohms, w/ wound potentiometer	
		R27 = 1,200 ohms, w/ wound potentiometer	
		R31 = 220,000 ohms, 1-w.	
		R32 = 180 ohms, $\frac{1}{2}$ -w.	





VO 36b

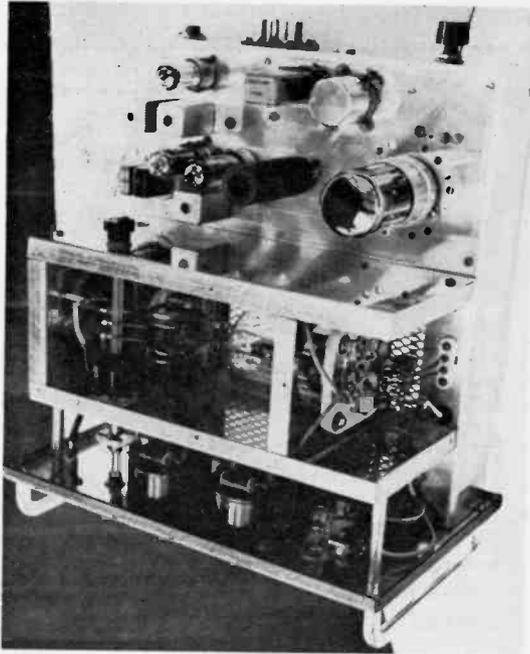
Fig. 1. Circuit of the two-metre transmitter described by G3NNK. The first stage can be switched for either crystal control (two spot frequencies in the band) or for VFO injection at 6 mc. Here, switch Sw1 is shown in the CO position, with Sw3 as for CW transmission. The iron-cored component Ch.1 may have any required inductance between 2 and 20 Hy to obtain the best keying waveform. The link between L8/L9, from the driver plate into the PA grids, is made by a length of 70-80 ohm twin feeder. In the construction, pin 7/V3 and pins 3-7/V4 are soldered to their respective screens. The modulator is a separate unit, to be shown later, and either series-gate modulation on the PA, or NBFM on the VFO, can be used. (Note that in this circuit as drawn, the +300v. and +500v. HT feed points, and the condensers C41, C42, should be transposed.)

Table of Coil Values

Transmitter

- L1 = 7 turns insulated wire on earthy end of L2.
- L2 = 110 turns 36g. enam. on 1/2-in. Aladdin former, two layers, 70 turns and 40 turns, slug tuned.
- L3 = 33 turns 30g. enam., close wound on 1/2-in. Aladdin former, slug tuned.
- L4 = 12 turns 24g. enam., close wound on 1/2-in. Aladdin former, slug tuned.
- L5 = 10 turns 16g. enam. 7/16-in. inside diameter, length 3/4-in., centre tapped.
- L6 = 9 turns 16g. enam. 7/16-in. inside diameter, length 1-in., centre tapped.
- L7 = 4 1/2 turns 14g. silver plated 7/16-in. inside diameter, length 3/4-in., tapped at 1 1/2 turns and space of 1/16-in. left for L8.
- L8, L9 = 2 turns 16g. enam. 3/16-in. inside diameter, length 7/16-in., coupled to L7 and L10.
- L10 = 4 turns 16g. enam. 7/16-in. inside diameter, centre tapped and space of 3/16-in. left for L9, total length 1 1/2-in.
- L11 = 4 turns 1/2-in. copper tube 3/4-in. inside diameter, centre tapped and space of 1/4-in. left for L12, total length 1 1/2-in., silver plated.
- L12 = 3 turns 14g. enam. 9/16-in. inside diameter, length 3/4-in., spaced one wire diameter.

- SW3 = 3-pole 3-way miniature rotary
  - RLA = High-speed relay 1700-1700 ohms Siemens H96E (or any suitable type)
  - ST1 = 150v, 20mA stabiliser CV289 or similar
  - V1 = 12AT7, ECC81
  - V2 = 6BW6
  - V3 = 5763, QV03-12
  - V4 = TT15
  - V5 = QQV06-40
  - V6 = 12BH7
- (All resistors 20% except where stated)



View above-chassis of the transmitter, showing the layout in the PA compartment. Expanded aluminium, covering top and side, is used to complete the screening. The neat arrangement of parts and the careful workmanship can be seen from this photograph.

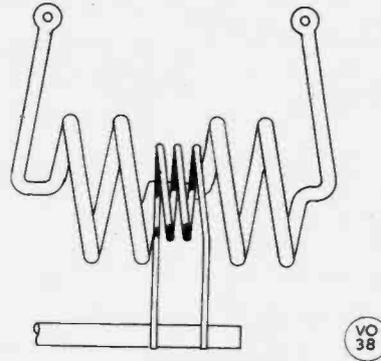
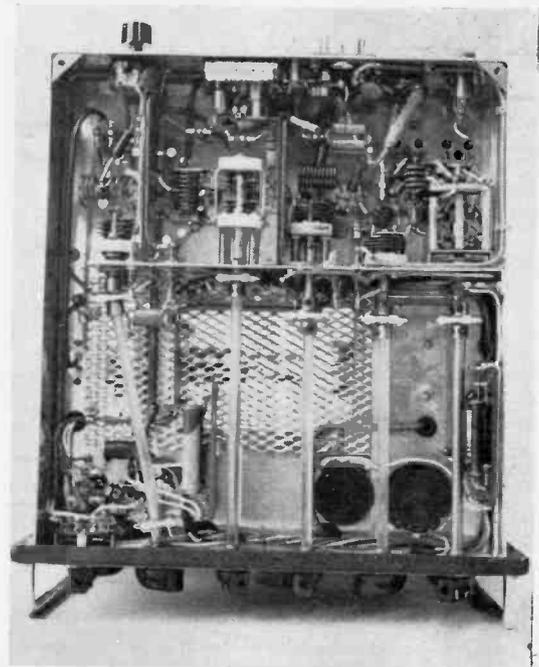


Fig. 3. Detail of the PA anode coil assembly; the coupling coil is made adjustable with respect to the tank, and is controlled from the rear of the PA compartment.



Under-chassis view of the G3NNK two-metre transmitter. The xtal holder is on the extreme right, with Sw1 immediately above it. The driver anode compartment is at extreme left; the twin-feeder from the coupling coil into the PA grid section runs along the side of the chassis. The gating valve V6 — see Fig. 1, p.459 — is at bottom left.

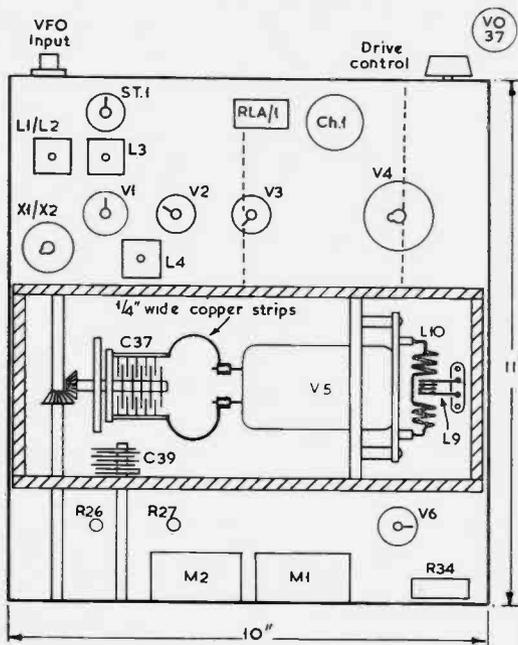


Fig. 2. The above-chassis layout of the G3NNK transmitter. The xtal mount is a ceramic octal v/holder using alternate sockets. The PA anode coil L11 and L12 — see Fig. 1 — have been omitted for clarity.

angled bevel gears and a length of  $\frac{1}{4}$  in. diameter polystyrene rod supported by bushes through the front and back of the compartment.

The gating valve V6 is positioned at the grid end of the PA in the space immediately behind the front panel. The meters are mounted on the inside of the panel and to give the transmitter a "commercial look," the front is covered with a sheet of perspex 1/16 in. thick. The meter windows are marked on the reverse side with Indian ink and the remainder

given a coat of grey paint. A hole is drilled below each meter window for zero setting, and the panel layout is shown in the picture on p.457. The meter switch is located in the centre of the panel and switches a 10 mA FSD meter to read grid currents of V2, V3, V4 and V5, anode and screen currents of V4, and screen current of V5. External shunts are switched in for the two latter readings.

All meter leads from the various stages are by-

passed to RF by feed-through capacitors at the point at which they leave the compartments; HT and LT leads are dealt with similarly. Each pin on the power input plug has a .005  $\mu$ F ceramic disc condenser to chassis. It will be seen that V5 and V6 have a heater supply of 12.6v.—this is merely because 12v. and 6v. LT is available from the power supply in use.

(To be concluded)

## LAYOUT FOR A MOBILE INSTALLATION

### SIMPLIFIED TOP BAND RIG FOR MINIMUM VEHICLE DISTURBANCE

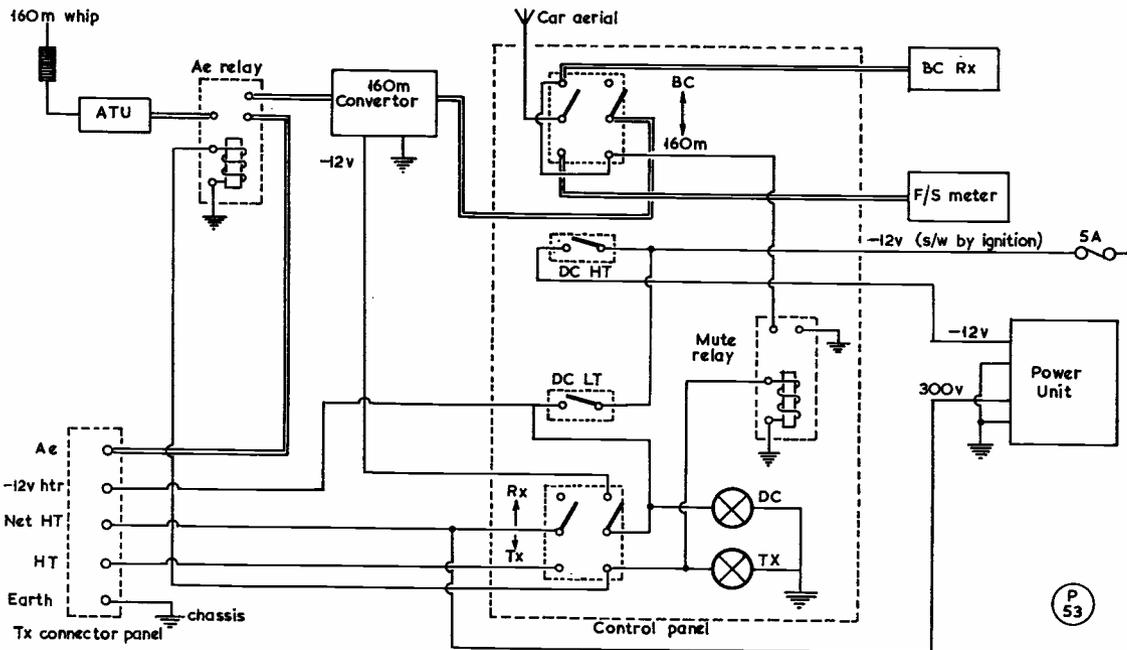
H. B. BIRD (G3OUQ/M)

A FEW months ago, after having changed from a van to a car, the author was faced with the business of installing the mobile gear all over again. As will be appreciated, there is a difference between piling a mass of equipment into a van, and in trying to fit mobile radio unobtrusively into a fairly reasonable-looking car. Something, quite obviously,

had to go ! It was decided that the Command receiver was too big and unsightly, so the first thing to decide was whether to invest in BC car radio, or build a new 160-metre receiver which would fit in the space provided for a radio in the dashboard. At about this time, a circuit appeared in SHORT WAVE MAGAZINE for a transistor converter for Top Band (see p.188, June), so it was decided to build this and invest in a transistor BC car radio to go with it.

As will be seen in the photograph, the control unit, the transmitter and the converter are mounted in a central console which just fits over the prop-shaft and is out of the way of the driver's and passenger's feet but still easy to reach.

At this stage, let it be said that the installation was designed with safety in mind. All the wiring is in flame-proof insulation. The control unit was built with the Tx/Rx switch at the bottom, easily reached by the left hand; HT and LT supplies are properly fused; when the ignition is switched off there is no



Unit wiring layout for the mobile installation described by G3OUQ/M, and explained in the text. This switching arrangement gives complete control and protection and utilises the car-radio aerial as fitted, as well as the Tx/Rx 160m. whip. The transistorised Top Band converter works into a standard car radio receiver and when in /M operation, the car-radio aerial is connected to a field strength meter which can be read from the driving position. The fitting of the control panel, and the various units of the installation, is shown in the photograph on p.462.

chance of a short-circuit occurring. It was also arranged that the car radio can be used for normal BC reception when ignition is off.

The writer was also rather reluctant to leave the normal car radio aerial doing nothing, so it was brought into operation to feed the field strength meter, situated to the right of the steering column, when the rig is in 160m. operation. There is no need to change any aerials over by hand as all aerials are switched by the BC/160m. switch on the control unit.

The transmitter is to a normal VFO, tuned buffer and link-coupled PA design. The microphone is xtal, mounted on a GPO-type neck sling. The power supply is a vibrator 300v. unit and is mounted in the boot, together with the ATU, which is a roller-coaster inductance with an RF ammeter for tuning up. The whip, which is 8 feet centre-loaded, is fixed at resonance at 2 mc and the roller-coaster is then adjusted to bring the resonance down to any frequency in the 160-metre band.

#### Wiring Plan

The circuit layout of the control system and inter-connection is on p.461 and is self-explanatory. Four switches are used; the first one changes the aerials; the second and third are the —12v. on/off and the 300v. on/off, the fourth being the transmit/receive control. Two indicator lights are wired to indicate "LT On" and "Transmitter in Use." A relay is also fitted to earth the receiver aerial when transmitting, as it was found to pick up car engine interference. In the actual G3OUQ/M layout the aerial relay is mounted inside the transmitter, but here it is shown as a separate unit for simplicity. The console in the car can be removed in a matter of seconds by disconnecting three coax couplers and a 6-way Jones plug. Then, by connecting up the normal car aerial to the receiver the car is back to normal.

It was found necessary to drill only one hole, in the boot floor, for the complete installation of the gear. All supply wiring is screened and the only suppression found necessary on the engine was an 0.5  $\mu$ F condenser on the dynamo and a cut-lead



The G3OUQ/M installation, the transmitter and control panel being mounted in the console; the transistor Top Band converter — to the circuit on p.188 of our June 1962 issue — is in the slim box below the car radio. The complete wiring plan for the inter-connection of the various units of the equipment is given in the accompanying circuit diagram, on p.461. The car is a Singer "Gazelle," 5404-AC.

suppressor in the main coil connection to the distributor.

Many most enjoyable "natters" have been had with this rig. Not being a mobile DX fiend, there is no provision for tuning the transmitter on the move — this is a very dangerous practice, anyway. One switch and a tunable receiver are quite enough when wearing safety straps!



Seen at the Lincoln Rally — a family of radio amateurs: Father G3LWB, mother G3ORU and son G3NRM, with daughter Pat coming up for her ticket.

#### RADIO AMATEUR INVALID AND BEDFAST CLUB

This is a small Club group which exists for the benefit and in the interests of those radio amateurs who are permanently incapacitated in one way or another. In the nature of things, it has many supporters and well-wishers. For years, the general management and administration of the R.A.I.B.C. had been in the hands of G3DPH and his father, SWL W. Harris, both of Ipswich. It is with deep regret that we have to announce their deaths, within a short time of one another; their passing will be mourned far outside the R.A.I.B.C. circle of membership. Until a new honorary secretary can be appointed, and arrangements made for the Club to carry on, all business will be dealt with by the assistant hon. secretary, Mrs. F. E. Woolley, G3LWY, Rochmount, 10 Sturton Road, Saxilby, Lincoln, to whom R.A.I.B.C. correspondence should be addressed.

## THE MINI-QUAD TWENTY

### BEAM DESIGN FOR 20 METRES — GAIN MAINTAINED WITH REDUCED OVERHANG

W. HAZELDEN (G3KBE)

**T**HE Cubical Quad has deservedly become a popular and widely used form of beam aerial on the amateur HF bands. Its low angle of radiation, relative ease of construction and some 8 dB of gain over a dipole, together with the ease with which it can be tuned and matched to standard coax feed-line, has resulted in its popularity. A further point in its favour is cheapness of construction, with easily-obtained materials from the local hardware store.

By virtue of its two half-waves in the single loop, the Quad shows an impedance of about 100-120 ohms—not quite the 150 ohms impedance of two dipoles due to the loop construction. With  $0.15\lambda$  spacing between elements the impedance drops to a figure of 65 ohms with a gain of 8 dB over a dipole. On 14 mc, this would be a spacing of approximately 9 feet between driven and parasitic loops. Though this is a slight mismatch with 80-ohm cable, it is an acceptable one for practical purposes. Greater gain and an impedance of 75 ohms can be obtained with  $0.2\lambda$  spacing, giving a distance of about 12 feet between elements, which is very close to 80-ohm cable, showing a gain of about 10 dB over the dipole. This can be fed directly into the now standard *pi*-tank network of the final RF amplifier in the transmitter.

The square form of Quad construction reduces the turning circle by half and a 10-and-15 metre array would have an overall width of about 11ft. 4in. However, on 20 metres this increases to nearly 17 feet and the extra dimensions required on this band necessitate much stronger and heavier booms and "X" pieces. The enclosed area of a 20-metre loop amounts to nearly 300 square feet. In the usual form of construction, 8 bamboo canes are required, in the region of 11 feet long. Although the width of a 20-metre Quad is about half that of a Yagi type array (with its radiator length of 33 feet or so) in many instances the size even of the 20-metre Quad is such that some difficulty arises in finding the space to erect it at a reasonable height above ground. The height at the centre should preferably be between  $\frac{1}{4}$  and  $\frac{3}{4}$  wavelength, and in the clear.

#### Possible Reduction

Some thought was therefore given to reducing the area to more manageable proportions without too great a loss of efficiency. Reference to Fig. 1 will show that any form of loading with normal horizontal polarization must be positioned at the top or bottom centre of each element, or at both. Having some spare ferrite beads, a plain dipole was strung up,

vertical fashion, to find the decrease in length there would be over a full-length unloaded 20-metre dipole of 33ft. 6in. This showed that 25 beads each side of the coax feeder connection resulted in a reduction of length to about 23ft. for resonance, a not inconsiderable saving. On air testing, this short dipole appeared to be quite as efficient a radiator as the 33ft. 6in. unloaded version. A loop 12ft. square was then constructed, as it appeared that if 100 or so beads were threaded along the radiator in a position where they would have most effect—that is, at a current max.—they would increase the electrical length of the loop from 48 feet to approximately 68 feet with resonance on 20 metres.

The 12ft. square was an arbitrary selection of size but one which was considered the optimum dimensions at the particular location. The enclosed area formed by this would now be 144 sq. ft. against the full size of an unloaded loop of 289 sq. ft.—a 50 per cent. reduction. However, as the point of maximum current produces the greatest increase in flux density in relation to the ferrite material, any movement away from this point results in less increased inductance as a whole, so that adding beads produces less and less effect as one moves away from the current antinode—indeed, if the optimum size of 12 feet was to be adhered to, a large number of these beads would have to be used to give resonance on 20 metres, namely about 200 on each element! It may be that types of beads other than those used (Mullard B4-FX1308) would have produced the required effect with a smaller number.

#### Loading Coils

Attention was then turned to a more usual method of increasing inductance, by means of loading coils. Two 6in. lengths of  $1\frac{1}{2}$ in. diameter paxolin tube were wound with the same wire as used in the aerial—this was plastic covered 3/029 cable, familiar in the electrical trade. This cable, of  $\frac{1}{8}$ in. diameter, is particularly suitable for the purpose as it has good insulating properties and tensile strength and is easily handled without kinking. The feed end of the radiator

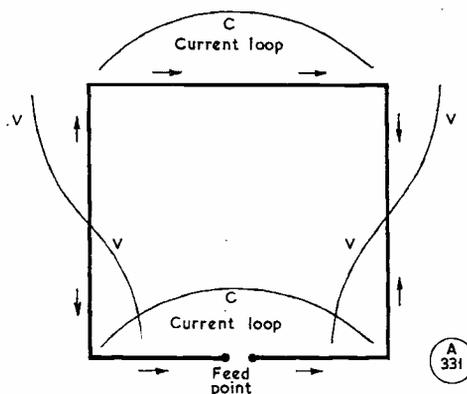


Fig. 1. The instantaneous current and voltage distribution on a loop aerial of the Quad type. It is from a consideration of this factor that the miniaturised Cubical Quad described in the article has been designed.

loop was temporarily shorted and the loop and loading coil turns were adjusted to resonate in the 20-metre band. The number of turns required came out to be 23, over a winding length of  $3\frac{1}{4}$  inches, which left plenty of room at each end of the paxolin tube for fixing purposes. If the pick-up coil of a grid-dip oscillator is just inserted in one end of this loading inductance a good deflection on the meter can be obtained. For those without a GDO—that most essential of test instruments—these measurements should cause the natural frequency of the loop to fall in the 20-metre band.

Unfortunately, the resonant frequency of an aerial near ground is not the same as when erected and allowance must be made for this difference. Again, as hardly any two situations are the same, the change in frequency varies according to surroundings. A correction factor of 400 kc was allowed and the loop was resonated at 13,750 kc, to bring the resonant point to 14,150 kc when 40 feet in the air. If one wishes to work mainly on, say, 14.3 mc, a frequency just below 14 mc should be aimed at. In practice it was found that the SWR did not exceed  $1\frac{1}{2}$ -to-1 over a band width of 250 kc—which is not quite as good as the full-size Quad but perfectly acceptable under the circumstances.

This single element was then erected using short lengths of hardwood between mast and loop (about one foot long) to stand the loop off from the metal mast employed. A check with the GDO and SWR meter showed resonance approximately in the centre of the 20-metre band, as required, and a reasonable match was also obtained using 80-ohm feedline. This single loop gave encouraging results. Performance appeared better than a plain dipole at the same height, although theoretically the gain is only 2 dB over a dipole. A useful bi-directional pattern resulted with low-angle radiation. Where space is at an absolute premium the single loaded Quad has much to recommend it as the turning circle is a third that of a full-scale 20-metre rotary dipole.

### Adding the Reflector

Two 9ft. booms of knot-free straight white "2 x 1" wood were obtained, and creosoted before being clamped to the mast with a spacing of 12 feet between them. (It may be necessary to drill two holes in the centre of these booms to take the legs of the U-bolts.) The reason for the two booms is that a change of construction from the "X" type of Quad is necessary due to the loading coils, which in the "X" assembly would of course have no support. Eight lengths of bamboo each 6ft. long were used to support the horizontal portions of the Quad and the loading coils; these were cut from 10ft. lengths of ordinary garden canes, with the thin ends removed, leaving 6ft. varying in diameter from about 1in. at the butt end to  $\frac{1}{2}$ in. at the outer ends. With the butts fitted in the centre, a strong 12ft. support was obtained without any droop at the ends of the canes. Fig. 2 should make the construction of these supports clear.

Slots were carefully cut into the ends of the canes to take the aerial wire; after this has been positioned PVC tape should be bound around the

cane ends and waxed thread over the tape, so as to ensure that the canes do not split and that the wire does not slip through the slots. Originally, it was decided to fit the reflector loading coil at the bottom-centre of this loop, winding on extra turns to provide the necessary reactance of this element, and then adjusting the turns for maximum forward gain. In practice this was difficult and the reflector loading coil was therefore positioned in the same manner as the radiator loading coil, at top centre, and wound with the same number of turns of 3/029 cable.

Adjustment of the reflector was carried out with a stub 5ft. long, spacing  $2\frac{1}{2}$  inches between wires. Maximum forward gain was found to be at a point 3ft. 9in. from the 3in. insulator fitted at the bottom centre of this loop. Bare 14g. copper wire was used for the tuning stub and after the optimum point was found, soldered across, the remaining portions being cut off and the stub bent back in a half-circle, with the free end fixed to the lower boom. Three spacers were needed for the stub line, made from used-up Biro pens, each 3in. long and drilled to take the 14g. wire; coil dope was squirted through each open end to prevent entry of water and to fix the spacers to the copper wire. Two croc. clips fixed to a short piece of brass were used to carry out tuning adjustments on the reflector.

To give added strength to the element supports four pieces of hardwood each 27in. long by 1in. square were used between boom ends and canes, the butts of the canes being fixed to the hardwood by means of "Jubilee" type small hose-clips, two to each cane, making 16 in all. These clips make a very effective fixing and are unlikely to slip under any circumstances. The ends of the booms are held to these hardwood strips by a long enamelled wood screw and also by lengths of  $\frac{1}{2}$ in. diameter aluminium tubing (which happened to be available). The ends of these  $8\frac{1}{2}$ in. long tubes were flattened and drilled to take 2in. and 1in. enamelled wood screws into the boom and hardwood end pieces respectively. An engineer's square was used to ensure a perfect right angle between hardwood pieces and boom before screwing up tight. Brackets each side of each end of

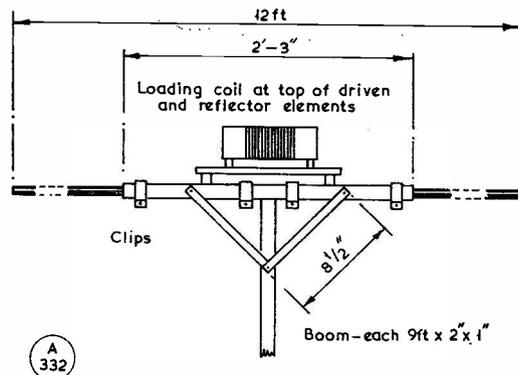


Fig. 2. Plan view of boom-ends and their supports in the G3KBE Mini-Quad design. Sections 1-in. cube are cut out of the top end of the booms so that they are flush with the 27-in. hardwood pieces. The canes are secured under the hardwood.

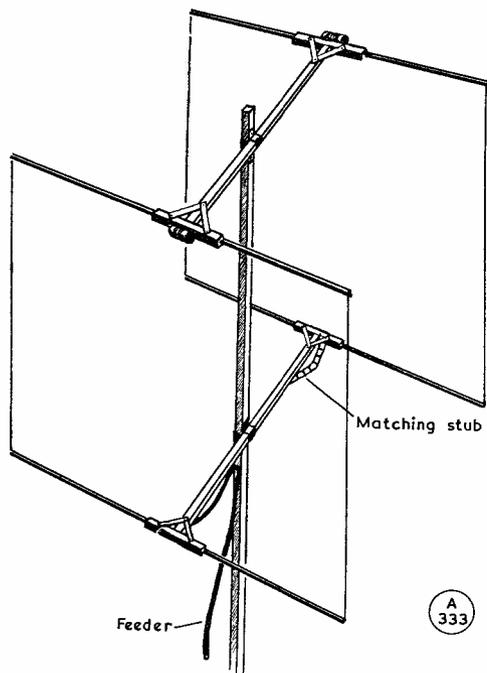


Fig. 3. Showing the general constructional layout for the Mini-Quad as described by G3KBE. The loading coils — see text and Fig. 2 — are carried on the upper length of each section. Dimensions, tuning and results are discussed in the article.

the boom would probably do as well, but these aluminium "struts" make a very strong fixing and prevent flexing in wind. In very exposed locations, it might be found advisable to use longer lengths than  $8\frac{1}{2}$  inches for the struts.

#### Feeder Connection

The coaxial connection at the bottom of the radiator was made from two small pieces of  $\frac{1}{4}$  in. polystyrene sheet with a tab each end whereby the connector can be screwed to the underside of the lower boom. Grooves were cut out to take the inner and outer coax and the two pieces cemented together with dope, to make a water-tight joint. The coax was then bound to the boom and down the mast with PVC tape. The aerial wire itself should also be fastened in the same way along the bamboos. Three such tapings should be sufficient for each 6ft. length of cane. The loading coils are fixed to the hardwood ends by 1in. stand off insulators and the ends of the coils soldered to the aerial wire *in situ*.

#### Results

On-the-air tests over a period show that this "Mini-Quad" compares very favourably with the full-sized version. At the G3KBE location, contacts to the Far East are very difficult due to sharply rising ground and a semi-circle of pylons, but in a few hours VS1, VS4, 9M2 and ZE2 were raised with it. These stations could not even be heard on the 200ft. long-

wire which had been previously used on 20 metres. Contacts on 5 watts have been made in QRM conditions with stations on the East Coast of America using the Quad, and it certainly seems that any loss in efficiency due to the scaling-down in size must be very small. The DX contacts made support the contention that the low-angle radiation properties of the full Quad are being obtained.

For those who find DX working difficult with a long-wire or a dipole under the crowded conditions of our 20-metre band today, and have not the room to put up a full-sized 20-metre Cubical Quad, this "Mini-Quad" design may be a solution. Acknowledgements are due to G2HDT for his help in the final stages.



G3JEQ (Great Bookham, Surrey) is well known for his very successful /P expeditions, into GM as well as GI. This year he has been through no less than 12 of the rarer GM counties (such as Ross and Sutherland) making about 400 Top Band QSO's and travelling some 2,500 miles. Here is the portable set-up, the photograph having been taken at a site in Nairn. The 160m. aerial is either flown by kite or held up by the transportable mast (sections carried on the roof of the car) as described in the May 1962 issue of "Short Wave Magazine." G3JEQ, who is becomingly modest about his /P achievements, has earned the thanks of many GDX operators — and he says he tries particularly for the weaker stations.

#### THE MAGAZINE CLUB CONTEST

Each year since the War we have run a special competitive event for Clubs called MCC—the "Magazine Top Band Club Transmitting Contest"—and we are now at the 17th in the series. The rules for this year's MCC were given on pp.440-441, Oct. issue, and it will be seen that single points can be scored by Clubs working non-Club stations. This means that participation by non-Club operators would be welcome, but they should *not* call "CQ MCC"—this is reserved as an identification for Club stations.

## SEEN AT THE SHOW

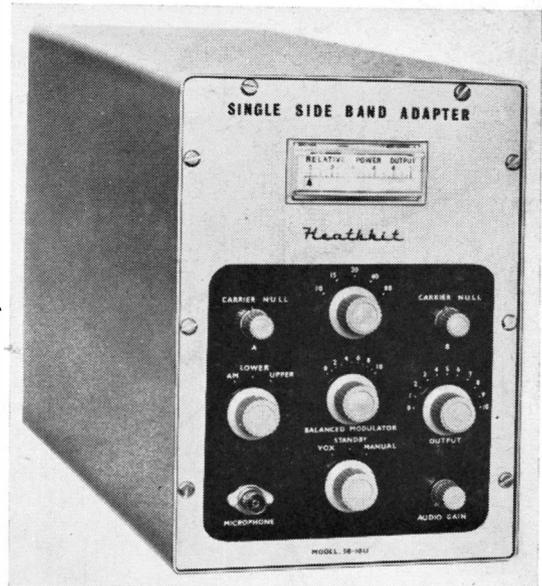
### Some Items from The 1962 Radio Communications Exhibition

**T**HIS short review attempts to pick out the more important and interesting of the new commercial equipment items for amateur-band operation shown at the R.C.E., Seymour Hall, London — in itself an exhibition of mainly Amateur Radio interest.

From **Minimitter**, we have the latest model of the "Mercury 200" 10-80m. transmitter, which now has an increased power rating and uses silicon rectifiers. Their 40-80-160m. transmitter, known as the "Top 2-7" is rated at 24 watts, and is completely self-contained, including aerial c/o and remote switching. The latest of the Minimitter converters is a 6-band unit of reduced dimensions, and intended either for fixed-station or mobile use. Another interesting Minimitter product is their new all-transistor mobile receiver for Top Band only, the "T.R.7"; this is a compact unit, completely self-contained including speaker and battery, and besides having full bandsread, incorporates a Q-Multiplier for reception in all modes, AM/SSB/CW. (*The Minimitter Co., Ltd., 37 Dollis Hill Avenue, Cricklewood, London, N.W.2.*)

Though **Webb's Radio** are not strictly manufacturers, they have been in the business since pre-war days and are the main London agents for Eddystone equipment, so their stock always includes the latest from that stable — in this case, the Eddystone 880/2 receiver, which has 30 tuning ranges each exactly 1 mc wide; the 940, priced at £125, which has a cascade RF stage and separate detectors for CW and SSB, and is the successor to the well-known 680X; and the fully-transistorised 960, which is 500 kc-30 mc communications job. In addition to Eddystone products in their great variety, Webb's also handle a useful range of home-constructor items by other manufacturers. (*Webb's Radio, 14 Soho Street, Oxford Street, London, W.1.*)

For years now, **Daystrom Ltd.** have been well-known for the extensive range of Heathkit amateur-band equipment, covering a great number of items. In addition to the SB-10U Sideband Adaptor, a recently-introduced kit is the Q-Multiplier,

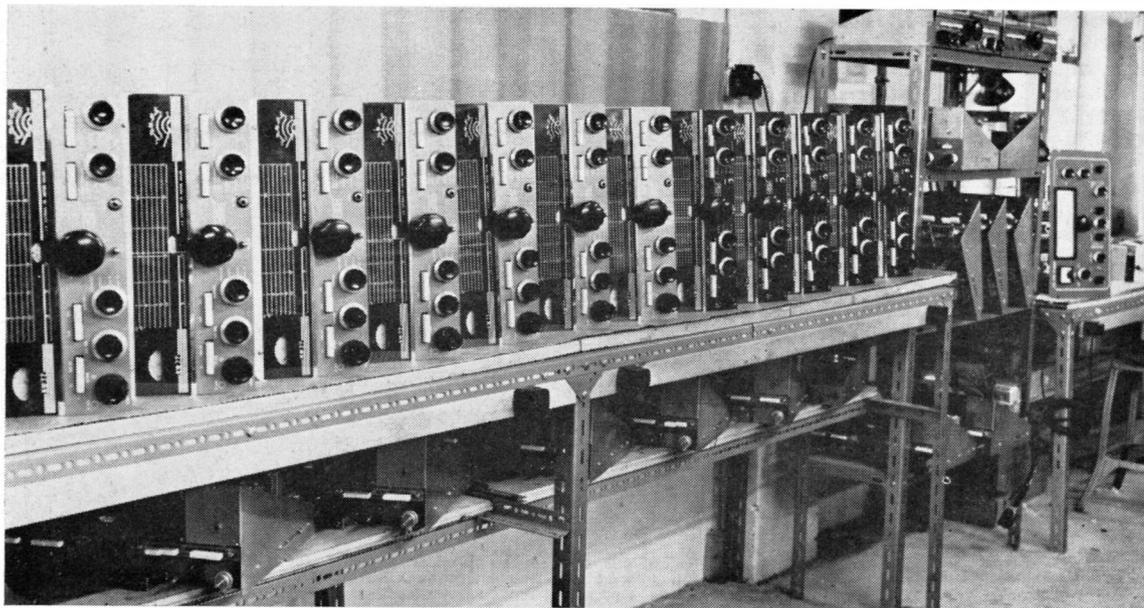


Among the wide range of items of amateur-band interest on the Heathkit stand at the Exhibition — the type SB-10U Sideband Adaptor, available in kit form, and designed to work with the Apache TX-1 or the DX-100U (with slight modifications) to give SSB operation on the 10-80m. bands. The SB-10U can also be used with any other transmitter, subject to certain alterations being possible, including putting the PA into Class-A. The chief feature of the SB-10U is that it enables the operator to retain his investment in his AM gear, and also to keep his high-level AM capability. At the kit price of £39 5s., the SB-10U brings Sideband operation within the budget of most U.K. amateurs.

Model QPM-1, a self-powered unit suitable for use with any communications receiver having its IF in the range 450-470 kc; the QPM-1 provides considerably increased selectivity, and is switch-controlled for



On view on the Withers stand at the International Radio Communications Exhibition — the TW VHF transmitter, a very neat little 10-watt CW/phone job which, in spite of its small size, is highly efficient. The PA is a QV03-10 modulated by a pair of EL84's. The transmitter is available for either 2, 4 or 6 metres (overseas).



Part of the production line at the K.W. Electronics, Ltd. works at Dartford, Kent, showing a batch of the new KW-77 receivers. On view at this year's Amateur Radio Exhibition, these are now coming off regularly, for orders from all parts of the world. The KW-77 has excellent characteristics for specialised amateur-band operation, is of outstanding quality, and is rapidly making a name for itself. It also has the advantage of being reasonably priced for its class.

narrow-null-broad conditions; in the kit, the price is £7 12s. 6d. The "Apache" transmitter and DX-40U/DX-100U kits are already familiar, as are the "Mohican" receiver and auxiliary items such as the VFO, VF-1U, and the GDO, model GD-1U, or XGD-1U in the transistorised version. Heathkit also offer the "Mohawk," which is a high-performance amateur-band receiver, 10-160 metres, costing £178, and the HR-10, a basic amateur receiver for 10-80 metres, with IF at 1681 kc employing a crystal filter, having sensitivity of 1  $\mu$ V for 10 dB signal-to-noise, and image rejection down to 40 dB; the HR-10 costs £48 in kit form. (*Daystrom Limited, Gloucester, England*).

Those looking for cabinets and chassis work generally will know that they can always get a first-class job from **Philpotts**—whether it be in a stock size, or for an individual one-off requirement. They are now doing a suitable cabinet for the G3BDQ Receiver, described in the June—July issues of *SHORT WAVE MAGAZINE*. (*E. J. Philpotts Metalworks, Ltd., Chapman Street, Loughborough, Leicestershire*).

Of considerable interest to constructors and experimenters is the range of component items now available from **Electroniques**, already well-known for their "Stabcoils," the coil with the built-in adjustable capacity trimmer, core and temperature compensation; the range has been considerably

extended, and includes RF chokes, filter coils and ferrite cores — indeed, anything and everything involving windings for radio purposes. Also new is the range of complete detector units, consisting of an IF transformer, audio diode and AGC diode, with decoupling resistors and capacities, all assembled, wired, tested and enclosed in the IF can. Another introduction to the Electroniques range is a very handsome and well-made slow-motion drive assembly, with various alternative blank scales for calibration to individual requirements. Together with their high-Q IF transformers for the frequency range 50 kc to 2.2 mc, and the "Trolex" low-loss switches and tuning condensers, these items put Electroniques right into the quality-market for high grade components and RF assemblies. (*Electroniques, Ltd., Bridge Road, Felixstowe, Suffolk*).

At this year's Exhibition, **K.W. Electronics** consolidate their position in the world amateur market with the Mk. III version of the already well-known KW Viceroy SSB Transmitter and the KW-77 Receiver, the latter being of advanced design and of particular interest to the discerning amateur who wants high performance at reasonable cost. As well as being manufacturers of a wide range of specialised amateur-band equipment, K.W. Electronics also act as agents for American firms manufacturing for the amateur market including, in particular, Collins, Hammarlund and Drake. The products of Mosley, Geloso, Hy-Gain and Dow-Key are also handled,

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*"Short Wave Magazine" is independent and unsubsidised and has a world-wide circulation among Radio Amateurs*

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as well as such items as the CDR Rotator—and a mechanical filter of Japanese origin. (*K.W. Electronics, Ltd., Vanguard Works, 1 Heath Street, Dartford, Kent*).

In addition to a very successful range of commercial TV aerial arrays and special VHF aerial installations, the firm of **J-Beams, Ltd.** have adapted several of their slot-fed designs for the two-metre and 70-centimetre amateur bands. These are high-gain arrays, designed on a unit system, and manufactured commercially; they are offered to amateurs at very attractive prices. Recent additions to the range are a halo for two-metre mobile operation, a 4-element Yagi, and a crossed Yagi for horizontal, vertical or circular polarisation. (*J-Beams, Ltd., Westonia, Weston Favell, Northampton*).

It is some years now since the firm of **Withers** appeared in the amateur market, specialising in the VHF field. In addition to their well-established TW-2 Transmitter, Nuvistor Converter, Nuvistor Pre-Amplifier and Halo aerial, all for the two-metre band, and power supply units, they now have the "Twomobile" and "Topmobile" all-transistor communications receivers. New products also include a medium-power table-top transmitter for two metres, complete with modulator; a driver unit for the 144/430 mc bands; and a 10-watt modulator as a separate item. All this equipment is well designed and constructed, and is offered at very attractive prices. (*T. Withers, Electronics, 15B Gilbert Street, Enfield, Middlesex*).

#### ANOTHER PIONEER PASSES ON

The name of Simeon Aisenstein will hardly be known outside the esoteric circle of senior physicists and commercial leaders in the world of radio communication—yet he was one of the great pioneers of wireless telegraphy, and one of the world's foremost designers of radio valves. He was a Russian, born in Kiev in 1884, and started taking an intense practical interest in wireless in 1900, at the ripe age of 16. He started his own experimental laboratory at Kiev in 1905, and attracted the attention of the Russian military authorities, who gave him considerable assistance. During this period, Aisenstein became associated with Isaac Shoenberg and Vladimir Zworykin, famous names of today in TV and electronics. In 1908, Aisenstein met Marconi, in England, and by the time the 1914 War came he was responsible for all Russian radio stations and for the maintenance of communication with the Allies. By 1916, he had established a method of wireless communication with submerged submarines, adopted by the British Admiralty. He was imprisoned by the



The Eddystone 960, seen on the stand of Webbs Radio at the Seymour Hall Exhibition this year, is a very interesting design in that it is all-transistor, tuning 500 kc to 30 mc in six ranges, and has a full communications specification. The power supply is a 12-volt battery.

Bolsheviks in 1917, but got away to England in 1921, and was given charge of the European interests of the Marconi Company, first in Poland and then in Czechoslovakia, until 1939, when Czechoslovakia was annexed by Hitler. He was employed on radio equipment design at Marconi's Chelmsford works up to 1941, when he took over the direction of the valve laboratories, later to become the English Electric Valve Company, with Simeon Aisenstein as general manager. He retired in 1955, and died on September 3, 1962, full of years and honour, with a long record of practical achievement in the development of radio communication.



A driving competition, involving /M operation and motoring, was laid on for the Weston Rally on September 22, the winner being G3JFH/M (left) of Cheltenham. The cup was presented by G5DV (right), with G5UG (centre) looking on.

*A G3GMN print*

## MODIFYING THE G3BST RTTY CONVERTER

### IMPROVEMENTS FOR BETTER PERFORMANCE

J. A. McELVENNEY (G3LLV)

*The articles by G3BST on an RTTY Converter and a Diversity Unit for better printing under poor conditions first appeared in the March-April, 1960, and the July-August, 1961, issues of SHORT WAVE MAGAZINE, respectively. These circuits, involving some original ideas, performed very well and have been widely copied and quoted. As more experience was gained with them various modifications and improvements have suggested themselves. This article discusses changes in the limiter and discriminator stages of the G3BST design.—Editor.*

**I**n the light of the experience gained over several months using the G3BST RTTY converter and diversity unit, the writer modified the circuit slightly. Since a general improvement in the performance was noted, it was felt that the modifications might be of interest to anyone already using, or thinking of building, this unit.

#### Limiter Stage

The limiter used was the one due to G3NPF (p.410, October, 1961, SHORT WAVE MAGAZINE). Though this circuit worked well it required more audio input than was readily available. To improve this the component values in the first half of the limiter were altered to those in Fig. 1 here. The resulting higher gain and short grid base give a better limiting action. In point of fact only about 250 mV is required to initiate it, enabling the input to be fed from almost any convenient audio take-off point. A higher input than this should be used to take care of fading.

#### Tone Amplifiers

Originally, the amplifiers were designed to operate on the approximate frequencies of 700 and 1550 c/s. Although the reasons for choosing these frequencies were sound, the writer felt that they limited the scope and performance of the converter for several reasons. First, it cannot be used on the VHF bands where the AFSK frequencies of 2125 and 2975 c/s are standard; secondly, most ancillary units, such as band-pass filters, are normally designed for these channels; and finally, since one channel is on a proportionately much lower frequency than the other, there is a large unbalance between the outputs at the discriminator. This is due to a difference in the gains

of the amplifiers and in the DC recovery from the discriminator.

With these points in mind the "mark" amplifier, V2, was made tunable and identical to the "space" amplifier, V3—see p.12, March, 1960, SHORT WAVE MAGAZINE. They were then tuned to 2125 and 2975 c/s respectively. If there is no room for a further set of potentiometers then "skeleton" ones, as used on printed circuits, can be wired directly in place of the fixed resistors.

#### Discriminator

If an oscilloscope is connected to the top of R39 (Fig. 2 p.470) and S1 placed in the "mark" only position, it will be seen that the output from the discriminator falls to half that of the normal "mark" and "space" position. This is due to the diode in operation biasing the other one into conduction and therefore shunting the load to earth via R38 and S1. Open circuiting the input to the diodes (V5, V6, Fig. 2), by rearranging the switching as in Fig. 2, avoids this and thus removes the necessity for VR1, the diversity input control, being set for half-value inputs. As a result, the susceptibility of the unit to noise pulses is reduced.

In the writer's set-up at G3LLV the method of obtaining local record was found to be slightly unsatisfactory since any small signals entering the front of the converter during transmission caused misprinting. This was obviated by putting in the relay RL/B which isolates the diversity input from the rest of the converter on "transmit." S3 was included to make local record optional at any given moment.

#### Adjustments

The tone amplifier input control R4 in Fig. 1 should be adjusted for maximum output from the discriminator consistent with a sharp peak from the amplifiers. This is very important because limiting occurs very easily in this circuit if the control is advanced too far, resulting in almost total loss of response from the amplifiers.

With S1 in the central position VR1 (Fig. 2) is backed off until printing is faulty and then advanced

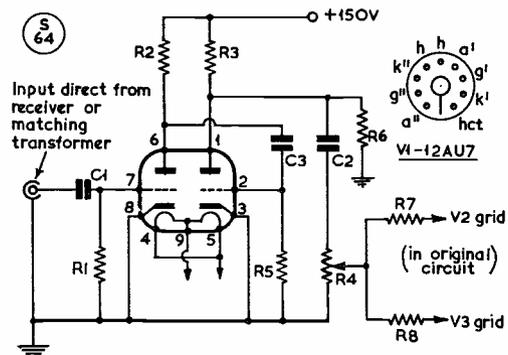


Fig. 1. The limiter stage, showing alterations to the first half of the circuit, and changes on the grid side of the tone amplifiers, V2, V3. The text and the circuitry here should be read with the original articles, by G3BST.

slightly till printing is just normal. Output from the discriminator at this point should be approximately 8 volts peak-to-peak. All other adjustments can be found in the original articles—March, April, 1960, SHORT WAVE MAGAZINE.

To anyone wishing to keep to the original arrangements it should be pointed out that the circuit on p.12, March, 1960, contained two slight errors: The grid sides of V2 and V3 in the converter should be connected as in Fig. 1 here, and the correct values of C11, C11a and C12 should be .01  $\mu$ F, .02  $\mu$ F and .01  $\mu$ F respectively.

Finally, in the writer's version germanium diodes were used instead of the EA50's to simplify the layout slightly. Subsequent tests showed that this was no disadvantage so long as the diodes have a good front-to-back ratio.

Over the months that this unit has been in use it has proved to be a very consistent performer indeed and can be thoroughly recommended to anyone just getting under way on RTTY.

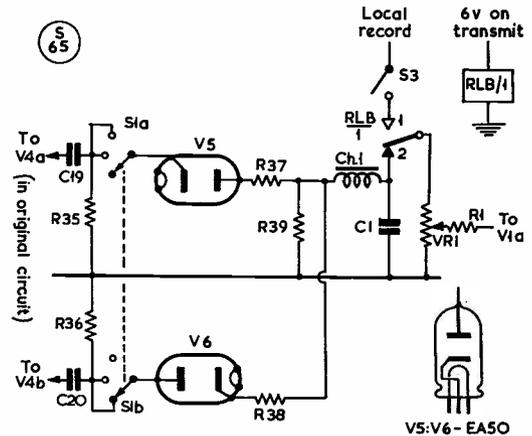


Fig. 2. The discriminator modifications, as incorporated by G3LLV. The changes involve the switch S1, and the addition of a relay. The original component numbering (p.12, March 1960 issue "Short Wave Magazine") has been retained to avoid confusion.

### HEAVY LOSS ON TV/Rx PRODUCTION

In his report to shareholders of the Pye-Cole group, now known as British Electronic Industries, Mr. C. O. Stanley had to report a loss for the current year of £155,000 against a profit for the previous year of nearly £500,000! This alarming result is attributed to the sale of TV receivers sticking to such an extent that the deficit on the E. K. Cole account rose to more than £750,000. The report shows that without the benefit of what is called the "non-domestic side," the losses would have been heavier still. As large stocks are held of the domestic items, it can be seen that it is on its other electronics manufacturing activity and interests that the Group now depends.

### CASE OF PIRACY

The owner of G3OAD (Smethwick, Staffs.) is not now active on the bands 10-160 metres and anyone working a station signing G3OAD on these bands is in contact with a pirate.

### COUNTIES OF THE UNITED STATES

In this country, the working of counties on the various bands is of great interest to many AT station operators. But to work the counties of the U.S.A. would surely be a lifetime's task, even if it were possible of fulfilment—there are 3,071 U.S. counties, and though many of them are larger than in the U.K., it is doubtful if some have any active amateurs at all.

### USEFUL COMPONENT ITEM

In the construction of gear, it is very often necessary to find an independent mounting for a tuning condenser, variable resistance or some similar component—in other words, a bracket. Furthermore, this bracket should be small, with holes for fixing screws and a slot in the upright portion, wide enough to accommodate standard shaft sizes, and of sufficient length to allow variation in height above chassis level. Just such an item is now available, with a 1½-in. foot and a slot in the upright 3/8-in. wide by 1-3/8-ins. long. Its price is only 1s. 6d., obtainable from: Home Radio (Mitcham), Ltd., 187 London Road, Mitcham, Surrey. (Trade terms for quantities.)

### NO RADIO SHOW, 1963

This year's Earls Court song-and-dance and electronic-music jamboree, called the National Radio Show, is not going to be repeated in 1963. Instead, a trade show is being planned, open to valve and component manufacturers as well as set makers. Any step or decision of this sort that eliminates the "celebrity-dais" and the wearisome shop-window competition between the BBC and ITV will be accounted a Good Thing by those who have to try to do business at this Exhibition—which should be completely reorientated to cover the whole field of communication by radio. A number of prominent manufacturers stood down from this year's Earls Court Show.

Use the Readers' Small Advertisement section of "Short Wave Magazine" for anything radio you may want to buy, sell or exchange

# DX COMMENTARY

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

A STATION was recently heard announcing that "All Bands are Go"—and, much as we dislike the idiom out of its context, we have to agree that he was right. All bands definitely *went* at the time, and they continue to go very well. Despite the rather drear outlook of the sunspot-counters, we have five bands out of our six functioning extremely well. Fifteen metres has been superb for at least one-third of the period under review, with DX from all parts likely to show up at almost any time of day. Twenty goes on just as usual—exasperating or exhilarating, according to your outlook. Forty and Eighty are really waking up, and all the Top Band followers marvel at the early Trans-Atlantic DX.

A few hardened old pessimists think it's all too good to last, but the rest of us make hay while the sun shines (spottily or otherwise) and enjoy the variety of DX that is still available.

There is no doubt that both transmission and reception have increased in efficiency since the last sunspot minimum, and this will to some extent mitigate the falling-off in propagation efficiency. Receivers, in particular, seem to have improved enormously . . . and yet the veterans are still winking out anything that the new jobs can find.

Aerial know-how is possibly the most important factor of all, and the champions of the "piece of wet string" are undoubtedly finding the going pretty rough. Beams and well-designed long wires are showing their worth more and more; and, of course, SSB as a mode of transmission



DL2VR

## CALLS HEARD, WORKED and QSL'd

has made phone contacts possible where they would, at least, have been very difficult on AM.

There is a very large post-bag this month, and we are glad to see quite a number of new reporters joining in. Welcome to them all, and we hope that the brevity of some of the comments won't deter them from writing regularly. Some subjects have to be condensed pretty drastically, which is a good reason for cutting this preamble and getting on with the news.

### Items from Everywhere

Various birds of passage have come and gone, notably Gus (W4BPD) who was very busy from 9U5BH (Rwanda) and 9U5ZZ (Burundi), dealing out QSO's with his usual efficiency. He should, by now, have appeared and disappeared again as ZD9AM (Gough Is.) and might show up from Bouvet Is. at almost any time. The

future? Well, we hear tell of VQ1, 5R8, FB8, FR7, VQ8—enough to keep you going for another month, anyway.

Timor—the one that used to be CR10 and has now turned into CR8 as that there's no longer any Goa—occupies lots of space in these columns but gives out precious few QSO's. We now hear of both CR8AC and CR8AS being worked; the former sounds genuine enough, yet the VK's say "Never heard of him."

VK9LA (Cocos Keeling) is said to be active every day from 1300 GMT, with a dipole and 40 watts . . . K5KOR/KS6 promises an expedition into ZM6 during November . . . KC6BK has been very active from the Eastern Carolines, especially during the Oceania contest. . . ZK2AB also made a welcome appearance, but was not worked or reported much from Europe.

Six operators of ET2US

received separate licences in early October. ET2USN has been heard—we don't know the other calls as yet . . . HCØNE is not a Maritime Mobile or a DX-expedition. He's just a plain HC, but very interesting since he operates at week-ends from 19,000 ft. up on Mt. Cotopaxi. (Possibly the highest radio aerial in the world?)

The Marianas are in some demand since it has been decreed that they count separately from Guam Island. Several of us who were on the air in 1946-47 remember wonderful QSO's with Tinian and Saipan on 28 mc; stations are now beginning to show up from those islands (KC6BB/KG6, KG6SH and KG6SI are all on Saipan).

9G1DP promises more operation from XT2Z (Upper Volta) around Christmas time . . . VKØVK expects to operate from Heard Island for roughly a month, starting mid-January. . . The VS9K epic (both Kamaran and Kuria Muria) seems to have been postponed, and one or the other may now take place in late November or early December.

There is a rumour around that the new prefix for Uganda is 5H5, but no one reports hearing any as yet . . . it's enough to keep them all off CW for the rest of their lives!

#### DX-Quotes from Readers

From G2KO: VP8GU, on Adelaide Is. off Graham Land, is Ted, ex-G3LHG. He QSP'd to the effect that he is active on 3.5, 7, 14 and 21 mc and looking especially for G contacts.

From G2DC: Danny, ZK1BY, was due to show up from the *Manihiki Is.* around October 14 . . . after this he will be off to Pago-Pago (KS6) and then the new Republic of Samoa. *Marcus Is.:* KA2JL is held up and sees no hope in the immediate future. *Sikkim:* AC4AX has been moved to AC3, but if he is more active there than he was in AC4 it won't be too exciting. *PK5PL:* This gent., requesting QSL's via W2CTN, is almost certainly a phoney. (CTN knows nothing about him.) *Kuria Muria:* If this

VS9 expedition does come off (November or December, as stated) it will be worth while, as the islands have DXCC approval.

From G3GGS: W4BPD's movements, as quoted, confirmed by W2CTN . . . VP8FX is at Base F, Argentine Is.; VP8GB and 8GV both Base E, Stonington Is.; VP8GQ says G3PMO is in Port Stanley (Falklands) and awaiting his gear; he will be on 14 mc CW.

From 5A5TY: Going QRT in mid-November and moving to Scotland—GM call not yet allocated, but hopes to be active on Top Band and to tour the rare counties. (Tx will be a frequency-meter which delivers 5 watts!)

From ZB1BX/G3KXF: Active on all bands from 3.5 mc down, plagued by Central Europeans to whom ZB1 is still rare DX! ZB1NZE and ZB1JF are QRT; ZB1VJ due to come on shortly.

From VS9APH/VS9KPH: Returning to the U.K. and will be on as GW3IEQ (QTHR); any further requests for the VS9 QSL's can be made to him there.

#### Beamless Ones

G3LPS (Blackburn) adds his congratulations to the many offered to GW3AHN, who worked 300 countries with 25 watts (p.416, October). And he asks "What is the world's top score made by an amateur without a beam? Most of the Top Men use beams, naturally, but there must be many like myself who cannot erect one" Any offers?

#### Contests

The Phone section of the CQ Worldwide DX Contest is all over, but don't forget the CW week-end, which is November 24-25. Full rules were given last month—p.416. The VK/ZL (now known as the "Oceania Contest") was held during October and brought forth a lot of activity under rather mediocre conditions—still, it was nice to hear all those VK's and ZL's again. Where do they go when there's no contest on?

Others coming up are the OK DX Contest (December 9); and, of course, the ARRL DX Contest (Phone, March 9-10, CW, March 23-24). The latter clashes with a

Pakistan Day DX Contest on March 23.

#### More DX Shorts

ZC5FF is said to be on 7005 kc around 1400 most days—if you can find him through the general mush from Europe . . . ZC5BU is on 14 mc, mostly AM but occasionally CW . . . VK2QL promises lots of activity on 3.5 and Top Band CW. Although Australians are permitted to use 1800-1860 kc under their new arrangement, VK2QL says they have Loran troubles and will

#### TOP BAND COUNTRIES LADDER

Station	Confirmed	Worked
<i>CW and Phone</i>		
GM3OM	98	98
G2NJ	98	98
GM3COV	98	98
G3LWQ	92	93
G3MBW	91	92
G3OIT	90	93
G2CZU	90	92
G3NPB	89	90
G3NNO	84	92
G3NVO	84	90
GM3KLA	84	88
G3OHX	84	87
G3OLN	79	89
G3JFO	76	83
G3PLQ	75	86
G3OWR	72	79
G3PDM	72	78
G3OXI	68	73
G3OKJ	62	69
G3PHO	54	81
G3IDG	49	51
G2BP	43	54
G3NAI	42	61
<i>Phone only</i>		
GM3OM	89	90
G3FS	86	86
G2CZU	69	69
G3NNO	60	72
G3PLQ	37	41
G3OIT	33	58
G2NJ	33	35
G3OLN	30	48

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

usually be near 1800 kc.

Willis Islands — the "blitz" threatened for next May is still on, with VE7ZM, W9JF, VK3WL, VK5AB and VE7ALE supplying the motive power. (They've already got the licence and the call VK4WE.) CW and SSB promised.

Outstanding DX heard or worked on 7 mc during the last month has included the following: 9U5ZZ, 5T5AI, KN1WIT/KJ6, KJ6BZ, KX6AJ, 9U5BH, TG9AD, CE1AD and XE1SS. The catch? Not one, so far as we know, has worked into Europe except Gus with his two 9U call-signs.

As mentioned last month, a YV0AA (Aves Is.) expedition should be coming up in January . . . W0MLY, famous for all his African calls, now plans a trip to Navassa Is. (KC4) during December . . . ZS6PC and ZS6BBB will operate /ZS9 from Bechuanaland, for four days beginning November 29; SSB, all bands, 24-hour operation. (Thanks to G3LVC for QSP.)

### Top Band—DX

We seem to be approaching the finest DX season for many years on One-Sixty; and this means that more and more are becoming interested. The activity already is very high, and QRM will soon be a serious factor. The main thing is for European stations to leave the 1800-1825 kc sector clear for the American stations. (Anyone who doesn't is pretty soon chivvied out of it, but it all causes unnecessary QRM.)

The Sunday mornings designated for "special" tests this year will be *December 2, 16; January 6, 20; February 3, 17*. On these mornings U.K. and European stations should obey the rule of *listening* for the first, third and fifth five-minute periods of every half-hour, transmitting only in the second, fourth and sixth periods. Other Sunday mornings are liable to be just as lively, but a free-for-all will then be the rule.

W1BB will be on every Sunday morning, 0500-0730, between 1803 and 1807 kc, calling and listening for alternate five-minute periods—November to March. Stew con-



G3NRI is one of the Yorkshire stations, and runs a home-built Tx using a Gelo VFO driving a 6146 PA to about 45 watts, the receiver being an HRO. For the occasional phone QSO, cathode modulation is used, and the station equipment includes a dummy-load and SWR indicator incorporated in the ATU, also a 100 kc CC oscillator for calibration. Activity is mainly CW on the 15-20-40 metre bands.

firms that the first crossing was on September 16 (W3GQF/G6BQ), at least a month earlier than usual. On September 29 it was made by W1BB/G6BQ and also by K3MBF.

*Flash!* The VK's, now they are allowed Top Band, have lost no time in getting cracking. The first recorded contact was on September 20 (K3MBF/VK3HG), followed very quickly by W1EFN/VK3AKR. On the 21st, W1EFN, W2FYT and K3MBF all worked VK3HG. Thereafter the W/VK contacts came thick and fast. Known to be active are VK2AHQ, 3AKR, 4RZ, 2BX, ZL3OX and 3RB.

VP8GQ raised several W's on September 22, first being W8GDQ. Other rare (for Top Band) DX expected on includes HI, EP, PY, OA, CO, YN, XE, VP3, HH and ZS.

W2EQS confirms that HI8XAG will be on 1825 kc with 30 watts and a half-wave. W2EQS himself worked VK3AKR on September 27 and has heard him many times since. And on September 30 he

heard *several* G's, but mostly too weak to identify for certain. However, he did spot G3OQT, 3ERN, 3PU, 6BQ and GW8PG—and worked them.

G3GGS (Chorley) says that VQ2W will be on 160 metres, 0300 every Sunday. No contacts as yet (no locals to work!) but he has a big aerial and hopes for the best. . . Also some ZB1 operation promised, but no mention of call-signs.

And a *Late Flash*: September 30 seems to have been a red-hot morning. G3OQT heard nine W's and worked four (W2EQS, 2IU, 3GQF and K2PNF). . . On September 29, VP8GQ was copying G6BQ, RST 469 on peaks; on October 6, G6BQ heard VP8GQ, RST 339 . . . G3CHN reports that VP8GQ will use 1801 kc, with 1825 as a second frequency . . . also that W2FYT says all the following will definitely be on the band: 5B4PB, 5A3CJ, HH2V, HC1DC, YN1AA, VP3AD and HI8XAG. Finally, G3CHN worked ZB2AF/MM/CT1—anyone else find this one on 160

metres?

### Top Band—EDX and GDY

With all the real DX news that undoubtedly is going to pour in this winter, we shall have to restrict other comments on Top Band to exceptional daylight DX and new European exploits. County-chasing will continue to be recognised in the Ladders, and of course the popular WABC will be as much sought after as ever. Incidentally, who will be the first G3R - - to claim it? And, speaking of the G3R's, those who have queried why they can't join the G3O - -/G3P - - Table are asked to note that those boys are having their own marathon for 1962, which started in January and will finish (strangely enough) in December. Next year we will start straight away from January 1 with a G3P - -/G3R - - Marathon Table, and will treat the G3O - - stations as old timers who are no longer eligible! (The Ladder will appear in January, but scores will count from last June—so G3R's are not wasting their time now.)

Talking of daylight DX, it is hoped that the *MDT* on October 21 will produce some interesting logs, and remind you that they are wanted in good time for writing-up next month. If they could be sent before the deadline, which is not until November 16, it would help. And, still on the same subject, GM3HBY (Glasgow) writes to say that he worked GI3RCB (Belfast) on phone at 1150 on September 23 — just over 100 miles. GM3HBY's slow Morse at 1100 clock time on Sundays is copied by others in GI-land—and reports would be welcomed from any other part of the U.K.

G3OKJ (Pinner) has acquired his WABC on CW and is now starting again on phone. He missed the first *MDT* but promises activity in the second. Incidentally he works only two bands—Top Band and Four Metres!

G3PDH (Cleethorpes) is home from sea for a few months. He tried Top Band when in the Persian Gulf, but static made it quite impossible. On returning home, he heard W3GQF calling G3BRE on September 29.

G8ON (Workshop) says his fifteen-year-old junior op. has built a Tx which runs 35 milliwatts to a pair of OC201's, and has already worked four counties (three on phone). There are some OC24's to follow on, and when the Ttx gear is finalised, the goal is WABC with transistors—no less.

G3PEO (Cheltenham) reports great success with the W6SAI aerial system (a kind of folded unipole) and promises more detail later. The score is 73 counties, 9 countries and 50 OK's! G3OWR, G3PLQ and others mention GM3KHH (Banff) as a welcome addition. G3FS is now mobile, and from Devon he worked two GI's at 280 miles, *on phone, at 1300 GMT*—good going with any aerial, let alone a whip! G3RBP (Abingdon) is well away, with 50 counties and 7 countries already.

Those who may have thought they were on to a good thing by working a "UA3NB" on the evening of 12 October were in QSO with a type who ought more properly to have signed "UA3NBG"—he is unlikely to have been nearer the (imaginary) QTH he gave than the steppes of Yorkshire! He was too strong and too plausible to be true, and can be written off as a phoney. G3KOG (Ferriby, E. Yorks.) has given us the details, and G3PLQ also comments in similar vein.

### The Ex-G Radio Club

Details to hand regarding the current Net arrangements, which are as follows: 3810 kc, all modes, W3HQO in control—*Wednesday 0030; 14010 kc, CW, K6DCE in control (Pacific net)—Saturday 0300; 14010 kc, CW, K6DCE in control (Worldwide)—Saturday 2100; and 14345 kc, all modes, WA6MAZ, K5QWZ and W3HQO in control—Sunday 1900*. Times are GMT. Commonwealth and U.K. stations welcomed on any net frequency, especially CW. GC and GD stations specially requested! Membership now totals more than 100, in fifteen countries. You cannot join the club unless you were born in the U.K. and are now domiciled abroad, but you are nonetheless welcome in

the nets.

### Eighty Metres

Two categories of DX operators are at work here, the SSB types near 3800 kc working quite different stuff from the CW operators who peer through the cracks at the low end. ZL's, VK's, W's and VE's represent more or less all that's going at present. G2DC has skeds with Gus at 9U5BH, but nothing happened.

Of all our bands, Eighty is undoubtedly in the worst condition as regards QRM. The sidebanders have to dodge those enormous commercial RTTY noises, which produce a greater S-meter deflection than anything else in the entire spectrum; and the CW types have to cope with similar phenomena as well as the ghastly chirpers and clickers which seem to come from some Foreign Power that hasn't discovered yet that the war is over (the 1914-18

FIVE BAND TABLE

Station	Countries Worked	21 mc	14 mc	7 mc	3.5 mc	1.8 mc
G2DC	307	268	286	146	101	12
G3FXB	306	267	276	159	88	9
G3DO	299	222	274	52	58	10
G3FPQ	290	252	262	138	107	23
G3NOF	232	183	182	18	25	2
G2YS	205	129	181	96	75	20
G3LHJ	204	173	134	47	23	11
G3KMQ	194	75	174	64	42	12
G3IGW	184	127	131	99	51	25
G3BHJ	180	165	65	29	11	1
G3NEV	166	118	89	39	50	16
G2BLA	150	97	96	77	39	9
G3JWZ	132	77	107	62	52	9
G3PEU	131	63	119	10	14	4
G3JVJ	128	71	89	68	41	4
GW3CBY	95	31	75	53	35	15
G3IDG	90	62	49	25	17	9
G3PEK	66	17	58	32	22	8
G3NYQ	53	17	32	38	30	11

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

one, we mean).

Take heart, though—when you do work a nice piece of DX through all this stuff, the sense of achievement almost convinces you that it was worth it.

#### Forty Metres

A much better outlook here—just a broadcasting station or two and all the Mittel-European primitives (breadboard rigs of the 1927 era have just been discovered in some parts!) Fortunately a really good stable CW signal will usually push its way through all this porridge . . . we have actually heard instances of W's QRM'ing the Europeans.

G2DC had three DX skeds during the month, and they were all successful: ZK1BY, VS1FJ and 9U5BH; W's, VE's and VO's were also worked; Jack laments the fact that more DX stations don't use the band—are they frightened by the Klottery, or don't they realise how wide open it is?

G3FXB (Southwick) raised 9U5BH, 9U5ZZ, XE1OK and SV0WZ (Crete) as well as the "routine" stuff such as W, VE, PY, KP4, VQ4, JA, VK and HZ1AB. He is experimenting with vertical beams and finds it more interesting than Twenty and Fifteen, where the DX is more or less a routine matter.

G3PIT (Exeter) wrote last month, just too late to catch the deadline. He raised a beautiful assortment of DX, including KV4CI, 5A3CJ, HI8XAG, VP5XG, KG4AM, 4X4's, UF6, UI8, UJ8 (all between 2200 and 0200); also TI2CMF, VK's and ZL's (0520 to 0700).

G3LPS finds the West Indies stations coming in well by 2300, but mostly working W's and not listening further afield, with the exception of VP6RG, who often calls "CQ EU" around 2200. G3LPS himself worked VP8GQ, KC4USB, VP6RG and W2CSQ/MM off Colombia.

G3PVS (Woking) had W4FZ reply to a CQ at 1600, of all times; and he raised 4X4UK at 1900; G3PVS was using 80 watts CW to a dipole.

SSB DX on 7 mc is starting with a vengeance. G3DO informs us that

G3AOO has worked VK every morning for eight weeks (0600-0730) and many ZL's have also been QSO'd. G8PO, 2PU, 3DO and GI3CDF have all been working VK and ZL on 7090 kc, sometimes as late as 0800. G3DO himself lists VK2AAK, 2ALR, 2AVA, 3AC, 3AHO, 3AZM, 3HG, 3XM, 3ZU, 5QR and ZL2AAG. As he says, things are looking up for Forty-Metre SSB.

#### Twenty Metres

Anything can still happen on *Twenty*, from spectacular short-skip to those beautiful days (too few!) when all the locals disappear and every signal on the band is worth investigating.

G3GDC (Plymouth) set out to prove that AM phone is not outclassed yet, and raised VP1MM, VP2AR, VP4PL, VP5MJ, HH's, FM7WS, EP2BU, 9M2CB, 4S7YL, ZS, ZL, VK's, PY's, YV's and, of course, W's and VE's. All this with 150 watts and an X-20 Minibeam . . . as G3GDC says, "AM is not yet in the fallout stage!"

GM3JDR (Caithness) worked CW with HK7BE, MP4BBL, ST2AR, VP8GQ, 8GU and 8GV, VQ2W, 5R8AB, 5T5AI, 9U5BH and 9U5ZZ; and his usual terrific list of SSB contacts includes CE8AG, DU1AP, FG7XT, FS7GS, HI8CLU, HH2PW,

PJ2AA, PJ5MB, VP7's, VP8GQ, VS1JH, VQ1GDW, XW8AT, 9M2CR and the two 9U's. He now has his WAZ (all duly confirmed) on SSB.

G5CP (Chesterfield) is a convert to SSB. He is located on Bole Hill and has put up a Quad, which withstood the recent gales and cheered him thereby. First list includes OA4MP, KR6MA, YV6AP, W5AKM/KG6, VS9 and the like. When the promised KW-77 arrives, Ron expects to be really in business.

G3GGS, on CW, worked FS7GS, FP8BD, KG4AM, 9U5ZZ, VP8FX, 8GQ and 8GU. G3KMQ (Shaftesbury), also on CW, collected ZS3EW, PY1BCR, VQ8AI, 9U5BH and 5ZZ, OA4PZ and UA1KAE/2 (Antarctica). He had a sleepless night during a gale, worrying about the beam, but it's still there.

G2DC is pleased to hear the VK's and ZL's back at breakfast time, with JA, DU, KR6 adding spice. He worked CR8AC for a new one, as well as DU1OR, FS7GS, JA1-0, K4OXP/KG6, VK1-7, VU2AJ, ZK1BY, ZL1-4 and the 9U's. All CW, these.

G3NOF (Yeovil) exchanged SSB with CR7CI, EP2AC, FG7XT, FS7XT, FS7GS, HV1CN, KL7's, OA4CV, VK's, VQ4's, XW8AT, ZS3E and 9U5ZZ. On



Neat station operated by Derek Morris, ZL4OP, 134 Stobo Street, Invercagill, New Zealand. His Tx is all-band with an 813 PA, modulated by a pair of 807's, and aerials are a ground-plane and an 80-metre Zepp. The main Rx is a BC-342, and the stand-by Tx an ARC-5. ZL4OP was licensed in 1957, comes from Lancing in Sussex, is active mainly on 20m. CW, 0300-1000 GMT, and has 62 countries confirmed. He has been out in N.Z. since 1952.

some mornings he has heard all the Pacific areas, and during the afternoons 9M2, KG6, KA and VK have been good.

G2YS (Rickmansworth) stuck to CW and raised MP4QBB, SM5CBC/9Q5, VQ9A, 6O1ND, VP8GQ and VS9ARW. G3LPS (Blackburn) booked in FS7GS and PJ5MB for new ones, also KG4AM, ZS3EW and UA1KAE.

### Fifteen Metres

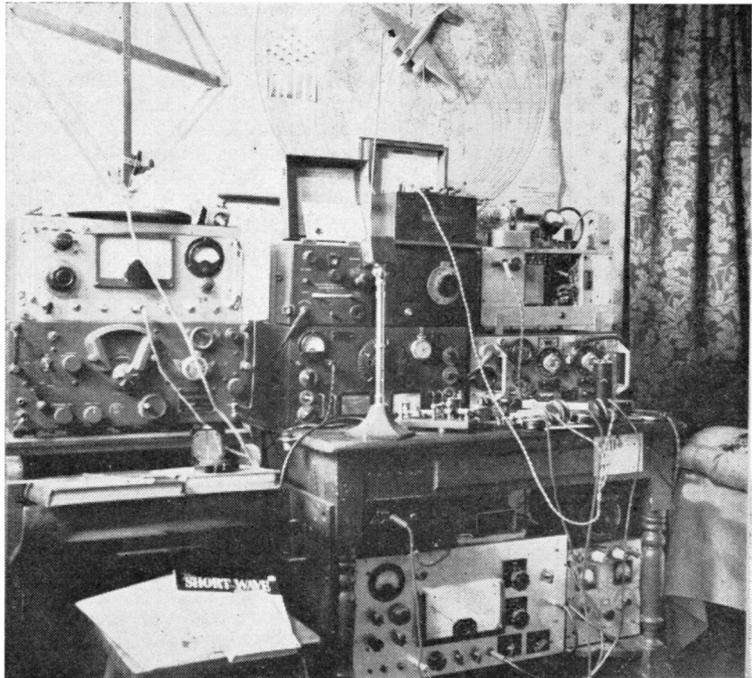
There have been days when Fifteen has been much better than Twenty. One never knows whether the afternoons are going to reveal the band full of W's, or quiet in that direction and lively towards the Far East. Mornings sometimes produce a crop of JA's; and one or two evenings have come up with a surprising display of strong W6-W7 signals. Apart from a few days when the whole thing was obviously a dead loss, it has been a very interesting band.

G2YS had CW contacts with VP5MJ, VP8GQ and 9U5BH; G3NOF worked SSB with VQ4AA and W's; AM with TT8AL, VQ4AQ, ZD6HK, ZE's, 5N2NFS, 9G1AB and 9K2AD. G2DC thought the band "splendid," and raised FS7GS, CE, OA, LU, VS9MB, VU2JA, VP8GQ, 9M2FK, 9U5BH, 9U5ZZ and ZS1-6.

G3NWT (Sandiacre) used AM and accounted for ZS3VP, 5H3IW, 9G1EE, CR6's, ZD6RM and PY7AKW (Fernando do Noronha). One afternoon XW8AL was so strong that he thought it must be a French station on short skip; and Africans were better than they have been for some months.

SWL D. J. Aldridge (Southend) sends a useful report on Fifteen, saying that AM has been exceptionally good from 5N2, 9G1, 6W8, EL and the other African countries; plenty of activity has been noted from South America and from KG4, PJ, KZ5, TG, VP7, VP9 and TI; and other good ones have been VS4RS, VK9EJ, FG7DR and JA's—all heard on a home-built 8-valve Rx with a 15 ft. whip.

G3LPS, just before writing, listened on the band and found it occupied by just two stations—



G2FXA is operated by G. D. Davies, 35 Kensington Road, Stockton-on-Tees, Co. Durham. He started up AA in 1938 as 2FXA and served in R.A.F. Bomber Command during 1940-'45; as soon as he got his gear back and the full call G2FXA, he was on the air, and has been at it ever since. As shown by this photograph, a good variety of gear is available; all bands Top to Two are worked and the D/F loop is also used. The model aircraft in the middle of a copy of our "Amateur Radio Map of the World" is a Mosquito of 8 Group P.F.F.

CP5EZ and 5T5AI; earlier in the day, XE1PJ and VU2BK were keeping it warm. VP8GU, ET2US/2 and CR6DX were also worked—all CW.

### General Chat

G3IDG (Basingstoke) reports "the ultimate in QSL's":—Wrong date, wrong year, wrong time, and RST's reversed. From a G, too. "What a waste of time, and money," he remarks. Allan has been discovering that more entertainment can be had from monitoring the goings-on of others than from transmitting oneself, and says "the overhearing of some choice bit of repartee now and again makes Amateur Radio seem more like a glorified Goon Show than a scientific hobby." He thinks, incidentally, that some of our SWL's acquire the competitive urge too early; thus they spend more time climbing ladders and increasing scores than listening

intelligently and making up their minds what *not* to do when they get on the air themselves.

G3NWT, referring to that Royal "We," says that before he was licensed he used to hear "*We* have done so-and-so," to get a mental image of the Busy Station with the riggers, the maintenance crews, the relief operators, the public relations staff, the QSL design and printing department and so on. He asks "If a member of royalty *does* operate, does he take on dispensation and call himself 'I'?"

The new callsign G3RFS is now the identity of *ex*-SWL N. Bethune (East Barnet), just 16, and active on 1.8, 7 and 14 mc. He has got off to a very good start, with a nice CW/DX list for the HF bands, and is to be congratulated on his success—as a keen and experienced SWL, he knows the form.

GB2SM, the Science Museum

station, made an entry for the World-Wide SSB Contest last March, and the results just to hand show that they came 6th, with G4CP 4th. GB2SM had only had their new SSB gear going for a few days, and were without one of their most experienced operators.

#### Our Heading Photograph (p.471)

DL2VR is the Club station of 1st Signal Regt. in Germany, and is operating SSB, using a K.W. Viceroy, the receivers being an AR88 and an Eddystone S.770. The aerial arrangements include a Mosley 3-element beam, a Quad for 20m., and dipoles for 40 and 80m.

#### Operating Notes

Time was when this Commentary carried a "Hot-under-the-Collar" section every month. Now, apart from the occasional protest in a letter, very few complaints come our way. This either means that people are getting more tolerant, or that the state of the bands is improving. Unfortunately there is no evidence in favour of the latter—Klottery and Liddy seem to be on the increase.

A quick round-up, then, of the general complaints, with a strong recommendation that you should try to do something about it. When you hear or work (or even know personally of) stations going in for these brands of foolishness, *tell them!* Sometimes it's sheer ignorance, in which case a little gentle instruction might help to make our bands cleaner. Where it is deliberate, only "sanctions" will help . . . if no one ever goes back to that man with the T6 chirper, he will have to scratch around and find out what's wrong. (Unfortunately other T6 chirpers often reply to him and exchange T9 reports. And that keeps them both happy.) But something can be done about the following, listed in order of nuisance-value:

*The Blind CQ Merchant:* You have just called a weak DX station; you are straining your ears to find out whether he really has come back to you, when—scree-ee-eech!—someone paralyses you with a "CQ DX" call, right on the frequency with surprising accuracy. This happens on both phone and CW. Sometimes it occurs with such regularity and precision that one thinks it must be deliberate. Half a dozen countries are notorious for this. Call the man, if you can spare the time, and suggest he uses his Rx.

*The Phonetic Fiend:* We've had a slam at these before, but it's no better. If you are copying the man solidly (and you *must* be if you gave him an R5 report), *tell him* that you don't need him to spell out his QTH in full, with phonetics. Suggest that he gives you credit for having a receiver, a pair of ears, and something in between them.

*The Repeater:* Much the same as the foregoing. A little ridicule does no harm. A gentleman who told us (on CW) that his name was Edededed was dealt with by calling him just that for the rest of the QSO . . . finally, after ten minutes, he patiently explained that his name was "Ed." We replied to the effect that he might have said so in the first place—but parted friends after all.

*The Show-Off:* Some phone operators need a spot of deflation. Stupid use of "Queen Roger Mary" and the like, and, in particular, that ghastly, childish, fatuous "Dah-de-dah" business needs a bit of exposure. We heard a frightful display of this (by a G) courteously dealt with by the other G in the QSO, who said "Look, old man, we gave each other R5—let's talk plain English, shall we?"

*General Klottery:* Stations with bad notes, clicks, chirps, over-modulation and any form of bad operating *should be told.* True, they may not believe you or even

understand you; but at least you will have tried to clean things up a little. And their shortcomings *may* be due to sheer ignorance rather than stupidity; they may even be grateful and try to improve their own standards. The main thing is not to take the lazy way out and put up with it. (But—before you embark on any of this band-cleaning business, make sure your own signal is above reproach; otherwise your remonstrations won't carry much weight!)

#### Last Minute News

VK5AB (*see* earlier item on Willis Is.) now has permits for Timor (CR8) and Christmas Is. (ZC3) . . . LA9ZH/Ø is now operating from Bouvet Is. (14180 SSB) . . . ZC5FF should be on both 14 and 7 mc CW by now . . . VP2KJ should have appeared from Anguilla (VPØ).

W1RAN, who came on as FP8BX earlier in the year, says that Europeans, on Top Band, were S7/8 and standing out over the W's as early as 0130. There are hopes that someone else will try FP8-land for Top Band DX during this winter.

E19J reports that Top Band licences can now be had for the asking in Eire (previously it has been a matter of special application). Earlier on, he was called by EP2BK, who was so loud that he was taken for a phoney and not answered!

And so to the usual sign-off. Thanks and acknowledgments to the WGDXC *Bulletins*; W4KVX's *DX Magazine*; W1BB's *160-Metre Bulletins*; the NCDXC's *DX-er*; and all our individual sources of information. Keep the news coming in—we will sort it out! And the next deadline, for the December issue, is **first post on Friday, November 16**, but don't all leave it until the last minute, *please.* Address everything to "DX Commentary," *Short Wave Magazine*, 55 Victoria Street, London, S.W.1. Good Hunting, 73 and—BCNU.

# SWL • • • • •

## THE Q-MULTIPLIER, ITS CIRCUIT AND OPERATION—READERS' NOTES, NEWS AND VIEWS—THE HPX LADDER

OF all the many devices intended to improve the performance of a receiver, without altering the circuit or layout internally in any way, the Q-Multiplier is probably the most simple, and also the most worthwhile. In its elementary form it can be used just to improve selectivity; with a little more circuitry it can be made to give either a "peak" or a "notch"—the latter for removing a heterodyne from the wanted transmission; and it can also be adapted, very easily, to serve as a BFO in cases where there is none in the receiver itself.

All this can be done with an *external* unit, the only connections to the receiver being a short length of coax by which the input of the Q-Multiplier is paralleled with the winding of a 465 kc IF transformer, usually the first in the receiver.

Since even a small unit such as a Q-Multiplier can often be made to present a circuit diagram that appears quite complex and difficult to understand, it has been reduced to absolutely basic form in Fig. 1. Here V1, a triode, performs the function of an oscillator with controlled feedback (by R2, the potentiometer in the cathode line). It is shown in a Colpitts circuit, the coil being connected between grid and anode with an earth tap arranged at the junction of the two condensers C3 and C4; C5 tunes L1 to the desired frequency, in the region of 465 kc. (Although a Q-Multiplier can be arranged for IF's of any frequency, we will consider the 465 kc case throughout.)

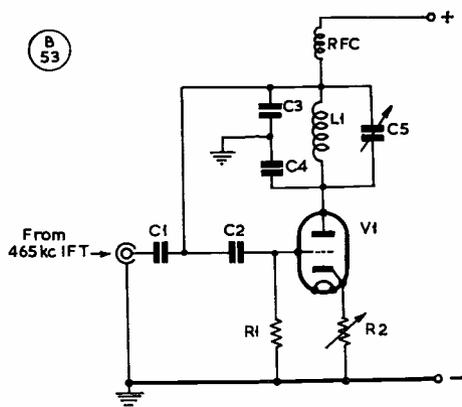


Fig. 1. The Q-Multiplier shown in basic form, for easy understanding of its operation. The oscillatory circuit (L1, C3, C4) is tuned by C5 to peak up the wanted signal. Feedback is controlled by the cathode potentiometer R2.

The grid circuit of V1 is connected through coax across the primary of the first IF transformer in the receiver. Therefore, provided that a really high-Q circuit is used (and with regeneration applied the Q naturally goes very high indeed), this circuit more or less "takes charge" of the receiver IF. In the extreme case, with V1 oscillating, the primary of the first IFT assumes a negative resistance; some backing-off from this condition by means of R2 will leave it in the condition of a very high-Q circuit—and hence the name given to these popular units.

Remember that the circuit you are paralleling with your IF transformer is of extremely high impedance at signal frequency; if its Q is sufficiently high, there will be virtually no attenuation on the wanted signal, but signals on nearby frequencies will, of course, be considerably reduced. On the "goodness" or Q of the tuned circuit will depend the amount of this attenuation.

### The Full Details

The complete circuit arrangement is shown in Fig. 2, where it will be seen that a double-triode has been brought into use so as to make possible the "notch" facility as well as the peak.

V1b is arranged in virtually the same circuit as V1 in the simplified arrangement of Fig. 1. When the switch S1 is at "Peak," V1b is connected directly to the coax socket from which the connection goes to the receiver. When at "Notch," however, V1a is brought into use also, and V1b with its tuned circuit now operates in a series-resonant condition. The setting of the tuning condenser C8 will be virtually the same whether "Peak" or "Notch" is being used, but it will be necessary when "notching" to find the correct setting of the potentiometer R6, which will be *very sharp* and quite difficult to find until you have got the hang of things. More of that, however, when we come to the operating details.

The most important component in the circuit, naturally, is L2, the tuned coil, which, with the capacities shown, will have an inductance of roughly 150  $\mu$ H for 465 kc. There is little point in winding your own, though you may use a 465 kc IF coil with some turns removed if it is of really good low-loss construction. But at least one maker (*Electroniques*) produces a special coil for the purpose, of the ferrite-potted type, and it is not expensive.

All values shown in the list of components assume that the IF is in the 465 kc region. L1 and C2 have a purpose of their own—to tune out the capacitive reactance of the coax connecting the unit with the first IF transformer primary in the receiver, and thus to avoid any necessity for re-tuning the latter. Here, a much higher inductance is needed—usually around 1.5 mH. In fact we have found that a standard 2.5 mH RF choke can be used, if the series condenser is made variable (.001 or .0005  $\mu$ F will be needed). Alternatively, this circuit may be dispensed with altogether if it is no trouble to re-trim the IF transformer to which connection is made.

Many designs of Q-Multipliers will be found to give a value of .01  $\mu$ F for the input condenser or

condensers (in this case C1 and C3). This, apparently, is one of those hang-overs from an original design, the very first Q-Multipliers having used these very large coupling capacities. There seems to be little point in it, and values of .001  $\mu$ F are specified in this case. (There might even be something to be said for making these variable, so as to find experimentally the best degree of coupling between the unit and the receiver.)

The stabilising condensers across the coil L2 (C5 and C6 in Fig. 2) must be of high quality, and silvermica types are essential here. For all the others, ordinary ceramics will do. The tuning condenser C8 must be mounted accessibly on the front panel and should preferably have a slow-motion drive—especially for using it in the "Notch" position.

**Operating the Unit**

When all the components have been assembled and wired up, apply LT and HT to the unit—not more than about 150 volts of HT will ever be necessary—and these voltages may be taken from the receiver, if they are available. Tune in a steady signal on the receiver—if it has a built-in crystal calibrator this will be ideal. Place S1 in the "Peak" position.

Rotate C8 until the signal appears to peak, then advance the potentiometer R6 until oscillation begins. Back it off *just short* of this point and you should find that the tuning of C8 gives a very sharp peak. Now, if you tune in a CW signal, you should find that a similarly sharp peak occurs at one particular audio frequency. On a telephony signal the selectivity may well be excessive, and you will have to back off on R6.

To find the "Notch" position, make S1 accordingly, and revert to your steady signal. Find a position for the tuning condenser, C8, at which the signal apparently becomes weaker; then, leaving C8 alone, rotate R6 until a really pronounced dip in strength is noted. If you are lucky, you will be able to produce a complete null; but if the signal is strong you will not be able to make it disappear completely. However, find the position of R6 which gives the deepest drop in signal strength, and mark it on the scale. You will then have to use this setting whenever you are in the "Notch" position, moving the notch over the frequency band by tuning C8. If you are listening to a telephony transmission with a pronounced heterodyne beat on it from an adjacent station, you should be able to tune the beat out completely.

Reverting to the peaking technique, which is, after all, the primary function of a Q-Multiplier—on a telephony transmission one merely increases the feedback (by R6) until selectivity is obviously improved. This is shown by a general "tightening-up" of the signal, a decrease in noise background, and, eventually, falling-off in intelligibility. With a CW signal there are a few more things to watch. If there is a particular musical pitch at which you prefer to listen to CW, you will have acquired the habit (or you certainly should have done by now!) of peaking everything at that pitch. It is no good having the

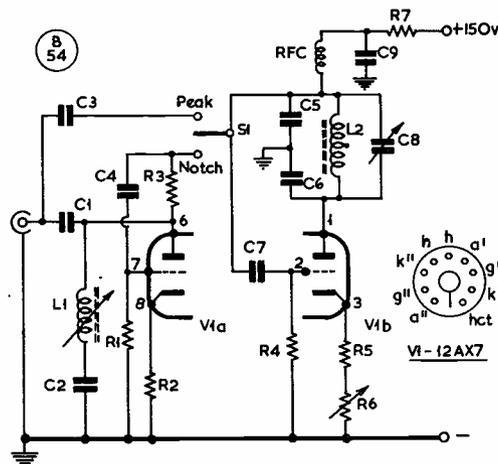


Fig. 2. The full circuit arrangement, for giving both "peak" and "notch"—see text. A double-triode is used, VIb for peaking and VIa for notching. Under certain conditions, the outer of the input coax socket should be earthed to the chassis of the unit; or it may be found preferable to leave the earthing to the Rx end.

**Table of Values**

Fig. 2. Circuit of the Q-Multiplier

C1, C2,	R2 = 1,500 ohm, 1/2-watt
C3, C7,	R3 = 150,000 ohm, 1/2-
C9 = .001 $\mu$ F, ceramic	watt
C4 = .005 $\mu$ F, ceramic	R5 = 4,700 ohm, 1/2-watt
C5 = .003 $\mu$ F, silver mica	R6 = 5,000 ohm, variable
C6 = .001 $\mu$ F, silver mica	R7 = 47,000ohm, 1/2-watt
C8 = 100 $\mu$ F, variable	L1, L2 = see text
R1, R4 = 2 megohm, 1/2-watt	RFC = 2.5 mH RF choke
	S1 = SPDT
	V1 = 12AX7

BFO set to give a low-frequency beat and then listening to CW at a higher frequency. Likewise some headphones (used by many CW men) have a resonant frequency of their own, which should be adopted as the correct CW note—otherwise you are throwing away a piece of built-in selectivity.

The point we are coming to is that you will be able to tune the Q-Multiplier until your CW signal, already peaked up, peaks still more—to the exclusion of other signals at different pitches. Set R6 to give the maximum sharpness short of actual ringing or oscillation, and then adjust C8 until the signal really peaks.

**Connection to Receiver**

The best place to connect the Q-Multiplier input is to the first IF transformer in the receiver, using the primary winding. Do *not* make a connection to the end of the winding which goes to HT; connect the coax inner to the "live" or anode end, and the outer to the receiver chassis. If possible, fix a coax socket to a convenient point on the receiver and wire it accordingly. At the other end, the coax inner is isolated from the unit by C1 and C3; the coax outer may be connected to the earth line of the Q-Multiplier

or left floating—trial will show which is preferable.

As you become acquainted with the unit, so you will find the best way of handling it, either when peaking or notching. Unless your receiver is already extremely good, you will certainly find a Q-Multiplier a worthwhile improvement.

### READERS' FORUM

The very large post-bag this month covers the usual variety of subjects; mostly DX heard, DX missed, receivers bought or built, receivers sold or scrapped. But through it all seems to run one persistent theme: "How can I improve my aerial and its matching to the receiver?" As this month's technical section is already filled (by details of the Q-Multiplier) we must leave this matter of aerials over until the next instalment, but it will most certainly be dealt with then, in the fullest possible manner.

Next, a lot of confusion among new readers about the meaning of the HPX Ladder. On the one hand, a few who don't yet know that for this purpose the "prefix" consists of the international prefix *plus* the figure in the call-sign. Thus a G2, G3, G4 and so on all count separately; A K2, W2, WA2, WB2 or WV2 are all different. In short, everything counts except the actual *letters* in the call-sign, and where you have a suffix it counts as if it were a prefix, so that a W3.../VO2 counts as a VO2. Don't go to the other extreme, as one reader did, and put in a list claiming a certain number of prefixes but actually containing precisely that number of *call-signs*!

And so to our readers' news . . .

### Try Forty

*R. A. McEwen (Stirling)* suggests that SWL's should try 40 metres in the early mornings, where ZL, VK, OA and other DX can often be heard on SSB . . . *R. K. Western (Torquay)*, listening late on September 29, heard 9U5BH, 5T5AI, 5B4, PY's and USA on that band . . . Other readers mention a few worthwhile pieces of DX on 7 mc; but all have this in common—if you want real DX you either have to stay up late or get up early. Perhaps that's why Forty is not terribly popular.

*K. A. Randall (Fareham)* has much improved SSB reception on his R.107, by working on the lines suggested on p.17 of the March 1961 issue of SHORT WAVE MAGAZINE. He has changed the BFO to an EF39, added an S-meter, and uses an RF-24 unit with it on Fifteen and Ten. "Coming up" are a Q-Multiplier and a crystal-controlled front end.

*R. K. Towers (Nottingham)*, who went on that marathon lorry trip round Europe, tells us that he visited F, DL, OE, YU, SV, I, HV and HB, and in the course of the journey picked up some valves which will do nicely for VHF PA's when his ticket is forthcoming; he has built a two-metre converter in the form of a cascode RF stage (6CW4's), triode mixer, cathode follower and a 6J6 oscillator.

*R. R. Loe (Colchester)* is building himself a receiver which rather resembles the Eddystone 940, but uses the CR-100 coil-pack and tuning drive; he has logged some really good SSB on Twenty and AM on Fifteen with it. R.A.E. is already in the bag,

## HPX LADDER

(Starting January 1, 1960)

Qualifying Score—150

SWL	PREFIXES	SWL	PREFIXES
PHONE ONLY		PHONE ONLY	
H. G. Shaw (Heswall)	637	G. Lawrence	
R. J. C. Coats (Cowie)	556	(Leamington Spa)	255
A. W. Nielson (Glasgow)	551	M. Saunders (Malvern)	254
C. N. Rafarel (Poole)	447	W. S. Teanby (Scunthorpe)	252
D. G. Edwards (Birkenhead)	411	C. Miller (Tayport)	251
B. R. Edwards (Hereford)	409	B. Pack (Frome)	247
M. T. Bland (Oakham)	396	G. Steedman (Huddersfield)	247
R. R. Loe (Colchester)	368	L. F. Meikle (Hexham)	246
D. A. Whitaker		J. F. Hobson (Emsworth)	237
(Waddington)	366	D. S. Radley (London, N.10)	219
R. K. Western (Torquay)	364	K. A. Randall (Fareham)	205
R. K. Towers (Nottingham)	359	D. Long (Barnehurst)	197
B. Curnow (Plymouth)	348	R. Mansell (Eastleigh)	197
D. Gray (Easington)	346	M. R. Warburton (Sale)	195
D. Bell (Nottingham)	343	D. J. Aldridge (Southend)	180
L. Birch (London, E.6)	333	B. J. Tarry (Warrington)	180
P. Whipps (Enfield)	325	D. Hayes (London, N.3)	172
P. J. Lennard (Wartling)	321	D. A. Williams	
M. Healey (Horsham)	314	(Budleigh Salterton)	166
M. Warrington (Burnley)	295	R. V. Coupé (London, W.3)	151
N. H. Maer			
(Sutton Coldfield)	289		
M. Pennington (Southport)	284	R. K. Western (Torquay)	471
P. Stevens (Donnington)	284	B. R. Edwards (Hereford)	465
S. Foster (Lincoln)	282	P. J. Lennard (Wartling)	370
A. T. James (Exeter)	281	P. Whipps (Enfield)	259
W. J. Atherfold (Southwick)	266	P. L. Stevens (Donnington)	232
D. Douglas (Edinburgh)	262	R. A. McEwen (Stirling)	215
		K. M. Duggan (York)	162

(NOTE: Listings include only recent claims. Failure to report for two consecutive issues of "SWL" entails removal from the Table. Next list, January, 1963 issue, deadline November 30).

Morse practice under way—so we shall lose him soon as an SWL if all goes well. (He queries a WB2 station . . . these calls are now being issued, all the WA2 sequence having run out. Another for HPX!)

*R. V. Coupé (London, W.3)* has acquired a BC-794B (Super-Pro) and finds it very good (for its age) on HF-band SSB. He also logged some ZL's on Eighty SSB (0600-0610), which takes a good receiver and much patient operating . . . *R. J. C. Coats (Cowie)* has just got a Nuvistor stage going, on the lines suggested in this feature, and likes the bandspread it gives on Twenty . . . *S. Foster (Lincoln)* notes evening conditions falling off, but still gets the VK's well in the mornings.

*C. H. Miller (Tayport)* is another who concentrates on Forty, and finds the DX good in the early mornings. As he says, it would be good at nights, too, if some of the unwelcome visitors would clear off and operate where they belong . . . *P. Whipps (Enfield)* agrees that conditions are falling off, but thinks activity is increasing, and Twenty is very rarely closed to DX of all kinds. Fifteen has also improved since the autumn.

### DX/TV

For a change we turn to *C. N. Rafarel (Poole)*, who still finds his DX TV exploits more absorbing than amateur-band listening. Fresh loggings are now scarce, but include new ITA stations (Fremond Point, Jersey, and Preselly, Wales) and a Dutch station on Channel E5—all received *via* tropospheric propagation. The Belgian "ace" Jacques Herreman recently stayed with SWL (or should we say "Viewer"?) Rafarel, but was not impressed by the standard of

# SWL • • • • •

*continued*

receiver design or aerial installation over here. With a special Belgian Band III aerial array (described as "most complex") and a Band III device as well, and a new mast awaited, C.N.R. hopes to better his present score of 56 TV stations in 20 countries.

D. Douglas (Edinburgh) would like to know if anyone has ever converted a Hallicrafters Ultra Skyrider for 160 and 80 metres. If so, he would appreciate details (2 Lauriston Park, Edinburgh 3) . . . P. L. Stevens (Donnington) entered for R.A.E. in November and hopes to be "joining the ranks" in due course. Meanwhile, with what he describes as a very poor set-up, with a modified PCR-1, and an 8-ft. whip in the loft, he has logged some quite good stuff such as VR3, FG7, FP8. He loathes contests—in fact he has several pet hates on the amateur bands, such as finding three or more stations all calling "CQ DX" on the same frequency!

L. Birch (London, E.6) asks whether 4U1ITU and EIØAB count as "separate countries." They don't—but they are perfectly good for HPX . . . K. M. Duggan (York) has a P-445U receiver, which covers 10-2000 metres in nine switched bands, but omits Twenty! Cast-iron case for a converter, there. He is one of the relatively few who are keen on CW, and would like to correspond by Morse on tape with someone of about his own age (16) interested in CW work. (QTH: 5 St. Johns Street, York).

B. Curnow (Plymouth), writing at the end of September, added a stop-press note to the effect that Ten had just opened up as he was posting the letter, with South Americans "belting in" at S9 plus 15. He is working on a CR-100 (acquired for £3 at a junk sale) and hopes to get some LF-band DX this winter . . . P. J. Lennard (Wartling) listens mostly to Twenty CW and says the Pacific has been good most mornings (0700-0800); also Central America and the Caribbean area are interesting in the evenings. P.J.L. has now started RTTY reception, in which he has a bit of an advantage, as his job brings him in touch with teleprinter engineers.

Another SWL getting results with radio-teleprinter reception is J. C. Vears (Epsom, Sy.), whose printer is a Teletype Model 14, feeding into a CR-100 on an indoor aerial, with a home-built terminal unit; the ancillary items for power supply and so forth are also home-constructed.

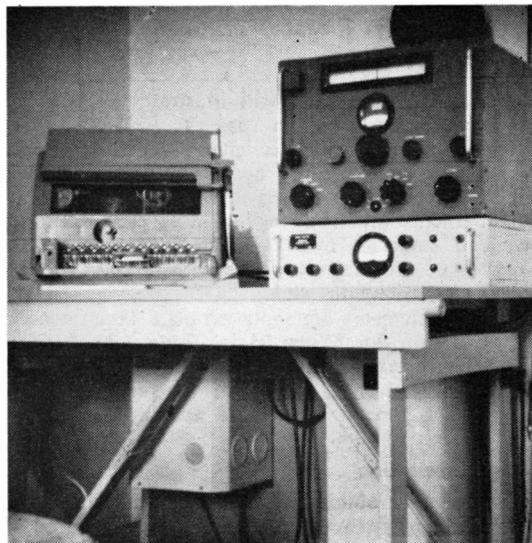
H. G. Shaw (Heswall) sends details of his card-index logging system, which is very comprehensive and simple. He uses shopkeepers' sales tickets (at 1s. or so per thousand) and separates out the countries with a job lot of visiting cards turned "long way up." Many SWL's might pay more attention to this side of the hobby, and it gives us an idea for a future dissertation!

A. W. Nielson (Glasgow) considers that Twenty

is the only consistent band, and finds it improving again, whether you want the Far East or the Mid-West. But he admits that 15 metres has shown a good deal of life from mid-afternoons onwards, and is better for South Africa than Twenty. He makes very little of Forty, because of the QRM, and doesn't think Eighty has started up yet.

D. Eckles (Farnborough) sends a description of his gear, which covers all bands from One-Sixty to Two. For the HF bands he has a rebuilt and miniaturised HRO, with an AR-88 type noise limiter. Into this he runs a crystal-controlled converter for Ten, Fifteen and Twenty. The second-string is a much-modified R.1155A, with an additional RF stage for ranges 1 and 2 (switched in by the original D/F switch wafer). On the VHF side he has a 6CW4 pre-amp and a cascade converter with an IF of 9-11 mc, feeding into either the HRO or R.1155A, and the pick-up for this is an 8-element Yagi, 30 feet high. At present two metres is his favourite band, and he hopes to be starting on 70 cm. soon.

And so we have to conclude another instalment. Correspondents are especially asked to note the deadline for the next issue (November 30). We have been receiving rather a lot of letters of the "Calls Heard" variety, and simply cannot use them; details of gear, and good photographs, are always welcome, but *no* meaningless lists of DX, please! So be punctual for next month, when we hope to be able to record some more interesting news for all our SWL readers. And the ATU-cum-aerial information that you have been asking for will be there. Finally, a very happy Christmas to all who follow this feature. CU in the New Year!



SWL J. C. Vears, 19 Waterloo Road, Epsom, Surrey receives RTTY using a Teletype Model 14 machine into a CR-100, with a home-constructed G3BST-type terminal unit. SWL Vears reports his printing as "fairly good."

*It is essential to keep to the published deadline dates for the regular feature articles*

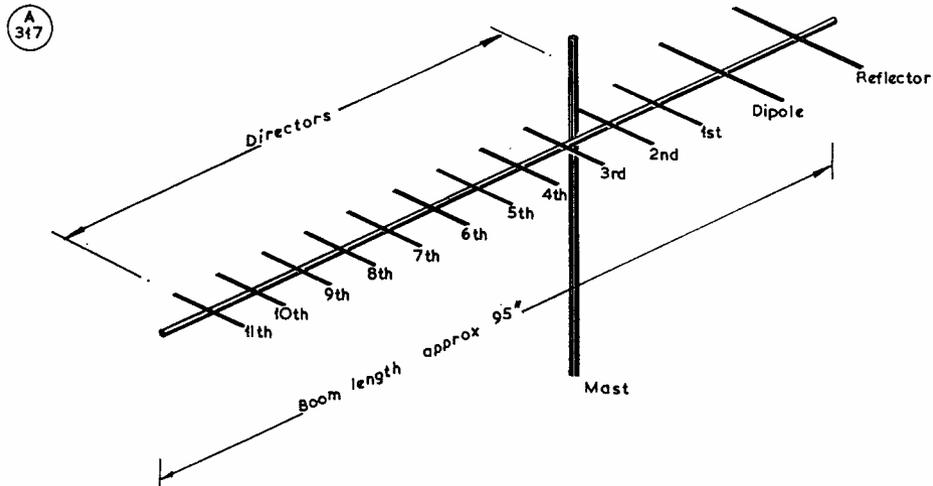


Fig. 1. To show the general appearance of a Long Yagi, with approximate layout dimensions, as described in the text. The exact positions of the directors are given in the tabulated data, and these must be adhered to for correct operation with maximum gain. Constructional methods and the feeding and tuning of the array are explained in the article.

## LONG YAGI FOR SEVENTY CENTIMETRES

### CONSTRUCTION, MATCHING AND ADJUSTMENT

G. V. FARRANCE (G3KPT)

THIS article describes and illustrates the 430 mc beam array now in use at G3KPT (West Bromwich), and which is giving excellent results. While the construction mechanically may appear difficult because of working in metal to the accurate measurements involved, in fact it is simple enough provided sufficient care is taken in setting up the work. And the gain achievable with this array makes the effort well worth while.

All the elements are mounted on a boom consisting of a  $\frac{1}{2}$ -in. dural tube 95 ins. long, with  $\frac{7}{64}$ -in. dia. holes to take the elements. These are spaced to the distances given in the table; the sketch at Fig. 1 suggests the general layout and final appearance.

#### Boom Fabrication

In order to obtain the required accuracy lengthwise, drilling jigs should be used. One jig is placed on the boom flush with the end and a  $\frac{7}{64}$ -in. diameter hole drilled. This jig is then pinned to the boom with a piece of  $\frac{1}{8}$ -in. rod. The second jig may then be moved along the boom resting on a flat surface, and the remaining holes drilled in line with each other.

The dipole fixing hole is  $\frac{7}{64}$ -in., enlarged for a force fit. The elements are forced into the boom and

locked into position by centre-popping the boom lightly around the edges of the elements; they are then bonded and waterproofed at the fixing points by applying "Araldite" adhesive. It is essential to remove all traces of oil or grease from the boom and elements, by using a detergent, before applying the "Araldite."

#### Matching

Most operators favour the use of 70-75 ohm coaxial feeder, and the method of matching shown in Figs. 2 and 3 has been proved satisfactory with this Yagi—with both a 10-element and an 11-element version.

The 75-ohm feeder is terminated with 4-1 coaxial balun—Fig. 2. The three braided ends are bound together with 16g. tinned copper, and soldered. The inner of the feeder is soldered to the inner of one side of the balun loop. From the top of the soldered braiding on one side of the balun loop round to the

#### ELEMENT DETAILS FOR 70-CENTIMETRE LONG YAGI

Reflector:	$13\frac{3}{8}'' \times \frac{1}{8}''$ aluminium rod spaced $64''$ from Dipole.
Dipole:	$12\frac{3}{8}'' \times \frac{1}{4}''$ brass tube, force fit.
1st Director:	$12'' \times \frac{1}{8}''$ aluminium rod spaced $2\frac{1}{16}''$ from Dipole.
2nd Director:	$11\frac{11}{16}'' \times \frac{1}{8}''$ aluminium rod spaced $4\frac{27}{32}''$ from Dipole.
3rd Director:	$11\frac{1}{4}'' \times \frac{1}{8}''$ aluminium rod spaced $7\frac{11}{32}''$ from Dipole.
4th Director:	$11\frac{13}{16}'' \times \frac{1}{8}''$ aluminium rod spaced $12\frac{3}{8}''$ from Dipole.
5th Director:	$11\frac{3}{4}'' \times \frac{1}{8}''$ aluminium rod spaced $10\frac{3}{8}''$ from 4th Director.
6th	$11\frac{11}{16}''$
7th	$11\frac{1}{8}''$
8th	$11\frac{9}{16}''$
9th	$11\frac{1}{2}''$
10th	$11\frac{7}{16}''$
11th	$11\frac{3}{8}''$

}  $\times \frac{1}{8}''$  aluminium rods.  
spaced  $10\frac{3}{8}''$  from each other.

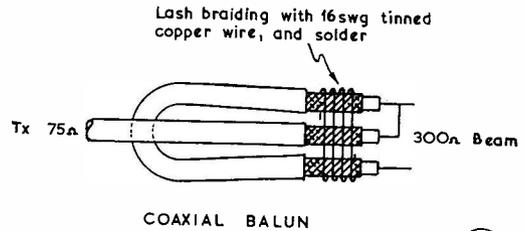
corresponding point on the other end of the loop the length is  $8\frac{3}{4}$  ins.

The balun is then attached to the bottom end of a quarter-wave stub tuner (Fig. 3), which is fitted vertically below the boom, and a quarter-wave from the mast (which is preferably *not* mounted to one side of the boom).

This stub tuner is then coupled to a second quarter-wave stub through  $\frac{1}{4}$ ths of a wave of 300-ohm open line—Y, Fig. 3. From the bottom, V, of the second stub tuner two half-waves of 300-ohm open line connect *via* a delta section to tapping points, Z, on the dipole—Fig. 3.

Dimensions as given here for the matching section are those used on the Yagi at present in operation at G3KPT. They may require adjustment in other cases. The quarter-wave stub tuners are actually made half-wave long mechanically and short-circuited at the boom end; this is simply for convenience in mounting. After adjustment of the shorting discs, the upper (unused) sections of the stubs are short-circuited at intervals by pieces of 16g. wire.

Finally, the balun is waterproofed by wrapping the exposed shorted braiding with PVC adhesive tape and applying several coats of polystyrene cement.



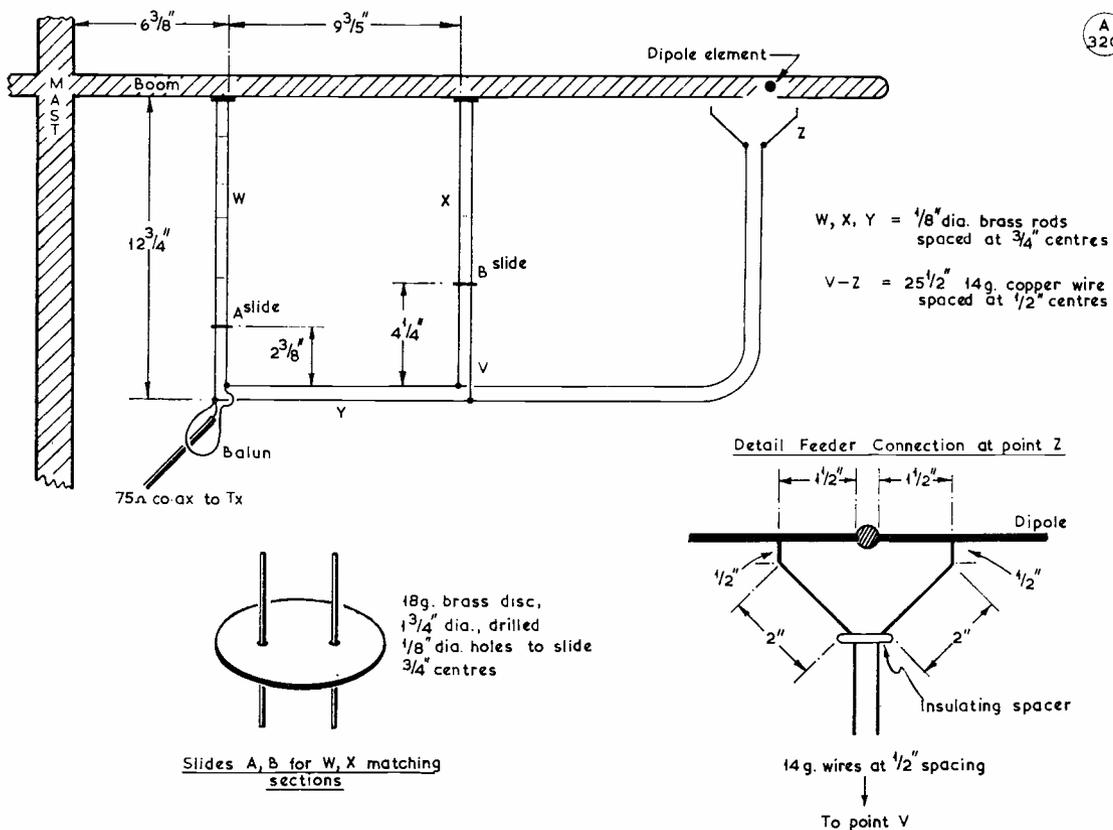
A 319

Fig. 2. Construction of the 75-300 ohm matching balun, feeding from the transmitter at 75 ohms—and see Fig. 3.

**Tuning**

Tuning should be done by using a remote dipole, coupled back to a local millimeter, the shorting discs on the stub tuners being adjusted for maximum forward gain. These discs, of course, must be soldered in position when tuning is completed.

For further information on the design, gain figures and construction of Long Yagis, refer to *VHF for The Radio Amateur*, by W6AJF.



A 320

Fig. 3. Sketch to show the layout and dimensions of the matching arrangements for the Long Yagi designed by G3KPT. To feed from the transmitter by coax at 75 ohms, a 75-300 ohm balun is required, which is matched into the driven (dipole) element as shown here. The positions of slides A and B, which tune the stubs, may vary from those indicated, these being as obtaining at G3KPT.

WITH the glass high and steady for three weeks, quite a steep temperature gradient as between day-time and evening, no wind and very little rain, and the development of wide areas of fog, it is not surprising that VHF conditions on both bands have been generally good during the period—indeed, two metres was often well open for stretches of 24-36 hours. This highly desirable state of affairs was occasioned entirely by the met. conditions—and it is to be hoped that those interested in EDX/GDX working, and without much previous experience of good openings on the VHF bands, will have noted the signs. Apart from the barometer, there is the state of the sky in the early evening, the appearance of the excellent weather charts put up by the Met. boys on TV, the TV reception conditions in fringe areas, the absence of wind and the presence of fog. The thing to look out for on the TV weather chart is a large area of high pressure, sometimes called an anti-cyclone; if such an area covers most of the U.K., part of the North Sea and extends into Northern Europe, then it is a pretty fair bet that two metres will be open not only for GDX, but also for working into F, ON, PA, DJ/DL and possibly OZ and SM as well. As soon as the high-pressure area begins to break up, or to move appreciably, it means that conditions likewise will fall off.

Of course, a cross-check on actual propagation conditions is given by the invaluable beacon signals, GB3VHF and GB3CTC, particularly for those VHF operators who are at such a distance that the beacon signal is normally chancy; it does not signify much for those who get an S9+ beacon signal under any conditions.

Most unfortunately, during this critical period of good but nevertheless sometimes variable conditions, GB3VHF chose to develop a difficult fault, and was off the air for the best part of three weeks. Hence, some at least of those many operators at GDX distances who are in the habit of checking on GB3VHF to see how conditions are were grievously misled into thinking either that

# VHF BANDS

A. J. DEVON

the converter had gone sour, or that the band was not open—in spite of all the signs that it should be. In other words, the absence of the GB3VHF signal had a distinctly inhibiting effect on activity generally. The unfortunate thing is that after the first notification was given that GB3VHF had gone off the air on October 3, no further announcement of any sort was made—the signal simply appeared again during the week beginning October 22.

All this is no reflection whatever on the devoted efforts of G3BPT/G3CO, who have undertaken the thankless task of care-and-maintenance of GB3VHF—and, indeed, the beacon transmitter, its aerial system and the ancillary equipment have shown a high degree of reliability, having been in continuous operation, with one or two minor interruptions only, for some 22 months. From their point of view, the fact that GB3VHF was so sorely missed during October is in a sense the reward for the time and attention they give it. And, of course, neither G3BPT nor G3CO have any responsibility for announcements regarding beacon serviceability.

## EI/GM "First" on 70 Cm

Harry of EI2W (Sandyford, Co. Dublin) registered yet another "First," and his 21st on the VHF bands for EI, when he had a good solid 70-cm. phone QSO with GM3FYB (Dunfermline) on the evening of October 16. So con-

gratulations to them both—and it shows how good conditions have been, right up into the 430 mc band. EI2W has now worked 12C all-time on that band, and four countries.

Because of the great number of movements claimed as the result of the uplift in conditions, we have taken a bit more space this month and most current tables are shown, so that we can all see where we are—no less than 85 movements are recorded, about half of them in the Two-Metre All-Time.

And the positions are very interesting. Harry, EI2W, is in the hot seat on p.486—and what a fine effort from where he is! But there are some of the best VHF operators in the U.K. right on his tail, and the only way to ease the strain for EI2W would be to get some of these chaps posted to Peru (or the Outer Hebrides). Gerry, G2XV (Cambridge) still retains his commanding position in the 70-cm. All-Time, and has now worked eight countries on that band. The 2m. Annual also looks interesting, and is considerably enlarged compared with its first appearance last month—we very much hope that many more two-metre men will come in, and keep us up-to-date with their scores.

The 4m. Table is also making progress, but we still have not had sufficient claims to justify an annual for that band—if those interested will let us know, whenever writing in, what their "Since Sept. 1st" score is on 4 metres, the new table will be started as soon as enough claims are in hand.

## The GM3IUB/P Expedition

This marathon effort, severe in its demands both on personnel and equipment, made over September 17-26 and announced in "VHF Bands" that month, turned out an unqualified success. Many have been the requests in this month's mail that the Birmingham University boys "be given a big hand." This your A.J.D. is happy to do, on behalf not only of those who gained several countries by being able to work GM3IUB/P, but also of those who (like A.J.D.) followed their proceedings with interest and

admired the way in which they handled their commitment. The nightly-county programme was adhered to as planned, schedule-keeping was meticulous, operating procedure was good, with proper use of phone and CW, and in general this expedition—which must have required a lot of background organisation, apart from everything else involved—showed how such an undertaking should be tackled. Much credit is due to all concerned. During the trip, some 400 contacts were made by GM3IUB/P and probably in the majority of cases they were giving a new-county QSO.

**TWO METRES**  
COUNTRIES WORKED SINCE  
SEPTEMBER 1, 1962

Starting Figure, 14  
From Home QTH Only

Worked	Station
58	G3BA
51	G3EDD
48	EI2W, G3BNL
46	G3BOC
43	G4LU
39	EI2A
36	G3CO
35	G3FIJ
33	G3JWQ
29	G2BHN, G3HRH, G3OJY
27	G2DHV/P
26	G3NUE
23	G5QA
22	G3DVQ, G3PTO
20	G3JHM/A, G3LQR
19	G3PSL
18	G3CKQ
14	GW3ATM

*This annual Counties Worked Table will close on August 31, 1963. All operators who work 14 or more Counties on Two Metres are eligible for entry in the Table. QSL 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 1963, 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, 1963, only amended scores from those already standing in the Table at that date will be accepted.*

In addition to the many who heard GM3IUB/P in each of the 10 counties they went through, several stations succeeded in working them in in every GM county covered, these being nearly all real GDX contacts. Here again is the proof of what so many experienced VHF operators have so often said—that if a wanted station is known to be there, on a given frequency and at a stated time, he can be worked at GDX even under not too-good conditions. In other words, much more could be done, particularly on CW, if people would only try.

**Some of the Gleanings**

It was G3NFM in Co. Tyrone who gave G3CCH (Scunthorpe) his 85th for the All-Time, and GM3IUB/P from Selkirk and Roxburgh who put EI2W ahead by one. EI2A (Navan, Co. Meath) raised the GM expedition in five counties, and besides that Shane "found GDX available nightly" through the first fortnight of October, with the 6th the outstanding evening (as many others have also mentioned); it was on October 6 that most of the active EI/GI stations worked F8VN. The EI's now on the two-metre band, in addition to EI2A and EI2W, are EI3S, EI6AI, EI6X, and EI7D, with EI4Q and EI6D coming on.

G3JMA (Harlow) has been moving along well on 70 centimetres; in addition to several good QSO's at GDX, he and GM3FYB have heard one another, and in all G3JMA worked no less than 58 different 70-centimetre stations in one 24-hour period! His best DX on that band, apart from EI2W, was G3ILD (Co. Durham).

G3FIJ (Colchester) continues operation on all bands from 70 to 430 mc, being active mainly on two metres, with Sunday mornings reserved for 4 metres. G3BNL (Keyworth, Notts.) is another who works all three VHF bands, and sends claims for the appropriate tables. If a few more people would do this, we could probably show a panel with listings for each band—which would be interesting.

From Welwyn, Herts. G3HRH (who is, of course, well known in the VHF world) sends claims for the tables, and describes his

**70 CENTIMETRES**  
COUNTRIES WORKED SINCE  
SEPTEMBER 1, 1962

Starting Figure 4  
From Home QTH Only

Worked	Station
18	G2CIW, G3KPT
14	G3BNL
11	G3LHA
9	G3LQR
5	G5QA

*This Annual Counties Worked Table is reckoned from September 1st, 1962 and will close on August 31st, 1963. All operators who work four or more Counties on the 70-centimetre (430 mc) band are eligible for entry. Counties should be claimed as they accrue, and otherwise the rules are as for the Two-Metre Annual Table.*

station, of which the beam is probably the outstanding feature, in more senses than one—he has an 8/8, twice, at a mean height of 40 feet. The Tx runs a pair of CV-2130's in push-pull in the PA, driven by a QV06-40 to the full 150w. input on CW and phone, the modulator being 8I1's in Class-B zero bias; his converter is 6CW4-6BQ7A-6AK5, with an EF91-ECC91 oscillator chain, giving 10-12 mc IF tuned on a modified BC-455. And very nice, too. Now we know why G3HRH is so loud at A.J.D.'s! (But still G6NB is the only station that can be heard with no HT on the Rx!)

G3DKF (Coventry) keeps going steadily, and is now at 64C in the All-Time, with 13 countries worked; he recently acquired an 8/8 J-Beam and with this in a "temporary position" for trials, he found himself working EI and GI for the very first time.

G3CO (Hartley, Kent) was happy to register with the GM3IUB/P expedition in three counties, and to hear them from all locations. He found conditions for this very long path better during the early part of each evening—with the GM signal getting weaker as it got round to his own sked time; another very heartening QSO for him was with GI5AJ. G2BHN (Yeovil) is at last able to get into Counties Worked, his QSO's for this being with F3XY (often a very good

## TWO METRES

## ALL-TIME COUNTIES WORKED LIST

Starting Figure, 14

From Home QTH Only

Worked	Station
86	EI2W
85	G3CCH, G5YV
84	G5MA, G6NB
79	G3BA
78	G2CIW (408)
75	G3BA
74	G3EHY, G3KEQ
73	G3HBW, G3IUD
72	G6XM
71	GM3EGW (310)
68	G3BLP (967), G3BW, G3GHO
66	EI2A, G2OI (585), G3JWQ (569), G3KPT*, G5BD
65	G3HRH, G6XA (333)
64	G3DKF
63	G2FJR (542), G3FAN (1,000)
61	G2HIF, G3HAZ, G4LU, G6RH
60	G3DMU, G3IOO
59	G3BOC, G3CO (565), G4SA, G5DS (883), G8VZ
58	G8OU
57	G8SB
56	G3WW (770)
55	G2HDZ (495), G5BM, GW5MQ
54	G3JYP
53	G2AJ (519), G3LHA (387), G4CI
52	G2NH, G3FZL, G3NUE (269), G6XX, GM3DIQ, GW2ADZ
51	G5ML, GW3MFY
50	G3ABA, G3GSE (518), G3LTN, G3NAQ, GW3ATM
49	G3PBV
48	G3AYC, G3FIH, G3LAR, G6TA (487), GW3ATM
47	G3OJY*, G3OJY, G5WP
46	G3MTI (242), G3OHD, G4HT (476), G5BY, G6YU
45	G2AHP (647), G2DVD (362), G2HOP, G2XC, G3BJQ, G3GFD, G3MPS, G5JU, G6GN
44	G3BK, G3DVK (282), G3GSO, G3NBQ (218), G8DA
43	G2BHN (238), G2DDD (322), G3BNC, G3COJ, G3DLU*, G3HWJ, G3KHA (262), G3KQF, G3KUH, G3NNG, G3WS, G4RO, G5DF
42	G2AXI, G3DO, G3IER, G6CI (220)
41	G2CZS (282), G2FQP, G3FIJ (465), G3JAM (481), G3JLA
40	G3CGQ, G3FUR, G3JHM/A, G5MR (366), G8KL

Worked	Station
39	G2IQ, G3GBO (434), G3LTF, G3OSS, G3VM, G5UM (868), G8IL (325), GC2FZC
38	G3APY, G3CKQ, G3HTY, G8VN (190)
37	G2DHV, G2FNW, G2FZU (180), G3DLU, G3MAX, G3OSA, G8DR (482), GC3EBK (260)
36	G2DCI (155), G3CXD, G3DLU*, G3IIT, G3OBD, G6CB (312), G8IP
35	G3FYY (235), G3HCU (224), G3IOE, G4LX, G5TN, G13ONF
34	G2AHY (295), G3AEP, G3HWR (506), G8IC
33	G3HHY (125), G3ICO, G3PTO, G4JJ/A
32	G3BYY* (274), G3HIL, G3NNK (325), G3OBB, G8QY, G8VR
31	G3HXO, G3KPT (180), G5RP
30	G3FRY, G3GOP (208), G3GVF (129), G3IRA, G3KEF (110), G5NF, G8NM, GW8UH
29	G2CVV, G2DHV/P, G3AGS, G3AKU, G3DVQ, GM3LDU
28	G3ITF, G8DL, GM3BDA
27	G3CVO (231), G3DAH, G3ISA (160), G3JGY, G3LDY (102), G3LTF/A, G6GR, G13GQB, GW3GWA
26	G2BRR, G3CFR (125), G3MED, G3SM (211), G3YH, G4MR (189)
25	G3JHM, G3JMA, G3JXN (220), G5SK, G6PJ
24	G3FD, G3FEX (226), G3FXG, G3FXR
23	G3BDQ, G3CWW (260), G3HSD (168), G3NPF (143), G3OPR (144), G5PY, G8VN (125)*
22	G2DRA, G3AGR (135), G3ASG (150), G3BPM, G5AM
21	G2AOL (110), G3IWI, G6XY
20	G3EYV
19	G2BLA (113), G2HDR, G3GCX, G5LQ (176)
18	G3DBP, GC2CNC
17	G3EGG, G3MHD (195)
16	F3XY (200), G3FRE, G3MLS, GC3OBM
15	G3IWA
14	G3CYY

Note: Figures in brackets after call are number of different stations worked on Two Metres; starting figure for this classification, 100 stations worked. QSL cards are not required to verify for entry into this Table. On working 14C or more, a list showing stations and counties should be sent, and thereafter added to as more counties accrue.

\* New QTH

signal right into the Midlands) and G13FJA; and G2BHN also moves well in the other two-metre tables.

G3BOC (Willaston, Wirral) drew blank, more or less, during his holiday visit to Brora in Sutherland; conditions were very poor and the only non-GM raised was G15AJ. However, he found three GM's ploughing lonely furrows on two metres in the rare county of Ross & Cromarty; GM3JFG in Invergordon, and GM3MUT and GM3ODP on the Black Isle. At least these chaps can work one another, and are very well placed for the Aurora openings which will soon be coming along. And G3BOC remarks that the only time he has ever heard GB3CTC (the Cornish beacon) it was S9!

G3JHM, from his /A eyrie near Worthing, found a number of new stations to work on 4 metres—his total on this band is now 61S, which proves that 4-metre activity is building up well; G3JHM/A already has 13C for the projected 4-metre annual, and he is at 21C for the all-time on that band. In the Worthing area, they now run a local 4m. net, on 70-26 mc, with four stations on regularly; an idea behind this is the laudable one of attracting some of the Top Band locals on to 70 mc.

Every now and again, we hear from G3JWQ (Ripley, Derbys.), to bring his scores up to date; he worked the GM party in six of their counties and can now show 569 different two-metre stations worked. G4LU (Oswestry) reports his experiences with GM3IUB/P as "beyond all expectation"; interesting QSO's in other directions have been with GC2FZC, G3CZZ/M and G3LMG/M in Cornwall, and on one evening early in the period five F's were raised. G4LU gives G3RME (Gobowen, nr. Oswestry) as a "new recruit to the Signals Corps of the Welsh Marches," and also mentions GW3PDI (Wrexham) as a potent signal for Denbighs. (It happens that your A.J.D. heard GW3PDI working G3JXN in London, one evening during the period—what made the QSO unusual was that they were on CW, and both are doctors.)

G3EKP (Belthorn, Lancs.) writes to report himself as now

active on 70 cm, most evenings around 10.30 p.m., working G2OI or G3ILX (Barrow). G3EKP triples to 433.2 mc using a QQV03-20A, with a 16-ele stack, and he is looking for southerly stations; G3OTA is another in the district due on 70 cm shortly.

#### Bit of a Party

The North-West VHF Group, which represents the Lancs. area so effectively, is laying on an occasion for that most delectable of all Lancashire dishes, a hot-pot; this will be on Saturday, December 8, in Manchester; tickets for the supper are 10s., obtainable from either G3AGS, G3AOS or G3MAX (all *QTHR*), and a very good evening is in prospect for those who can make it.

G2CIW (Birmingham) reports that as a result of the sustained period of good conditions, he

worked almost as many counties on 70 cm in six weeks as he had done during the whole of the previous year. Among much good 70-cm. GDX were QSO's with EI2W and G3KMP (Hastings), while F8MX was heard when working EI2W; Jack also had a good innings on two metres, so his scores are up all round.

In a very interesting report, G3BA (Sutton Coldfield) mentions that he was able to work GM3IUB/P through all their ten counties, with signals always up to S7 or better. EI3S was another nice QSO for Tom, who also had two-metre contacts with four other SSB stations—G3CCH, G3ILD, G3MCS and G6CW. The new "all-mode" driver unit at G3BA (see this space last month) is making good progress.

Of course, Louis of G3EHY (Banwell, Som.) was well in with all the DX knocking about during the period; not only did he hear GM3IUB/P consistently on their tour, but he worked them at nine out of ten locations; from some places, signals were up to S9. Other GM's worked were GM3FYB (Dunfermline) and GM3HLH (Fife)—and the EI2A/G3EHY schedule over a path-distance of around 220 miles continues to show consistent results. Incidentally, it might be mentioned that G3EHY is only about 60 ft. a.s.l., and his slot-fed 6/6 is barely 40 ft. up—so he certainly has no height advantage.

G3KPT (West Bromwich) continues to do well on 70 cm, with some 30 stations worked in about six weeks, and another half-dozen or so heard. G3GVV (Haywards Heath, Sx.) writes to put himself in the two-metre picture again—after 12 years on the HF bands!—and is now on 144.63 mc, running 30w. input and a slot-fed 4/4 at 30 ft., from a good location 240 ft. a.s.l. with a clear take-off to the east; he would like offers for regular schedules, 1700-1900 clock time, any day (*QTHR*).

Those looking for four-metre contacts with Staffs. might find G3PTO (Wolverhampton), who is on 70.29 mc, with a QQV03-10 in the PA, taking 20w., a 3-ele beam, and a CC converter, tuning 12.9-

13.1 mc on a BC-348; G3JHM/A is among his stations worked on four metres. G3PTO is also with us on two metres, and from a start only in August this year, has worked 33 counties and four countries; the PA on this band, also a QQV03-10, runs just 18w., the beam being a slot-fed 4/4 at 35 ft.; his Rx section has a 6CW4 front-end, and G3PTO remarks that he uses both CW and phone.

Needless to say, Bob of G5MA (Great Bookham, Sy.) is able to show a fine log of GDX worked during the period—not only did he chase the GM3IUB/P boys through the Lowlands of Scotland very successfully, but he also picked off four other GM's—including GM2TW, a rare one, for Stirling—several EI's and GI's, and he had some good EU contacts as well. In terms of counties for the All-Time, Bob is now up with the leaders—and, as we all know, it is when you are lying about third that the going is particularly hard. However, with Louth and Tyrone still to get, G5MA has a good chance of catching EI2W.

Another to report himself back in the two-metre business "after a spell on the DX bands" is G3DVQ (Purley, Sy.), with 20w. input and a slot-fed 6/6 at 30 ft.—and he kicks off nicely in the Annual with 22C.

The day after he got his ticket, G3RME (Gobowen, Salop) wrote in to say he proposes to "confine his activities to the two-metre band." His PA takes an 832 at 20w., series-gate modulated, and the Rx side consists of a home-built 6CW4 pre-amp. into a TW cascode converter, with an HRO as IF/AF amplifier; the beam is, at present, an indoor 3/3 fixed to fire south-east. G3RME had his first-ever QSO with none other than G3EHY, for a nice piece of semi-DX, quickly followed by contacts with most of the locals, of whom G3RME lists about fourteen—and he acknowledges with gratitude the help he has had from G3ASC and G3IOO in getting started.

Harold, G5YV (Leeds) slipped in one of his periodical notes to stake his claim for 85C in the All-Time, and besides that has been doing well on 70 cm. Indeed, by

#### TWO METRES COUNTRIES WORKED

Starting Figure, 8

- |    |  |
|----|--|
| 20 | G3HBW (DL, EI, F, G, GC, GD, GI, GM, GW, HB, LA, LX, OE, OH, OK, ON, OZ, PA, SM, SP)                                   |
| 19 | G5YV (DL, EI, F, G, GC, GD, GI, GM, GW, HB, LA, LX, OE, OK, ON, OZ, PA, SM, SP)  |
| 19 | G3CCH (DL, EI, F, G, GC, GD, GI, GM, GW, HB, LA, OE, OH, OK, ON, OZ, PA, SM, SP)                                       |
| 18 | G3LTF, G6NB (DL, EI, F, G, GC, GD, GI, GM, GW, HB, LA, LX, OK, ON, OZ, PA, SM, SP), ON4BZ                              |
| 16 | G3GHO, G3KEQ, G5MA, G6RH, G6XM, PA0FB  |
| 15 | G2XV, G3AYC, G3FZL, G4MW, GM3EGW   |
| 14 | G2CIW, G2FJR, G2HDZ, G3BLP, G3FAN, G3HAZ, G3IOO, G3JWQ, G3KPT, G3WS, G5BD, G6LI, G8OU, OK2VCG                          |
| 13 | G2HIF, G2HOP, G3BA, G3CO, G3DKF, G3DMU, G3DVK, G3GPT, G3NNG, G5DS, G6XX, G8VZ  |
| 12 | EI2W, F8MX, G3EHY, G3GFD, G3GHI, G3JAM, G3OBD, G3PBV, G3WW, G5CP, G5ML, G8DR, GW2HIY                                   |
| 11 | G2AJ, G2CZS, G3ABA, G3BDO, G3GSO, G3HRH, G3IUD, G3JZN, G3KUH, G3LHA, G4RO, G4SA, G5UD, G6XA, OK1VR                     |
| 10 | G2AHP, G2AXI, G2FOP, G3BK, G3BNC, G3DLU, G3GSE, G3KQF, G3LAR, G3MED, G3OSA, G5MR, G5TN, G8IC, GC2FZC, GW3ATM, GW5MQ    |
| 9  | G2BHN, G2DHV, G2DVD, G2FCL, G3BOC, G3BY, G3FLJ, G3FUR, G3JHN/A, G3JLA, G3LTN, G4LX, G5UM, G8GP, GC3EBK, GM3DIQ, GW3MFY |
| 8  | EI2A, G2DDD, G2XC, G3AEP, G3AGS, G3BOC, G3EKK, G3GBO, G3HCU, G3HWJ, G3KHA, G3MPS, G3OHD, G3OJY, G3VM, G5BM, G5BY, G8SB |

SEVENTY CENTIMETRES  
ALL-TIME COUNTIES WORKED  
Starting Figure, 4

Worked	Station
39	G2XV
34	G2CIW
33	G3JHM/A, G6NF
32	GW3ATM
31	G3JWQ, G5YV
30	G3KEQ, G3KPT
28	G3HAZ, G3HBW, G3LHA, G3NNG
26	GW2ADZ
24	G3LTF
23	G3BKQ, G6NB
21	G3IOO
20	G3LQR
17	G3BA, G3MPS
16	G2DDD, G3MED
15	G2OI, G4RO
14	G2HDZ, G3FAN, G5UM
13	G6XA
12	EI2W, G5BD
11	G3AYC, G3BYY
10	G3HWR, G3IRW, G5DS
9	G3BNL, G5QA
8	G3NJO/T
7	G2HDY, G3JHM
6	G3FUJ, G3KHA, G3WW
5	G3FUL, G3IRA, G3IUD, G3JHM, G5ML
4	G3JGY

*On working four Counties or more on the 70-Centimetre band, a list showing stations and counties should be sent in for this Table, and thereafter new counties worked notified as they accrue*

working GM3FYB, he made the G/GM "First" for that band; and yet another GM worked on 430 mc from G5YV was GM3EGW; Harold's 70 cm total is now 31C in the All-Time.

G3LHA (Coventry) is another keen 70 cm man, who is now up to 7 countries worked on that band; if only he could find GW3ATM, he would make it eight. Portable trips with 430 mc gear have been made into Hunts., Oxon. and Northants.; the best result was from near Chipping Norton in Oxon., when 12 70-cm stations were worked in 95 minutes; when in Northants.

G3ILD in Co. Durham was heard at S9—but he went QRT before G3LHA/P had a chance to raise him.

G3EDD (Gt. Wilbraham, Cambs.) says that having deliberately gone county chasing during the September I.A.R.U. Contest, and emerging with 18C for 21 QSO's, he decided to take the thing seriously—he is engaged in a local-Derby with G2XV—with the result that he is able to claim a total of 51C for the Annual! In 16 hours of operating during the Contest, G3EDD worked 111 stations (this is last-month stuff, but is worth a mention here because it shows what can be done when you settle down to try) and since then has booked in EI, GI, GM and GW, with the elusive GM2TW heard and called time and again during the early hours of October 7. G3EDD says that he often finds two-metre conditions better at the breakfast-hour than in the evening, and wishes that more stations would come on around 8.00 a.m.

The article starting in this issue shows the transmitter arrangement being used by G3NNK (Romford, Essex); it runs 75w. input under series-gate modulation—probably the best of what are known as the "efficiency systems"—and 90w. on CW, his aerial being a 6/6 J-Beam at 33 ft., with a cascode converter using a 6CW4 pre-amp. on the receiving side. Having now had time to reckon up his two-metre score, G3NNK makes it 325 different stations worked in 32C.

From the Grammar School, Loughborough, G3PSL runs a 10-watt Withers Tx, with a 5-ele Yagi at 50 ft. a.s.l., and has already worked 19C for the Annual, including GM3IUB/P when in Wigtownshire. G3OKJ (Pinner, Middx.) has been on 4 metres consistently for about six months, during which time he has raised stations in 14 counties, from Hants. round to Cambs. and up to Notts., with G3EHY for Somerset as DX. The Tx at G3OKJ takes a DET-19 in the PA, with 18w. input, and his aerial is no more than a dipole at 18 ft.

G3OJY (Penzance) with 29C for the two-metre Annual, continues

to do well from a GDX location right away from the main centres of activity; he and the other Cornwall boys certainly have to work for it and in addition to the distance factor, they also have gale hazards with which to contend—G3OJY lost all his outside gear in a few minutes one night recently, including a smashed-up 8/8. But in the right tradition, he immediately made good with a temporary 5-ele to keep on the air until the main damage could be put right.

G3PJK in Manchester has been trying for three months with GI3HXV to make it on four metres—and on October 16 they had a solid QSO on CW. This is very good and the G3PJK score of different stations worked on four metres is now 27; a new CC cascode converter has helped things along. G3JPK is one of the most active of the 4-metre group in his area, and has done much to promote and encourage activity.

G3BIK (Gosforth, Newcastle) is now on 433.91 mc, running 100w. with a 16-ele stack, beaming south and standing by most evenings after 2200 clock; his Rx consists of an A.2521 trough-line pre-amp. into a cavity xtal mixer, tuning 24-26 mc on a CR-100. From Dedham in Essex, G3LQR claims for all three VHF bands, and he now has a 4X150A taking 150 watts on 70 centimetres—he says this shows "a considerable increase in efficiency"; we are not surprised!

#### Conclusion—

For your A.J.D., this has been one of the heaviest months ever to report. Bits of paper have poured in from all quarters—his own voluminous pieces of *reportage*, gathered in long listening sessions, have not even been looked at in writing this—and it is devoutly hoped that they have been sorted out correctly. Anyway, there it is. And for next time the deadline is **November 21**, with everything you want to say or are interested in about VHF addressed to: A. J. Devon, "VHF Bands," *Short Wave Magazine*, 55 Victoria Street, London, S.W.1. We meet again on December 7. Till then, may Allah guide you.



## **THE OTHER MAN'S STATION** **VK3AST**

**S**TATION VK3AST, located at Wimbourne Avenue, Mount Eliza, Victoria, Australia, is operated by Surgeon-Commander S. J. Lloyd, of the Royal Australian Navy, who is a member of the Royal Naval Amateur Radio Society, as well as of his local Wireless Institute of Australia (W.I.A.). First licensed in 1948 as G3DKI, the VK callsign has been held since 1953. Activity is at present confined to the 3.5, 7, 14, and 21 mc bands, on CW, AM, and NBFM; future intentions include operation on 160 metres (recently released to Australian amateurs) and SSB, but progress in this direction is likely to be slow, since professional commitments and other interests leave little time for constructional work.

All equipment shown in the photograph is home-made: a frequency meter is the only item of commercial or ex-Service apparatus in use, apart from portable gear. In the operating console, on the left is the transmitter control unit; this contains the VFO,

speech amplifier, NBFM modulator and control switching. The receiver, in the centre position, has crystal-locked plug-in converters for the front end on the various bands, followed by a tuned first IF section covering 3.3 to 3.8 mc; the second IF of 465 kc is followed by alternative diode and product detectors and conventional AF amplifier, output stage, BFO, and the rest. The right-hand side of the console is occupied by the auxiliary power supplies, and a 1-inch CRO modulation monitor has been added since the picture was taken.

The transmitter, shown on the right of the console, is built on three chassis fitted into an old-fashioned broadcast receiver cabinet. The lower deck carries 400- and 800-volt power supplies, using 866A rectifiers. The centre unit contains a crystal oscillator and an 807 high-level mixer, to heterodyne the VFO output from the 3.0—5.0 mc range into the higher frequency bands; on all bands except 3.5 mc the VFO

output is kept *outside* the band in use, and outside the first IF tuning range of the receiver—this is to allow full break-in operation without having to key the VF. The upper section of the transmitter comprises an EF55 grounded-grid buffer, the 813 PA valve, a 6L6 clamper used for CW, and a 6V6 series-screen modulator for AM. The tank circuit is a *pi*-coupler with 80-ohm coaxial output. Plug-in coils are used throughout.

Junction boxes and the T/R ("send-receive") relay are mounted on the wall behind the gear, but an EF50 electronic T/R switch is also included in the transmitter cabinet for break-in working. The coaxial

output cable feeds an all-band aerial tuning unit connected to the main aerial, which at present is a 135-foot wire centre-fed with tuned open-wire transmission line.

No special TVI precautions have been taken, but the harmonic radiation has been kept to a minimum by avoiding the use of frequency multiplication, and as the area is one of high TV signal level no trouble is experienced. The location is generally good for getting out, being on high ground and fairly clear all round, with a particularly good take-off to the west over water—but an adjacent main highway produces considerable ignition interference at week-ends.

## Miscellany

### INCIDENTAL INFORMATION, AND ITEMS OF TOPICAL INTEREST

(The heading under which almost anything may appear)

"Last April 20, was a memorable milestone in my life; on that date I celebrated my 58th birthday, my 46th year of Amateur Radio, and my 60th DXCC country worked and confirmed on 160 metres."

(W1BB, in "DX Magazine")

— • • • —

"It looks like this next couple of years is going to separate the stamp collectors from the DX'ers. There are some nights when even my 100 kc crystal calibrator sounds like DX."

(W6HVN, in the NCDXC "DX'er")

— • • • —

"IRE Standards on Abbreviations of Radio-Electronic Terms list 'megc' as the abbreviation for megacycles per second . . . however, a footnote states 'Usage has established MC and mc as abbreviations for megacycles per second'". (We are glad to have contributed to that usage and will continue to use the convenient, and understandable "mc" in Short Wave Magazine).

("Collector and Emitter," Oklahoma)

— • • • —

Sooner or later the fate of that term "Ham" has got to be settled. In the early days its use implied all that was best in Amateur Radio, and the "ham spirit" was well known and understood. Nowadays, when any misguided youths who are caught transmitting without a licence are invariably described in daily newspapers as "Radio Hams"; when "ham-fisted" has passed into popular parlance; and when "hamming it up" is applied equally to bad actors, pop singers or insincere politicians on TV—it seems time for a reappraisal. Is time so precious that we *have* to abbreviate a clear, concise term such as "radio amateur"? Perhaps we can leave the "ham" legacy to other hobbies and professions and call ourselves by our proper name again.

It will come as a surprise to many that British and American time, until very recently, did not coincide to a margin of less than two milliseconds. It was Telstar that made it possible to compare measurements across the Atlantic with great accuracy, because, prior to its arrival on the scene, irregularities in the ionosphere were sufficient to cause discrepancies, when *microseconds* were the units of comparison. Results achieved by using Telstar as the reflecting medium are now accurate to some 20 microseconds. The importance of accuracy in this matter is, mainly, that some navigational techniques depend on the measurement of phase differences between VLF stations. No more multiple or "fuzzy" reflections, now that Telstar is in use.

— • • • —

Ingenious test for transistors, using the resistance of the human body: Taking the lowest ohms range on a multi-range meter, connect the emitter of the transistor to the meter terminal which goes to the *positive* of the internal battery. Connect the collector to the other terminal (to negative of battery). Now, holding the collector lead, extend one finger to touch the base lead from the transistor. The deflection, which should have been very small before, should increase considerably. Then, with the other hand, hold the emitter lead, and extend a finger to touch the base lead (still touching it with the other hand as before). Deflection should now decrease to about half the previous figure. A transistor which passes this test is at least good for audio work. P-N-P types are referred to, of course; for N-P-N reverse the polarities.

(G8ON sends this information, evolved by his 15-year-old son)

— • • • —

"Electricity as high as 12 kV is running in the case at the right side. Be such as not to touch it while the set is in motion. As this set is transless system, one of the power lines is directly connected

chassis therefore, when you touch chassis you may feel electric shock, in such case plug in power plug vice versa. When you touch chassis do it with your right hand and keep left hand in pocket. Do not touch chassis with bare foot. Always wear shoes."

*Note on back of TV sets recently imported into Kenya, reported in "QTC"*

— • • • —  
CQ for September includes a description of a very useful "L/C Box" which houses a standard capacitor and a standard inductor. A grid dip oscillator can be used externally, with unknown capacitors and inductors, to determine the resonant frequency, and inductance or capacity is then read off directly on charts. As a matter of interest,  $5\mu\text{H}$  and  $100\mu\text{F}$  are used as the standards.

— • • • —  
Users of the Heathkit DX-100U will probably be interested in several modifications detailed in QST (September) They include improved grid-block keying, neutralisation of the PA, an output loading modification, provision for a keying monitor and a vernier knob on the VFO control.

— • • • —  
Thin film has been extensively employed for making condensers for many years. It is now being used for complete circuits, which are expected to improve on conventional circuits both in reliability and cost. A thin film circuit is made by deposition of the capacitors, resistors, connecting strips and contact areas on to a rigid base to which transistors and diodes are afterwards connected. The method is particularly suitable for circuits operating at up to about 24v. and with low power dissipation.

*("Components News," STC)*

— • • • —  
The Radar and Electronics Association have forwarded their lecture programme for this quarter. On November 8, W. J. Bray, M.Sc. (Eng.), M.I.E.E., of the Post Office Engineering Department, will be lecturing on "Satellite Communication Systems"; on December 6, there is an additional lecture by Professor Sir Bernard Lovell, O.B.E.,

F.R.S., on "Investigation of Space by Probes and Radio." And on December 13, Mr. R. A. Turrell and Mr. B. J. Rogers (Bush Radio Ltd.) will be talking on "Colour Television Services." Normal lectures are at 7 p.m. at the Royal Society of Arts, John Adam Street, W.1.; but Sir Bernard Lovell's talk will be at the Royal Commonwealth Society Hall, 18 Northumberland Avenue, W.C.2.

— • • • —  
Famous sayings from the past as they might have been in Amateur Radio parlance:—

*Queen Victoria* : "Negative Hi !"

*Dr. Livingstone* : "No, Sir, I am not VQ2DL and I hate presumptuous people."

*Nelson* : "I can never resolve SSB."

*Shakespeare* : "Does this sound like a ham transmission?"

*Charles I* : "I am sorry to be such an unconscionable time a-signing."

*(Suggested by G3NWT)*

— • • • —  
The connection between bird-watching and Amateur Radio is emphasised by the announcement (QST, October) of a bird-watching award. Species mentioned include the Gravel-Throated Splatterer, the Yellow-Bellied VFO-Swisher, the Long-Winded Coot, the Loud-Mouthed Warbler and the Ruffled Spouse. And in the DX'er (NCDX) there is a hilarious interview with WIFH — at one time the world's top DX man — who is reputed to be an ace bird-watcher now—bird-watching being a popular sport in the States. He laments the cheating that goes on; some people will even go to lonely spots in the world and trap rare species, bringing them home and placing them in your yard for a few dollars, long enough for you to photograph them. And then there was the man who painted a sparrow black and tried to pass it off as a midget crow. The equivalent of the DXCC Committee wouldn't swallow it! (But WIFH draws the line at staying up late to look for a new species). Furthermore, people will cheat by using binoculars in excess of the licensed magnification . . . telescopes (linear) will be the next development.

### RECRUITS STILL WANTED

The 65th Signal Regiment, Territorial Army, a London Area unit, is essentially a highly technical organisation with a long-range radio commitment demanding a high standard of their personnel, of both sexes. The Regiment gives spare-time technical training in a wide variety of subjects of Signals interest and significance, and already has 250 young men and 100 young women in its ranks. The Regt. Hq. is at 79 Worship Street, London, E.C.2, with Squadron Hq. in Barnet and at Southborough, near Tunbridge Wells. Full details can be obtained on application to the address given.

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

# 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.

**DL2DY**, J. G. P. Butler (*G3RDY*), 1 (BR) Corps Tps. Wksp., R.E.M.E., B.F.P.O., 39.

**G3PMK**, J. C. Buick (*ex-G13PMK/MM/VP2ST*), C.P.O.'s Mess, H.M.S. *Ganges*, nr. Ipswich, Suffolk.

**G3PNC**, R. L. Jack, Huntington Court, Kingston, Herefordshire.

**G3PYE**, Amateur Radio Group, Pye Telecommunications Ltd., Newmarket Road, Cambridge.

**GW3PYX**, J. Chetcuti, 94 Donald Street, Roath Park, Cardiff, Glam.

**G3RBL**, G. Lloyd, 262 Hubert Road, Selly Oak, Birmingham, 29, Warks.

**G3RCU**, C. B. Jones, Japonica, Abbey Road, Sandbach, Cheshire.

**G3RCW**, North Notts Amateur Radio Society, c/o E. W. Badger, 20 Tennyson Drive, Worksop, Notts.

**G3RDT**, J. C. Taylor, Dormy Cottage, Brookside Close, Runcton, Chichester, Sussex.

**G3RDY**, J. G. P. Butler (*DL2DY*), 33 Laburnum Grove, North End, Portsmouth, Hants.

**G3REF**, C. Capes, 9 Cockshott Close, Leeds, 12, Yorkshire.

**G3REL**, B. W. Woodfield, 26 Endike Lane, Beverley High Road, Hull, E. Yorkshire.

**G3RER**, R. J. G. Newton, Burton Manor College, Burton, Neston, Wirral, Cheshire.

**G3RFN**, G. Wild, 8 Westwood Road, Leyland, Lancs.

**G3RFT**, J. A. Mahon, 22 Broadway, Leyland, Lancs.

**G3RFY**, P. Buckingham, Ingle-nook, Holnicote Road, Bude, Cornwall.

**G3RGA**, P. J. H. Toynton, 46 Norfolk Road, New Barnet, Herts.

**GM3RGI**, D. Campbell, 18 South Biggar Road, Airdrie, Lanarkshire.

**GM3RGU**, J. Connelly, 84 Crowlin Crescent, Cranhill, Glasgow, E.3.

**G3RHA**, F. J. Keynes, 73 Greenhill Road, Northfleet, Kent.

**GM3RHK**, C. W. Forret, 4 Hayfield Lane, Lerwick, Shetland. (Tel.: *Lerwick 798*).

**G3RHL**, B. W. Rous, 10 Lesley Avenue, Canterbury, Kent.

**G3RHN**, R. L. Chapman, 29 Davis Avenue, Northfleet, Kent. (Tel.: *Gravesend 4560*).

**G3RHX**, N. W. Pattinson, 112 Sedlescombe Road North, St. Leonards-on-Sea, Sussex.

**G3RIE**, E. F. Puremont, 19 Vesper Gate Drive, Leeds, 5, Yorkshire.

**G3RIF**, H. Harrison, 67 Little Green Lanes, Sutton Coldfield, Warks.

**G3RII**, H. Armstrong, Outmoor, Williton Hill, Watchet, Somerset. (Tel.: *Watchet 257*).

**GM3RIJ**, B.B.C. Westerglen Club (Radio Section), c/o B.B.C. Transmitting Station, Westerglen, Falkirk, Stirlingshire.

**G3RIK**, D. Carden, 191 Ramsay Street, Rochdale, Lancs.

**G3RIM**, T. Emeney, 20 Rushworth Road, Reigate, Surrey.

**G3RIN**, R. Wells, 3 Cronks Hill Road, Meadvale, Redhill, Surrey.

**G3RIU**, F. G. Beresford, 51 Gosforth Lane, South Oxhey, Herts.

**G3RJH**, R. Harding, 19 Killowen Avenue, Northolt Park, Greenford, Middlesex.

**G3RJL**, A. H. Paul, 9 Dale Gardens, Woodford Wells, Woodford Green, Essex. (Tel.: *Buckhurst 3500*).

**G3RJK**, R. L. J. Kissick, Brookside, Brookside Road, Freshwater, Isle of Wight.

**G3RJV**, G. C. Dobbs, 95 Earl Street, Grimsby, Lincs.

**G3RKH**, J. L. Marshall, 11 Rosyl Avenue, Holcombe, Dawlish, Devon. (Tel.: *Dawlish 2483*).

**G3RKK**, A. J. Shepherd, 3 Cearn Way, Coulsdon, Surrey. (Tel.: *UPLands 7572*).

**G3RKQ**, A. J. Balmforth, 13 Strafford Walk, Dodworth, Barnsley, Yorkshire.

**G3RKR**, T. Williamson, 38 Watson Avenue, Cleadon, South Shields, Co. Durham.

## CHANGE OF ADDRESS

**G2ASL**, E. Line, 7 Dinmore Avenue, Northfield, Birmingham, 31.

**G2BCH**, J. P. O'Brien, 29 Crossways, West Clacton-on-Sea, Essex.

**G2FDF**, W. F. Limehouse, M.I.R.E. (*ex-Y12FDF*), 5 Argyle Road, Whitby, Yorkshire.

**G2HBQ**, R. I. G. St. John, 22 Fisher Close, Southgate, Crawley, Sussex.

**GM3AEY**, H. G. Henderson, B.Sc., Schoolhouse, Oakley, Fife.

**GM3AEY/A**, H. G. Henderson, Inzievar Secondary School, Oakley, Fife.

**G3CGU**, R. H. Clifton, 49 Hillview Road, Botley Road, Oxford.

**G3DTA**, G. F. Nottingham, 23 Walney Road, Heworth, York, Yorkshire.

**GM3EGW**, J. F. Shepherd, 28 Garvock Hill, Dunfermline, Fife.

**G3FLG**, P. Harvey, 11 Kinloss Road, Greasby, Cheshire.

**G3FWZ**, D. Vaughan, 25 London Road, Camberley, Surrey.

**G3GGL**, G. Wormald, Eton House, Windsors Road, Albrighton, Salop.

**G3GJQ**, R. Handley (*ex-AP2R*, *G3GJQ/V59A*, *G3GJQ/V59K*, *Y12AM*), c/o Sgts' Mess, R.A.F. Station, Cosford, Wolverhampton, Staffs.

**G3GNR**, R. E. Short, 7 Park Place, Raans Road, Amersham, Bucks.

**GW3GNT**, P. A. C. Wood, Priory House, Penmon, Beaumaris, Anglesey.

**G13GRY**, F. L. Wiseman, Camian, Circular Road, Castlerock, Co. Londonderry.

**G3HLW**, D. A. Pilley, 12 Highfield Close, Waterlooville, Hants.

**G3HT**, H. W. Pope, 1 Bijou Close, Greenways Estate, Tiptree, Colchester, Essex.

**G3IBB**, R. Walmsley, Royal Signals, 257 Signals Squadron, B.F.P.O. 20.

- G3JEK**, W. J. Holden, 24 Colwell Road, Cosham, Portsmouth, Hants.
- G3JMB**, J. Brooker, 7 Fitzmary Avenue, Margate, Kent. (Tel.: *Thanet 31881*).
- G3JMJ**, D. E. Nunn, 25 Sterling Road, Winton, Bournemouth, Hants.
- G3JMJ/A**, D. E. Nunn, Chesterton Mill, French's Way, Victoria Road, Cambridge.
- G3JTL**, A. P. Fennell, Fore Street, Bovey Tracey, Devon.
- G3KUL**, D. Stephenson, 701 Bishport Avenue, Withywood, Bristol, 3.
- G3LDA**, A. B. Fletcher, 40 Chelmsford Avenue, Warden Hill, Cheltenham, Glos.
- G3LOX**, B. M. Johnson, Allerton Cottage, Wraxall, Nailsea, Somerset. (Tel.: *Nailsea 3012*).
- G3LYT**, W. J. C. Fennell, Fore Street, Bovey Tracey, Devon.
- G3MDD**, B. S. Mudge (*ex-VS6DV/VS6ED*), 20 Cripsey Road, Oxford, Oxon.
- G3MJN**, L. A. Harvey, 33-A Shakespeare Drive, Westcliff-on-Sea, Essex.
- G3MRV**, G. W. Carrick (*ex-GM3MRV*), Greenview, Broom-fallen Road, Scotby, Carlisle, Cumberland.
- G3NCZ**, K. Heap, The Gables, East Park Road, Blackburn, Lancs.
- G3NPH**, A. M. Deacon, 31-A Moss Grove, Kingswinford, Brierley Hill, Staffs.
- G3NRW**, A. I. H. Wade, Rutherford Hall, Ashby Road, Loughborough, Leics.
- G3ODI**, G. N. Partington, B.Eng. (*ex-GW3ODI*), 16 Fern Grove, Liverpool, 8.
- G3OIC**, I. L. Croxford (*ex-G3OIC/ZC5AB*), 17 Woodland Avenue, Lambeg, Co. Antrim.
- G3OPU**, I. M. Watson (*ex-VP9MM*), 26 Newstead Road, Southbourne, Bournemouth, Hants.
- G3PEK**, B. D. Simpson, 3 Moelfre Drive, Cheadle Hulme, Cheshire.
- GM3PFQ**, J. Balfour, 17 Bandon Avenue, Kirkcaldy, Fife.
- G3PHG**, A. J. Gibbs, 6 Dairyfields, Gossops Green, Crawley, Sussex.
- G3PLL**, R. P. Moore, Ballycastle Cottage, Aghanloo, Limavady, Co. Derry.
- G3PMR**, A. H. Jubb, Orchard Lodge, South Wheatley, Retford, Notts. (Tel.: *Sturton-le-Steeple 287*).
- G3PWY**, D. M. Gresswell, 11 Vincent Road, Hounslow, Middlesex.
- G8AP**, Dr. E. Pawson, 93 Repton Road, Orpington, Kent.
- G8CV**, Dr. T. McL. Galloway, Rose Park, Aglionby, Carlisle, Cumberland.

#### AMENDMENTS

- G3JSV**, D. A. S. Holmes, 225 Stock Road, Billericay, Essex.
- GM3OWU**, V. W. Stewart, 9 Belmont Avenue, Juniper Green, Midlothian.
- G3PIY**, C. A. Isaacs, 55 Leafield Road, Hunts Cross, Liverpool, 25.

#### SINGLE-COPY ORDERS

Readers are reminded that we can accept single-copy orders for "the forthcoming issue"—that is to say, individual orders for the December issue (due out on Friday, December 7) should be posted on Tuesday, December 4, with a postal order for 3s. 5d. and a note saying "December issue, please." This may help those in remote districts who have difficulty in getting the *Magazine*.

#### EXTERNAL S-METER UNIT

We are often asked about "Adding an S-Meter to my Rx." This is usually more difficult than it sounds—unless a modification for that particular receiver has already been published—but there is another way of tackling the job. In the March 1957 issue of *SHORT WAVE MAGAZINE*, we gave full details about adding an S-meter as an external unit for use with *any* receiver. It is bridge device, involving one triode valve and a sensitive meter; it can be powered from the main Rx and the only other approach to the internals of the receiver is that it should be possible to pick up the live AVC line. Most receivers have a DPST toggle switch for BFO control, one side earthing the AVC line, and the other switching HT to the BFO. The live AVC can be taken off this switch to drive the S-meter. Recently, in making up another model of this device for a particular purpose, an aircraft-instrument type of panel meter was used. Meters of this pattern are available very cheaply on the surplus market, and whether the dial is scaled

"gas pressure, outer turbine," "oil temp. 0°C," or whatever, the actual instrument movement is always a sensitive milliammeter or microammeter with a damped, dead-beat action, ideal for S-meter indication. It is only a matter of changing the scale, or re-marking the dial, to use it for our purpose. A useful practical article on the handling of panel instruments ("Repair of Moving-Coil Meters") appeared in the March 1962 issue of *SHORT WAVE MAGAZINE*. The issue of March 1957, in which the original S-meter design was fully discussed, is long since out-of-print with us; if you have not got that copy, or cannot borrow it locally, it may be possible to obtain one through the Readers' Small Advertisement section.

#### TAPERED AERIAL ELEMENTS

Referring to the article "Light-Weight Vertical Aerial Construction," in the October issue of *SHORT WAVE MAGAZINE*, G3IRD (Bagworth, Leics.) draws attention to the fact that tapered elements do not conform to the normal formula for length—as the current distribution is not sinusoidal, they should be made longer. As an example, a dipole for 15 mc, with each arm tapering from 1½ ins. to ¼-in., will resonate at a frequency 6% higher than the figure given by formula; hence, the element for a 20m. ground-plane, with a taper from 1½ ins. to ¼-in., should be made 17 ft. 2 ins. long to resonate at 14.2 mc. And arising from the footnote to that same article, it might also be mentioned that a radiating element made from beer-cans soldered together will show a useful broad-band characteristic.

# THE MONTH WITH THE CLUBS

By "Club Secretary"

(Deadline for December Issue : November 16)

(Address all reports for this feature to "Club Secretary")

**J**UDGING by the number of applications for identification numbers, the Seventeenth "MCC" should be quite an event. Of course, it is unlikely that all those Clubs who have been allotted numbers will be there, but we confidently forecast that more than 70 Clubs will be taking the air on November 17-18. Further, we expect last year's record (71) to be broken.

Correspondence from Club Secretaries has shown that the cutting-down of MCC to one week-end has been favourably received. In fact it does appear to be a positive fact that the difficulty of getting organised for two successive week-ends has kept a few out of the contest in past years.

Certainly it will make the competition keener, for two reasons. No one can afford to have a bad first session (hoping to make it up on the other three!). Any slip-up on the opening day will take a lot of making good, this time. Secondly, the same proportion of non-Club stations will be available (more, of course, since there are more stations on the air each year); but as many as possible have now got to be worked in two sessions instead of four. Actually, one doubts whether the speed of the contest will allow many of these single-point contacts to be gathered in; certainly nobody will have time to go deliberately looking for them.

## Please Note!

And some important reminders: Get an accurate time-check before the start of each session—we expect logs to be timed to the minute. Do *not* attempt to keep the fair log as you go along; this can be entered up at leisure afterwards, from the working sheets. Head each page of the fair log with your Club name and callsign. Make sure the log sent in is set out exactly as required by Rule 7, p.440, October (one side of ruled foolscap sheets is the best sort of paper to use). If you hear Club identification numbers in excess of 120 (the latest shown on p.497 here) do not be surprised, as there may be a few late comers, received after this went to press.

Finally, it will help us if you can get your entry in before the due date, November 30. We cannot in any event evaluate logs received after that, because the work of checking the whole entry is done over the week-end immediately following the closing date, which is a Friday. Anything received on the Monday (and we have several such every year) will simply be

too late for adjudication.

So we wish everyone Good Luck, six hectic hours of operating, and no slips over aerial connections, power supplies, or finding the keys to the shack! As usual, full results and comments will appear in our January issue.

## ACTIVITY REPORTS

Closed Circuit Amateur TV will be discussed by **Chiltern** at their meeting on November 29, at the British Legion, St. Mary Street, High Wycombe. Note change of secretary (*see* panel for QTH).

**Civil Service**, meeting at the Science Museum, will hear a talk on Radio Interference Problems and Cures (Belling Lee) on November 6. On November 20 there will be an informal meeting, with GB2SM on the air.

At **Crawley**, on November 28, G2FUX will be talking on W and VE Mobile Operation—some observations on his recent visit to those countries. Regular slow Morse classes are now being held, and it is hoped that some more licences will soon be applied for. **Cray Valley** report that their Audio Evening in October was very well attended. Next meeting is on December 6, when there will be a talk on the Withers (TW) range of VHF equipment. **Newark** meet every other Wednesday and have arranged a programme which includes a demonstration of the Drake 2B, a Film Show, a tape recorded lecture, a visit to a "school shack" and a social evening. G3JNL is the new chairman, and G3JNK and G3PYY are on the committee.

There are four November meetings at **Manchester**, all at the King George VI W.V.S. Centre, North Road, Moston. On the 7th there is a lecture by G3JIB on Binary Systems; on the 14th one by G3PVG on Computers; the 21st is the night for "Practical and Ragchew"; and the 28th for Theory and Morse practice; the December 5 lecture is not yet fixed.

There will be a talk on VHF and UHF Techniques at **Newbury** on November 30—7.30 p.m. at The Canteen, Elliots of Newbury; visitors and prospective members will be welcome. On November 8 **North Kent** will be hearing from one of their own members about Scrambler Circuits; the subject for the 22nd has not yet been decided. The pre-Christmas gathering is fixed for December 6, at the King's Head, Old Bexley.

**Reigate** report that the newly-arranged informal

meetings on the first Saturday of the month are popular. The regular club night (this month on the 17th) will either be a film show or a series of talks by members on their mobile experiences. The constructional competition judging will be held on December 15, and the AGM on January 19.

**Roding Boys' Radio Society** is the former junior section of the Wanstead and Woodford Club, which has recently branched out independently and is seeking members. Meetings are held at Wanstead House on Tuesdays, 7.30 p.m. (See panel for secretary's QTH.) **Sutton and Cheam** are visiting the headquarters of Cable and Wireless Services (Victoria Embankment, W.C.2) on November 20.

The November meeting at **Cambridge** takes place on publication day, November 2, and will be a Social Evening and Ragchew, held at Coton. Next meeting is on December 7, when G2DUS will talk on Electronic Organ Design.

At **Guildford**, the meeting on November 8 will be addressed by G5XB from Reading, and on the 23rd they will be visiting the BBC Receiving Station at Tatsfield. The Annual Dinner is provisionally booked for December 14 at the Corona Café, High Street, Guildford.

**Harrow** meet on November 9, when G3OKJ will describe a Top Band transmitter of novel design, and on the 23rd there will be a film show. The 2nd, 16th and 30th will be practical nights, with slow Morse practice, and G3EFX on the air. A special "Christmas Novelty Night" is planned for December 21.

The AGM at **Hastings** will be held on November 6, and on the 20th G6QB will be describing the Drake 2B Receiver. December 4 is an Open Meeting—all at 33 Cambridge Road, Hastings.

GM3LAV will be talking on Some Aspects of Transistors to **Lothians** on November 8; on the 22nd they will hold a Surplus Sale; both meetings at the YMCA, 14 South St. Andrew Street, Edinburgh 2. Transistors are also the subject at **Mitcham**; on November 16 G8TB will give a talk entitled "Why be Afraid of Transistors"—why, indeed! On December 14, the Christmas meeting, there will be a Draw and a Constructional Contest.

**Morecambe** will be hearing about The Development of Radar (Mr. F. R. Stoodley) on November 7, and December 5 will be "The Chairman's Evening." **Northern Heights** have a Ragchew scheduled for November 21, a film show on December 5 and their Annual Dinner on December 12.

Pocket Paging Systems will be discussed at **Purley**

#### THE SEVENTEENTH MCC

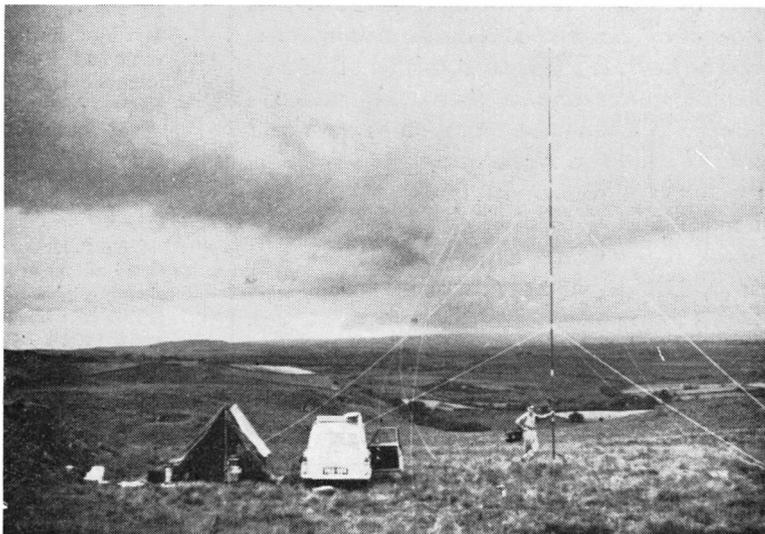
Dates November 17/18, full rules pp. 440-441 October issue. Supplementary Club identification list, p. 497 here. Obtain accurate time-check before each operating session. Note that fair logs must be in by November 30 latest; entries received after this date cannot be evaluated. Results in detail in January issue.

(by G3DQY) on November 2, and on the 16th G3NFV will talk about The Ham-Hop Club. At **Sheffield**, where they now hold the call G3RCM, they are busy building an all-band transmitter and re-furnishing the headquarters. A technical meeting will be held on November 9, and an exhibition of amateur-built gear on the 23rd; ten members are busy on classes of R.A.E. instruction.

**Slade** will be hearing about Printed Circuits (Mr. D. Wilson) and also about the 1962 D/F Events (Mr. G. C. Simmonds) on November 16. The 30th is the date for the AGM. Meanwhile the Club station (G3JBN) at Church House, is available to members, with a licensed operator always there on Wednesday evenings; note QTH of new secretary, in panel.

**Southgate** hold their competition for the G6QM Trophy on November 8 and their AGM on December 13. There will be a Junk Sale at Spen Valley on November 15, and a visit to Fox's Biscuit Works (Batley) on the 29th. Meetings are at the Grammar School, Heckmondwike, 7.15 p.m., from now on.

**Stratford-upon-Avon**, reporting for the first time,



When G3CGD and G3HCV took out GW5BK/P of the Cheltenham Amateur Radio Society, on a trip into the Welsh counties for Top Band operation during the August holiday period, it turned out to be hard going in very bad weather. However, the counties of Carmarthenshire, Cardiganshire, Montgomeryshire and Flintshire were reached, and a total of 185 QSO's made on 160m., many with operators working these counties for the first time. Their equipment included a sectional mast; here it is at 36 feet, when GW5BK/P was at Mynydd Bach, Aberayron, Cardiganshire. It was a good site, from which 48 stations were worked.

**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.  
 BARNSELY: P. Carbutt, G2AFV, 19 Warner Road, Barnsley.  
 BURNHAM-ON-SEA: D. W. Birt, G3GIW, 99 Stoddens Road, Burnham-on-Sea.  
 CAMBRIDGE: H. Lowe, 47 Hurst Park Avenue, Cambridge.  
 CHILTERN: H. D. Coltman, G3PVJ, 301 Micklefield Road, High Wycombe.  
 CIVIL SERVICE: G. Lloyd-Dalton, 2 Honister Heights, Purley.  
 CLIFTON: E. Godsmark, G3IWL, 211 Manwood Road, London, S.E.4.  
 CRAWLEY: R. G. B. Vaughan, G3FRV, 9 Hawkins Road, Tilgate, Crawley.  
 CRAY VALLEY: S. W. Coursey, G3JJC, 49 Dulverton Road, London, S.E.9.  
 DERBY: F. C. Ward, G2CVV, 5 Uplands Avenue, Littleover, Derby.  
 EAST KENT: D. N. T. Williams, G3MDO, Seletar, New House Lane, Canterbury.  
 ECCLES: J. A. Jennison, 20 Carr Road, Higher Irlam, Lancs.  
 EXETER: S. Line, 46 Roseland Crescent, Heavitree, Exeter.  
 FARNBOROUGH: Dr. W. F. Luke Fava, G3NXB, 65 Gally Hill Road, Crookham, Hants.  
 GRAFTON: A. W. H. Wennell, G2CJN 145 Uxendon Hill, Wembley Park, Middlesex.  
 GUILDFORD: D. Hobden, 121 Great Goodwin Drive, Guildford.  
 HARROW: A. C. W. Biddell, G3GNM, 114 Kingshill Avenue, Kenton.  
 HARTLEPOOL: L. Foden, G3CHJ, 207 Park Road, West Hartlepool.  
 HASTINGS: W. E. Thompson, G3MQT, 8 Coventry Road, St. Leonards-on-Sea.  
 LEICESTER: R. E. Hill, 28 Fayhurst Road, Leicester.  
 LOTHIAN: W. T. Sutherland, GM3JWS, 47 Great King Street, Edinburgh 3.  
 MANCHESTER: A. B. Langfield, G3IOA, 2 Rowland Street, Moston, Manchester 10.  
 MELTON MOWBRAY: D. W. Lilley, G3FDF, 23 Melton Road, Asfordby Hill, Melton Mowbray.  
 MIDLAND: C. J. Haycock, G3JJD, 29A Wellington Road, Handsworth, Birmingham, 20.  
 MID-WARWICKS: N. K. Read, 86 Telford Avenue, Lillington, Leamington Spa.  
 MITCHAM: B. Blandford, 1 Biggin Avenue, Mitcham.  
 MORECAMBE: K. J. Singleton, G3NLM, 8 Westmoor Grove, Heysham.  
 NEWARK: J. R. Clayton, 160 Wolsey Road, Newark.  
 NEWBURY: G. T. Allen, G3JTK, 83 Huntsbrook Road, Tadley, Basingstoke.  
 NORTHERN HEIGHTS: A. Robinson, G3MDW, Candy Cabin, Ogdan, Halifax.  
 NORTH KENT: B. J. Reynolds, G3ONR, 49 Station Road, Crayford.  
 PETERBOROUGH: D. Byrne, G3KPO, Jersey House, Eye, Peterborough.  
 PURLEY: E. R. Honeywood, G3GKF, 105 Whytecliffe Road, Purley.  
 R.A.I.B.C.: Mrs. F. E. Woolley, G3LWY, 10 Sturton Road, Saxilby, Lincoln.  
 REIGATE: F. D. Thom, G3NKT, 12 Willow Road, Redhill.  
 RHONDDA: A. Chapman, GW3RIY, 10 Enid Street, Trealaw.  
 RODING: S. Wright, 10 Newton Road, London, E.15.  
 SHEFFIELD: D. R. A. Hill, 16 Tyneley Road, Sheffield 2.  
 SLADE: D. D. S. Williams, 117 The Boulevard, Wylde Green, Sutton Coldfield.  
 SOUTHGATE: R. W. Howe, G3PLB, 162 Victoria Road, London, N.22.  
 SOUTH HANTS: G. J. Meikle, G3NIM, 34 Victoria Road, Netley Abbey.  
 SOUTH LONDON MOBILE CLUB: B. Negri, G3LXN, 17 Voltaire Road, S.W.4.  
 SPEN VALLEY: L. A. Metcalfe, la Moorlands Road, Birkenshaw (Acting).  
 STRATFORD-UPON-AVON: P. Robinson, G3MGJ, 43 Loxley Road, Stratford-upon-Avon.  
 SURREY (CROYDON): S. A. Morley, G3FWR, 22 Old Farleigh Road, Selsdon, South Croydon.  
 SUTTON & CHEAM: F. J. Harris, G2BOF, 143 Collingwood Road, Sutton.  
 SUTTON COLDFIELD: L. E. R. Hall, G3IGI, 24 Calthorpe Road, Walsall.  
 TORBAY: Mrs. G. Western, G3NQD, 118 Salisbury Avenue, Barton, Torquay.  
 W.A.M.R.A.C.: Rev. A. Shepherd, G3NGF, 121 Main Street, Asfordby, Melton Mowbray.  
 WESSEX: G. J. Fowle, 138 Surrey Road, Branksome, Poole.  
 WEST KENT: H. F. Richards, 17 Reynolds Lane, Tunbridge Wells.  
 WIRRAL: A. Seed, G3FOO, 31 Withert Avenue, Bebington, Wirral.

announce a talk on Coupled Circuits, Acceptors and Rejectors, by G3OOQ, on November 9; on the 16th the subject will be Valves (by John Lambert) and on the 23rd the Use of Valves as Oscillators (Ron Garrett); this is followed up on the 30th by the Use of Valves as Amplifiers (G3ORI).

Amplifiers and Modulators will be discussed at **Sutton Coldfield** on November 8; on the 22nd the AGM will be held, together with the judging for the G3GLQ Cup. At the November meeting of **Wessex** (on the 5th) the event will be a film and lecture on London Transport; December 3 is the date for a Demonstration of Equipment. The film show at **West Kent** on November 9 may include the new film "Bridge Across Space"; November 23 will be Audio Night, when members will demonstrate their latest gear.

**Acton, Brentford & Chiswick** will be having a "Mixed Film Show" at their November meeting, which is on the 20th at the AEU Club, 66 High Road, Chiswick (7.30 p.m.). At **Barnsley**, on November 9, members will see and hear an illustrated tape lecture called "DX-pedition to St. Pierre," by W1PFA. On the 23rd there will be a display of members' equipment.

**Clifton** heard G3HWG's excellent lecture on Oscilloscopes on October 5. They are planning a Dinner and Dance for the same date as the Social Evening and Constructional Contest, provisionally set for December 14.

There is a Surplus Sale at **Derby** on November 7; on the 14th Mr. R. Moon will talk on Electronics in Industry, and on the 21st the subject is Radio-Controlled Models (Mr. R. Cullen). November 28 is marked up for a film show.

The October meeting at **Exeter** took the form of an RTTY lecture by G3GWH. After refreshments Mr. Ivor Elston demonstrated his teletype equipment, using an Eddystone S.640. The meeting was well attended, and the next is on November 6 (YMCA, Exeter, 7.30 p.m.).

**Melton Mowbray** will be hearing about Crystal-Grinding from their secretary, G3FDF, on November 15—St. John Ambulance Hall, Asfordby Hill, at 7.30 p.m. At the December meeting, on the 20th, G3FXP will be talking about Transistors.

At **Peterborough** they had a working demonstration of a new commercial transmitter and three communications receivers, followed by a display by G2NJ of valves, coils and other components from the early 1920's. The AGM is booked for November 9, at Peterborough Technical College.

On November 12 at **Wolverhampton** the title of the talk is "Applications of Transducers," by G3RBA/T. November 26 is the day for their R.A.E. class. Both meetings 8 p.m. at Neachells Cottage, Stockwell End, Tettenhall.

A new programme has been drawn up for **Rhondda**, with lectures, discussions, films, visits and a field day among the activities. Meetings for all these events are on the last three Thursdays of the month; the main meeting is on the first Thursday—all at the Royal Hotel, Trealaw.

Up in **York** they now meet on Tuesdays at 7.30 p.m. for R.A.E. and Morse classes, and on Thursdays

at 8 p.m. for talks and informal meetings; all gatherings are at the Clubroom, Fetter Lane; note change of secretary—see panel for QTH.

At their AGM, **Grafton** reported a most successful year of operation, and elected G2AAN president, G2CJN secretary (back again!) and G3AFC chairman; seven vice-presidents were also elected, together with other officers.

**Leicester** also held their AGM, and elected G3LIR chairman and Mr. R. E. Hill secretary (see panel for QTH). A new club shack is being fitted up, and a long-term project includes a 120-watt transmitter for the HF bands. G3MYI is busy erecting an aerial in readiness for MCC, in which he will be operating the club Tx.

The **South London Mobile Club** meets at the Clapham Manor Baths once a fortnight. November 3 will be an informal meeting, November 17 a Junk Sale. Membership to date is about 30.

**Burham-on-Sea** report that they now hold Morse classes on Mondays, R.A.E. theory classes on Thursdays—all at the clubrooms, The Hall, Berrow Road. The main monthly meeting is at the Crown Hotel on the second Tuesday, the clubroom not being big enough—a good sign! An interesting winter programme is promised.

**East Kent** held their AGM recently, and elected G2JF chairman, G3MDO continuing as secretary. They, too, have arranged R.A.E. classes, which will



The pack-up for the portable gear when the Cheltenham boys, G3CGD and G3HCV, went out with GW5BK/P. The mast sections can be seen on the roof of the car — and G3HCV looks ready for anything! (Another picture p.495).

be held at their headquarters every Tuesday, 7 p.m. Forthcoming meetings—November 6, “The Other Man’s Job” (Mr. E. Whitehead); November 27, Chassis Construction (Mr. R. Dale); December 11, “Something in a Can” (Mr. W. Broad).

The club station, G3IDV, was “well and truly opened” by G3CHJ, secretary of **Hartlepoons**, at a recent meeting—the culmination of many months of hard work by loyal members. A programme of talks has been arranged for the winter, including a film show of “Local Radio Activities”; R.A.E. and Morse classes are also running.

**Surrey** (Croydon) meet on November 13 to hear G3BLP’s talk on The Practical Application of Transistors. For the December meeting the subject will be “SSB—Third Method.”

At their recent AGM, **Wirral** elected G3CSG chairman and G3FOO secretary. During October they visited the G.P.O. station at Criggion, and previously paid a call on the Manchester *Guardian* offices. November 7 is booked for G2FOS’s talk on “SSB—Part II”; and on the 21st G3CSG and G2AMV will discuss their “joint venture”—a mobile transmitter and receiver.

A new local Club group is the **Mid-Warwicks**, formed at Leamington Spa to cater for all those interested in Amateur Radio and electronics. Meetings are every Friday, 8.0 p.m., in the Oddfellows Hall, Warwick Street; a clubroom with workshop facilities is being sought and it is intended to start classes for Morse and the R.A.E. in the New Year. A welcome to this venture, which we hope will be well supported locally—see panel for the hon. secretary’s QTH.

**Torbay** report successful meetings and extending activity, and hope to be back in their own Hq. in Belgrave Road very shortly. The **Farnborough**

#### “MCC”—ADDITIONAL CLUB IDENTIFICATION NUMBERS

Identification numbers up to No. 91 were given on p. 441 of the October issue. The following additional numbers have been issued, as at close of press:—

92 BBC (Langham)	108 Yeovil
93 BBC (Bush House)	109 Bangor University
94 BBC (Lime Grove)	110 South London Mobile Club
95 Shefford, Beds.	111 Wakefield
96 Paddington	112 North Notts
97 Deal	113 Blackburn
98 Verulam (St. Albans)	114 Halifax
99 Chiltern, High Wycombe	115 A.A.S., Arborfield, Berks.
100 Ash Green	116 Barnsley
101 Petersfield	117 Loughborough, Leics.
102 Civil Service, London	118 Midland Radio Contest Club
103 Newark	119 Norfolk A.R.S.
104 Oxford	120 Eccles, Lancs.
105 Stockport	
106 Aquila (Bromley)	
107 Burslem, Staffs.	

Note: Though further Club identifications are being issued as requests may be received, they cannot now be published and will be with numbers above 120.

## CLUB PUBLICATIONS RECEIVED

We acknowledge, with thanks, the receipt of the following Club publications: **Reigate** (*Feedback*, No. 12); **North Kent** (*Newsletters*, Nos. 59 and 60); **Cray Valley** (*Newsletter*, September); **RAIBC** (*Radial*, October); **Wolverhampton** (*Newsletter*, October); **Southgate** (*Newsletter*, October); **Derby** (*Newsletter*, No. 4); **South Hants.** (*QUA*, October); **Purley** (*Splatter*, October); **Mitcham** (*Newsletter*, September); **Guildford** (*Natter*, October); **ARMS** (*Mobile News*, September); **Stratford-upon-Avon** (*News-Sheet*, Autumn); **West Kent** (*QLF*, September); **WAMRAC** (*Circular Letter*, No. 22); **Surrey** (*SRCC Monthly News*, October); **Wirral** (*News Letter*, Vol. 15, No. 8); and **Midland** (*News Letter*, October).

Technical College Radio Club operate their own station, G3POW (400 contacts in 40 countries so far), and in his report the chairman, G3OWF, mentioned that in addition to the permanent clubroom they are planning, various social activities were being organised; the committee consists mainly of students of the College, with G3NXB as hon. secretary.

Up in **Eccles**, where the Club station signs G3GX1, a junk sale is to be held in the newly re-roofed Clubroom on November 27, at 8.0 p.m. The constructional section have an all-band Tx on the stocks.

For **Midland**, there is a special visit for licensed members to A.E.R.E., Harwell, on November 18. Monthly meetings are held at the Institute, Paradise Street, Birmingham, at 7.30 p.m. on the third Tuesday each month and a varied programme is presented.

Though MARS is in a strong financial position, with liquid assets of over £300, the hon. treasurer's report for the current year shows a deficit on operations of £49; it is perhaps significant that £38 of this is accounted for by the loss on the annual dinner, due to unexpectedly poor support.

## THE "OTHER MAN'S STATION" FEATURE

If you have a good, clear photograph of your station, showing plenty of detail, why not send it in, with some notes on the equipment and your results, for writing up as "The Other Man's Station." This feature has been running for years—since before the last War, in fact—and since 1938 scores of station descriptions have been published. We pay for all such material used immediately on publication, and the story as sent in can be in "own words."

## USE OF BCM/QSL

The both-way use of the QSL Bureau we operate is confined strictly to direct subscribers, *i.e.* those who obtain SHORT WAVE MAGAZINE by post monthly direct from us at the advance subscription rate of 36s. for a year of twelve issues. We are unable in any circumstances to vary this rule, but we are always prepared to accept *s.a.e.*'s on deposit for *one-way* use, free of charge, by those who think cards for them might reach our Bureau. Similarly, we are glad to accept instructions for the disposal of incoming cards.

## SMALL ADVERTISEMENTS

## ("SITUATIONS" AND "TRADE")

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## SITUATIONS VACANT

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**WANTED FOR CASH:** Good clean communications receivers and SSB equipment. Please state price.—Short Wave (Hull) Radio, 30/32 Princes Avenue, Hull. (Tel. 18953.)

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**RADIO AMATEUR COURSE.**—A postal course for those wishing to take the Amateur Examination. A sound basic training in radio communication. Very reasonable terms. Send for brochure.—Premier School of Radio, BCM/Wireless, London, W.C.1.

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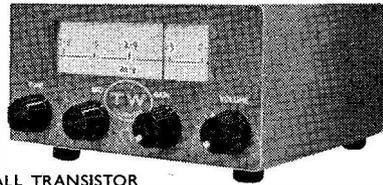
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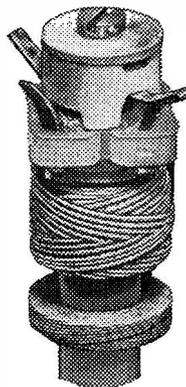
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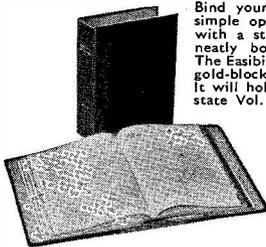
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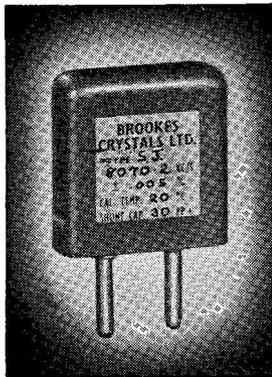
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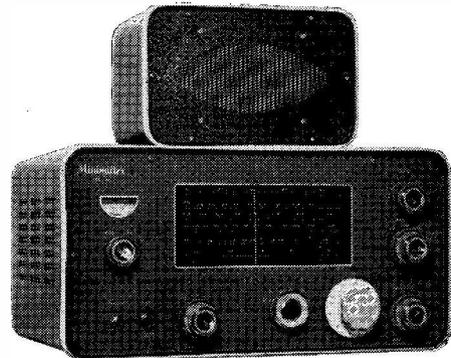
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GD-1U



CM-1U



OS-1

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