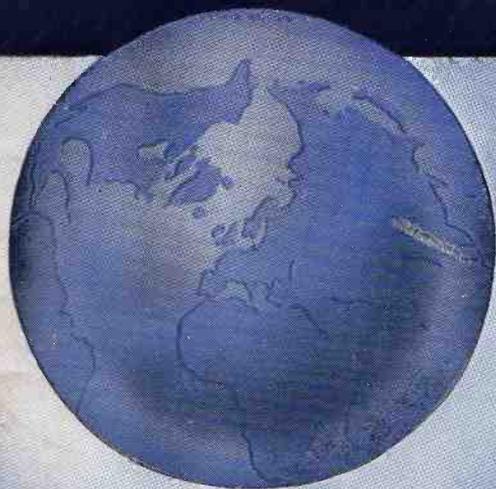


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The
SHORTWAVE
Magazine



EXCLUSIVELY FOR THE
RADIO EXPERIMENTER &
TRANSMITTING AMATEUR

VOL. IX No. 6 AUGUST 1951

H. WHITAKER G3SJ

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RESISTORS. An exceptionally fine assortment of 100 Erie, Dubilier etc. includes ceramicons all brand new $\frac{1}{4}$ to 20 watt, carbon and small vitreous. Values range from 22 ohm to 8.6 meg, including all standard values. Average parcel will include at least 20 different values, as follows, 20 $\frac{1}{4}$ watt, 30 $\frac{1}{4}$ watt, 30 1 and 2 watt, 15 $\frac{5}{10}$ watt, 5 20 watt. Our price 12/6. Your own choice of values (nearest will be sent) 15/-.

BLEEDERS. Complete set of 4 for the 4336 Tx 30/- . Ditto Screw in type for the 4336 per pair 10/- . Assorted bleeders 30 watt to 120 watt, 1800 ohm to 1 meg a good assortment of popular values including tapped varieties at 15/- per doz.

CATHODE RAY OSCILLOSCOPE. An outstanding offer of a well known manufacturers surplus. Model GP4. Size 12in. x 8in. x 6in. 200/250v. 40/100cy. 3in. Tube ECR 30. Deflection Sensitivity 2v. per in.m. Direct connection to both "X" and "Y" plates. Hard valve time base circuit 5-250,000 c.p.s. in 6 steps, with separate fine control. Time base wave form brought out to terminal for external use. Separate valve for sync control. "Flyback" suppression. Provision for using a D.C. voltmeter to measure amplitude of an A.C. wave form. Controls as follows, Brilliance on/off. Focus, X shift, Y shift, Sweep coarse, sweep fine, Y amp, Y amp switch (disconnects the Y plates) Sync, Sweep switch (disconnects X plates from sweep circuit) Blackout switch, X and Y terminals. Input terminal to grid of Y amp. Provision for use with wobulator, and as a high resistance D.C. voltmeter. 7 valves in all, and complete with internal power supply. Brand new in original cartons. £19/10/0 Carr. paid. Manual available with each instrument.

MICROAMP-METERS. 0/200 micro-amps, size 4in. x $\frac{1}{2}$ in. U.S.A. manufacture. Spares for the Collins freq. meter TS/69. Brand new £3.

COLLINS FREQ. METER TS-69. 341 to 1000 Mc. Size 20in. x 5 x $\frac{1}{2}$, individually calibrated 4in. x $\frac{1}{2}$ in. 0/200 Microampmeter. Approx. 8 divisions per Meg at 144 Mc band. Veeder counter dial. Brand new and unused, £7/10/0.

ANTENNA RELAYS. Price Bros. Maryland. Double pole change over, suitable for 600 ohm line. 28v. D.C. Cylinder piston action. An exceptionally fine job, with ceramic stand offs. 25/- each.

VALVES. All new boxed in original cartons. 813 90/-, 805 27/6, 807 12/6, 1625 4/-, 860 10/-, 6K7 7/6, 6L7, 6N7, 6SG7, 8/-, 12A6, 12SK7, 12SR7, 12SF7, 6/-, 450th £6, 6SA7 7/6, VU111 3/6.

VOLTMETERS. 2in. square flush, 0/20v., 0/40v., basic 0/5 mills, 5/- each. 0/200 mills 3in. round flush 10/6. 0/1 mill 2in. round flush, U.S.A. 10/6.

CONDENSERS. All condensers as advertised last month are still available.

TELEVISION PATTERN GENERATOR. J.V. Type PG II. Complete with 230/50 cy Power supply. 7 valves. Covers all television channels. 40/70 Mc. One Horizontal bar optional number of vertical bars. Sound modulation. Indispensable to the service engineer. £14 Carr. paid.

FEEDERS: Henley 80 ohm. twin line 6d. per yard. Telcon 300 ohm. line 9d. per yard.

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P.O. KEY SWITCHES: S.P. Change-over plus S.P. Break, with adjustable lock panel mounting 2/- each.

P.O. Type panel mounting Jacks, double circuit, 1/6 each. Standard plug to suit 1/- .

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JONES PLUG CABLE GRIP to clear 2/- per 100.

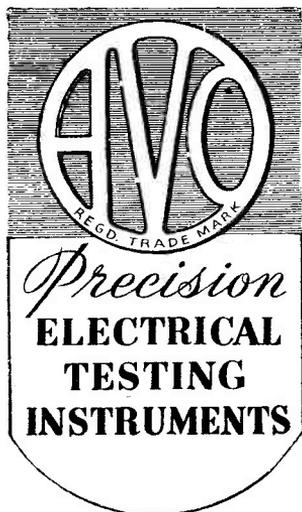
1154 TRANSMITTER. Brand new and unused in original transit cases, complete with all valves. A grand bargain at £5 Carr. paid. 15/- extra.

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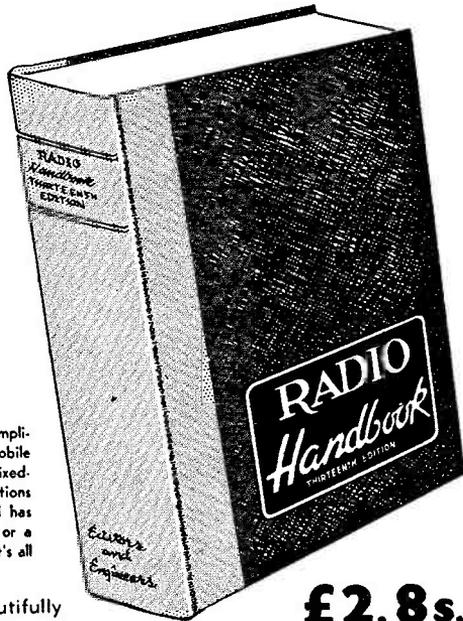
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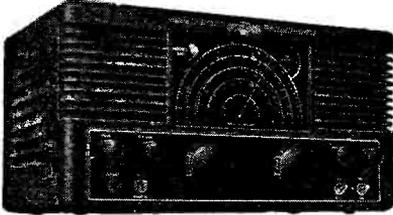
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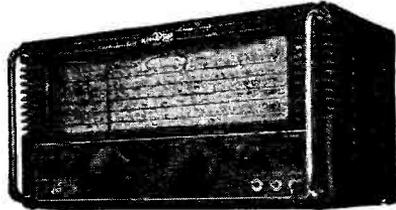
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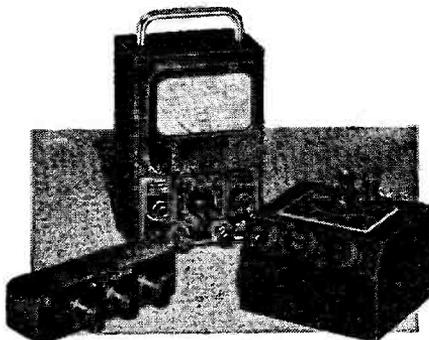
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SHORT WAVE MAGAZINE

FOR THE RADIO AMATEUR & AMATEUR RADIO

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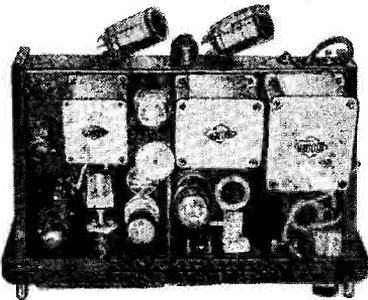
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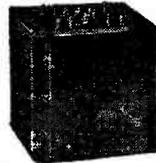


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E D I T O R I A L

Activity

This is the season of the year when one would expect individual enthusiasm for radio to begin to slacken—the counter-attraction of outdoor activities and the incidence of holidays during the period June-September quite naturally tends to reduce to some extent the level of Amateur Radio operations. Only in the VHF field is the approach of the summer period felt to herald “The Season,” and so far this year our hopes in that respect have been fulfilled beyond expectation.

But on most other bands, we are in the doldrums—as well as being in what one can only hope is the trough of the sunspot cycle—so that it would not be at all surprising if amateur activity fell to a low level under such conditions.

The fact that it does not and that the slight decline actually noted can quite obviously be related to the seasonal trend remains (as it always has done) a very good sign for the health and well-being of the Amateur Radio movement. There are those who “pack it in” altogether for the summer; those who still come on at regular intervals but spend far less total time on the air than they do during the rest of the year; those who keep up their interest but go weeks without touching the receiver.

But there is a large and increasing body of amateurs who maintain their activities at the same level all the year round. They are the hard core of real enthusiasts, and it is from their ranks that the leading amateur transmitters of the future will eventually emerge.

*Austin Fobler
G6FO.*

Switched Three-Band Exciter

MODIFYING THE BC-458
TRANSMITTER UNIT

By J. H. MAGEE (ZE3JL)

THE BC 458 transmitters have been widely used as small 50/60 watt rigs, or modified as VFO's. The writer has modified some 10 or 12 of these units as VFO's with 3.5 or 7 mc outputs, and the reports have always been of excellent stability and xtal note.

The modifications to be described are for changing these units for 3 to 4 watts output on 3.5, 7.0, and 14 mc. Outputs on 7.0, 14 and 28 mc have also been

The BC-458 has been a popular surplus item for some time and can be used without much modification as a CW transmitter on two of our bands. Here is a design for making the 3.0—4.0 mc version of the BC-458 into an effective switched exciter giving output on three bands, with incorporated crystal check.—Editor.

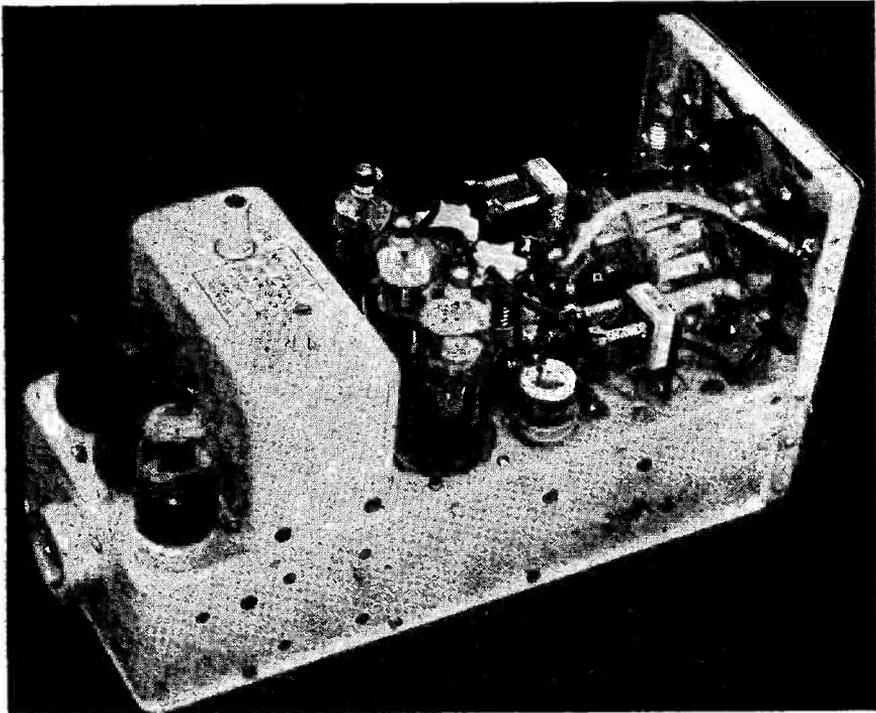
obtained by similar modification.

First a word about the units. They can be obtained covering four frequency ranges, viz.:

3.0	--4.0 mc
4.0	--5.3 mc
5.3	--7.0 mc
7.0	--9.1 mc

Any of the above transmitters can be used.

An optional xtal check oscillator is incorporated in the present design, this being used by the writer for band edge



Interior view of the unit as modified by ZE3JL. The three VT501's in the centre of the chassis are, front to back, buffer—7 mc doubler—14 mc doubler.

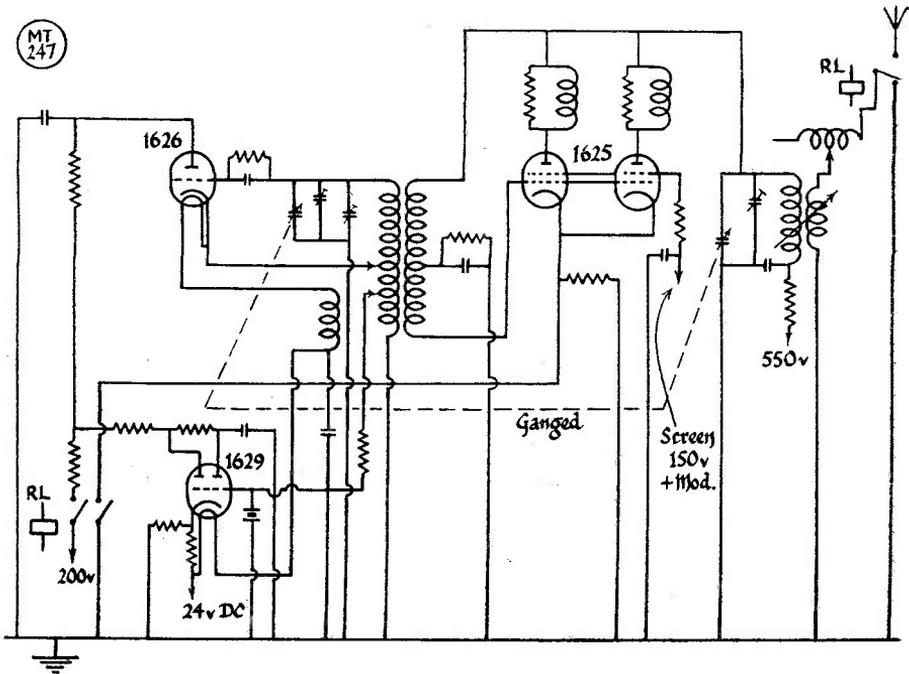


Fig. 1. Original circuit of the unit (BC-457A, BC-458A, BC-459A, BC-696A) employed by ZE3JL to apply the modifications for converting it to the three-band exciter described in the article.

(A fixed capacity should be shown in series with the grid connection to the 1625 stage).

checking. VT-501's (Osram TT11) are used for the doubler stages, primarily for their small size and top cap anode connection.

Modification

First remove every item from the chassis, with the exception of the neutralising condenser, decoupling condenser C19, and the MO grid condenser and leak R14. This may seem rather drastic, but the MO is best rebuilt using more rigid wiring.

The two 1625 valve sockets and recessed cans are taken out and the centre piece between the holes cut away. A small sheet of aluminium, $4\frac{7}{8} \times 1\frac{1}{2}$ ins., drilled and fitted with three octal bases, is attached across this hole. The locking mechanisms are removed from the front panel and discarded, together with any other projecting fittings. A sheet of aluminium is riveted to the front panel to clean up the finished appearance.

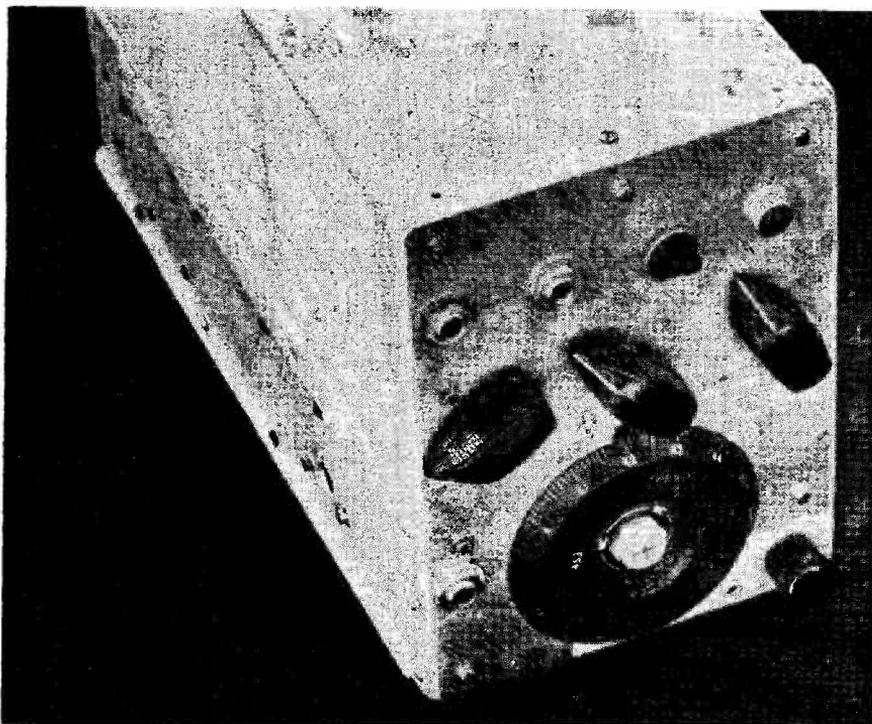
Coils

If the 3-4 mc range unit is being modified, no change of the MO coil is necessary. With any other range the turns on the MO coil should be increased to a total of 20. The lowest tap (shown as E) can be removed. Coils L2, L3 and L4 are wound on $\frac{7}{8}$ ins. dia. ceramic formers, with 22 SWG wire. Data as follows:

- L2—26 turns closewound, 3-turn link.
- L3—28 turns, spaced 1 dia., 2-turn link.
- L4—10 turns, spaced 3 dias., 2-turn link.

Wiring

An earthed 14 SWG copper wire is attached immediately behind the three doubler valve sockets. This provides convenient earth points for R4, R5, C4, C6, and C9. The screen dropping, plate decoupling, meter shunt resistors and plate decoupling condensers are mounted on a large tag board to the front of the sockets, in the space



Panel arrangement for the three-band exciter. The finger knobs are, left to right : 7 mc doubler tune, output selector switch, and 14 mc doubler tune. The other switches and sockets are for metering, with the (pre-set) buffer adjustment through the hole in the left-hand side of the sub-chassis.

with the small trimmer, reached through the guide tube.

With a 0-50 or 0-100 mA meter plugged into socket S1, trimmer C11 should be adjusted for dip, then backed off slightly. The main tuning condenser when swung over its entire range should not alter this dipped current reading by more than 5 mA. If the current changes more than this figure the circuit needs retracking. This is accomplished by loosening the rotor of C21, adjusting to a new position, and compensating by trimmer C11. For example, in the writer's unit C21 is practically all out when tuned to 3.8 mc. This tracking can be conveniently done by using a grid dip meter when winding L2.

With the stage tracking correctly the cathode resistor can be removed and the 7 and 14 mc doublers tested, the meter being plugged into socket S2. These

stages are quite conventional and should produce no difficulties. Also, they have negligible effect on the plate current to V2.

Before putting the unit into operation a metal screen was fitted between the VT-501's and the ganged oscillator condenser.

Many users of these BC 458's, when used as VFO's, were troubled with a T8 note, occurring always from the buffer stage. A slight adjustment to the neutralising condenser will readily cure this trouble. Other points are that the buffer stage is best run NOT at full bore, and that the two cover plates be securely attached and not "draped on" by a couple of screws.

The exciter can be keyed in either or both the doubler stages; keying in the buffer stage is not recommended owing to frequency drag. In a similar unit

the oscillator was keyed with good success.

The writer's exciter was refined by bandspreading the tuning. This was done by removing some of the stator plates. If attempted, this should be done with the greatest caution, as the stator is easily distorted and the small

attachment beads lose themselves very quickly.

Power requirements are 10 mA at 150 volts and 60-70 mA at 300 volts. There is no great advantage in using a regulated supply for the MO, and the whole unit can well be run from a single 300-volt pack.

Constant Modulation Controlled Carrier Working

PRACTICAL SYSTEM FOR
AMATEUR USE

By A. J. R. PEGLER, A.M.I.Mech.E.
(G3ENI),

Lieut.-Cdr. (E), R.N.

THE constant modulation controlled carrier system has not been very popular in Amateur Radio circles in spite of the fact that it has a lot to recommend it, and is a well established system of speech communication. Its chief advantages may be listed as follows:

- (a) A predetermined level of modulation can be maintained over wide ranges of audio power.
- (b) Only sufficient radio frequency energy is generated to accommodate the audio frequency component at the given level of modulation.
- (c) Greater intelligibility at weak signal strengths, and under conditions of high background noise.
- (d) Reduction of heterodyne interference between adjacent stations.
- (e) Efficiency systems of modulation can be used, thus economising in audio equipment.
- (f) Such systems of modulation as in (e) can be worked at their maximum efficiency at all times.

The disadvantages are mainly of a design nature:

- (a) Good regulation of power supply and bias supply is required.
- (b) Varying load on radio frequency driver stages and modulator.
- (c) Weak signals may be difficult to locate owing to absence of steady carrier.

Theory of Operation

Since this article is essentially prac-

This interesting article gives essential details on yet another effective system of modulation, not widely known or used in this country. In the particular application described here the screen of the PA is controlled and a 10-to-1 ratio is obtained between the quiescent carrier condition and the input under full modulation.—Editor.

tical, readers are recommended to standard books of reference if an analysis of the theory of operation is required.

The basic principle is that the radio frequency drive to, or the amplification of, a modulated stage is controlled in such a manner that the radio frequency output is proportional to the average strength level of the audio frequency source to be transmitted. If as a result of this control the radio frequency output voltage is swung between zero and

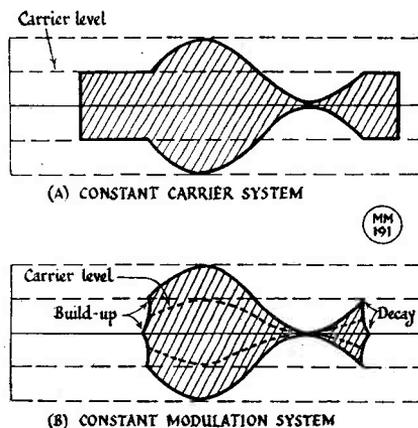


Fig. 1. These shapes illustrate the waveforms with which G3ENI's discussion is concerned.

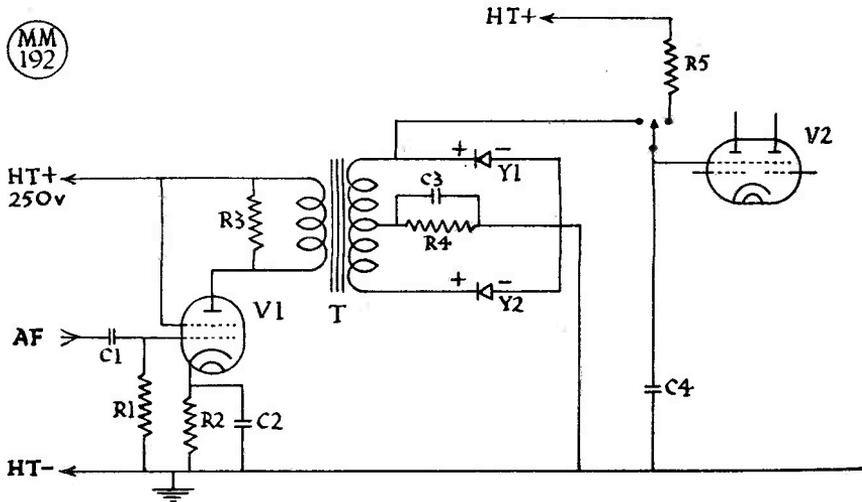


Fig. 2. The control circuit suggested by G3ENI and discussed in the text ; relevant values are given in the table.

double its average value, then 100% modulation will result at all output levels, e.g., a whisper will fully modulate and a shout will not overmodulate.

The advantages of this system should be obvious when it is remembered that if in the conventional system of modulation the audio input is adjusted to give 100% modulation on peaks, the average level of modulation will be only 30 to 35%. Fig. 1 shows in graphical form the difference between the two systems.

The following methods of obtaining constant modulation may be employed in a transmitter:

- (a) Anode modulation plus control of high tension voltage either by a series valve or by a saturable reactance in the power supply.
- (b) Anode modulation plus control of grid, screen grid or suppressor grid voltages.
- (c) Control grid, screen grid or suppressor grid modulation with control of one or more electrodes.

Of the above methods, (c) deserves the greatest popularity and is the simplest and most economical. Control and modulation of the screen grid is the system that will be described.

With efficiency modulation systems it should be remembered that the anode current and efficiency both double on modulation peaks. Thus the 35% efficiency normally obtained in the unmodulated condition rises to 70%. Using controlled carrier with constant

Table of Values

Fig. 2. The control circuit suggested by G3ENI

C1	= .01 μ F
C2	= 25 μ F
C3	= 0.5 μ F
C4	= PA screen by-pass
R1	= 250,000 ohms
R2	= 250 ohms
R3	= 10,000 ohms
R4	= 100,000 ohms
R5	= PA screen dropper
T	= 1 : 1 to 1 : 2 transformer
Y1, Y2	= Low current rectifiers
V1	= 6V6
V2	= 832, or any tetrode PA.

modulation near to 100% enables the power amplifier anode efficiency to be kept in the region of 60 to 70% at all times.

Practical Circuit

The circuit in Fig. 2 is of the system used at G3ENI. It happens to be for operation on the two-metre band, as this is used exclusively by the writer; but the principles involved can of course be applied on any band.

The speech exciter is quite normal and feeds a modulation transformer with a centre tapped secondary winding. The turns ratio is not critical and the normal push-pull output transformer with windings reversed can be used. The load varies over the modulation cycle and it is advisable to include a

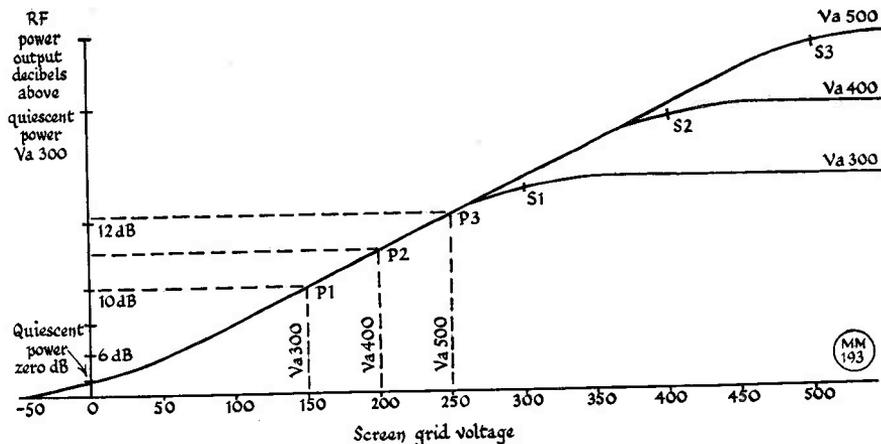


Fig. 3. Curves showing the limits within which the constant modulation controlled carrier circuit of Fig. 2 can be operated. The screen voltage should not exceed the "rectified value" shown at P1, P2 or P3 for plate voltages of 300, 400 or 500 v. respectively. The extent of the peak swing on modulation is shown at S1, S2 and S3 for these conditions.

resistance across the primary to improve the regulation, but this can be omitted if desired. A full-wave selenium type rectifier deals with the audio from the modulator, and the rectified voltage appears across the load resistance R4 and condenser C3. Care should be taken to see that the polarity is correct. This condenser and resistance load determines the growth and decay time constant, which should be of the order of one fiftieth of a second. The component values are not critical, and between 50,000 and 250,000 ohms for R4 and 0.1 and 1.0 μF for C3 may be used with impunity.

In order to superimpose the audio voltage on to the rectified voltage, a connection is taken from one end of the transformer secondary rather than the centre tap. This connection goes straight to the screen grid of the PA V2. Provision is made to switch the screen grid to its normal HT supply in order to facilitate tuning and permit CW operation in the usual way, *via* R5 and C4.

Operating Procedure

Tuning is done in the normal manner with the screen grid switched to the high tension supply. The switch is then moved into the modulation position and the PA current drops almost to zero. On advancing the audio gain and speak-

ing into the microphone, the PA current is observed to peak up in sympathy with the speech. The position of the AF gain determines the average value of the power radiated.

Initial tests should of course be monitored, and carried out using an artificial aerial as load. The following operating points should be noted:

- (a) The PA should be driven hard and loaded as fully as possible.
- (b) Plenty of reserve drive should be available. If necessary this can be absorbed in a "swamping" resistance connected across the penultimate stage tuned circuit to improve regulation.
- (c) The modulator output power should be about one and a half times the normal screen grid power consumption.
- (d) The rectified voltage applied to the screen should not be allowed to exceed one half the anode voltage.
- (e) The PA anode voltage should be kept as high as possible. Owing to the low anode dissipation with this system of modulation, it is possible to raise the anode voltage above that recommended by the makers to about twice that normally used for any given frequency.
- (f) Care should be taken not to push the audio up too high as this will result in flattening of the positive peaks owing to non-linearity of the PA or lack of drive.
- (g) Tests and measurements should preferably be carried out using a 1000-cycle tone source. The GPO measurement of power input uses such a source with this type of modulation.

Results Obtained

The writer has been agreeably surprised with the results obtained. Output is good, PA efficiency high, quality is satisfactory and the system is very easy to get going. Using an 832 valve on 145 mc (V2), the quiescent power unmodulated is about 2 watts, rising to 20 watts fully modulated. This represents an increase of 10 dB. Fig. 3 shows the relationship between power output and applied screen voltage. It shows how non-linearity may be pre-

vented by working on the straight part of the curve. It also shows how desirable it is to keep the anode voltage high. There is an appreciable saving in high tension power and the PA runs very cool.

Acknowledgments

In conclusion the writer wishes to acknowledge the help given in the first instance by correspondence with G13ZX, in recent articles in *QST*, and in helpful and patient assistance given over the air by G6HG and others.

TVI-Proof Exciter for Twenty

CO-VFO MIXER
AMPLIFIER

By K. DANIELS (G3BYS)

THE exciter to be described is a specialised piece of equipment designed solely for use on the 14 mc band. The basic principles may, however, be applied on other frequencies. The design is not claimed as original but the principles involved deserve to be more widely known. The author is located in the fringe area of the London Television transmitter so that one of the main considerations in the design of a suitable exciter was to ensure that it would give only the desired 14 mc frequency, thus keeping any TVI problems to the main transmitter or aerial system. The whole approach to TVI elimination at this station has been that prevention is better than cure, and although screening and the use of low-pass filters can cure interference, the principle of not generating interfering radiation is more satisfying and reliable.

Further requirements were complete break-in, no chirp or drift and plenty of drive for the 813 in the main transmitter running 150 watts input. The present commercial trend towards miniaturisation and higher efficiencies was also considered.

The main design requirements can

As our contributor rightly remarks, the principle adopted in the design of the Exciter here described is not used nearly as often as it could be in amateur practice. By adding the output of a 10 mc CO to a 4.0-4.4 mc VFO, he obtains stable drive over the 14.0-14.4 mc band, and claims that this assists in preventing TVI.—Editor.

therefore be summarised as follows:—

- (1) Absence of TVI
- (2) Complete break-in
- (3) Elimination of chirp and drift
- (4) Single knob control
- (5) Ample drive for an 813 (4 to 5 watts RF)
- (6) High efficiency and compact size.

In the interests of TVI elimination the exciter called for a minimum of low frequency multiplying stages, meaning that the oscillator would be on a higher frequency than usual, with the consequent difficulty of obtaining stability. The elimination of chirp and drift can only be obtained easily by leaving the variable oscillator operating continuously and maintaining constant load. This complicates matters for complete break-in as it requires a well shielded Class-A stage after the oscillator on a sub-multiple frequency.

The little used method of overcoming all these problems while retaining the asset of full break-in is to use the heterodyne principle.

General Description

The diagram Fig. 1 shows the exciter in block form. The frequency of a continuously running variable oscillator which covers the band of 4 to 4.4 mc is added to a keyed crystal oscillator with output on 10 mc. The resulting fre-



Neat construction of the G3BYS version of the Exciter described in the article, embodying the circuit of Fig. 2.

quency of 14 to 14.4 mc is fed through wide-band couplers to a small power tetrode giving an output of 4 to 5 watts into a resistive load. This output, when coupled to the main transmitter through a 4ft. length of co-axial cable, produces an available 10 mA of drive for an 813 against 150 volts of fixed bias, with constant 300 volts for screen and 1200 volts on the anode. Under these conditions a power input of 150 watts to the 813 is easily obtained. The 813 PA stage is very well screened but not neutralised.

Construction

The first three "blocks" (see Fig. 1) are built in an aluminium die-cast box so there is no relative movement between components. A shielding bracket in the form a "Tee" is fitted. The horizontal top of the "Tee" serves as mounting for the crystal oscillator and Clapp variable oscillator valves. The vertical shield of the "Tee" separates the two inputs to the adder valve (V3) which is mounted horizontally near the bottom of the box. It is suggested that this unit be constructed first and before the remainder of the components for the exciter are purchased. The satisfaction of hearing the perfect output of the

adder valve on the station receiver with no vestige of a signal when the key is up will certainly encourage the purchase of any remaining components required!

It is emphasized that the parts used in this unit should be of highest quality with the best mechanical stability. Ceramic or at least mica condensers are essential. The upper inch of box depth accommodates only the two valves, ensuring adequate heat dissipation away from frequency determining components. When this unit is tested the amount of drift should be noted after the first fifteen minutes. In the original oscillator a slight drift higher in frequency was encountered. This was cured by replacing one of the fixed trimmer condensers across the tuning capacity with a ceramic type having a positive temperature coefficient. For a good note from a Clapp the coil should have a high "Q". The minimum distance between the winding and any earthed surface should be greater than the radius of coil. The winding itself must be firmly secured to the paxolin coil former with a coating of polystyrene cement. An iron dust tuning core should *not* be used.

Broad Band Couplers

The broad-band couplers for 14 mc (T1, T2 in Fig. 2) were modified from ex-Government 10 mc receiver IF transformers taken out of the Transmitter-Receiver TR.1143. The reference number stamped on is 10K/312 and they are available brand new for less than a shilling each. The internal fixed condenser of 115 $\mu\mu\text{F}$ across each winding is removed and a 50 $\mu\mu\text{F}$ ceramic substituted.

The couplers and remaining com-

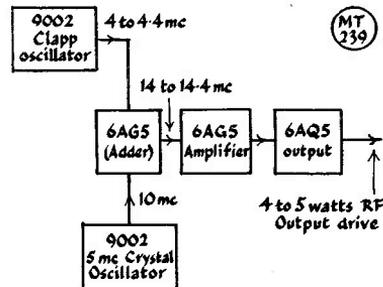
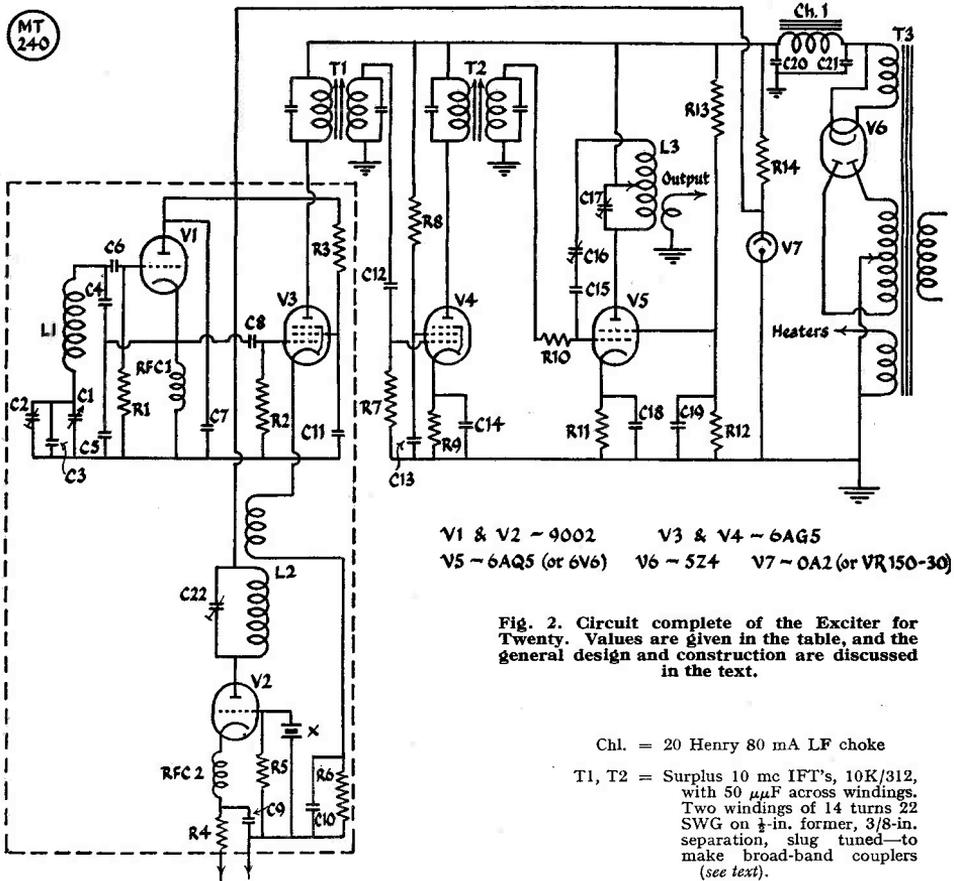


Fig. 1. Block schematic of the CO-VFO driver unit for 14 mc, described by G3BYS.

MT
240



V1 & V2 - 9002 V3 & V4 - 6AG5
V5 - 6AQ5 (or 6V6) V6 - 5Z4 V7 - 0A2 (or VR150-30)

Fig. 2. Circuit complete of the Exciter for Twenty. Values are given in the table, and the general design and construction are discussed in the text.

Table of Values

Fig. 2. Circuit of the CO-VFO Driver.

- C1 = 50 μF variable
- C2, C16, C17, C22 = 3-30 μF trimmers
- C3 = 100 μF , positive temp. coeff.
- C4, C5, C7 = 500 μF , mica or ceramic
- C6, C8 = 100 μF , mica or ceramic
- C9 = .006 μF , mica
- C10, C11, C13, C18 = .001 μF , mica
- C12 = 50 μF , mica or ceramic
- C15 = 10 μF , mica or ceramic
- C20, C21 = 24 μF (per section), 450v. wkng.
- R1, R5, R7 = 100,000 ohms, $\frac{1}{2}$ -watt
- R2 = 15,000 ohms, $\frac{1}{2}$ -watt
- R3 = 10,000 ohms, $\frac{1}{2}$ -watt
- R4, R6, R9 = 220 ohms, $\frac{1}{2}$ -watt
- R10 = 10 ohms, $\frac{1}{2}$ -watt
- R11 = 500 ohms, $\frac{1}{2}$ -watt
- R12 = 22,000 ohms, 3-watt w/wound
- R13 = 10,000 ohms, 2-watt w/wound
- R14 = 60,000 ohms, 4-watt w/wound
- RFC1, RFC2 = 2.5 mH RF choke

- Ch1. = 20 Henry 80 mA LF choke
- T1, T2 = Surplus 10 mc IFT's, 10K/312, with 50 μF across windings. Two windings of 14 turns 22 SWG on $\frac{1}{2}$ -in. former, 3/8-in. separation, slug tuned—to make broad-band couplers (see text).
- T3 = Suitable power transformer (300-0-300 volts, 80 mA, 5-volt 2 amp. and 6.3 volt 3 amp).
- X = 5 mc Crystal (see text)
- L1 = 35 turns 34 SWG close wound on 5/8-in. former
- L2 = 35 turns 34 SWG close wound on 5/8-in. former, with cathode winding of 10 turns spaced at 1/8-in.
- L3 = 30 turns 24 SWG spaced wire diam. tapped at 8th turn, on 5/8-in. former. (8-turn winding for neutralising)
- V1, V2 = 9002
- V3, V4 = 6AG5
- V5 = 6AQ5
- V6 = Suitable rectifier
- V7 = Voltage stabiliser

ponents of the exciter are mounted on a die-cast chassis. The only precautions observed are that the grid and anode pins of the first amplifier (V4) have a small copper shield soldered between them, and the normal high frequency constructional practice of short leads and good earths to chassis is followed.

The power tetrode of the exciter is a 6AQ5, a miniaturised version of the ubiquitous 6V6. With no screen or anode voltages applied to the 6AQ5 and metering its grid current (do not forget to by-pass the meter) the four tuning slugs on the couplers are adjusted until a current of 3 mA is available at 14 mc, rising steadily to 8 mA at 14.4 mc. The voltages to screen and anode are reconnected and the anode circuit resonated to 14.1 mc using a small 6-watt car bulb connected across the one turn link. With the key up the 6AQ5 is neutralised by listening on the station receiver; this neutralising improves the stability of the exciter amplifier.

A miniature voltage regulator (V7) located between the horizontally placed adder valve (V3) and the variable oscillator tuning control ensures a constant 150 volt supply for the oscillators. A 5Z4 rectifier, small 20 Henry choke and a double section 24 μ F electrolytic condenser complete the power supply.

Switching

A refinement not shown on the schematic diagram (Fig. 2) is a three wafer switch mounting through the front panel with a keying jack. Each wafer

is five-way. One wafer completes the circuit from main supply to transformer on positions 2, 3, 4 and 5, another closes the key circuit on positions 3 and 4, whilst the remaining wafer supplies screen voltage to the 6AQ5 on positions 4 and 5. This switch allows the following conditions to be selected :

- (1) Off
- (2) Mains On, exciter may be keyed, but exciter amplifier Off
- (3) Exciter on whole time, exciter amplifier still Off
(used for zero-beating a DX signal)
- (4) Exciter, including exciter amplifier, may be keyed
(normal CW position)
- (5) Exciter and exciter amplifier On whole time
(for phone operation)

The variable oscillator is adjusted with the 3-30 μ F trimmer so that the minimum frequency is 14000 kc, thus preventing the danger of operating outside the band limits.

The dial calibrations are nearly linear, being approximately 25 degrees for 100 kc at the bottom of the band, and up to 14300 kc.

Although a 5 mc crystal was used, doubling in the anode of the crystal valve to 10 mc, any other frequency crystal can be employed provided that the harmonics of the crystal (or the required variable oscillator) do not fall within the band 14000 to 14400 kc.

The total consumption of the exciter is less than 70 mA with an HT supply of 270 volts.

OCTOBER AMATEUR EXAMINATION

Normally, the Radio Amateurs' Examination held by the City & Guilds of London Institute takes place in May of the year, and because of their already very crowded calendar, it is not possible for them to arrange another sitting. However, we are informed that the GPO has undertaken to conduct a Radio Amateurs' Examination, on the same lines as last year, in collaboration with the Cripplegate Institute, Golden Lane, London, E.C.1. This examination will be held at that Institute (only) on October 6 next, 2.30-5.30 p.m. The fee for this sitting will be 25s., and applications to take the Examination must be received *not later than September 1* by The Inspector of Wireless Telegraphy, Telecommunications Depart-

ment, General Post Office, London, E.C.1. The fee should be remitted with the application to sit.



GERMAN AMATEUR CONVENTION

The first big DARC convention took place in Cuxhaven during the period June 11-17, and drew no less than 800 members and interested visitors. DL1WA was elected president for the year, and a series of lectures was given by prominent German engineers and scientists; visits were paid to various technical establishments and stations, including DAC, Elbe-Weser Radio. The convention station DLØKT was on the air on all bands 3.5-144 mc, and considerable interest was taken in the VHF side of this activity.

Practical Keying Monitor

CHEAP AND SIMPLE
MORSE CHECKER

AS is well known, it is much easier to maintain a consistently high standard of keying if one is able to monitor one's own transmission. There are several ways in which this may be accomplished successfully, but the present article describes a very simple keying monitor which has numerous advantages over more complicated types. It may be constructed in such a way that it occupies only a minute space, component values are extremely non-critical, current drain is almost negligible, and it requires no adjustment when the transmitter frequency is changed from one band to another. Almost any combination of diode and triode or diode and pentode can be used with equal success; in fact, its exact form depends more on "junk box availability" of valves and components than on theoretical circuit considerations.

One feature of the device which must be mentioned at once, however, is that it is purely and simply a "keying moni-

tor"; it in no way monitors the quality of the transmission and it is not conscious of poor note, chirpiness, instability or other transmission defects. These must always be checked separately.

Basically, this keying monitor consists of a neon tube which is connected in such a way that it operates as a relaxation oscillator at some frequency which is convenient and comfortable to listen to, say 1000 c/s. The output of the oscillator is fed to the audio stage of the receiver, and its amplitude is adjusted to give a pleasant signal level.

A triode or pentode valve is connected directly across the neon, so that the latter is effectively short-circuited when the valve takes current, *i.e.*, the receiver output is cut off. A diode detector is very loosely coupled to the transmitter output circuit in such a way that when the key is down a small negative voltage appears at the diode anode; this is DC coupled to the triode or pentode control grid, thus cutting off the valve under key-down conditions. This removes the short circuit from the neon oscillator, allowing the note to be heard; as the transmitter is keyed, an exact replica of the keying is heard in the receiver.

tor"; it in no way monitors the quality of the transmission and it is not conscious of poor note, chirpiness, instability or other transmission defects. These must always be checked separately.

Basically, this keying monitor consists of a neon tube which is connected in such a way that it operates as a relaxation oscillator at some frequency which is convenient and comfortable to listen to, say 1000 c/s. The output of the oscillator is fed to the audio stage of the receiver, and its amplitude is adjusted to give a pleasant signal level.

A triode or pentode valve is connected directly across the neon, so that the latter is effectively short-circuited when the valve takes current, *i.e.*, the receiver output is cut off. A diode detector is very loosely coupled to the transmitter output circuit in such a way that when the key is down a small negative voltage appears at the diode anode; this is DC coupled to the triode or pentode control grid, thus cutting off the valve under key-down conditions. This removes the short circuit from the neon oscillator, allowing the note to be heard; as the transmitter is keyed, an exact replica of the keying is heard in the receiver.

The Circuit

Fig. 1 shows the basic circuit of this monitor, and it may be used where a

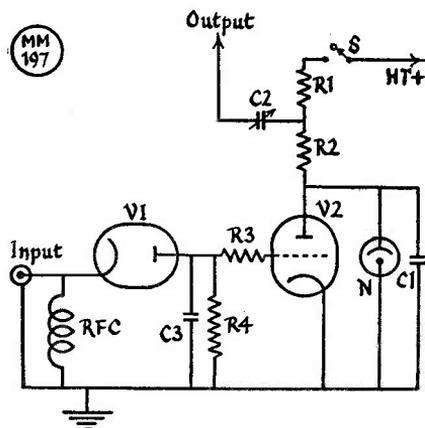


Fig. 1. Circuit of the keying monitor suggested in the text, where separate valves are used for V1 and V2, which may be a matter of convenience. Since the device is energised by the transmitter RF applied across RFC, it is not frequency conscious and no re-tuning is necessary when on VFO control.

Table of Values
Fig. 1. Keying Monitor circuit using two valves

- C1 = .001 μ F mica
- C2 = 100 μ F trimmer
- C3 = 470 μ F mica
- R1, R2 = 3.3 megohm
- R3 = 47,000 ohms
- R4 = 1 megohm
- N = Neon tube (see text)
- S = On-off switch
- V1 = Any diode, *e.g.* EA50
- V2 = Any small triode or pentode. (If the latter, feed screen through 3.3 megohm resistor).

separate diode or crystal diode is used for V1. In the absence of RF input, V2 is conducting, and its anode is maintained at a potential less than the striking potential of the neon tube N. With RF applied, however, a negative charge appears on C3, so biasing off V2. The time constant R4 and C3 must be kept small compared with the duration of Morse characters, and 1 megohm and 470 $\mu\mu\text{F}$ are satisfactory values. When V2 is biased off, the condenser C1 begins to charge from the HT line through R1 and R2 in series. When a certain voltage is reached, the neon tube strikes and C1 partially discharges through the tube; when, however, the voltage on C1 falls below a certain level, the neon extinguishes itself and C1 again begins to charge through R1 and R2. The whole cycle of operation repeats itself many times a second, and so a continuous oscillation is built up, and it will be found that a voltage swing of about 20 volts occurs at the neon anode. This is excessive to feed into the audio stage of a receiver directly, so R1 and R2 are used as a potentiometer for the output, which is taken from their junction through a small trimmer condenser C2, which gives a fine adjustment of volume. Incidentally, C2 should be kept as small as possible, and it should be connected directly to the grid of the audio valve in the receiver so that the normal receiver volume control does not affect the volume from the keying monitor. Care must be exercised in preventing hum pick-up on the audio stage grid lead and arrangements must be made so that the receiver HT remains on the keying monitor and the receiver audio stages when the send-receive switch is in the "send" position.

The monitor is very loosely coupled to the transmitter tank circuit by bringing a small piece of wire from the monitor input socket near to the tank circuit or the aerial tuner; normally a piece of coaxial cable would be used to make the connection and about 6 inches of braid could be stripped from the end to form a probe. There is no need to strip the polythene insulation from it; in fact, it is desirable not to do so in the interests of safety. A few simple experiments will soon indicate the correct degree of coupling.

More or less any small neon tube will prove satisfactory—those which are sometimes used for indicator lights in radar equipment (available in the surplus market) are very convenient,

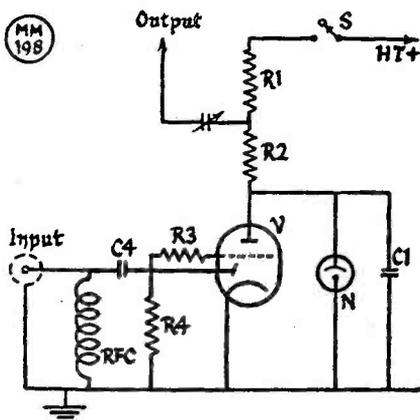


Fig. 2. Another version of the circuit of Fig. 1 using a diode-triode or double-diode triode. With this, C4 can be reduced to 100 $\mu\mu\text{F}$. If a double-diode triode is employed the diode anodes should be strapped.

and, for a really miniature tube, the one wired across the aerial circuit of the BC-453 would be hard to beat! A domestic neon bulb with a built-in series resistance is *not* suitable.

Fig 1 utilises a series connected diode; if, however, a parallel diode is more convenient, as is the case if a diode-triode valve is used, the circuit of Fig. 2 may be adopted. Operation of this is almost identical with that of Fig. 1, negative bias being obtained at the diode anode. The switch S is provided merely to allow the unit to be switched off when the transmitter is being tuned up or when phone is being used.

It is unnecessary to give details of physical layouts, since these are not critical and, in any case, they depend on the particular valves and components available.

Alternative Schemes

Finally, a brief mention of alternative methods of keying monitoring may be useful. Naturally, the neon oscillator may be replaced by a conventional audio oscillator which is coupled into the receiver in the same way as described above. In this case, additional components and wiring are required, but the results are the same as in the neon scheme described.

Instead of operating the neon oscillator from a diode detector, the bias for V2 may be switched by means of sub-

sidary contacts on the Morse key or keying relay, but in this case there is no indication of the presence of actual transmitter output.

The most comprehensive scheme is, of course, a complete heterodyne monitor (which would usually take the form of a wavemeter, e.g. a BC-221). As in the above case, it may be coupled in to the audio stages of the receiver so that monitoring is automatically avail-

able when transmitting. This last method has the advantage that the actual transmitter output is monitored and immediate warning of imperfect transmitter operation is given. It is, however, more complicated and requires adjustment whenever the transmitter frequency is changed. The writer feels that the simple scheme described in this article has a great deal to commend it for routine use.

The British Amateur Television Transmitting Licence

COST, CONDITIONS
AND COMMENT

By M. W. S. BARLOW (G3CVO)

THE terms of the long-awaited television transmitting licence were released at the B.A.T.C. Convention on June 23, and many of the conditions will be of interest to video and sound operators alike. In many countries, of course, there is no restriction on the use of TV by amateurs within the internationally agreed bands, the normal "sound-only" licence also covering the TV facility. At the moment, several of the conditions imposed by the GPO may seem a little hard, but it must be remembered that the TV licence as a whole is liable to review at any time.

In general, the TV licence is very similar to the ordinary licence, and is identically worded in the paragraphs dealing with copyright, advertising, propaganda, operation within the specified bands and so on. In fact, most of the more legalistic parts of the licence have been taken bodily from the sound licence. The TV transmitting conditions are:

Transmission of video signals is permitted in the 3, 6, 13 and 25 centimetre bands, the latter being on a "non-interference" basis. The accompanying sound is covered by the normal licence (which must be held before the vision permit will be issued), and may be transmitted simultaneously or separately, on the same band as the video or on any other band. Use of the 70 cm band for vision is still under con-

It has been a long struggle to obtain recognition for the fact that there are some British amateurs at least who are able to transmit television and anxious to put British amateur TV on the air. This article, by the honorary secretary of the British Amateur Television Club, discusses the terms of, and the conditions imposed by, the special TV transmitting licence now being issued by the GPO.—Editor

sideration. Any station receiving amateur TV transmissions must also hold a BC TV receiving licence, whether or not the station is in a "service area." The cost of this special vision transmitting permit is (at the moment) £3 on top of the normal sound licence, and TV receiving licence.

The licensee is permitted to use the station (quoting) "For the purpose of (1) sending to or receiving from one other amateur station, as part of the self-training of the licensee in the technique of communication by wireless telegraphy or as part of any technical investigations in wireless telegraphy he may be conducting, visual images, the subject of which relates either to the technical investigations in wireless telegraphy of the licensee or the person with whom he is in communication, or to matters of a personal nature (other than business affairs) in which the licensee or the person with whom he is in communication is directly concerned; and (2) sending the call signal to the station by radiotelephony or by Morse telegraphy."

Conditions.

The next words are the rather ominous ones "Provided that"—but the first proviso is only our old friend concerning types of emission and DC inputs and so forth "as in the schedule hereto." Proviso (b) states that "The vision signals

sent by means of the Station shall be of such form that they can readily be received on a standard TV receiver; (however) symmetric or asymmetric modulation, and either positive or negative modulation may be used." (c) Is the usual one about operation only under the licensee's supervision; (d) Is another well-known clause in a different guise: "The station shall not be used for the transmission of any visual image which, entire or in part, might prove objectionable to any casual or other viewer." (e) Bans the use of the station on behalf of any other person, and expressly states that the licence does NOT cover the reception of BC TV programmes. (f), (g), and (h) cover the non-payment of fee, and removal of equipment in an emergency, and so on.

The conditions follow, and it must be remembered that these apply to the microwave bands only. Section 2 (1) says: "When in use the sending apparatus shall be tuned to a frequency within one of the authorised bands, and this frequency shall be so selected and maintained that no appreciable energy is radiated on any frequency outside the limit of the band, with or without the modulation applied. A satisfactory method of frequency stabilisation shall be employed in the sending apparatus (not specified)." The transmission frequency must be known to $\pm 0.75\%$, i.e., about 15 mc in the 13 cm band. Then follow clauses dealing with non-interference, and the use of AC mains for HT supplies; access to the station by duly authorised representatives and non-use of the station in the licensee's absence.

Sending periods: The transmitter may not be operated for more than 30 consecutive minutes with or without modulation. Before beginning to send, "The licensee shall take such measures as are practicable to verify that avoidable interference will not be caused with the working of any other station."

The log must be kept up as usual, with an additional column for "Subject of transmission." The station must be equipped with a receiver to pick up CW or phone messages on the vision channel. The station call (normally identical with the sound one) must be sent in visual form at the beginning and end of each transmission, and also by MCW or phone, not less frequently than once in every ten minutes, also on the vision channel. The call may not be used for advertisement purposes in any manner whatsoever.

The remainder of the conditions are the

legal ones, and also cover such matters as height of aerials near aerodromes. Specifically forbidden is the transmission of vision signals having any business, commercial, advertising, religious or propaganda value, or *interest as public entertainment.*

Opinion and Comment.

As will be imagined, these conditions raised plenty of comment when studied by the TV transmitting club. The general opinion was that the GPO had been, as always, very fair, but that a few alterations would help considerably. The most obvious relief is with regard to the cost. Those members who are content to use their TV gear over a closed circuit pay nothing, whereas those who go to the very considerable extra trouble and expense of experimenting with radio TV transmission are being penalised to the (minimum) tune of £6/10/- per annum. At this price, of course not everybody can afford to buy camera tubes and transmit too. It is much to be hoped that this purely financial snag will, in time, be removed.

Other criticisms are: A normal sound licence must be held even if the licensee has absolutely no desire to communicate on any of the normal amateur bands by sound only; a TV receiving licence must be held, even though it is a condition that the station must be equipped for reception on the TV bands; (the normal licence covers transmission and reception of amateur messages, but not BC programmes) The remainder of the conditions are much as expected, and have enabled the B.A.T.C. Standards Committee to bring out some concrete recommendations, viz. 200-line 50-picture per sec. sequential scanning, positive modulation double-sideband separate sound, or 405-line double-interlaced; aspect ratio 4.3, with aerials horizontally polarised.

As soon as the cost of the licences is reduced, or abolished as an extra to the normal licence (as in the USA and Holland) there are 26 amateur stations on the way to putting British TV on the map.

STILL THEY COME

The total of TV licences issued at the end of April 1951 was 825,600—an increase of more than a quarter of a million since the end of November 1950.



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

IN spite of the uniform dullness of conditions on all bands, the grand total of DX reported this month is so formidable that one wonders how it is all done. Of course, there is only one answer: The efficiency of receivers, transmitters, aerial systems and operators adds up to an ever-increasing high as the conditions become worse.

All this makes us wonder what on earth things are going to be like when the bands really open up again! 'Way back in 1946/7 an indifferent operator *plus* an 807 PA *plus* a piece of wire could work good DX all round the clock; but we don't foresee that happening again in 1956. There will be far too many terrific signals from the crowd who have been learning how to make themselves heard through thick and thin in the last lean year or so. In short, we consider that the chap who said "Conditions are better when they're bad than when they're good" was far from mad after all.

For the present, there's no doubt whatever about how they are. A fine burst of DX arrives every now and then—more frequently late at night than early in the morning—and everything sounds gorgeous for a while. Then, next day, the same old marks on the dial are smeared over with Euro-

peans, semi-locals and unwanted QRM of all kinds. Weekday afternoons are probably the quietest time of all, and when the short-skip isn't too bad, some nice signals from VS1, VS6, JA, KG6, KR6 and the like come rolling in.

However, enough of this generalisation; let's see what the 'chasers say about it all. Although nearly all the correspondence concerns *Twenty*, we will try to separate out the bands in the accepted style, starting with that band.

Calls Heard, Worked & QSL'd

The DX on *Twenty*

G6QX (Hornchurch) says his normal operating times are 2330-0130, during which period he has collected FG7XA, FP8BX, HR1DF, HP1BR, OA4BR, TI2PZ, VP4LZ and 4TR. HR1DF was a new one for the post-war list. 'QX is worried because he can't raise GC, GD or GW on 14 mc. Among those that got away were HS5IE (we heard him, too) and a brand-new PX1A, who made a brief appearance and set the W's off.

Talking of PX, of course, we must not overlook the gallant effort put up jointly by W6SAI, F7AR (W8PQQ), SM5UM and ON4QF, all of whom sallied into Andorra and put 7B4QF on the air. This station naturally caused a bit of a stir, and many G's found him difficult to work. Most of the leading DX-hunters did get him, though, before he packed up (we thought in rather a hurry) and departed to become 3A2AC for a while.

F7AR said they "did a bit of missionary work" in Andorra, so it's just possible, of course, that PX1A was the real one after all!

G5BZ (Croydon) collected both these stations, and adds that 9B3AA is in Bulgaria and does QSL. G6TC (Wolverhampton) says the band seems to be opening up in the mornings for W6, VE7 and the like, which is encouraging. (We have found KH6 the most popular quarry, but then we don't get up very early).

New ones this year for G8IP (Hampton) were VQ3, MD2 and FF8. G2BJY (West Bromwich) weighed in with FN8AD, FP8BX, VQ2B, VS6BA, ZK1BC, with KH6AAQ and CT3AA. 'BJY, also, feels that the band has been better around 0700-0800 BST—chiefly for West Coast W's.

[Over

FOUR BAND MARATHON

(STARTING JANUARY 1, 1951)

Station	Total Points	3.5 mc	7 mc	14 mc	28 mc	Countries
G3ATU	246	21	82	138	5	147
G6QB	224	18	55	122	30	136
G5BZ	221	21	52	134	14	139
G3FXB	205	21	69	114	1	128
G5JU	201	25	51	94	31	108
G6QX	195	32	58	89	16	103
G5FA	184	15	68	94	7	107
G3ABG	173	22	65	63	23	93
G2AJ	152	18	41	75	18	95
GM2DBX	149	1	30	76	42	92
W2WC	141	22	35	77	7	84
G8IP	128	12	50	58	8	83
G8KU	124	13	26	78	8	81
G2BW	124	14	30	71	9	80
G6TC	121	13	34	59	15	67
G3COI	96	19	18	57	2	64
G3EDA	79	12	32	34	1	51
G6AT	60	9	33	16	2	38

(Note that new entries to this table must not include QSO's dating back more than two months from the time of entry. Regular reporters should send in their score month by month—three months' failure to do so will be taken to indicate loss of interest and the score will be deleted).

How Do They Do It?

Last month G3GUM (Formby) protested that ZK1BC only had to show his face for the first time and all the DX gang seemed to be on parade at once. This time he repeats the statement with CR8CC as the target. (Yes, we were there, too!) No sooner had this CR8CC sample shown up (working a VQ4 in the evening) than G6ZO, G6RH, G2PL and even G6QB all seemed to be on the flypaper. Most of them were unlucky, and, anyway, we heard CR8CC describe himself as a "ship station," so he wouldn't count as a new one.

'GUM also tells us that the W6 gang were furious at not being able to work 7B4QF, so they will probably ship a case of California Kilowatts in the direction of Andorra before long.

Further news items from G3GUM: This new FG7XA who has popped up and says "QSL via W4LVV" says he is the type who used to be FG8OA. Other DX of the month — XE1XB, EQ3B, FN8AD, VP4's and VQ4's, KS4AQ and OQ5RA. Finally, he's afraid that his score will have to come down by three on account of ZA1A, ET9X and

VQ9AA. (So are we—all three are now believed to have been phoney).

G3BDQ (St. Leonards) has been cleaning up the rig for LF operation during the coming season, but still managed to pull in FP8BX, TI2PZ, CX1BZ, PK4DA, ZS3Q, HP1LA, plus three new ones in the forms of 3A2AC, 7B4QF and VP1AA. 'BDQ has now worked four different stations in FP8!

G5FA (London, N.11) missed out on 7B4QF, but did manage to find 3A2AC, CE6BS, SU1GO, YI3ECU and KH6IJ. Otherwise he hasn't been very active; we are hoping to have a personal QSO with him during the month, and we will see if our rig works in the presence of visitors.

New ones on CW for G4QK (Harpden) were FP8BX, FN8AD and VP9OO, the latter being only the second VP9 he has heard on CW since the war. The other was on 80 metres.

Another New One?

Here's one for the Phone crowd in the shape of LN7B, a Norwegian-operated station on Bouvet Island, Antarctica. He was worked by GM2DBX (Methilhill) at 1525 on July 2, and 'DBX was told that it was the first QSO with the U.K. LN7B was still trying to contact Norway, not having worked an LA up till then. Bouvet Island apparently is listed in some quarters as a separate country. Any further news on this item will be welcome.

Other 20-metre phone contacts for GM2DBX were HE9LAA, YU1AD, VP4, VS1, MP4, C, CX, XZ and 3V, among many more.

GM6EST (Motherwell) is stuck at 38 Zones and would very much like to hear something from Zone 26 (we needn't even mention 23). He says the only time he ever heard an XZ was when the transmitter was stripped for alterations. 'EST refers to an advertisement for the gadget that changes straight Morse into secret code, and suggests that G1BF must use one as an electronic key. (We wouldn't confine it to G1BF, either! Poor old G6 . . . sends Chinese Morse sometimes, too!).

Surprising comment on conditions from G3COI (Wolverhampton): "In spite of the sunspot cycle predictions, I have found DX working easier than I ever did." But, he adds, this may be due to acquired experience and a better aerial. He now uses two dipoles in or out of phase and finds it very satisfactory compared with some "nerve-racking



At G8IX, Hanley, Staffs. the transmitter is a T.1154 with an 1134A modulator, running 70 watts phone and 100 watts on CW; receiver is an 1155 modified with bandspread, and the main aerial a 132-ft. Windom. G8IX started his radio career in 1915 as a boy telegraphist in H.M.S. "Diana," and during the last war was a Sea Cadet instructor.

experiences" with a rotary beam.

"COI suggests that the commercials we have been complaining about might be used as band markers; but what is their frequency *supposed* to be? (They

use VFO's—we know, because we once succeeded in making one of them move. It was better than working a new country).

For those who are still chasing

Delaware for WAS, G3COI would like to recommend W3IYE, worked recently—and he did QSL.

G2YS (Chester) reports a funny one in the guise of FD4AD (F7, 14005 at 2130). Unfortunately, the FD lost him in QRM; is he genuine in Togoland? Others for 'YS were F8EX/AR, 3A2AC and 7B4QF. Heard, but not worked, was HI5ES. This seems like an anagram of HS5IE, already reported. Small prize offered, but not given, for anyone hearing (a) SH5EI, (b) HE5IS or (c) EI5HS. Fair drives you dotty, as G2YS says. It could be G1BF again.

G3FXB (Hove) puts up what many would regard as pretty fair proof that conditions aren't bad; he has worked three more Zones, making his 1951 total 39 of them! The score of 128 countries, in 39 Zones, in six months, reflects a lot of credit on the operator, but still doesn't prove that conditions are terrific. But 'FXB says firmly that DX becomes monotonous by its very regularity—and that without the aid of beams or rhombics. New ones this month on 14 mc were EA6, F18RO, FP8BX, FR7ZA, KV4AA, UAØKKB, VS2CP, ZD2DYM and 7B4QF. The other ("common or garden") stuff makes quite nice reading, too, but not so good as the "Gotaways," which include FN8AD, UM8KAB, CR8CC and HR1DF. More from 'FXB under other headings.

Another nice batch of news from G3ATU (Roker). Apart from acquiring 7B4QF, he worked F18RO, PJ5FN, CR9AF, XU6F and 1AHR/M1 (all round about 1800) plus FG7XA and PK4DA (midnight). The latter told 'ATU that there have been several openings to Europe at round about that time. XU6F gives a QTH in Hong Kong. . . . Another slight worry: MP4BAF's postal address is Bahrein, but the station appears to be in the Sheikhdöm of Qatar. As 'ATU says, if they count Saarland, why not Qatar? (We have completely stopped the manufacturing of new countries, but if the other various bodies insist, in cases like Saarland, we simply can't help falling into line).

Lots of people have written about 9B3AA, who seems to be the same operator who started up by calling himself 9D3AA for a while. He has been sending QSL'S by airmail (right out of Zone 20!) but asks everyone to keep his QTH quiet—somewhat naturally.

Heard by your Commentator within ten minutes of each other: Time, about

0830 GMT; Frequency, LF end of 14 mc. FO8AC calling "CQ G," replied to by a VK, whom he works. . . . FP8BX calling "CQ VK," replied to by a G, whom *he* works. We really must try calling "CQ No DX"

Forty-Metre News

There still seems to be DX around on Forty, but it's mighty hard to come by unless you are a sleepless wonder. G3ATU was one of the lucky few who acquired 7B4QF on that band; he also welcomed OY5EL, who has been heard on phone.

G3FXB was quite surprised to catch a few new ones, which included CE7AA, CE7ZN, OY5EL, SU1FX, VP8AP and VP9AK. A make-weight was 11YCC/Trieste. 'FXB says the main difficulty seems to be lack of DX activity rather than conditions.

G4QK reports XE10M on CW, but unfortunately he got away. G3BDQ found 7B4QF, and G3ABG (Cannock) had an excellent contact with VQ4CM (7013 at 2220).

G5BZ says "DX is there if you take the trouble to scratch round a bit," and proves it with CE, CN, PY, VE, VQ4, ZL and 3A2AC. By the time you read this, we imagine that 7 mc conditions will be bucking up a little. This winter there should be plenty of fun, especially for the ground-plane experts.

Eighty-Metre DX

The star turn on Eighty has been VQ4CM, who has given a lot of G's their first contact with Kenya on the band. (We fixed a sked but couldn't find him that night!) G2BJY worked him and had his doubts—later dispelled by a twenty-metre contact. G3GUM tells us that G8KP (Wakefield) has been, working CE3, CE4 and VQ4 on the band, and also that KV4AA says he has worked several G's up there lately.

G3BDQ winkled out OY5EL for a new one, and G5VB has been heard working CE's, among whom the star turn seems to be CE4AD. Our old friend VK5KO is often heard plugging away on the band, and even ZL's have broken through from time to time.

Our remarks about Forty apply equally to Eighty—there should be never a dull moment this coming autumn and winter. We only know of one amateur who has, so far, gone to an eighty-metre ground plane, and he was amazed at the results. (Go out and find some 60-foot poles, Arabackle, and *we'll* get weaving).

G2YS was another who worked VQ4CM, and G3FXB says that the latter has already increased interest in the band so much that several new ones are about. He has worked CT1BV, MF2AA and YO6CA, but CE4AD, unfortunately, got away.

Not Much on Ten

The Cinderella-Band has been Ten, this month. After last month's promising burst of CW activity, there has hardly been anything of the kind. G3ATU managed to work OE5ZZ and an F8, thereby almost doubling his ten-metre score, but nothing else showed up. G6QX did rather better, with short-skippers like YU, F, OE, EA, 9S, HB, SM, I, HA, OK, DL and FA.

No one else does more than merely mention the band, and we ourselves haven't spared it much time lately, so it's fair to say that there is *no* ten-metre news at present.

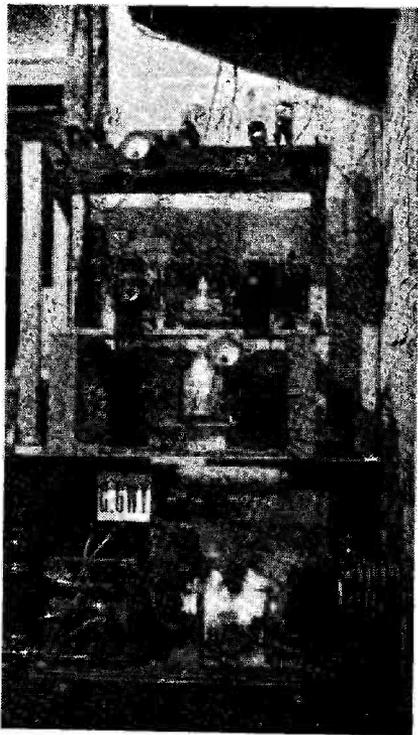
From the Overseas Types

Neville Jackson, who was secretary of VS6AC for some time, now boasts VS6CE as his own call. When he wrote he had only been on the air for three days, but had already found that the voltage varies between 190 and 230! He returns to England in November or December, and wants to work as many G's as possible before then. He adds that he may stop at the Nicobar Is. on the way home . . . now then, stand back, *please*.

SUIFX started up on June 29, and since then has been very active on both Twenty and Forty. He says Twenty is pretty good for the Far East in the afternoons; Europeans occupy the whole evening, and then the DX comes in again about 0200. Forty is hopeless until the BC stations close at midnight, and after that it is quite fair—he has already worked VQ4CM and PY7WS.

'FX tells us that SUIFX is also on the air, although the two of them share the same rig. They have difficulty—especially in phone contacts—in convincing people that they really *are* in SU. Unfortunately, as 'FX says, it's only too true.

W2WC (Brooklyn) sends in a new score for the Marathon table, and reports working FG7XA, KW6AC, MD2JB, SUIAD, VT1AC and 9S4AX for brand-new ones. He says things are pretty rough over there on Twenty—a good piece of DX only has to show its head and the ensuing pile-up is so



G6WY (now VE3BWY, Toronto) when his station was at Beckenham, Kent in 1930. The bright glow on the lower deck comes from the high-voltage rectifiers and the transmitter (centre) appears to be a Goyder-lock TPTG with a valve about a foot long. In those days, it used to be said that "Goyder lock was fine—until you lost the key." This sent the self-excited output stage drifting off on its own, with parasitics up and down the band—not that we are suggesting that this happened at G6WY!

terrific that only the kilowatt boys with their 3-el. beams stand a chance. (And, he adds, there are plenty of those).

If you have been hearing ZD2AO during July, it is none other than G2AO of Malvern. He tells us that the P. & T. Dept. issued him with a licence at very short notice, and he hopes to be on all bands from 14 to 1.7 mc—although he may have finished and may be on the way home by the time you read this.

Next is a letter direct from MP4BAM, who is also G8JX and VS1CF. He reports that he is in the same position as MP4BAF, already alluded to—his

station is in the Sheikhdom of Qatar, between Bahrein and Sharjah. 'BAM asks us to tell the boys that every contact will be confirmed by surface mail, but as he has only just received cards and has been on the air two years, the back-log may take a little time to clear up. The rig runs 120 watts to an 829, into a 300-ft. long wire strung up 60-ft. high.

More About DAC

We thought we had settled the DAC matter last month, but correspondence still rolls in. GW8WJ (Prestatyn) suggests that if 10-watt G's cause him serious QRM, the inference is obvious An RAF correspondent who wishes to remain anonymous says he has to spend a lot of time "on the other end" of DAC when he is doing Met. reports; he feels like a trespasser on the band.

G2JU (West Wittering), who is interested for practical reasons in navigation, gives us some detailed gen.

Among it is the following: 1885 kc is the "little ship" frequency for DAC, and is used by coasters and the like which are fitted for telephony only. DAC can connect such a ship, via 1885 kc, into the German telephone system, just as our own coastal stations do. As G2JU points out, there are lots of frequencies on the Top Band which are so used; it behoves amateurs to keep clear of them. As he has collected together a lot of information on the subject and is very conversant with the procedure, he is going to write a fuller account for us.

G8JU (Speke) comes forward with similar details and adds that DAC transmits Met. bulletins at 0800, 2000 and 2200 GMT. Thanks to all the customers who rallied round on this subject; may we now consider it closed? Surprising how much attention has centred around one commercial station in one shared band!

Clots' Corner

G2BIY offers "PX1XP," with T1 note and drift, giving his QTH as Andorra, and would like to add, collectively, the clots of all nations who wrecked his QSO with ZK1BC by continually calling him throughout the contact.

G6QX offers an LA who broke into a QSO between a G and FR7ZA, calling the FR7 and signing "LA2?? pse report." 'QX calls him a Clot-optimist.

We ourselves offer, collectively, three stations who made a wonderful mess of a nice DX station. Procedure was like this: CR8CC was working a ZS; a ZB1 broke in and called the CR8; an OH called the ZB1 as soon as he had finished; and finally an I1 called the OH. When it was all over, CR8CC was still working the ZS, and none of the other three had got anywhere.

General Patter

G6QX writes: "Listened to some of the driv-el-dribblers the other night while warming up, and, boy, the love, affection and sweet-dreams stuff they finished up with would ensure world peace for a million years if it meant anything. It was embarrassing to hear such a hen-party amongst grown men . . . shades of Freud, Havelock-what's-his-name and others"

G3ATU asks, "Have you noticed the deplorable increase recently, especially on Twenty, in transmissions of T7 and under? (Well under, mostly). Some of

ZONES WORKED LISTING

POST WAR

Station	Z	C	Station	Z	C
Phone and CW			cont'd.		
G6ZO	WAZ	232	G3GUM	37	144
G6RH	WAZ	228	G2FYT	37	137
G6QB	WAZ	218	G3ABG	37	136
G3ATU	WAZ	207	G6QX	37	136
G5YV	WAZ	205	G2YS	36	135
G3DO	WAZ	200	G3CIZ	36	127
G2FSR	WAZ	196	G2HKU	35	122
G4CP	WAZ	195	G6TC	35	112
G8IG	WAZ	188	G2DHV	35	106
G2VD	WAZ	171	G3GUM	37	144
G3BI	WAZ	162	G3ABG	37	136
G3TK	WAZ	157	G6QX	37	136
G3AAM	WAZ	154	G2YS	36	135
G2IO	WAZ	152	G3CIZ	36	127
G3YF	WAZ	152	G2HKU	35	122
G8IP	WAZ	144	G6TC	35	112
G3AZ	WAZ	133	G2DHV	35	106
G5BJ	WAZ	126	G3GUM	37	144
G5VU	WAZ	124	G3ABG	37	136
			Phone only		
G2AJ	40	201	G2AJ	38	161
G2WW	40	183	G3DO	37	160
G3FNJ	40	150	G6WX	37	135
G6BB	40	136	G8QX	36	139
G3BNE	40	134	G3COJ	36	134
G5MR	40	130	G2WW	36	134
G3BDQ	39	168	G2VJ	34	122
G5FA	39	160	GM2DBX	33	107
G8KU	39	158	G2BBI	30	98
G3FXB	39	140			
G2BJY	38	162			
G3COJ	38	157			
G3FGT	38	148			
GM3EST	38	147			



PY2RT, Sao Paulo, Brazil runs an 813 on Twenty and Ten, with a pair of 811's in the modulator. His countries worked total 118, and he is WAC on CW and Phone.

these merchants have notes like an aviary."

G2HKU (Sheerness) tells us that ZL's are licensed to use phone between 7051 and 7200 kc, and that the Top-Band slice that has been allocated to them is 1900-1925 kc.

G13GQI (Belfast) agrees with the point raised by G2CDT in the June "Commentary" (concerning the giving of fuller details about DX contacts). In fact, 'GQI goes further still, and thinks all reports of working DX should give Frequency, Time and Date. Power, Type of Aerial with dimensions. Forestalling the criticism that all this would take up a lot of space and time and reduce the actual DX news, he says he would willingly accept a "DX Commentary" about a quarter of the present length if the DX mentioned was given together with such details.

Personally, we disagree; very few people who report the DX have anything exotic in the way of an aerial system. Most of them use 150 watts, but those who use 25 get there just the same. Times and frequencies are given when possible, but mean very little; certainly the exact frequency means nothing at all, and we always make it perfectly clear which band we are talking about. The time is, perhaps,

the most important item, but even this tells us little, since G6ABC worked ZY1XX at 0800 and G6BCD worked him at 1400, and the best time to have worked him would have been 1130, but there was no one there to do it!

But we turn the question over to readers; do you want a lot more detail about DX worked (on the lines above) or don't you? What I *would* like to do would be to have fuller details of the aerial systems used by some of the leading DX types. These would not be flung about in the text in such a way as to waste space, but could be tabulated and shown in a small panel.

Please let me have a few details next month, all those who are well up in the tables; Long-Wire, Dipole, or Beam? If Long-Wire, how long and in what direction? How high? And nature of general location—that is, surrounded by buildings, or on hill-top, or in hollow, or sloping ground, or what-have-you? A few details of this kind would be very illuminating, since aerials are undoubtedly the subject creating most interest among the DX fraternity.

Top Band Conditions

G3FXB recently heard WWV at S4 on 2.5 mc, and also logged WCKY (1560), WMEX (1510), WTOP (1500)

and WNAC (1280), although no DX was heard at this time on the Top Band. He says that during the Transatlantic Tests, when W's were coming through at 559 on the band, many of the well-known American broadcast stations were hardly audible, although when conditions are really good they are S7-8. He wonders whether the frequency difference between 1800 kc and, say, 1500 kc, is responsible for a wide variation in conditions at a certain time; in other words, is there a Minimum Usable Frequency for a certain range? 'FXB, when he was an SWL, used to do a lot of medium-wave DX; although he never heard anything further west than Texas (4500 miles), the CE and LU stations used to come through with great strength and regularity. This suggests that South America might be easier to work on Top Band than the Middle West States.

Top Band Transatlantics, 1952

We are still waiting for final confirmation of the dates from the other side, but it seems safe to state that we shall only be using the 0500-0800 period, and that five or six Sundays, at fortnightly intervals, will be chosen. They will probably start before Christmas and end by late February. Full details and dates will appear as soon as confirmation is received; almost certainly, in next month's "Commentary."

The VK/ZL Contest

The Annual VK/ZL Contest is to be a bumper affair this year, as 1951 is the Jubilee of the Federation of Australia. The Commonwealth Government has

honoured the W.I.A. by making a monetary grant towards this world-wide Contest, and it is hoped that it will be an unusually successful event this year.

The CW Section will run from 0001 GMT on October 13 until 1200 GMT on October 14; the Phone Section follows one week later; the Receiving Section covers both events. You may enter the "Open" Section (Phone or CW, all bands), or you may elect to use any one band in either section.

Serial numbers will be exchanged, as usual, consisting of RST (or RS), followed by a three-figure number increasing by one for each successive contact. Each contact scores one point, and the total is multiplied by the number of VK and ZL districts worked, counting all bands used.

A Cup goes to the leading VK/ZL station, with a plaque or medallion to the leader in each VK/ZL district. Certificates go to the winning stations in all other countries. Every entrant will be posted a copy of the results, together with a special QSL acknowledging his participation in the Contest.

Logs must be in by January 31, 1952. We will refresh your memory during the next two months with a little box full of the main details!

That constitutes the sum-total for the month, and it is time to sign off. Next month's deadline is **first post on August 15**; and for the following month, first post on *September 12*. Address everything to "DX Commentary," *Short Wave Magazine*, 55 Victoria Street, London, S.W.1. Good Hunting, 73 and BCNU.

THE SUMMER CALL BOOK

The latest (Summer 1951) edition of the *Radio Amateur Call Book* is now available, price 20s. post free. It lists amateur stations by callsign, name and address all over the world, and gives a lot of useful general information besides. The British section contains all additions, corrections and amendments up to and including those published in "New QTH's" in our May 1951 issue. This section is available separately as *The G Call Book*, and costs 4s. 6d. post free. Also in separate covers is the Foreign Section of the *Call Book*, listing all amateur stations of the world outside the United States; the price of this is 8s. 6d. post free.

CARDS IN THE BOX

Operators listed below are invited to send us a large S.A.E., with name and callsign, for the delivery of cards held for them in our QSL Bureau — address: BCM/QSL, London, W.C.1. If publication of the callsign/address in "New QTH's" and in the *Radio Amateur Call Book* (British, Foreign and All-World versions) is also required, this can be mentioned when forwarding the S.A.E.

G2ATW, 2LL, 3DBJ, 3DTP, 3FAS, 3FVW, 3FYI, 3GCB, 3GCT, 3GIC, 3GMW, 3GWN, 3GZW, 3HBL, 3HCB, 3HLV, 3HNC, 3HUP, 4PV, 8PT, G13GTO, 3HDC, 3ICD, GW3GHT.

Getting an Amateur Licence

WE frequently receive enquiries from readers which amount to "How Can I Become an Amateur Transmitter?" If you do not hold exempting qualifications, you have to pass a technical examination and a Morse Test. Here is an outline, in brief, of the procedure involved.

The Radio Amateurs' Examination is conducted under the *ægis* of the City & Guilds of London Institute, at examination centres all over the country, and is held about May every year. Thus, the next one will be in May 1952. Particulars regarding the R.A.E. can be obtained either from your local Technical College or the Superintendent, City & Guilds of London Institute, Dept. of Technology, 31 Brechin Place, South Kensington, London, S.W.7. Question papers and specimen answers appear regularly in *Short Wave Listener & Television Review* in good time for the next sitting. Thus, the 1950 Examination was covered in issues dated January, March, April and May of this year. Similarly, the R.A.E. held in May 1951 will be dealt with in detail in issues appearing in early 1952.

The authority for the issue of licences is the Engineer-in-Chief, Radio Branch W5/5, G.P.O., London, E.C.1, from whom Forms E-in-C 447 (Application) and E-in-C 428 (Conditions and Exemptions) can be obtained. The Morse Test standard is 12 words per minute, sending and receiving, and is arranged through the nearest head post office on instructions from London.

Almost all prospective applicants who have been in the communications or radar branches of the Services, whether commissioned or not, will find they are exempt from either the R.A.E. or the Morse Test, if not both—provided application is made during service or not later than two years after discharge. For instance, an Officer R.N. (C), an LRM W/T, an Officer R.A. (I.F.C.), a Foreman of Signals, a Signals Officer R.A.F., and a W/Op (Air) are merely examples from a long list not having to take either examination. They would thus be granted an "A" Licence as amateur transmitters merely on the acceptance of their applications by the G.P.O.

Grades such as LRM A.R., Radio Mech., R.Sigs., and Wireless Mech. I would be exempt from the technical examination but would have to pass the Morse Test. On the other hand, an Air Signals Officer (F.A.A.), a Telegraphist S., an Operator Wireless & Keyboard, and a W/T Slip Reader Operator are accepted as being fully qualified in Morse but would have to sit the technical examination.

There are also a number of civilian exemptions in the same sense as the foregoing, including those of appropriate degree status, radio officers in the Merchant Navy, and others similarly qualified. All are covered in Form E-in-C 428, obtainable from the G.P.O.

For those taking the written part of the Radio Amateurs' Examination, the syllabus is essentially basic theory, simple calculation and circuitry, and a knowledge of the licensing conditions. Anyone who takes a real interest in radio as a hobby should have little difficulty in reaching the qualifying standard—for the last three years an average of about 70% of the candidates sitting have been passed.

Useful study reading for the R.A.E. is the *Radio Amateurs' Handbook* and the latest *Radio Handbook*. Excellent and well-tried correspondence courses, for both written examination and Morse test, are also offered by *Short Wave Listener* advertisers.

XTAL XCHANGE

Here are this month's offerings, in respect of which all negotiations should be conducted direct. Insertions in this space are free and should be sent in on a separate slip, headed "Xtal Xchange—Free Insertion," drafted in the form as shown below.

G3DCJ, Atlantic Breezes, Sennen, Penzance, Cornwall.

Has chassis-mounting 75 kc ex-A.M. high stability bar, also Biley 100 kc bar, Type SMC-100; no certificates. Wants any frequency 8084-8091 kc, $\frac{1}{2}$ -in. or 3/4-in. pin spacing.

G3HEC, 270 Spotland Road, Rochdale, Lancs.

Has 5340, 6030 and 6040 kc crystals, $\frac{1}{2}$ -in. mounting, also 6000, 6010 and 8000 kc with 3/4-in. pins. Wants 455 kc crystal for SX-24 (or similar type), and 500 kc bar.

G8KP, 125 Oakwood Avenue, Wakefield, Yorks.

Has crystals 3425, 3501, 3509, 3563, 3590, 3603, 3616, 3631, 3645, 3707, 7003, 7042, and 7084 kc, all new, $\frac{1}{2}$ -in. mounting. Wants any frequency 8011-8022 kc.

Random Jottings

By THE OLD-TIMER

WHAT a strange variety of "procedures" the phone-users have! The old, straightforward *coda* of "G6ABC over" has quite vanished from the air; he is always "standing by" or "listening," both of which are longer than "over." But I must admit that I prefer the calling-up technique which runs "G6XYZ, G6XYZ from G6ABC, G6ABC." It is clean and tidy, it ties up with CW procedure and it sounds better than "Hullo, hullo, hullo G6XYZ, this is G6ABC calling you," apart from being a good deal shorter. All we need now is a clean-up of the calling and signing methods adopted when there are three or more in one QSO. Too often one hasn't the faintest idea who is signing and who is being called; and as for the unfortunate character "in the rumble," "in the hole," "on the hook" or wherever he is

THUNDER AND LIGHTNING

There have, I suppose, been a number of serious accidents due to aeriels being struck by lightning while the operator was still at the receiver. But we don't hear much about them. The fact remains that local storms should be treated with far more respect than the average amateur gives them. If complicated aerial systems make it impracticable to instal the simple SPDT earthing switch, then a plug-and-socket arrangement of some sort should be provided so that the aeriels can be disconnected and earthed *quickly*. (Mine are done outside the window and hitched straight on to a stout lead going directly to earth; I don't want *any* of that stuff fizzing round inside my shack, thanks).

CALL-SIGNS AND THEIR ORIGIN

How many people have noticed that none of the Finnish calls have a first letter earlier in the alphabet than "N"? The very first Finnish amateur, if I remember rightly, had the call 1NA (no prefix). He could be identified because

no other European country used the figure 1. Later he became fn1NA, then s1NA, then es1NA and finally OH1NA. (Only the OH should be in capitals because it was the first official allocation of international prefixes which made them an actual part of the call). Subsequent Finnish calls went on from there, but they never went behind the "N" for their first letter.

The first Swedish amateur call was SMZZ, and *they* worked backwards. Later, the districts were organised and figures inserted. You may notice, even now, that a given group of letters in an SM call-sign is never duplicated. For instance, SM7XV is the *only* XV; they still allot the call-signs strictly by letters, and then insert the "district" figure. The two-letter calls nearest to "ZZ" indicate the Old Timers.

PHONES OR SPEAKER

There seems to be a new *genus* of amateurs who never use headphones. Surprising, this, because a good headset will bring up to R5 a CW signal that is quite difficult to read on the speaker. The advantage doesn't seem so marked on telephony, even when QRM is causing trouble. On the other hand, static crashes, vacuum cleaners and the like seem even more annoying on phones than on the speaker. Surely the answer is to possess both and to make the best of each?

ARE CONDITIONS EVER BAD?

The old theory that conditions are never universally bad seems to be proving itself again. On mornings when no DX has been possible from this country, I have heard rare birds working one another with great gusto; and they have by no means been locals to each other. For instance, ZM6 and VR2 working KL7's; KH6 working ZS; HP working UA9; all at times when, from this country, it seemed impossible to raise either end. In any case, they were only just readable. So I take it that on those days when we hear nothing at all, conditions are superb for some part of the Globe with no amateur population, such as AC4 or large tracts of Antarctica—not to mention the Pacific Ocean.

One-Lunger for the Top Band

EFFICIENT SINGLE-STAGE TRANSMITTER FOR 160 METRES

By W. E. CORLETT (G3DIP)

THE oscillator described has been designed to provide a simple yet efficient single-valve transmitter. As the output was required at the crystal fundamental frequency, a "plate-grid" circuit was decided upon. The essential difference between this type of oscillator and the more usual electron-coupled arrangement is the fact that the feedback to maintain oscillation is obtained by having the cathode tuned to a lower frequency than that of the crystal. Output can thus be taken at the fundamental frequency without undue crystal current and subsequent danger of crystal fracture.

Circuit

Basically, the circuit (Fig. 1) consists of a plate-grid oscillator, the output of which is Pi-section coupled to the aerial. This method of tuning enables any convenient length of aerial to be used, an advantage when space is limited.

The grid circuit consists simply of the crystal and associated grid leak, R1. Both are connected directly between grid and earth, but an RFC may be included between R1 and the grid if desired. (This has not been found necessary in the model.)

The actual value of C2 in the cathode circuit is not critical and is best found by experiment, being partially dependent upon stray capacities. The anode

Table of Values

Circuit of the Top Band Tx described by G3DIP

C1, C4, C8	= .01 μ F paper
C2	= 750 μ F Mica
C3	= .001 μ F Mica
C5, C6	= 250 μ F Variable
C7	= 4 μ F Electrolytic
R1	= 100,000 ohms 1 watt
R2	= 270 ohms 1 watt
R3	= 5000 ohms 3 watts
RFC.1	= 2.5 mH
RFC.2	= 2.5 mH
L1	= 45 T 1 $\frac{1}{2}$ in. Dia. 22 SWG enam.
M1	= 0-50 mA DC Meter
M2	= 0-350 mA RF Meter

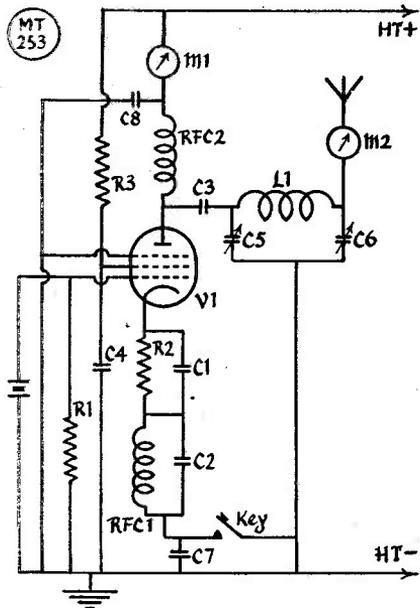
Whether for regular appearances or for occasional excursions on 1.7 mc, a separate transmitter is now accepted as being the right approach to that band. With the 10-watt power limitation, a simplified one- or two-stage arrangement is the usual choice. Here is the circuit and essential constructional data for a useful Top Band CW transmitter.
—Editor.

circuit, L1, C5, C6, is a normal Pi-section tuning network. C5 is the tuning condenser and C6 the aerial loading condenser.

Cathode keying is used, C7 being inserted to reduce key clicks; this will depend upon the length of key lead, filter in use, and so on, and is best determined by experiment.

Construction

The crystal and its associated grid circuit should be well screened to avoid extraneous feedback from the anode



Circuit of the 1.7 mc single-valve transmitter described in the article. Though a 6AG7 is suggested, any similar valve with low anode-grid capacity can be used, or an EF91 for a miniaturised version of the circuit.

circuit, and wiring should be carried out as directly as possible. L1 is best mounted horizontally, but this is by no means essential, as the capacity unbalance can be compensated by C5 and C6.

Operation

Power required for normal operation of the transmitter is 300v. at 30 mA and 6.3v. at .45 A. C5 is tuned for minimum HT current with C6 at maximum capacity. C6 is then reduced gradually, the anode dip being maintained by re-tuning C5. An optimum point will be found where there is no further increase in aerial current. The anode

current should be approximately 30 mA at this point. The transmitter is then checked for correct keying, and if this is satisfactory, is ready for use. Should chirp be evident, the loading is reduced until this is eliminated.

Conclusion

The plate-grid oscillator is also an efficient harmonic generator, its output on even harmonics being somewhat greater than that of the ECO. Used in this manner with crystals of the order of 7 mc, C2 should be a variable condenser of about 250 $\mu\mu$ F. The anode circuit should be series tuned to the harmonic required.

G1BF Here

GETTING GOING ON VHF

Much heartened by flood correspondence (well, long letter from UZ0AA in Zone 19 claiming to be Popoff's grandson, and some meaty comments from old pal DRIP operating *sub rosa* in E.10) lavishing high praise my whacko articles.

Editor much concerned to hear have solved all TVI problems at XQ6BF/PM (this of course is me G1BF on Ten) by using 813's in bash-bash-SEO. Resulting RF kick-back into mains ample to nullify all TV reception over half-mile radius; blinding flashes on neighbours' screens result in harassed BBC getting steady stream phone calls demanding Change That Film for Something More Up-to-Date.

Am now being pressed give advice on use 813's on 144 mc band. Do not hold with VHF really as no scope for rare exotic c's and everybody very serious about high-toned operating. But have looked into this simple problem and find filaments pair 813's just about self-resonant on 120 mc (near enough to band for practical purposes) when connected in series. Have therefore devised new cathode-oscillator circuit by cunning arrangement chokes, pass-by condensers and strapped anodes (too difficult for beginners to understand) enabling tank RF to be pumped back round to keep fil glowing. This of course is variation my well-known self-sustaining T20 oscillator using heater link-coupled into tank thus eliminating QSB on wad by saving expense heater xformer. (Now beginners will realise how important they keep in touch this space.)

Old pal DRIP (on air *sotto voce* out Leyton way) has different approach VHF problem with 813's. He de-bases valves and applies HT from 2500-0-2500 xformer in my well-known self-rectifying circuit. Resulting signal drifts from Alexandra Palace to Sutton Coldfield and back again in two-minute cycle; strong third harmonic radiation thus enables CQ to be called throughout 144 mc band no trouble at all with very fair AC note only slightly fluffy at edges. Must admit old pal DRIP got something here even if some power lost in squiggers also swishing rapidly through 430 mc band. Nevertheless am always strong advocate simultaneous multi-frequency working so cannot criticise DRIP too harshly.

Editor says will have to cut down my space to see if readers complain. But truth is Editor had anonymous letter (Zone 16 postmark) warning him to moderate tone or he will be for high jump when masses rise.

Look out for More Valuable Advice in my next.

(As nobody gets paid for writing this stuff, we don't mind telling you the author is not who most people think he is —Editor)

GERMAN VHF BROADCASTERS

During the proceedings of the recent DARC Convention, it emerged that the German broadcasting authorities are now operating some *forty* VHF FM stations in the band 87.7-95 mc, with aerial powers ranging from 100 watts to 10 kW. Under suitable conditions, some of these stations should be receivable in this country on receivers like the S-27, which is fitted with an FM discriminator and tunes to 140 mc.

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 quarterly issue of the "RADIO AMATEUR CALL BOOK" in preparation. QTH's are inserted as they are received, up to the limit of the space allowance each month. Please write clearly and address on a separate slip to QTH Section.

- | | | | |
|----------------|---|--------------------------|---|
| G2APP | J. Frampton, 136 Glenavon Road, Warstock, Birmingham, 14. | GM3HME | R. A. Loomes, 13 Snaefell Crescent, Burnside, Rutherglen, Lanarkshire. |
| G2ASW | S. W. Woolford, 26 Hereford Court, Headstone Drive, Harrow, Middlesex (Tel.: Underhill 0094). | G3HMJ | S. F. E. Wilkins, 11 Den Road, Headington, Oxford. |
| G2HDF | F. Westwood, 110 Cemetery Road, Lye, Stourbridge, Worcs. | G3HNE | G. Campbell, Nunwood, Apperley Bridge, Bradford, Yorkshire. |
| G2HLG | J. G. Barker, Uppergate Cottage, Ingleton, via Carnforth, Lancs. | G3HNL | J. W. Coleman, 70 Alverstone Avenue, East Barnet, Herts. (Tel.: Ent. 7091) |
| G3DII | J. Bell, 52 York Crescent, Blackburn, Lancs. | G1BHNM | C. E. Davies, 30 Churchill Park, Bangor, Co. Down. |
| G3DPJ | A. Smith, 28 Delamare Crescent, Croydon, Surrey. | G3HNS | Flt Lt. E. J. Regan (<i>ex-ST2JR/V59AJ</i>) 6 Millgate Street, Aylsham, Norfolk. |
| G3DTU | E. Clowes, 95 Hanley Road, Sneyd Green, Stoke-on-Trent, Staffs. | G3HNT | N. L. Tomlinson, 37 Ranelagh Road, Pendlebury, Manchester. (Tel.: Swinton 2807). |
| G3EAY | D. M. J. Wood, 192 Colchester Road, Leyton, London, E.10. | GM3HNV | J. H. Calder, Viewfield, Kettlebridge, Kingskettle, Fife. (Tel.: Kingskettle 304). |
| G3EVP | H. J. Grayson, Thorp Arch Vicarage, Boston Spa, Yorkshire. | GM3HOM | J. Reilly, 20 Ormsay Street, Glasgow, N.W. |
| GM3FMF | A. Thomson, 46 Apsley Street, Glasgow, W.1. | G3HOZ | K. R. W. Chapman, 327 Bexley Road, North Heath, Erith, Kent. |
| G3GAF | C. T. Dollery, White House, Burton Road, Lincoln. (Tel.: Lincoln 215). | G3ILM | L. A. Mills, 37 Coventry Road, Ilford, Essex. |
| G3GAF/A | C. T. Dollery, 79 Oxford Road, Moseley, Birmingham, 13. (Tel.: Birmingham South 1762). | G5NZ | R. Stokes, 72 Highland Road, Northwood, Middlesex. |
| G3GCS | J. Hickling, 47 Banbury Road, Oxford. | G6NZ | L. E. Newnham, B.Sc., Verona, Havant Road, Emsworth, Hants. |
| G3GFM | A. N. Lawes, 11 Meadvale Road, East Croydon, Surrey. | CHANGE OF ADDRESS | |
| G3GFT | G. F. Oldfield, 135 Lytham Road, Blackpool, Lancs. | GW2AVV | G. E. Evans, 121a Penycae Road, Port Talbot, Glam. |
| G3GML | F. B. Murray, 46 Pentland Avenue, Chelmsford, Essex. | GW2BBO | L. W. Osmond, 127 St. David's Crescent, Penarth, Glam. |
| G3GST | G. E. McCracken, 471 Hawthorne Road, Bootle, Liverpool, 20. | GW2BMN | H. Millington (<i>ex-G2BMN</i>), 24 Mount Pleasant, Menai Bridge, Anglesey. |
| G3GUH | M. J. Fitzgerald, 41 Harwood Road, Bridgenary, Gosport, Hants. | G2CZM | A. G. Pruden, 47 West Way, Rickmansworth, Herts. |
| G3GVQ | M. Bates, 34 Woodman Close, Sparsholt, nr. Winchester, Hants. | GM3AKN | R. Milne, 4 Woodside Drive, Penicuik, Midlothian. |
| G3HAO | E. H. Webster, 83 Tudor Court North, Wembley Hill, Middlesex. (Tel.: WEM 3882). | G3AZT | C. H. Walker, 34 Westfield Road, Rugby, Warks. |
| G3HAT | M. C. Hately, 17 Selby Road, Ealing, London, W.5. | GM3BN | A. E. Sutton, 67 Sidney Street, Arbroath, Angus. |
| G13HCG | R. J. Johnston, Royal Ulster Constabulary Barracks, Glengormley, Belfast. | G3BVD | G. Brown, 2 Rose Cottage, Upwey, Weymouth, Dorset. |
| G3HET | J. W. Forsyth, Wooler, Northumberland. | GM3BYK | F. Baillie, 147 Croftside Avenue, Croftfoot, Glasgow, S.4. |
| G3HFF | A. A. Damsell, Southview, Chalford Hill, Stroud, Glos. | G3COY | V. J. Reynolds, 2 Langdale Crescent, off Courtway Drive, Sneyd Green, Stoke-on-Trent, Staffs. |
| G3HFO | N. A. Smith, 63 Westfield Road, Surbiton, Surrey. | G3ESF | A. R. Harrower, 1 Tiverton Road, Thornton Heath, Surrey. |
| GW3HGB | Sgt. J. Mills, 85 M.O., West Camp, R.A.F. Station, St. Athan, nr. Barry, Glam. | G3FMB | F. T. Butler, 17 Eva Road, Gillingham, Kent. |
| G3HGR | P. Knight, 77 Runnymede, Colliers Wood, London, S.W.19. | G3FSX | R. J. Ellis, 87 New England Road, Haywards Heath, Sussex. |
| G13HHN | R. J. Armstrong, Ballee, Strabane, Co. Tyrone. | GM3FWM | J. Hutchison, The Cottage, Cultybraggan Camp, Comrie, Perthshire. |
| G3HHV | A. M. Hunt, M.P.S., 10 Glendower Road, Plymouth, Devon. | G13HNM | C. E. Davies, 19 Woodvale Gardens, Belfast. |
| G3HIG | F. Stacey, 11 Fairspear Road, Leafield, Oxford. | G13ZX | Dr. D. M. Downing, 75 Dunlambert Drive, Fortwilliam, Belfast. |
| G3HIL | K. N. Honeyball, 71 Canterbury Grove, West Norwood, London, S.E.27. | G5YH | H. Chorley, Little Orchard, Cavendish Road, Chiswick, London, W.4. |
| G13HJH | A. McBurney, Ballymartin, Kilkeel, Co. Down. | CORRECTION | |
| G3HJQ | J. W. Stainsby, Perrstain, Fairmoor, Morpeth, Northumberland. (Tel.: Morpeth 303). | G3AO | S. Levings, 55 Derbyshire Road, South Sale, Manchester. |
| GW3HJR | R. Morris, Flat 3, 306 Newport Road, Cardiff. | G8DA | P. Malvern, 280 Linden Road, Glos. |
| G3HLM | W. E. Harris, 29 Moorside Road, Heaton Moor, Stockport, Cheshire. | G8JC | E. J. Morris-Casey, 4 Kennels Road, Station Road, Fernhill Heath, Worcester. |
| G3HLN | J. Matthews, 4 Barnfield Road, Welwyn Garden City, Herts. | G8JD | F. L. Firth, Folly Hall, Wibsey, Bradford, Yorkshire. |
| | | G8JD/A | F. L. Firth, 19! Edge Lane, Liverpool, 7. |

VHF BANDS

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

THIS month we start with some hard hitting. The comment here last time on the dangers of what is euphemistically called "VFO technique" spreading to the VHF bands has brought a number of letters strongly supporting the views we expressed. It appears that a few—a very few—stations are already doing the sort of thing one feared might happen. The "VFO" may take the form of a set of crystals at suitable spacings across the band, but the intention and effect are just the same. No call signs are being mentioned, but there is a receiver at G2XC, and your anxious conductor is well aware of the identity of at least one of these band-hoppers. Suffice it to say that a crystal filter is needed to work G3BW, when a particular station puts in his LF-end crystal. There is just no excuse for this, as the operator in question has a perfectly good channel higher up the band, where most of the other stations in his locality are working.

Doubtless it will be contended by the VFO addicts that their licence permits operation on any frequency between 144 and 146 mc, and that legally they are in order—as, indeed, they are. But there used to be, once upon a time, something called "The Spirit of Amateur Radio," and that included consideration for others and good manners on the air. Many of us hope that these things still mean something on VHF. Perhaps there is still time to stop the rot from setting in permanently.

To add force to these remarks, let us

*G3APY/G5BY Set New
Seventycem Record—*

VFO's and Crystals—

Some Contest Comments—

American DX Results on Two—

*Activity Reports and The
Achievement Tables*

quote one or two correspondents. G3EHY writes: "VFO working on the LF bands has always had its Spivs, but on Two Metres I think we can pride ourselves that operating has always been clean and conducted in the best spirit of co-operation and sportsmanship. Do let us uphold this worthwhile tradition; I feel that all who are on the band at the present time would have the same sentiments in this respect." He then goes on to quote an example of a portable station during a recent field-day whose technique fell far short of these standards. G3EHY adds: "I am afraid my respect for this station is not quite what it was previously." G6NB comments: "Two is getting like the LF bands. People seem to flit up and down with the hope of working DX and usually end up by QRM'ing the spicy bits. I think it better if everyone would stay in the same place. Then even the DX would know where to find them. We must guard against these LF band practices on the best band we have." EI2W, whom we suggested last month might be operating VFO, writes to deny

NEW SEVENTYCEM RECORD

On July 17, 2215-2250 BST, G5BY of Bolt Tail, S. Devon, worked G3APY of Kirkby-in-Ashfield, Notts., to establish a new European record of 227 miles on the 430 mc band. Contact was first made on two metres, and, on both stations changing over to 70 cm, immediate QSO was obtained; G5BY was RST-589 peak and G3APY RST-449. This is yet another fine achievement on which both operators will be congratulated by all VHF workers.

any such thing emphatically. Apparently his crystal is near the PA and has been warming up a bit. He then says: "I am opposed to VFO on this band. It is hard enough to work stations on fixed frequencies, but a VFO would upset the whole appeccart."

In case the *Magazine* attitude on this matter be misunderstood, may we make it clear that this is not propoganda for the Two-metre Zone Plan—although that plan if carried out 100% would avoid such situations as have been described above. The main consideration is surely to stay on one frequency and avoid changes of frequency, particularly large ones. By so doing, you will help yourself and everyone else on the band.

Propagation Note

Apparently last month's discussion on the differences between sporadic-E and tropospheric propagation was also read with general interest. G3BLP writes: "There is an astonishing amount of ignorance on the basic means by which our signals go places, and a little light in the right place is a good thing."

Many stations have been busy correlating barometric pressure with two-metre conditions, but it is feared generalisations are often made from insufficient evidence. One or two coincidences between high barometric pressure and good DX are *not* enough to draw the conclusion that there is a direct connection between millibars and the range of DX. It is probably true to say that, with a high barometer reading, the *chances* of DX are better, but the writer of this piece (who has made an intensive study of the subject over many years) would hesitate to go any further than that. The big danger with all this is that a low barometer is beginning to encourage low activity, many stations not even troubling to switch on. In that way, a number of good evenings have not been utilised to the full. On one recent occasion, with the barometer well below normal for summer, three stations at well over 150 miles, one of them an ON, were worked from G2XC. But after that there was nobody else to work, and all three stations said "Conditions good but no activity."

Over the other side of the Atlantic some new two-metre records have been achieved. According to W2PAU of CQ, the best so far is a contact between W5QNL and W6ZL, made on June 10. There was apparently an excellent open-

ing between California and north-east Texas starting in the late evening. W2PAU considers that a sporadic-E condition was the probable reason for this. An electrical storm at the Texas end made copying difficult, but signal strengths were up to S8 over this 1395-mile path—note the distance! A peculiar phase distortion was noted on telephony signals and CW beat notes were rather rough. Abnormally short-skip was occurring on six metres at the time, and a temperature inversion was also present at a height of 60,000 feet or more.

Contests

It has been put forward by an outside agency that *Short Wave Magazine* should join with other "contest organisers" in compiling a standardised scoring system for VHF events in this country. The basis at present suggested provides for a measure of handicapping according to height above sea level. The object of this is stated to be (we quote) "the alleviation of the frustration felt by many poorly situated stations"!*

As *Short Wave Magazine* takes an independent stand on these matters, we should perhaps make our attitude quite clear. The rules we offer for any Contest, VHF or otherwise, are always plainly stated *before* the Contest starts, so that everyone who enters knows exactly on what basis his entry will be judged, and by whom. There is no guess-work involved, nor is any sliding scale applied. And nobody who feels the rules to be unfair at his particular location need enter unless he wishes to do so—though in fact the majority of operators come on for all contests, if it is only to join in the activity and give somebody else a point. Whether they actually send in an entry is another matter. (As an example of this, of 203 stations said to have been active in support of a certain contest recently, less than 30 appear to have sent in transmitting entries!).

Most VHF men agree that it is impossible to produce a set of rules which will equalise everybody's chances under all foreseeable conditions. Height above sea level is not by any means the

(*This statement is about as fatuous as the suggestion it inspires that height *a.s.l.* is the determining factor in obtaining GDX ranges. It is a good example of the pitfalls into which the inexperienced are led when attempting to guide the course of events. A mere imitative faculty is not enough when dealing with issues of this kind.—Editor).

TWO-METRE ACTIVITY REPORT

G4HT, Ealing, Middlesex.

WORKED: F9DI, G2FZU, 2HGR, 2HIF, 2IQ, 2OI, 3AHX, 3A00, 3ATZ, 3BW, 3CC, 3CHY, 3CXD, 3FIH, 3FNK/P, 3GUD, 5BD, 5CP, 5KX, 5YV, 6PZ, GC2CNC, GW5BM/P, 5MA/P, ON4EZ. (June 19 to July 8).

GW5MQ, Rhosesmor, Flints. NGR 33/209695.

WORKED: EI2W, 8G, G2AJ, 2HCG/P, 2NH, 3ABA, 3BLP, 3BW, 3CXD, 3DA, 3DH, 3ENS/P, 3ERD/P, 3ETI, 3FNK/P, 3GMX, 3GUC, 3HII, 4JJ/P, 5BD, 5CP, 5DF, 5JU, 5MA, 5RW, 6CW/P, 6LK, 6XM, 6ZQ, 8IC, 8OU, G12FHN/P, GM3BDA, 3ENJ, 3OL, GW2FVZ, 3ATZ/P, 3DA/P, 3ENY/P, 3GMX/P, 5BM/P.

G3EHY, Banwell, Somerset.

WORKED: EI2W, 8G, G2AHP, 2AOK/A, 2ATK, 2BBW, 2BZ, 2CPT, 2DD, 2DUS, 2FQP, 2FTS, 2HCG, 3ABA, 3AHX, 3APV, 3ATZ, 3AVF/P, 3BW, 3BGR, 3BLP, 3CHY, 3CGQ, 3DIX, 3ENS/P, 3ERD/P, 3FMI, 3FNK/P, 3FRE, 3FSD, 3FSL, 3GHS, 3HAZ, 3MA, 3MA/P, 3WW, 4SA, 5BD, 5BM, 5DF, 5HB, 5KX, 5MA/P, 5SY, 5YV, 6AG, 6KB, 6LR, 6LX, 6UH, 8IC, 8ML, 8OU, 8QY/P, 8SB, 8SY, GW2ADZ, 3ENY/P, 5MA/P. **HEARD:** EI9M, G3AGA, 3EMJ, 8VV. (June 8 to July 9).

G6NB, Aylesbury, Bucks.

WORKED: DL4XS/3KE, EI2W, 8G, F8NW, G2FNQ, 2FO, 2IQ, 2OI, 3AGS, 3ALY, 3A00, 3BGR, 3BW, 3CC, 3DMU, 3GEN, 3GUD, 3FIH, 4JJ, 5CP, 6PZ, 6YU, 8IC, 8SB, GC2CNC, GW2ADZ, 3ENY/P, ON4BZ, PA0FB, OZ2FR. **HEARD:** GM3OL, OZ2FR, SM7BE. (During June).

GC2CNC, Jersey, Channel Islands.

WORKED: G2AJ, 2DVD, 2MC, 3BA, 3BEX, 3BNC, 3CFR, 4HT, 5DS, 5MA, 5VP, 6AG, 6LK, 6UH, 6XM, 8IL, 8IP, GC3FSN (June 11 to July 12).

C3HCU, Chiddingfold, Surrey.

WORKED: F8AA, 8GH, 8NW, 9AE, 9DI, G2DSW, 2DVD, 2OI, 2XC, 3CGQ, 3DBM, 3DVQ, 3GHI, 3HBW, 3LI, 5LK, 5MA/P, 5RO, 5US, 6XM, 8IP, 8SM, GW2ADZ. (June 11 to July 10).

G3WW, Wimblynton, Cambs.

WORKED: G2ADR, 2FQP, 2HCG/P, 2HOP, 2MA, 2UQ, 2XC, 2XV, 2XV/P, 3AGS, 3AKU,

3AVF/P, 3BK, 3BNC, 3CGQ/P, 3CJY, 3CJY/P, 3EHY, 3ERD/P, 3FD/P, 3FMI, 3FOQ, 3GGJ, 3MA/P, 4DC, 4MW, 4SA, 5BD, 5CP, 5UF, 5YV, 6JI/A, 6LX/P, 6JU, 8KZ/P, 8SB, 8SY, GW5BM/P, 5MA/P.

HEARD: G2FKZ, 2FNW, 2HCG, 2IQ, 2OI, 2WJ, 3ALY, 3CXD, 3FIV, 4RO, 4HT, 6AG, 6CW, 6LL, 6SN, 6VX, SAX, SGL, 8KZ, 8VU, GW2ADZ. (June 14 to July 8).

G3HBW, Wembley, Middlesex.

WORKED: G2AYM, 2FMF/A, 2UQ, 3ABA, 3HCU, 3HSC, 4FB, 5CM, 6CB, 6HG, GW5MA/P, ON4BZ. **HEARD:** G2ANL, 2FQP, 2HCG, 2HCG/P, 2IQ, 2OI, 2RI, 3ABH, 3AGA, 3AHX, 3AUS, 3BA, 3BUR/P, 3CC, 3CCP, 3CFR, 3DIV/A, 3EHB, 3EHY, 3FIH, 3FUW, 3HAZ, 4AP, 5BD, 5BM, 5UF, 6XY, 8SY, 8WV, GC2CNC, ON4NC. (June 17 to July 8).

G3BW, Whitehaven, Cumberland.

WORKED: G2AJ, 2FCV, 2FKZ, 2FZU, 2HCG, 2HGR, 2XV, 3ABA/P, 3AGS, 3A00, 3BA, 3BKS, 3BLP, 3BPJ, 3CC, 3DA, 3DMU, 3DUP, 3EHY, 3FRE, 4HT, 4JJ, 4MW, 5BD, 5BM, 5CP, 5DF, 5JU, 5RW, 5YV, 6CW, 6LC, 6LX, 6NB, 6XM, 6YU, 8IC, 8OU, G12FHN/P, 3AXD/P, GM3BDA, 3EGW, 3NG, GW2ADZ, 3ATZ/P, 3DA/P, 3ENY/P, 5BM/P, 5MO. **HEARD:** EI2W, G2AOK/A, 2FTS, 2XC, 3MA/P, 3WW, 5ML, 8QY/P, 8WV. (June 11 to July 8).

GW5MA/P, 4 miles SW Bryn-Mawr, Brecknock.

WORKED: G2AHP, 2AJ, 2FKZ/P, 2FTS/P, 2HCG/P, 2HDZ, 2KF, 2MR, 2NH, 2UJ, 3BLP, 3EHY, 3FSL, 3HBW, 3MA, 3MA/P, 3WW, 4HT, 4SA, 5BM/P, 5DF, 5DS, 5HB, 5LI, 5RP, 5WP, 6CB, 6LK, 6LX, 6NB, 6UH, 6WU, 6XM, 6ZQ, 8IP, 8ML, 8OU, 8SM/P, ON4BZ. **HEARD:** G2KI, 3BK, 6AG, 6JK/P, 6XM/P. (July 7 and 8).

G4MR, Slough, Bucks. NGR 41/988792.

WORKED: G2AHP, 2FMF/A, 2YC, 3ABA/P, 3BA, 3BHS, 3EUQ/P, 5DS, 8KZ/P, GW2ADZ, 5BM/P. **HEARD:** G2CPT, 2FNW, 2IQ, 2UQ, 2XS, 3ABH/P, 3BUR/P, 3CHY, 3DUP, 3EHY, 3FNK/P, 3FQP, 3GOP, 3HAZ, 5BM/P, 5CP, 5UF, 5YV, 6CI, 6CW, 6PZ, 6XY, 8SB. (June 15 to 17, 29 to 30, July 6 to 8).

G3BLP, Selsdon, Surrey.

WORKED: EI2W, F9DI, G2DBG, 2HIF, 3ABA, 3AGS, 3A00, 3ATZ, 3AUS, 3AVF/P, 3BA, 3BGR, 3BW, 3CFR/P, 3DIT, 3EHY, 3ERD/P, 3EUQ/P, 3FIH, 3FSL, 3FUW, 3GGJ, 4JJ/P, 5BM, 5KX, 5ML, 5YV, 6PZ, 6ZQ, 8SB, GC2CNC, GW5ENY/P, 5BM/P, 5MA/P, 5MQ.

HEARD: EI8G, G5HB, GM3OL.

G6CB, Wimbledon, Surrey.

WORKED: F9AE, 9DI, 9LO, G2FVD, 2HCG/P, 2OI, 2RI, 2XC, 2XV/P, 3ABA, 3ABA/P, 3ABH/P, 3AHX, 3BA, 3BEX/P, 3BHS, 3BLP, 3BVG, 3CC, 3CGQ/P, 3EIV/P, 3ERD/P, 3EYV, 3FFX, 3FNK/P, 3FUL, 3GUD, 3HBW, 4FB, 5BD, 5BM, 5JU, 5KX, 5SZ, 6JK/P, 6LX/P, 6PZ, 6WU, 6YU, 6XM/P, 8KZ/P, 8SM/P, GW2ADZ 5BM/P, 5MA/P.

HEARD: G2CPT, 2FNW, 2HGR, 2IQ, 2XS, 3A00, 3AUS, 3AY, 3CHY, 3CVE, 3CXD, 3DIV/A, 3DUP, 3EHY, 3ENS/P, 5CP, 5YV, 6CW, GC2CNC, GW5MQ. (June 12 to July 9).

G3FIH, Radstock, Somerset.

WORKED: G2FTS, 2NH, 2XV, 3BA, 3BEX, 3BLP, 3CGQ, 3CHY, 4HT, 5LI, 5MA/P, 6AG, 6NB, 8IP, 8OU.

HEARD: G2AHP, 2HCG, 3DIX, 3DUP, 3EHY, 3WW, 5BY, 5DF, 5UF, 6CB, 6XM, 8IL, 8SM. (June 12 to July 3).

G2HDZ, Pinner, Middlesex.

WORKED: G2AHP, 2DD, 2FKZ, 2FNO, 2FTS, 2HCG, 2HIF, 2XC, 3ASG, 3BHS, 3BNC, 3CGQ, 3DUP, 3EHB, 3EHY, 3ENI, 3FAN, 3GOP, 3MI, 4SA, 5BC, 5BY, 5DS, 5SZ, 5UF, 6GR, 6JP, 6LR, 6WU, 8OU, 8SK, GW5MA/P, ON4BZ.

HEARD: EI2W, G2AVQ, 2BMZ, 2CPT, 2OI, 2RI, 2XV, 3AUS, 3CD, 3FAQ, 3FRE, 3HAZ, 5BD, 5CP, 5YV, 6CW, 6SN, 6YU, 8AX, 8SB, 8TL, GW2ADZ, PA0PN. (June 9 to July 8).

G2XC, Portsmouth, Hants.

WORKED: F8AA, G2DLJ/A, 2OI, 2RI, 2WJ, 2XV, 3ABA, 3A00, 3BA, 3BGR, 3CFK, 3DUP, 3EMJ, 3FMI, 3VM, 3WW, 5JU, 5YV, 6CW, 6YU, 8SY, ON4AP, 4BZ, 4IF.

HEARD: F8GH, G2FNW, 2HGR, 2XS, 3AHX, 3ALY, 3ANB, 3ATZ, 3BK, 3CHY, 3FNK/P, 4RK, 5CP, GW2ADZ, 5MQ, PA0PN. (June 13 to July 11).

only factor involved, nor is it necessarily a criterion at all. An East Anglian station at sea level is likely to be at a far greater advantage than a station 500 feet up in the Welsh mountains, but screened in various desirable directions. Distance from large centres of activity, the nature of the surrounding terrain, paths over land or sea, the resources (and resourcefulness) of individual operators, and the distribution of the weather over the country as a whole are only some of the factors which can influence the final result.

Under these circumstances, it is felt that rather than standardising rules and so putting certain stations at a permanent artificial disadvantage, it is far preferable to have varied systems of scoring, provided always that the system is published *before* the event. Hence, the Rules for the next *Short Wave Magazine* Two-Metre Contest, scheduled for November 3-4, will be compiled by ourselves, and though we know already that everyone will not be pleased, they will be as fair as we can make them and open to the criticism of those who send in logs. Views expressed at the last Fiveband Club Dinner and in the entries for last year's contest are also being considered in formulating the rules for this year.

In the meantime, a summary of the rules for the forthcoming Dutch VHF Contest appears in this issue of the *Magazine*, and it is hoped that G stations will support the event, in the same way that the PA's have come in on our two-metre contests during the past few years. In this connection, and without in any way cutting across the PA Contest as such, we would very much like to have copy-logs from G entrants, so that we can prepare an independent order of merit for British stations.

Seventycems

Congratulations to F8OL and PAØPN on an excellent 70 cm contact over a distance of 318 kilometres (197.6 miles). This new Continental record, a fine achievement, was made on July 2 at 2030 GMT, and puts the Continentals well on the map on Seventycems. Signals were RST579 at F8OL and RST568 at PAØPN. Both stations used QOE-06/40's as PA with 20 watts input; PAØPN is also understood to have worked F9AE. The 70 cm converter at F8OL uses a 2C43 in a common grid, grounded cathode circuit, with coaxial lines; the mixer is a 1N21B. Local oscillation on

TWO METRES

COUNTRIES WORKED

Starting Figure, 8.

10 G3BLP (DL, EI, F, G, GC, GI, GM, GW, ON, PA)

G5YV (DL, EI, F, G, GM, GW, ON, OZ, PA, SM)

8 G5BY (DL, EI, F, G, GC, GW, ON, PA)

421 mc is obtained from a crystal on 23.388 mc. The aerial system is 8 dipoles in phase with reflectors, but in the direction of PAØPN there is considerable screening. At PAØPN a CV102 acts as mixer with local oscillator on 141 mc, and the aerial is 4 half-waves in phase with reflectors. F8OL has heard PAØPN on several occasions—June 28, 30, and July 2, 3 and 4. PAØLU reports that F3LQ, F8LO, F8OL, F9AE and F9MX are all on about 435 mc, F8JR on 435.12 and F8GH on 434.7 mc. PAØLU himself is building a tripler and PA for 70 cm, using the QQE 06/40.

G2DD (Stanmore) has now heard G3EHY (Banwell) on four occasions: April 18, May 21, June 4 and 5. On June 5, G2DD worked G8DM/A (nr. Swindon) on CW and phone. Signals from G2DD were peaking at S8. On July 2, G2DD heard GW2ADZ calling G2FKZ on schedule. Signals were RST438, but afterwards 'DD found he had not peaked up the aerial coupler. This can increase signals by about 10 dB and it consists of a home-made coaxial line with aerial link and low-impedance output. G2FKZ also received signals from GW2ADZ on July 2, peaking to RST569. Weak signals were also heard the following evening, when the signal path was right along a warm front.

G2QY, out portable on June 17, worked five stations, the best being G3APY/P at 110 miles; he also heard G4LU at 122 miles, the site being on the Chilterns near Princes Risborough. There was even QRM! G2QY says that he now feels he must revise his ideas on band-planning, and asks that more publicity be given to frequencies used by the various stations. At his home station he finds the harmonic from G3BLP is stronger when two metres is open for DX.

G3EHY (Banwell) carried out some interesting tests with G3APY on July 3. Signals were heard at G3APY over this

TWO-METRE ACTIVITY BY ZONES AND COUNTIES

Based on reports for current issue only

Zone A (144 to 144.2 mc)

Ayr: GM2BUD, GM3DDE, GM3DIQ, GM3FVX
Dumbarton: GM3DAP, GM3FOW
Dumfries: GM3OL
File: GM3EGW, GM3ENJ, GM3FYB
Lanark: GM3BDA, GM3EHI, GM3GAB, GM3NG, GM5VG, GM6KH, GM6WL, GM6ZV, GM8FM
Renfrew: GM4HX
Stirling: GM4QV, GM6XW

Zone C (144.2 to 144.4 mc)

Cumberland: G3ACY, G3BW
Durham: G2FO
Northumberland: G2BCY, G2DKH, G3CYY, G4LX
Lancashire: G2HGR, G2OI, G3AGS, G3AOO, G3BKS, G3BPJ, G3BY, G3DA, G3ELT, G3FFW, G3GMX, G3HII, G5KX, G5VN/A, G6LC, G8SE
Yorkshire: G2ADR, G2CPT, G2IQ, G2MA, G3ALY, G4JJ, G5YV, G6UJ, G8GL, G8IC

Zone D (145.8 to 146 mc)

Co. Down: GI2FHN, GI3GQB

Zone E (144.4 to 144.65 mc)

Cheshire: G3ATZ, G3ETI, G3FMI, G5CP
Derbyshire: G2DLJ/A, G2FZU, G3EMJ, G3GUD, G5RW
Leicestershire: G2ANL, G2FNW, G2RI, G3CHY, G3ENS, G3FFC, G3FUW
Lincolnshire: G3DMU, G5BD, G6LI, G6PZ
Nottinghamshire: G6CW
Staffordshire: G3CXD
Warwickshire: G2ATK, G2AVO, G3ABA, G3HAZ, G4RK, G5JU, G5ML, G5SK, G6CI, G6SN, G6XY, G6YU

Zone F (145.65 to 145.8 mc)

Caernarvon: GW3ENY
Flintshire: GW2FVZ, GW5M3Q
Glamorgan: GW3EJM
Montgomeryshire: GW2ADZ
Shropshire: G3AHX
Worcestershire: G3BGR

Zone G (144.65 to 144.85 mc)

Bedfordshire: G3CGQ, G3CUA
Buckinghamshire: G3CVO, G3GBO, G3MI, G4MR, G6JK, G6NB, G8VZ, G8WV

Cambridgeshire: G2UQ, G2XV, G3BK, G3FOO, G3GGJ, G3WW, G4MW, G8SY
Hertfordshire: G3DJX, G3FD, G4RO, G5SZ, G5UM, G6GR, G6LL
Huntingdonshire: G2FQP, G3AKU
Norfolk: G3VM, G8AX
Northants: G2HCG, G2HOP, G3BA, G3DUP
Suffolk: G3CFK

Zone H (145.25 to 145.5 mc)

Berkshire: G2HIF, G3CCP, G4SA, G5DF, G5RP
Channel Islands: GC2CNC, GC3FSN
Dorset: G2DGB, G3ABH, G5UF
Gloucestershire: G2AOK/A, G3FSL, G3GEN, G3MA, G5BM, G6ZQ, G8ML
Hampshire: G2DSW, G2XC, G3ARL, G3BHS, G3BNC, G3CFR, G3CGE, G3CVE, G3DEP, G3DTT, G3EUQ, G3FAN, G3GAV, G3GOP, G6DT, G6XM
Oxfordshire: G3AVO/A, G3EHB, G5TP, G6KB
Wiltshire: G4AP, G5HB, G8IL

Zone I (145.5 to 145.65 mc)

Cornwall: G3AGA
Devonshire: G2BMZ, G3AUS, G3GAO, G5BY, G5QA
Somerset: G3EHY, G3FIH

Zone J (144.85 to 145.25 mc)

Essex: G2WJ, G3ANB, G3ECA, G4HQ, G8TL
Kent: G2AJ, G2UJ, G2KF, G3DAH, G4FB, G6AG
London: G2DTO, G2FKZ, G3BCY, G3BVG, G3EYV, G3FSD, G3FZL, G4AU, G4DC, G5LI, G5PY, G6HG, G6LR, G6WU, G8KZ, G8LN
Middlesex: G2AHP, G2DD, G2FMF, G2HDZ, G2YC, G3HBW, G4HT, G4KD, G5BC, G5LQ, G6JP, G6UH, G8IP, G8SK
Surrey: G2FNQ, G2FVD, G2KI, G2MV, G2MR, G2NH, G3BLP, G3DVO, G3ENI, G3GHI, G3HCU, G3HSC, G5DS, G5LK, G5MA, G5US, G5WP, G6CB, G6LX, G8OU, G8SM
Sussex: G2DVD, G2FTS, G2JU, G2MC, G3BEX, G3DIV/A, G5RO

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

150-mile circuit. GW5MQ (Mold) has worked G2JT, G3APY/P, G3DA, G3ELT and G6DP during this past month. G5BY (Bolt Tail) had a two-way contact with G3CGE (Southampton) on June 24. The amazing thing about this QSO is that the send-receive relay stuck at G3CGE and, in spite of the aerial remaining connected to the receiver, G5BY heard G3CGE at RST559. The distance is 119 miles.

Two Metres

GM3FOW (Bearsden), whose letter arrived too late for last month, sends a list of some 20 stations active in GM. GM3DDE and GM3DIQ are busy re-

building. The latter is hearing the east coast GM's on his new 16-element beam, and has worked G3ACY (Carlisle). When GM3DIQ calls G3BLP on his nightly schedule, he would appreciate it if any stations along the route who may hear him would give him a call, as after looking for G3BLP he searches the whole band. On July 1, GM3ENJ (Dunfermline) worked a number of stations, including GW5MQ at around 200 miles. (Your conductor would appreciate information regarding the first GM/GW QSO for the Two-Metre Firsts Table. Also the first G/GI is not in our records). On June 30, GM3ENJ had heard DL4XS, which is

a very long haul. GM3EGW (Dunfermline) comments that his frequency is not as high as stated in last month's "VHF Bands," and is more correctly 144.185 mc. He gives GM3ENJ as 144.13 and GM8FM as 144.23 mc.

E12W (Dublin) has installed a 12-element beam and has worked G3BLP (295 miles) three times on phone. His signals have also been heard by ON4BZ. While E12W was working G8SB one evening, the latter had to close down as he was breaking through on his neighbour's deaf-aid! This is a new hazard for VHF operators. EI9N is expected to be working the DX soon, as he is changing his vertical rod for a horizontal aerial.

GW3ENY (Llandudno) has worked 18 counties on his various portable trips; he is /P every Monday evening, be it noted. GW5MQ (Rhosesmor) has found the month fairly good on Two. He says that GW3GMX/P was worked from both Denbighshire and Merioneth. A phone contact with E12W on June 30 is believed to be the first GW/EI on 'phone. GW5MQ complains that in return for 117 QSL's sent out from his GW location, he has had but 22 back! GW5MA/P provided many (but not G2XC) with a new county in the form of Brecknock. By beaming down the mountain gap over Abergavenny, he was able to work London and even ON4BZ with ease. Meanwhile, G2XC and other South Coast stations searched the band in vain!

GC2CNC (Jersey) says he often hears S9 signals from stations that cannot hear him, and *vice versa*, and wonders why. Most consistent signals with him are G8IL and G3BEX, with G3BNC on phone a good third. GC2CNC wants one more county to qualify for the "Counties Worked" table. (We know several Midland stations who would be happy to oblige.)

DL2DV (Fassberg) found June 21 a good night with OZ signals and SM7BE at S9. June 30 looked good on the weather map, but nothing was heard. On July 7 and 8 a number of over-200-mile contacts were made. The paucity of signals from PA is puzzling to DL2DV, as he considers the distance of 230 miles or so to Amsterdam should enable frequent contacts to be made; he wonders if the PA stations forget to look East. DL2DV will be returning home in the autumn, but would like to work G, ON and PA before leaving. Once again, he emphasizes the need to

TWO-METRE DX MARATHON

Station	Miles
G5YV (SM7BE)	602
G2BMZ (DL4XS/3KE)	520
G3HAZ (OZ6PX)	519
G3DIV/A (OZ2FR)	501
G2XC (DL3MH)	486
G5BY (DL3FM)	470
G6CW (OZ2FR)	452
G3WW (OZ6PX)	432
G6LI (OZ6PX)	428
G3BNC (DL4XS/3KE)	420
GW5MQ (PA/0FF)	416
G5BD (DL4XS/3KE)	412
G3BK (DL3MH)	411

Minimum distance for this table is 400 miles. Claimants must submit NGR or Lat. and Long. for both ends of contact.

search the HF end of the band.

Returning to England, a number of reports have come in from the North. G4LX (Newcastle) is back on the band after six months' absence. He has been experiencing heavy QRM on his zone frequency of 144.22 mc, and is using a number of lower frequencies, except when working GM. West Coast signals (G3A00, G5CP, G8SB, GW5MQ and others) have been consistently good, but according to G4LX they seem interested mainly in GM working. G3BW (Whitehaven) has been finding conditions fairly good, and has now achieved one of his ambitions, namely, to work more than 100 stations; very good going from such a remote location. G3BLP is his most consistent DX station. G3BW, in common with many others, says "Calls Heard and Worked" are vital to him, and he hopes that we will not be persuaded to drop them. G3BW is on 144.252 mc.

G8IC (Stainforth) was in on the early June super-DX and reports G3FFW active in Doncaster. G4JJ (Barnsley) has completed a 6-element stack and a new converter with consequent improvement in results; he feels that many southern stations do not tune down to his frequency (144.198). His list of stations heard and called includes several from the South, as well as GM and EI. A number of stations, mainly in the North and Midlands, have been worked. G5YV (Leeds) has found conditions good to the South. He has spent some days lining up a 4-over-4 Yagi, but it is still 3 to 5 S-points down on a single tier 4-element Yagi. However, the stack is only at 30 feet, and the single Yagi at 65 feet.

G8SB (Manchester) has worked 7 new counties, and reports E12W and EI8G as "colossal" signals. G3HII (Liver-

pool) feels his receiver is still far from good; he is on 144.36 mc for transmission with a much modified 522.

G6YU (Coventry) worked 12 portables during the field day, and reports that G5ML is again active. G6CI (Kenilworth) missed the June DX, due to activities of house decorators. G3BA (Davertry) bemoans the fact that assisting at one of the field-day stations prevented him from increasing his personal counties score. He has a daily schedule with G3BW which seldom has a miss.

G5BD (Mablethorpe) has an 8-element stack up and finds it far superior to his 4-element Yagi. G6NB (Aylesbury) has been hearing excellent signals from EI2W, EI8G, GC2CNC and GM3OL, but has so far failed to attract the attention of the last-named.

In East Anglia, G3VM (Norwich) thinks the weather will have to change before DX will be heard again in that part of the country. He says he likes contacts at any distance and is not impressed by the "No locals" calls put out by certain stations. And in any case, where does "local" end and "DX" begin? Both G3VM and G3WW (March) disagree with the suggestion that Calls Heard and Worked are a waste of space. G3WW worked the Brecknock portables.

Down in the South-West, G5BY (Bolt Tail) has not found conditions to be outstanding, in spite of high barometer

readings. He has worked EI2W and G5KX, but has yet to hear G3BW. G3EHY (Banwell) has also been working the EI stations regularly, with S9+ reports. G3BW is quite a consistent signal, and G8VV in Durham has been heard and called. G3FIH (Radstock) joins the Five-Band Club.

G3GOP (Southampton) on 145.4 mc awaits QSL's for a number of contacts. He has come to the conclusion that the low-lying stations such as his own are at a severe disadvantage on two metres. Well, it depends on many things. G3FAN (Ryde) continues to work new counties with 15 watts to a 522 and a 4-element Yagi; his converter is of the G6VX type.

G3GSE (Kingsbury) enjoyed the June DX and even heard OZ.. He has at long last worked G3EHY and managed to contact Warwick for the first time. G2AHP (Perivale) has borrowed G3HBW's converter and says it is very nice. He managed to raise GC2CNC, as also did G4HT (Ealing). G4HT was actually abroad during the big Continental opening in June. G2HDZ (Pinner) still has doubts about his 12-element array; G5LQ (Chiswick) feels the lack of DX worked is mainly due to his low QTH and aerial, and G6UH (Hayes) climbs the Counties Table.

G6CB (Wimbledon) hopes to raise GC2CNC and hear G3BW soon; he has been working on his converter and now hears stations that cannot get him.

THE VERON TWO-METRE CONTEST

RULES.

1. The Contest is open to all European 144 mc stations.
2. Times are 0001 GMT September 22 to 2359 GMT September 23, and 0001 GMT September 29 to 2359 GMT September 30.
3. CW or Phone may be used.
4. Logs to be sent to VERON, Traffic Dept., Prunuslaan 33, Delft, Netherlands, by October 15, 1951, [with copies (carbon) to Short Wave Magazine.]
5. Code numbers are to be exchanged. Code numbers consist of 6 figures (CW) and 5 figures (Phone). For CW first 3 figures are RST, last three figures a number chosen by operator, being a number between 000 and 100 for the first contact and becoming 1 greater for each succeeding contact. For phone omit T report.
6. Scoring: Up to 40 miles, 1 point per QSO. 40 to 80 miles, 3 points per QSO for first 25 contacts in this zone, then 1 point per contact. 80 to 160 miles, 5 points per QSO for first 12, then 3 points each. 160 to 240 miles, 10 points per QSO for first 10, then 5 points each. Over 240 miles, 15 points per contact.
7. The same station may be worked once to score during each week-end.
8. Logs: At top write call, name and address and claimed total score. Details in 8 columns, headed:
 - (1) Calls of stations worked.
 - (2) Date of QSO.
 - (3) GMT of QSO.
 - (4) Code sent.
 - (5) Code received.
 - (6) Distance in Miles.
 - (7) QTH of station worked.
 - (8) Claimed points for QSO.
9. Only one operator is permitted at each station during the contest.
10. With log send details of input, whether VFO or CC, type of modulation (if any) used, receiver, aerial and height a.s.l.
11. Certificates will be awarded to leading stations.

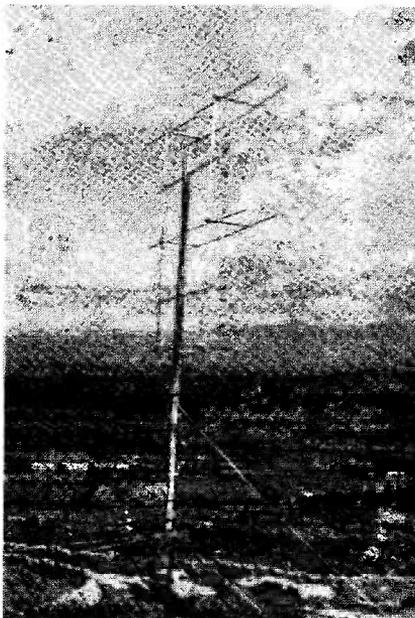
(Note: The above is a shortened version of the full rules of the Contest, but should be sufficient to enable the entries to be made).

G8LN (London, S.E.18) remarks that although nobody ever reports him in Calls Heard, he *is* active and has worked South Coast portables. G3ENI (Kew Gardens) finds that using good quality components and careful by-passing makes a lot of difference to the working of an RF stage. He also comments that mixer/osc. injection volts are second in importance to first stage adjustments in obtaining best signal-noise ratio. G2NH (New Malden) has worked DL4XS/3KE. G3EYV (London, S.W.4) has been busy building converters and has a nice cascode arrangement going. G3HBW (Wembley) finds difficulty in raising all but the strongest stations and has given up calling some of the weaker ones. On June 11 he got G3IRS (R.A.F., Locking) on two metres and worked GW3EJM. The following day he was posted back to London!

Some Late Letters. There is now only time and space to mention briefly that we have also had interesting reports from G3BW (Whitehaven), who has just worked his 40th county in a private vendetta with G3BA; from G3DIV/A, of Eastbourne, who raised DL3FM, DL3NQ, DL4CK, DL4XS/3KE, DL6BU, DL6WU and heard DL2MW and DL3JI on the night of June 30/July 1; from G3AGA (Falmouth), "the voice in the wilderness," who says he is still the only active station in Cornwall, and that though he can hear others GDX to him, they do not come back to his "plaintive wailings"—these include G2AJ, G2XC, G3ABA, G3BLP and G6NB, to mention only a few in his list; and from F8OL (Meudon, S-et-O), who reports excellent two-metre conditions across the Mediterranean on July 16-18, when F9AQ, F9BG and F8KY worked FA3GZ (Algiers) over distances of about 500 miles with high signal levels; in this connection, F9BG/FA3GZ very properly claim the first Europe-Africa QSO on the two-metre band. Very fine work, and with FA3GZ now known to be available, it should be possible to get new record ranges when conditions are right.

Sayings of the Month

"Please hold that counties ladder steady while I get one foot on the bottom" (G8IC) . . . "After 3 months on the band I have only got five cards in. Don't the lads like to part with them?" (G3HII) . . . "The fact that an EI has first of all to get across the Channel before he is on the starting line



EI2W, Rathgar, Dublin, who has been stirring the GDX on Two recently. He asks us to say that he is CC, but has been having trouble with crystal drift. Above and well in the clear is the EI2W 12-element array, consisting of 6 dipoles with 6 reflectors.

TWO METRES ALL-TIME COUNTIES WORKED LIST	
Starting Figure, 14 From Fixed QTH only	
Worked	Station
53	G2OI
50	G3BLP (459)
47	G3EHY (266), G6NB, G8SB
46	G2AJ (375)
45	G2NH
44	G5MA, G5WP
43	G3COJ (123)
42	G3ABA (193), G4HT (402), G5BY
41	G3BA
40	G3CGQ, G3WW
39	G2IQ, G3BW (102), G6XM (208).
38	G2XC, G3APY, G5BM
37	GW5MQ
36	G3CXD, G5DS (251), G5YV, G8IP (258)
35	G5DF, G6LK
34	G2CPL (288), G3VM (170), G4AU, G4DC, G5BD, G5JU, G6YU
33	G2FNW, G2XS (147),
32	G3BK, G6CW, G6UH (267), G8IL, G8WV
31	G2CIW (231), G5RP
30	G3BOB, G4CI, G5NF (201), G6CB (261), G8SM
29	G3FAN (161)
28	G2DLJ/A, G5UM (182), G6CI
27	G3AKU, G3DAH, G3GSE, G8QY
26	G3BHS, G4NB, G5SK
25	G3GSE
24	G2AIQ, G2HDZ (163), G3FXG, G4SA, G5LI, G8KL
23	G2AHP (201), G2NM, G4MR, G4RO, G5PY
22	G3BPO (189), G4RK, GM3BDA
21	G3FD, G3FMF
20	G2ANT, G3AEP, G3EYV, G3FIH, G3HCU, G8KZ
19	G3BNC, G5LQ (176)
18	G3GOP, G4LX, GM30L
17	G3HBW, G5MR, G6XY
16	G2AOL
15	G2DVD, G2AVR, G3AVO/A, G8IC

NOTE: Figures in brackets after call are number of different stations worked. Starting Figure, 100.

seems to put a damper on enthusiasm" (EI2W) "I would like to record my appreciation of the even-better-than-usual write-up in 'VHF Bands' in the July issue" (G3EYV) "I bet a lot of foreigners wish they could read English" (G6CB) "I worked GW5MA/P at 2 a.m. I think he deserves a medal" (G2HDZ) "I am a tenderfoot on VHF and if chaps who are anxious for a GC contact cannot get a reply from me, they must be patient with this green 'un" (GC2CNC). . . . "One station not 100 miles from London seems to have a lot of crystals, or a good VFO" (G6NB) "If G2IQ could see my version of his converter he would jump on it and then jump on me" (G2AHP) "To

operate on 2 metres successfully these days one needs a TV set to see the evening's weather map" (G3BLP) "The boys in the north are pleased that the record has come north for a change, even if only for a short while" (G5YV). . . . "I think lots of the boys take things a little too far in their desire for DX" (G3VM) "I have not heard EI or GM yet, but hope springs eternal" (G3WW) "City Slickers are springing up like mushrooms in Lancashire" (G8SB) "There is still plenty of room for more stations on Two" (G8LN).

In Conclusion

A Thank-you to the many who were kind enough to make complimentary references to the DX write-up in last month's issue of *Short Wave Magazine*. This would not have been possible without the co-operation of all concerned, and your conductor is particularly grateful to the Continental stations who took the trouble to give us so much information. Next month G2XC will be on holiday, and, once again, your old friend A. J. Devon has been per-

TWO METRES COUNTIES WORKED SINCE SEPTEMBER 1, 1950 Starting Figure, 14	
Worked	Station
43	G3EHY
42	G2OI
40	G5MA
39	G3BA
38	G4HT
37	G3WW, GW5MQ
36	G2NH, G5DS, G5YV
35	G2AJ
34	G6YU
33	G2XC, G3ABA
31	G2FNW
30	G6CW
29	G6CB, G8IL
28	G2DLJ/A, G3FAN, G5UM
27	G3GSE, G3VM, G8IP
26	G2CPL
25	G3AKU
24	G2HDZ, G3BW, G4SA
23	G2XS
22	G4MR
21	G3BOB, G3COJ, G3FD
20	G3GBO
19	G6CI
18	G2CIW, G3EYV, G3GOP, G3HCU, G5PY
17	G2AHP, G2ANT, G3HBW, G6XY
15	G2DVD, G3AVO/A

Note: This table will run for one year to August 31, 1951

sueded to deputise. He promises to do his best, so please send your reports to him in good time and do *not* post anything direct to your regular conductor at his home QTH. He will not be there from August 10 until late in the month. A few letters came in this month after the Tables had already gone to press. If, therefore, your score is not

up-to-date, please send the details again next time to ensure correct insertion. As we have said, A.J.D. will do his best with all this. The address will be "VHF Bands," A. J. Devon, *Short Wave Magazine*, 55 Victoria Street, London, S.W.1, and the closing date **August 16 latest**. And don't forget your NGR. With you again on October 5.

Reception of Amateur SSB Telephony

THE PRINCIPLES
AND PRACTICAL
CONSIDERATIONS

By H. C. WOODHEAD (G2NX)

IT is evident that the use of the single sideband method of transmission is becoming more and more popular in amateur circles in this country, for there are now almost a dozen G stations in regular operation, most of which are to be found on the 80-metre band. In this respect, we have, to some extent, lagged behind our friends on the Continent, for the OZ's, SM's and PAØ's have outnumbered us almost from the beginning. So numerous are the stations using SSB on 80 metres, that there can be few readers who have not at some time or other heard a QSO in which one side or the other, possibly both, were employing this system.

Some may have passed such a QSO by, under the impression that neither side could possibly understand the other in view of the "distortion" present in the transmissions; others, a bit more in the know, may have stayed to experiment in straightening it out. Such an experiment can be very interesting and instructive provided one understands exactly what is happening and that one is conversant with one or two simple rules which help in making the necessary adjustments. Unless one is acquainted with these principles, it is quite possible to tune through the transmission over and over again without ever being able to resolve it, and finally to give up in despair under the impression that intelligent resolution was impossible.

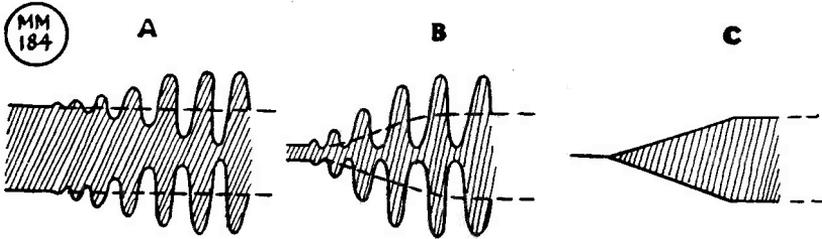
This article shows how the usual amateur-band receiver can be used, quite satisfactorily and without any electrical modification, for taking amateur SSB transmissions. In discussing the principles involved, the author puts the case for wider use of a single-sideband phone by amateurs. He makes some interesting comparisons, in terms of relative effectiveness, as between SSB and other systems of modulation.—
Editor.

This sort of experience has tended to give SSB a bad name, and it is only too often regarded as a system requiring something very special in the way of equipment, both at the transmitting and receiving ends, and only suitable for operation in the hands of the chosen few. While there is some justification for the impression that the transmitter requires something more elaborate than the usual CO-Buffer-PA-and-Mod, there is ample evidence that it is by no means beyond the scope of the amateur, any more than is the construction of apparatus for use on the VHF bands now in current use.

Simple Receiver Can be Used

When it comes to reception, the impression is quite unfounded, for, while it is possible to elaborate the receiver for SSB operation to an almost unlimited extent, any SSB transmission can be received with complete intelligibility, equal if not superior to AM, on any ordinary communications-type receiver. As for elaborations, however, the same is true of any system, be it SSB or anything else, as those who go in for receivers with AVC, AFC, triple diversity, auto tuning, auto switching and so on will be the first to admit. There is only one proviso in the case of SSB, and that is that the receiver shall be provided with a BFO.

This is not to say that elaboration of



Showing the same input power to the transmitter PA in the case of (a) Normal AM, (b) Controlled carrier, such as Super Modulation or Clamp Control, and (c) SSB working—in each case using tone modulation, gradually increased from zero to give 100% modulation in (a) and the same input to the PA in (b) and (c). Note that the final conditions in (a) and (b) are identical and that the final condition of (c) is equal to the mean carriers in (a) and (b).

the SSB receiver serves no particular advantage because, of course, it does. But then, of course, while AVC, AFC, triple diversity and all the rest can provide definite advantages, they are by no means *essential*, and indeed much good work has been done using an 0-V-1 without any of these refinements. On the other hand, while it would not perhaps be safe to state categorically that it would not be possible to receive SSB on an 0-V-1 (some enthusiast would be sure to turn up to prove one wrong), it may at least be said that such a receiver would be most unsuited for the job.

Advantages

At this stage someone may ask, "What is to be gained by this more complicated and somewhat peculiar form of transmission?" Is it worth the complication? Although this has been explained several times already, there is, perhaps, reason for covering the points once again.

Briefly, the advantages of SSB are an increase in signal-to-noise ratio, absence of the particular form of distortion known as "selective fading," and an increase in the effective signal strength of some ten times. This latter point needs stressing, because it is in the more effective use of the permitted input power to the transmitter that SSB excels. This is in contra-distinction to Super Modulation (so called), for which somewhat exaggerated claims are apt to be made. This latter, 150 watts input for 150 watts input, cannot give any greater *signal* (in terms of signal-to-noise ratio) than ordinary AM. This is, of course, only true for similar peak input powers on speech, which is all that the amateur licence permits.

What Super Modulation can and, in fact, does achieve is to provide an equal signal to that given by AM *with a reduced mean power input*, due to the fact that the carrier is reduced in power when it is not required. Many exponents of this system will no doubt retort that, in spite of the theory of the thing Super Mod *sounds* much louder and that the proof of the pudding is in the eating thereof. This may well be, but we should beware of talking in terms of apparent loudness of the signal, for we might obtain the same result by turning up the audio gain. The snag is at once apparent, for we should at the same time increase the noise level, and it is always in terms of signal-to-noise ratio that the effectiveness of any system must be judged.

Economy in power and, perhaps, simplicity of circuit are just claims for Super Mod, but when one considers that the input power to the amateur transmitter is anyway little more than that taken by the electric lamp in the average sitting room, the economy achieved ceases to be so attractive. The claim for apparent increase in signal level with Super Mod is surely based on the fact that AVC is usually employed in the receiver, and since this ensures that the gain of the receiver is inversely related to the strength of the carrier being received—the latter being lower, on the average, in the case of Super Mod—the gain of the receiver will be greater than if it were tuned to a similar AM transmission with a greater mean carrier level, and the audio signal will therefore appear louder.

Tests in which the HF gain is controlled manually should show no difference in signal strength, or in signal-to-noise ratio, between the two

systems. The same holds good for Clamp Modulation or any other system in which the level of carrier is reduced below its maximum value when it is not required for peaks of modulation, or conversely when the carrier level is made to fluctuate with the envelope of audio modulation so that it remains almost 100% modulated for any speech level. The point is illustrated in Fig. 1, where a tone is shown increasing from zero for the AM, Super Mod and SSB cases. It will be seen that for the maximum modulation permissible, *i.e.* 100% at 150 watts input, the output signals are identical in the two former systems.

Not, of course, that there is any inherent disadvantage in any form of amplitude modulation using carrier control—there is not; but one needs to be careful in assessing the apparent gain of signal strength in systems of this kind.

The SSB system then does actually provide a signal which is some ten times as effective at the receiver as a similar AM signal would be, though this increase will not all necessarily be obtained unless some narrow filter is used in the receiver. The average communications receiver can be used to provide a signal about three or four times as effective as an equivalent AM signal, with complete intelligibility.

Tuning Procedure on SSB

It is merely necessary to adjust the receiver to produce the loudest signal, as if for AM, but with the AVC cut off. This will not necessarily produce any intelligible signal, but the intelligence can be restored by switching on the BFO and setting it to the correct point, which is found in the following way:

In varying the BFO ("pitch control") a point will be found such that further adjustment to one side produces a form of distorted speech sounding distinctly guttural, rather like a slow-running gramophone record. Tuning the BFO the other way produces speech sounding tinny, like a fast-running record. The further one goes from this central point, the more guttural or tinny does the distorted speech become; but between these two conditions the centre point will be found to give clear speech.

It is as well at this stage to turn the audio gain up to maximum and adjust the HF gain to give a comfortable level in phones or speaker. This step is often forgotten, but it is very necessary in order to prevent the incoming signal from exceeding the level of the BFO

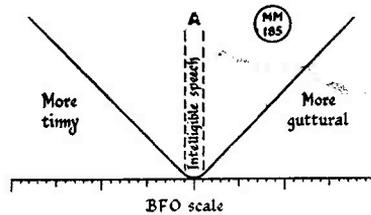


Fig. 2. Diagrammatic explanation of the setting of the receiver BFO for SSB reception.

injection and thus producing all the effects of an over-modulated AM signal.

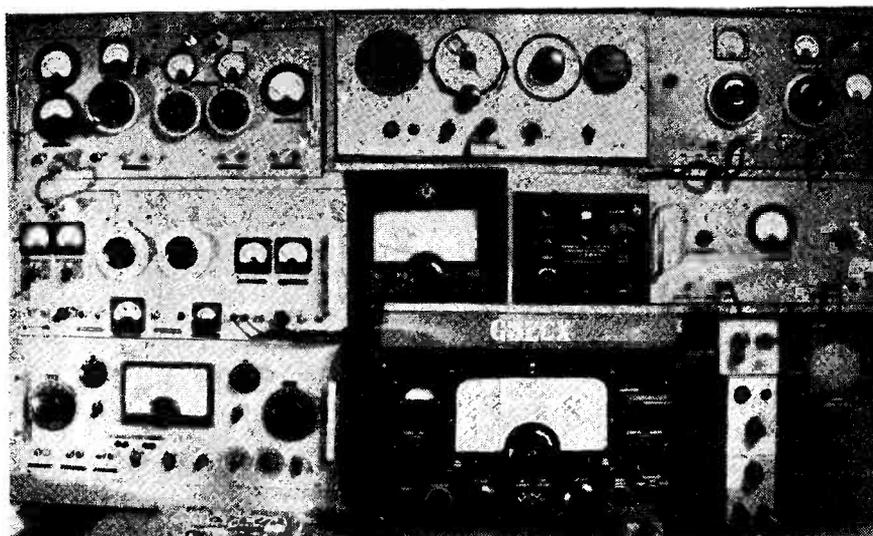
Having once found the correct position, one can swing through it to the tinny side and the guttural side and very quickly get the hang of the thing. It is much easier to make the adjustment in actual practice than it is to explain it in so many words, but reference to Fig 2 will help to make it clear.

Most SSB stations will be only too ready to explain the method of reception and to help the man at the receiving end if asked! For this purpose they can usually insert some carrier to enable normal reception to be carried out, as if for AM, while they explain the details. The quality of the transmission must not, however, be judged in this condition, because it is impossible to modulate fully in this way without distortion. It is useful for instructing the uninitiated and for calling purposes, and the distortion is no longer present when the carrier is cut and the station reverts to the true SSBSC condition of transmission.

(To be continued)

DIRECT SUBSCRIPTIONS

Readers in the U.K. who become direct subscribers to *Short Wave Magazine*—that is to say, those who pay the *Magazine* cover price to us for 12 months in advance—are guaranteed delivery of a copy by post on the day of publication each month. This costs 24s. for the year of twelve issues, and new subscriptions can be accepted to start with the next issue. Orders with remittance should be addressed to The Circulation Manager, *Short Wave Magazine, Ltd.*, 55 Victoria Street, London, S.W.1.



The other man's station • G3ECX

THE fine array of gear at G3ECX belongs to A. P. Newport, 71 Micheldever Road, Lee, London, S.E.12, who operates on all bands 1.7 to 28 mc with equipment which is mainly home-built. Our photograph shows in the bottom row, left to right—the standby Rx, “Commander” station main receiver, control panel for all equipment, and monitor oscilloscope: Middle row, left to right—FD/BA section of main Tx, the Q-Max VFO, Class-D Wave-meter, and speech amplifier: Top row, left to right—150-watt PA and p/p 807 modulator with aerial tuning panel, station monitor receiver, and 1.7/3.5 mc QRP transmitter.

Using the send-receive switch on the Commander (which is conveniently provided with two spare contacts for the purpose) the whole station is relay controlled on that one switch. The speech amplifier sub-modulator, running 6J7-6C5-6C5-p/p 6L6's, provides a full 24 watts of audio for anode-screen modulation of the single 6L6 PA in the 1.7/3.5 mc transmitter; for modulating the 150-watt 813 PA, the sub-modulator

drives into the grids of the pair of 807's in AB-2 mounted on the PA chassis. This arrangement effectively separates the functions of the modulator side of the equipment, enabling speech output to be obtained at the two different audio levels that are required.

The aerial, one of the recognised types recently re-invented in the States, is a 68-footer fed one-third of the way along with 300-ohm ribbon, and is used for both transmission and reception by relay change-over, under the control of the send/receive switch. (Incidentally, it can be shown that with this type of feeder and a top cut for the lowest-frequency band in use, a tapping point can be found which will give almost the right impedance match for all bands higher in frequency, thus producing an all-band aerial with the minimum of complication at the transmitter end).

G3ECX is an all-band station, though main interest is in 14 mc CW. His layout shows that while he has followed standard practice in the general design of his gear, it is adapted to his own particular requirements.

The Short Wave Magazine covers the whole field of Amateur Radio

HERE & THERE

“To Face p.284”

Every copy of our July issue contained a loose amendment sheet, inserted after printing, to account for the diagrams appearing incorrectly on p.284. This was an unfortunate boob—for which we apologise to all readers interested in that particular article, and to our contributor. And, as a matter of fact, it was not our fault either.

The Radio Show.

The 18th National Radio and Television Exhibition is taking place at Earl's Court, London, from August 28 to September 8, and once again there will be a magnificent display covering all sections of our great radio industry. This year, the Exhibition will have more space and will be of greater interest than ever before.

Amateur TV Convention

The British Amateur Television Club held a very successful rally in London on June 23, fully reported in the current (August) issue of our *Short Wave Listener and Television Review*. The BATC concerns itself entirely with the problems relating to amateur television transmission and reception, and the membership is busy on the design and construction of apparatus for the frequencies on which amateur TV is now permitted. The honorary secretary of the British Amateur Television Club is M. W. S. Barlow, G3CVO, Cheyne Cottage, Dukes Wood Drive, Gerrards Cross, Bucks. One of the most active and successful members in this new field of amateur activity is G2DUS.

Osram Valve Manual

This is a very well produced catalogue/handbook of some 250 pages covering the Osram range of valves, tubes and rectifiers for all receiving and television applications and their associated power supply requirements. The *Osram Valve Manual* also contains a vast amount of useful practical data, including outline diagrams, circuits with values, replacement, substitution and obsolescence tables, and notes on the use of a number of specialised valves designed for service in the sphere of electronics. An interesting introductory chapter traces the history of the valve and its engineering

development. The *Osram Valve Manual* is well indexed and illustrated, costs 5s., and is published by the General Electric Co. Ltd., Magnet House, Kingsway, London, W.C.2. It can be ordered direct.

GB3FB On Again

Continuing its journeyings, the Festival of Britain Land Travelling Exhibition appears at Birmingham during the three weeks August 4-25, with G5VM in charge of GB3FB. It is fair to say that the Amateur Radio assignment in connection with this Exhibition is probably one of the most difficult that could have been given, demanding as it does the demonstrating of amateur operation under the worst possible conditions. And it is a pity that someone-or-other succeeded in persuading the authority concerned to apply for a call sign which is not in the usual prefix sequence for British amateur stations. However, it is reported that the GB3FB booth is the centre of great public interest.

Tragedy in EI

In the July issue of *I.R.T.S. News* appears the report of the death by electrocution of EI3N, Terenure, Dublin, who was killed by his gear during the night of June 14 last. From the evidence, it would seem that this was another case of making adjustments to the PA tank with one hand while holding the microphone with the other, an accidental touch thus earthing the 1500-volt HT supply across his body—though exactly how it happened will never be known. A particularly distressing feature of this tragic and—we are bound to say—wholly unnecessary occurrence is that it was his wife who, hearing a thud in the radio room, rushed in to find EI3N lying on the floor with his transmitter beside him. In offering our deepest sympathy to his widow and three young children, we would once again counsel all amateurs to take heed of the warning given by the untimely death of an active and well-known operator.

Latest Call Book

The summer 1951 Edition of the *Call Book* is now available, price 20s. post free; the G listings are complete up to “New QTH’s” in our May issue.

The Month with the Clubs

FROM REPORTS RECEIVED

Very shortly Clubs will be starting preparations for their own event—the Sixth Annual *Magazine Club Contest*. This year we have made a fundamental alteration to the rules of “MCC,” although the general size and shape remain unaltered.

The Sixth MCC will run from Saturday, November 10, until Sunday, November 18, between the hours of 1800 and 2300 on each day.

To avoid the complications which were already arising last year as the result of “phony” activity, this year’s contacts will be strictly between Club stations. The object will simply be to work as many of the other Clubs as possible, with one contact with each of them *per day*. There will thus be no shortage of stations to work; there will be as many there on the last day as on the first.

Copies of the rules will very shortly be circulated to all Clubs on our Active Register. This means those who have reported at any time in the last six months. An announcement about this will appear in our next issue in this space.

Deadline for next month’s reports is **first post on August 15**, and, for the following month, **first post on September 12**. The address for all material for this section is “Club Secretary,” *Short Wave Magazine*, 55 Victoria Street, London, S.W.1.

And now follow this month’s reports, from 19 Clubs

Radio Society of Harrow.—Weekly meetings continue through the holiday season, and visitors to the district will always be welcomed. The August meetings are as follows:—3rd: Lecture on Unusual Waveforms by G2DBM; 10th: Practical Night; 17th: Talk on CR Tubes; 24th: Practical Night; and 31st: Speech Clipping, by G2TA. Field Day is on August 26 and contacts with other Clubs will be appreciated.

Stourbridge & District Amateur Radio Society.—Recent meetings comprised a discussion on Field Days, a film of the Club’s effort in NFD, given by G3HGI, and a talk on A Simple Transmitter by G3BMY.

Baldock and District Radio Club.—A permanent Clubroom has been obtained at last, and work is going ahead on decoration. The Club Tx will be installed in due course. The nightly Top-Band chat still takes place, and Morse classes are on the way.

Midland Amateur Radio Society.—The annual Field Week-

End was held at Redhill Farm in ideal weather and propagation conditions. G5IW/A worked 30 countries—mostly DX—and G3EKN/P and G3BUR/P were active on 1.7, 3.5 and 145 mc. A special word of thanks is due to the XYL’s who looked after the material needs of the operators and staff.

Brighton and District Radio Club.—Informal club meetings on Tuesdays will be held during August, and it is hoped that any visitors on holiday will turn up. The Club Tx, G3EVE, is now permanently installed and can get on the air quickly. The Club will be active on 80-metre CW to start with, and will be glad of any contacts. Well-known manufacturers have promised lectures during the late summer programme—details next month.

Sheffield Amateur Radio Club.—This Club has continued its meetings during the summer, with good attendances. It is hoped to arrange visits to places of interest during the coming months. New members will be welcomed.

Grafton Radio Society.—After a very successful year, Grafton have now closed down for a well-earned rest (they meet thrice-weekly throughout the year!). The new session opens on September 10 with the Sixth AGM.

Wanstead & Woodford Radio Society.—Weekly meetings continue, and for a fortnight the Club has been in the centre of the Borough’s Festival activities. Members have also attended a local Fete, operating the Club Tx, and others have been fixing lighting and PA to an outdoor stage for Festival Plays. New members are welcome, any Tuesday evening at 8 p.m.—Wanstead House, The Green, E.11.

W.F.S.R.A. (“Bedfast Club.”)

—The former Secretary, G3GYR, has been forced to resign owing to pressure of other business; his place has been taken by G3GBI.—note QTH in panel. A record is being made of those to whom the Club may be of assistance, and another of all those who can help. It is hoped that a News Sheet will be published shortly. Meanwhile an illustrated leaflet on the objects of the Club is being prepared. Many more offers of practical assistance are needed; if you can help with gear, periodicals or in any way whatever, just drop a line to the secretary for full particulars.

Worthing and District Amateur

Radio Club.—Worthing’s annual Bucket and Spade Party has become quite traditional, and it is hoped that this year’s event, on August 26, will be a bumper occasion. The Party assembles on the sands at 10 a.m., takes a boat trip from the pier at 4 p.m., reassembles for photograph and prize-giving at 6 p.m. and embarks on a Treasure Hunt at 6.30 p.m. Visitors are simply asked to turn up—with YL’s or XYL’s—at the West Kiosk in front of the Beach House, Worthing.

Sanderstead & Purley Radio

Society.—This Club has moved to new Headquarters at The Railway Hotel, Purley, a more central location and one which offers better facilities. A full programme has been arranged for several months ahead, and meetings will be held on the fourth Thursday of each month. Forthcoming events include lectures and demonstrations on Recording, Speech-Clipping and High-Fidelity Quality. Note Secretary’s QTH, in panel.



General view of the camp when the Midland Amateur Radio Society went portable recently on 7/14/44 mc, signing G5IW/A, G3EKN/P and G3BUR/P respectively.

Hampstead Radio Transmitters' Group.—Meetings are held, "for rag-chewing only," at 1 Broadhurst Gardens, N.W.6 (behind John Barnes' in Finchley Road). The next dates are September 14 and October 19. On June 29 Nina Barrett, G3GYL, who is a member of the Group, broadcast in Woman's Hour on Friendship by Radio, with, of course, special reference to its application to the blind. G3DCU

has left Hampstead for a post in Australia, and maintained contact *via* amateur stations at various ports of call on the way out.

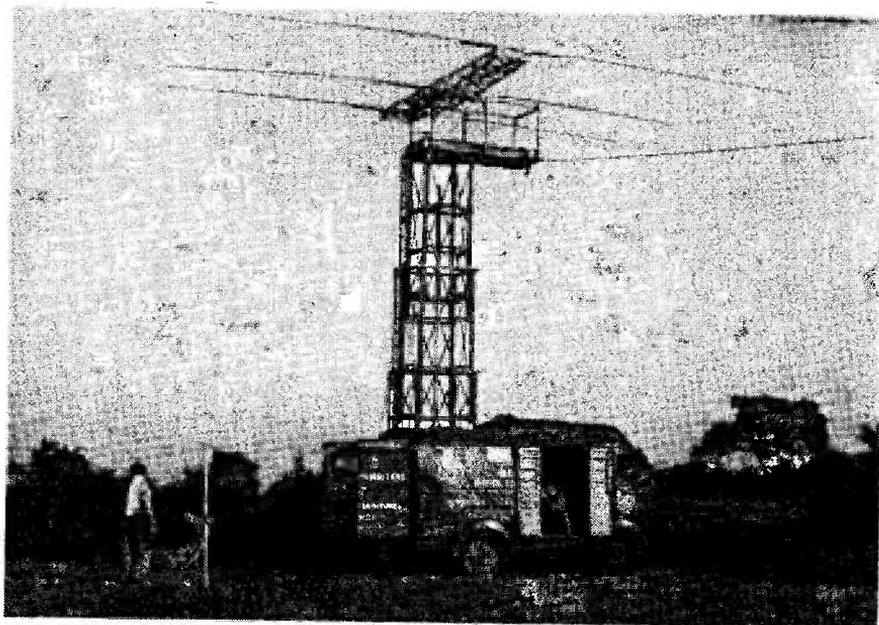
QAU Club, Jersey.—During June the Club was visited by G8JC, and later they had a Ladies' Night to which he returned with his XYL. Another pleasant surprise was the unexpected visit of GW5BI and his XYL, on

holiday. Regular meetings continue, and a good deal of two-metre activity is now taking place, largely by members of the Club.

Reading Radio Society.—June saw the Club busy at a Hobbies Exhibition at the Town Hall. Equipment in use included a Top Band transmitter and a Hellschreiber! Later in the month G2AHY lectured on the

NAMES AND ADDRESSES OF CLUB SECRETARIES REPORTING IN THIS ISSUE :

BALDOCK : A. Fussell, 6 Clare Crescent, Baldock.
BIRMINGHAM : W. V. Shepard, 174 Gristhorpe Road, Selly Oak, Birmingham 29.
BRIGHTON : R. T. Parsons, 14 Carlyle Avenue, Brighton 7.
EAST SURREY : L. Knight, G5LK, Radiohme, Madeira Walk, Reigate.
GRAFTON : W. H. C. Jennings, G2AHB, Grafton LCC School, Eburne Road, London, N.7.
HAMPSTEAD : B. Wardman, G5GQ, 59 Eton Place, Eton College Road, London, N.W.3.
HARROW : S. C. J. Phillips, 131 Belmont Road, Harrow Weald.
KINGSTON : R. Babbs, G3GVU, 28 Grove Lane, Kingston, Surrey.
MANCHESTER : H. Marshall, G4ND, 14 Greenway Close, Sale.
MIDLAND : H. B. Bligh, 52 Norman Road, Birmingham 31.
QAU CLUB, JERSEY : Miss Valerie Hunt, Woodshiel, Millbrook, St. Lawrence, Jersey, C.I.
READING : L. Hensford, G2BHS, 30 Boston Avenue, Reading.
SANDERSTEAD AND PURLEY : L. R. Young, G2AYM, 41 Lansdowne Road, Purley.
SHEFFIELD : E. Walker, G2LT, 11a Welwyn Close, Intake, Sheffield.
STOURBRIDGE : W. A. Higgins, G8GF, 28 Kingsley Road, Kingswinford, Brierley Hill, Staffs.
TEES-SIDE : H. Walker, 64 Ayresome Street, Middlesborough.
WANSTEAD : M. Roots, Wanstead House, The Green, London, E.11.
W.F.S.R.A. (Bedfast Club) : J. Beavan, G3GBL, 296 Fore Street, Edmonton, London, E.9.
WORTHING : F. H. Bettelley, 42 Annweir Avenue, Lancing, Sussex.



When MARS go portable, they go Big! The 20-metre beam for G5IW/A was mounted on a Tramways Dept. overhead repair vehicle, and the transmitter was an ET4336 fitted in a van!

Triode Valve—in the series "Electronic Theory."

East Surrey Radio Club.—At a recent meeting the members were given a lecture on British and American Television Construction and Practice. The Club would be glad to hear from anyone knowing of a room to let in the Redhill or Reigate area, so that permanent premises can be set up. At present the monthly meetings are held at the Barn Room, Lesbourne Road, Reigate.

Tees - Side Amateur Radio Society.—This Club, now reformed, has a permanent Clubroom in the Joe Walton Boys' Club, Lower Feversham Street, Middlesbrough. They meet every Thursday at 7.30 p.m., and a

lecture on Amateur Radio Theory is being read each week. Canteen facilities are available, and the Secretary will be glad to welcome new members—see panel for his QTH.

Birmingham and District Short Wave Society.—This Club held a most successful Field Day on June 17. Future programme includes a talk on An Amateur-Band Superhet on August 13, a demonstration of Tape and Wire Recording on September 10, and a Film Display on October 8. The "Club Shack" will not be in operation for some little time, owing to a change in policy.

Kingston and District Amateur Radio Society.—On July 4 G3GVU gave a talk on Detectors,

and on July 18 G3GDG discussed on Oscillator Circuits, after which a Brains Trust was held. Morse classes have been exceptionally well attended, and members are looking forward to the allocation of the Club's own call-sign. All meetings are at 5 Penrhyn Road, Kingston, and visitors are welcome.

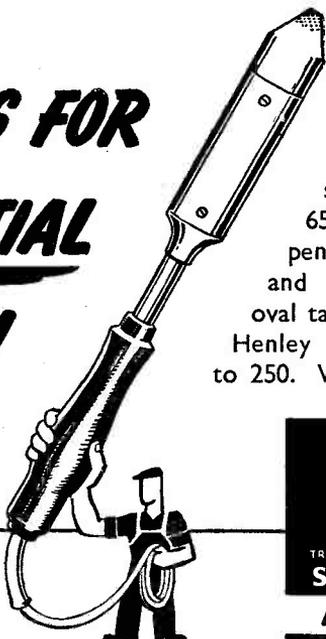
Manchester & District Radio Society.—At the July meeting G6OM lectured on VHF Communications. For August 13 a General Ragchew is planned, members being invited to air their problems. The September lecture will be on VHF Technique and will be given by G201. Meetings are normally held on the first Monday of the month, and new members are always welcome.

GIFT SUBSCRIPTIONS

Remember that one of the most acceptable presents you can make to an overseas contact is a subscription to *Short Wave Magazine*. Many readers also pay a subscription for a friend in Canada or the States in exchange for a subscription paid at the other end for

one of the American periodicals—nor need they be radio papers. The cost of *Short Wave Magazine* for a year of 12 issues, post paid home or abroad, is 24s. Orders with remittance to The Circulation Manager, *Short Wave Magazine*, Ltd., 55 Victoria Street, London, S.W.1.

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Deaf Aid Miniature Valves. DL72 and CK512AX. New, 9/-, P.P.

3½in. Scope Tubes VCR138/ECR35. New and Boxed, 21/6 P.P.; Base, 3/6.

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2½-3-3in. 16/9

250-0-250v 100ma., 6.3v 6a., 5v 3a., for R1355 ... 26/9

350-0-350v 70ma., 6.3v 2a., 5v 2a. 18/6

350-0-350v 100ma., 6.3v-4v 4a. C.T., 0-4-5v 3a. ... 23/9

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Short Wave Magazine, August 1951

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Short Wave Magazine, Volume IX

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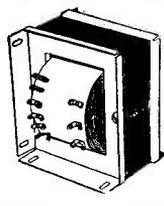
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