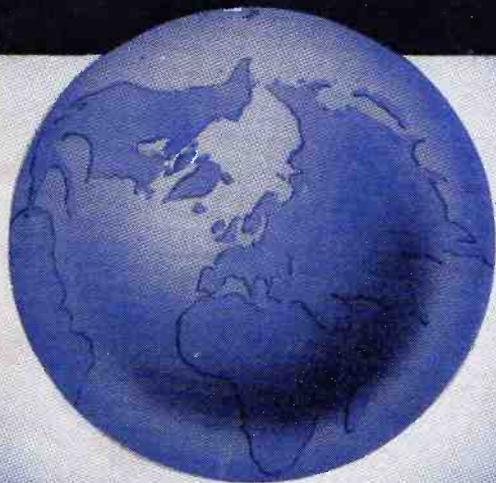


2/-

THE SHORTWAVE

Magazine



EXCLUSIVELY FOR THE
RADIO EXPERIMENTER &
TRANSMITTING AMATEUR

VOL. IX No. 10 DECEMBER, 1951

H. WHITAKER G3SJ

10 YORKSHIRE STREET, BURNLEY Phone 4924

RESISTORS. New and Unused Erie and Dubilier. We have secured another fine parcel of these and offer as follows. $\frac{1}{2}$ watt 8/6 per 100, $\frac{1}{4}$ watt 12/6 per 100, 1 watt type 9 insulated 15/- per 100, 1 watt standard type 15/- per 100, 2 watt 20/- per 100, 5 watt 25/- per 100. All well assorted values between 100 ohm and 6.8 Meg. Or sample 100 as follows, 20 $\frac{1}{2}$ watt, 25 $\frac{1}{2}$ watt, 20 1 watt insulated, 20 1 watt standard, 10 $\frac{1}{2}$ watt, 5 5 watt, with a range of at least 30 different values at 14/- post free.

OSCILLOSCOPES. By well known British Manufacturer. In black crackle steel cases, size 12 x 8 x 6 ins. For A.C. mains 230/200v 50cy. Tube size 3 ins. (green). Hard valve time base continuously variable from 5 to 250,000 c.d.s. Push-pull "x" deflection circuit with T.B. wave form brought out to separate terminal for wobulator work or synchronising. Provision for fly back suppression. Push-pull "W" deflection circuit, level from 15 to 300,000 c.p.s. All usual controls and provision for using a D.C. volt-meter to measure the amplitude of an A.C. waveform. Separate synchronised amplifier and no control interaction. Complete with all test leads and instruction manual. They are brand new and boxed in original cartons and represent an un-repeatable bargain at £19/10/0. Carr. paid.

AUTOMATIC 3 SPEED RECORD CHANGERS. Plessey, 12in. and 10in. mixed at 78 r.p.m. 12in. and 10in. mixed at 33 $\frac{1}{3}$ r.p.m. 7in. at 33 $\frac{1}{3}$ r.p.m. 7in. at 45 r.p.m. Crystal pick up with two switched sapphire stylus. Reject switch for automatic rejection of any record from any batch. 200 to 250v 50 cy. A.C. mains. Will play approximately 2000 records on each stylus without attention or change. Immediate delivery from stock Carr. Paid. £23/16/0. Min. size of mounting board 16ins. x 12ins.

MICROPHONES. U.S.A. T 30k buttons 1/-, U.S.A. Throat 3/-, T19 m/c with switch 5/-, Weston Ball m/c £5, Shafesbury Ribbon £12.

ELECTRONIC KEYS. 230v 50cy. A.C. Mains. Our own production. Grey crackle steel case 9 x 7 x 6 ins. Employs in all 5 valves. Controls for dot, dash, and spacing, with speed control continuously variable from below 10 wds. per minute to 60 wds. per minute, with perfect formation of characters. This is precision first class operating made easy. Carr. paid £12/10/0.

AERIAL EQUIPMENT. Type 1148a 5 section interlocking, 3in. heavy gauge steel. Cast base plate, 3 heavy ground stakes, 3 guys, pulleys and toggles. Complete with cross-arm dipole at approx. 70 Mc., with approx. 40ft. of 300 ohm line. As used with the 1147 receiver. In heavy wood transit case 6ft. x 18 x 12ins. Total height 27ft. Two can interlock together. Carr. paid 70/-. The case alone is worth this. Cigar masts. Heavy gauge galvanised steel. 2 section bolt together at centre by heavy flanges. Centre diameter 9ins. end diameters 4ins. Guys not available. Height 40ft. Carr. paid £7. As above height 30ft. Diameter at centre 6ins., end diameter 3ins. Carr. paid £4/10/0. T.V. antennas Holme Moss. Belling Lee Senior H £6/12/6. Aerialite, Model 54 "H" £5/12/6. Cranked arm "H" £4/8/0. All are complete with chimney mounting accessories.

CRYSTALS. 1000 kc Valpey, Bliley or Somerset, standard 3in. pin spacing, 20/-. R.C.A. 100 kc sub-standards, 20/-. Western Elec. 500 kc Ft 243 holders with 3in. pin spacing, 7/6. Full range of Western I.F. freqs. 450, 465 Kc, etc., 12/6 each. Amateur and Commercial bands. G3 SJ Xtals are precision lapped, and acid etched to final freq. Are available in either Ft 243 holders, 3in. British, 3in. U.S.A. or 3in. P.5 holders. Your own choice of frequency 2 Mc to 10 Mc inclusive. We will despatch to within 1 Kc of your chosen frequency at 15/- each, accurately calibrated with freq. clearly marked. Slight extra charges for decimal point freqs. We also undertake the calibration, or re-grinding of your own crystals at extremely reasonable and nominal charges.

MODULATION TRANSFORMERS. UM1 54/-, UM2 72/6, UM3 90/-, UM4 215/-, Immediate delivery from stock. Thermador 400 watt 50/-, Parmeko 450 watt for plate and screen Mod. of a pair of 813s Brand new created. 35/-.

VALVE HOLDERS. All ceramic. Octal with flanges 1/-, 807 do 1/3. 4 pin UX Lock-in Johnson 4/-, British 5 pin 6/- doz., British 7 pin 4/- doz. B7G complete with valve screen and valve retaining spring 2/3. B8G Amphenol 8d.

STATION LOG BOOKS. A quality production, 300 pages cream laid paper, section sewn, opens completely flat like a ledger. Stout heavy cover, 18/- post free. Sample leaves on request.

POWER SUPPLY UNIT, TYPE 247. Input 230v 50cy, output 550v at 300 mills, plus 6.3v at 3 amp. In grey steel cases 11ins. x 10ins. x 9ins., with pilot light. 5U4 rectifier required. £3/19/6. Carr. paid.

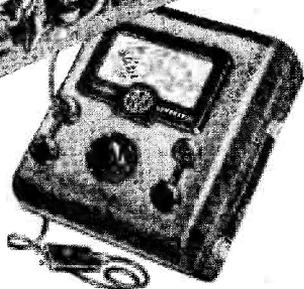
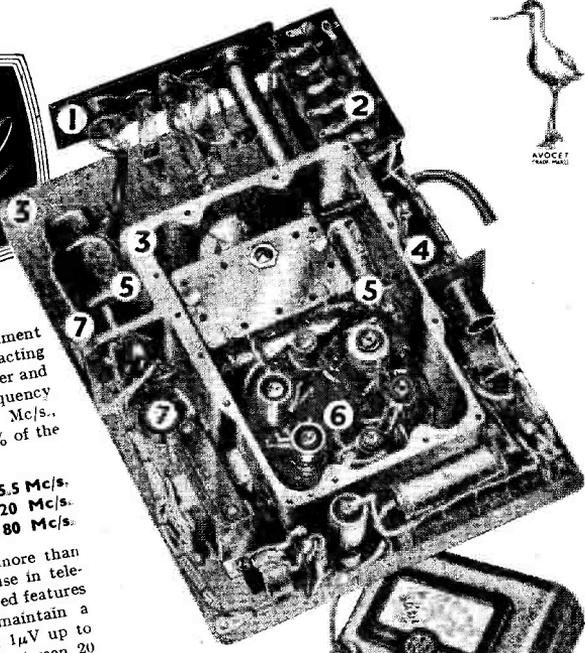
CONDENSERS. Silver Mica Approx. 100 assorted values including 1000v wkg at 4/6 per doz. Flat mica, 0002, 002 350v. 005, 0047, 006 1000v at 3/6 per doz. Mica 2500v wkg Sangamo etc. 12/- doz. assorted. Mica 5 Kv wkg Sangamo etc. 0004, 0006 and 001 2/- each. Mica 001 and 002 Muirhead 4 Kv at 30 Mc 4/- each. All high voltage mica are bakelite cased. Paper and oil. 4mf 2000v wkg 6/- 4mf 1500 wkg 4/- 4mf + 2mf 2000v wkg 8/- 10mf 1000v wkg 6/- 6mf 1000v wkg 4/- 4mf 500v wkg 2/-. G.E.C. 25 350v wkg Tublar 12/6 per original box of 100. Bias. One doz. assorted 6/-, 100 Assorted, every conceivable type included. Mica, metal can smoothing, bias, bath tub, high voltage types at 15/- Post free. We will be pleased to have your enquiries for any type condensers up to 20 Kv wkg, we carry exceptionally good stocks including U.S.A. all types.

CONDENSERS VARIABLE. TX. Hammerlund. 1500v wkg. 30pf 3/-, 100pf 8/-, 50 + 50 10/- 60pf. 7/6. 80pf 7/6. Eddystone 18pf 1000v 3/-, 30pf 1000v 3in. spindles 3/6, Wavemaster ceramic 25, 40 and 50pf 4/-. U.S.A. 15pf Cer. 25pf cer Rx type with spindles 1/6, 75pf Miniature U.S.A. screw adjust for i.f. etc. 1/-. Cylidon 200pf 1000v 5/-, do 250pf 750v 5/- both ceramic. U.S.A. Extension couplers for 3in. spindles 1/- each. BC 453 3 gang 0005 complete with all gearing 5/-.

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VALVES. All new boxed in original cartons. 813, 90/-; 805, 27/6; 807, 12/6; 1625, 4/-; 860, 10/-; 6K7, 7/6; 6L7, 6SA7, 6SG7, 6N7, 8/-; 12SR7, 12SF7, 6/-; VU111, 3/6; 7Q7, 6/-; 6Q7, 10/-; 6H6, 3/-; 5Z4, 8/-.



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Coaxial socket for attenuated output. Force socket located totally within H.F. compartment.
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Marked tagboard for inputs of 100 - 130V and 200 - 260V., A.C. 50/60 c/s.
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- VALVES** ————— 5
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- TURRET COIL SWITCHING** ————— 6
Standard "AVO" practice.
- ATTENUATOR SYSTEM** ————— 7
Employs close tolerance, high stability midget carbon resistors, low reactance rotary potentiometer modified for H.F. operation with carefully designed screening.
- Other features include :-**
- ILLUMINATED SPOT RANGE SELECTOR**
Gives rapid identification of operational band with intensified lighting round precise frequency. Fine hair line gives close discrimination, particularly on high frequencies.
- STOPS**
Separate stops prevent turning of dial with respect to condenser.
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- SLOW MOTION DRIVE**
substantially free from backlash.

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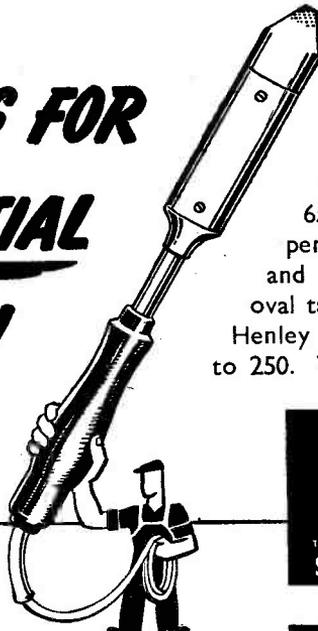
RECEIVERS TYPE R.3132. This unit is almost identical to the R.3084 and details are contained in the April issue of the Short Wave Listener of easy conversion for TV. reception. We supply the units fitted with 7-VR91's, 2-VR136's, 1-VU134, 1-VR92, I.F. amplifier strip etc. In good used condition. Price 49/6, carriage 5/6.

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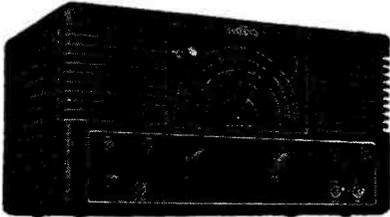
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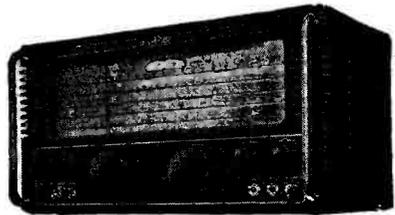


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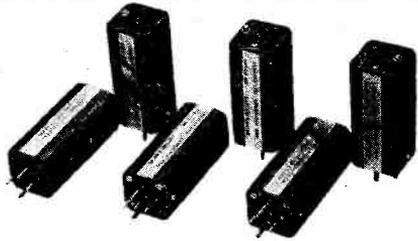
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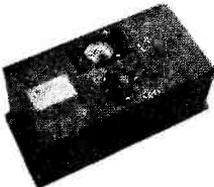
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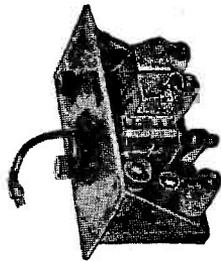
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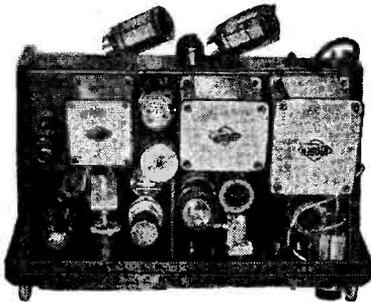
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The
SHORT-WAVE
Magazine

FOR THE RADIO
AMATEUR AND
AMATEUR RADIO

E D I T O R I A L

Christmas

It is our custom at this time of year to use this space to offer Christmas greetings and good wishes to all our readers and our remembrances to our friends, at home and abroad.

The year that is passing has seen many notable events, and that which is to come promises to be equally momentous—in the world of Amateur Radio as in the greater world beyond its relatively restricted horizon.

We are also glad to have the opportunity of thanking our ever-widening circle of readers for their encouragement and continued interest in SHORT WAVE MAGAZINE; and our advertisers for their support. Successful business, in whatever form, is what ultimately sustains the Nation, and this is as true of the varied activities centred on Amateur Radio as it is of any other enterprise or undertaking.

A VERY HAPPY CHRISTMAS TO YOU ALL

*—from the Editor, Management and Staff of
Short Wave Magazine*

Constant Modulation Controlled Carrier Working

SOME FURTHER NOTES
AND PRACTICAL DATA

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

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

THIS article is presented in continuation of that published in the August 1951 issue of *Short Wave Magazine*. Further information is given in the light of more than six months' experience in operation on the two-metre band, as a result of numerous enquiries, and with a view to effecting certain improvements to the original circuit.

It should be stated at this stage that the Constant Modulation system described has no direct connection with what has become known as Super Modulation. The latter, when adjusted to provide symmetrical modulation, radiates a carrier wave of constant amplitude. The peaking valve is merely for the purpose of supplying RF for the positive modulation cycle. If modulated asymmetrically, the positive cycle is larger than the negative, the average carrier level is increased very slightly and a measure of distortion results. However, when using speech, this distortion is not normally noticeable.

The Constant Modulation system described is an improvement on Clamp control in its various forms.

It is considerably simpler to build and operate, does not call for the high current necessary when using Heising modulation on the screen grid with 6L6 or 6Y6 valves, and permits a much greater control of the carrier to be attained with full modulation at high efficiency without distortion.

Fig. 1 shows the circuit described in the original article, together with the modification discussed below.

Weak Signal Reception

One of the disadvantages mentioned in the previous article was that weak

The author's first attack on this subject appeared in our August issue; the article below is based upon experiences with the system in actual operation, on the 2-metre band. The principles he discusses can, of course, be equally readily applied to phone transmitters operated on any other band.—Editor.

signals may be difficult to locate owing to the absence of a steady carrier. It has been found possible to overcome this by the simple expedient of speaking steadily and continuously, and without long pauses between words and sentences. This is only necessary, however, when calling other stations, or putting out a CQ.

In any case, with a residual carrier of 2 watts peaking to 20 or 30 with 10 to 12 dB of control, the difference in strength between minimum and maximum is only 2 S-points. This fact is most noticeable in tests with stations using accurately calibrated S-meters. In one test with G2XC, communication was found possible during average conditions over a distance of about 60 miles by keying the residual carrier.

If not required, the residual carrier can be removed altogether by placing a small negative biasing voltage on the screen grid of the PA (V2) as shown in Fig. 1.

Loud Signal Reception

For local working, it is desirable to operate the receiver with AVC off, AF gain turned down to maximum and RF gain turned down as far as necessary. In other words, as one would adjust for CW reception. This condition prevents the annoying rise of background noise between gaps in the speech and is generally far more pleasant in that it prevents sudden bursts of signal. If the AVC system incorporates a suitable time-constant it can normally be used without any bad effect. The ideal receiver for this system of modulation should include inter-station noise suppression and a quick acting AVC.

Aerial Coupling

To obtain the best results, the loading of the PA (V2) by the aerial should be as heavy as possible. Two effective methods have been tried at G3ENI, and the first is shown in Fig. 2. This consists of a hairpin loop tuned with a

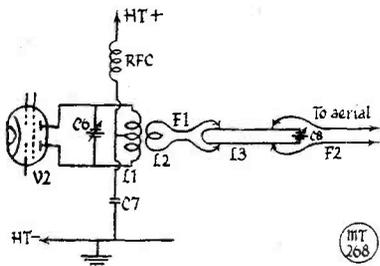


Fig. 2. Method of aerial coupling using a hairpin loop.

Table of Values

Fig. 2. An aerial coupling system as used by G3ENI on Two Metres.

- C6 = 25 μ F butterfly
- C7 = .01 μ F
- C8 = 25 μ F butterfly
- L1 = PA Tank Coil
- L2 = PA Link Coil
- L3 = Hairpin loop, 8 inches long.
- F1 = Electrical $\frac{1}{2}$ -wave 80 ohm twin feeder
- F2 = Main aerial feeders
- RFC = RF Choke
- V2 = PA

voltage will be rectified and applied like any other audio input.

Speech clipping is not recommended for use with Constant Modulation. It provides some slight increase in average radiated power, but this increase is far outweighed by the complexity involved in the speech exciter and the consequent distortion. Asymmetrical speech clipping is not practicable because of the action of the full-wave rectifier following the modulator.

A full-wave rectifier valve such as a 6X5G can be used in lieu of the

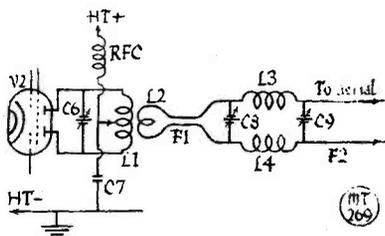


Fig. 3. A pi-section coupler applied to the output circuit, as described by G3ENI.

Table of Values

Fig. 3. Suitable pi-section coupler for Two Metres.

- C6 = 25 μ F butterfly
- C7 = .01 μ F
- C8 = 25 μ F butterfly
- C9 = 25 μ F butterfly
- L1 = PA Tank Coil
- L2 = PA Link Coil
- L3 = 6 Turns, $\frac{1}{4}$ ins. i.d., 18 SWG, spaced wire thickness
- L4 = 6 Turns, $\frac{1}{4}$ ins. i.d., 18 SWG, spaced wire thickness
- F1 = Electrical $\frac{1}{2}$ -wave 80 ohm twin feeder
- F2 = Main feeder
- RFC = RF Choke
- V2 = PA

selenium rectifiers, if these are not available. However, there is no real advantage in using a valve at this point.

There is no necessity to be limited to Constant Modulation at 100%. By tapping the modulation transformer at points M1, M2, M3, or M4 it is possible to obtain constant modulation with full carrier control at percentages ranging from 100% down to zero in proportion, as a first approximation, to the turns ratio. Carrier control without modulation is required when the AF power is applied to an alternative electrode in the

TABLE 1.

Valve	Anode Volts	Anode dissipation	Residual current mA	Peak current mA	Audio Watts	Average input Watts	Peak input Watts
6V6	500	8	10	80	2	12	40
6AG7	600	9	8	75	3	15	45
832	800	15	9	90	4	25	75
6L6	700	21	14	140	4 $\frac{1}{2}$	30	100
807	1000	30	15	150	3	50	150
829	1000	40	20	200	10	70	200
813	3000	100	25	160	20	170	500

modulated valve or to an alternative valve in the complete transmitter. It is also useful for varying the drive in previous stages, when necessary.

Table 1 shows some interesting figures which may be used as a rough guide to suit individual requirements, if the valves are to be run at their limits. These have been worked out on a basis of:

- (a) Average speech speed allowing a cool off period for the PA valve.
- (b) Use of valves at frequencies lower than maximum for full ratings.
- (c) An average input of 30 to 40 per. cent of peak input.
- (d) A peak power of about 5 times the anode dissipation.
- (e) No negative bias on PA screen grid to limit residual carrier.
- (f) About 10 to 12 dB of carrier control.

Fig. 4 illustrates a family of curves, applicable to any valve, which show the influence that the amount of residual carrier has on the percentage of modulation at various input levels. It also illustrates the degree of constant modulation that can be obtained with this system.

The curves have been calculated for the case when the rectified voltage is equal to the peak value of modulation voltage. Any departure from this equality results in a shift of the curves along the vertical axis.

General Remarks

Care should, of course, be taken to see that the PA valve is properly neutralised. The use of this system of modulation will not cause BCI or TVI providing that the transmitter is free from it when operated in the CW mode. The bandwidth of the signal when fully modulated is no wider than with conventional systems. No sideband splatter is evident and over-modulation is impossible.

The Constant Modulation System lends itself to duplex working on nearby frequencies on the two-metre band, provided that the usual precau-

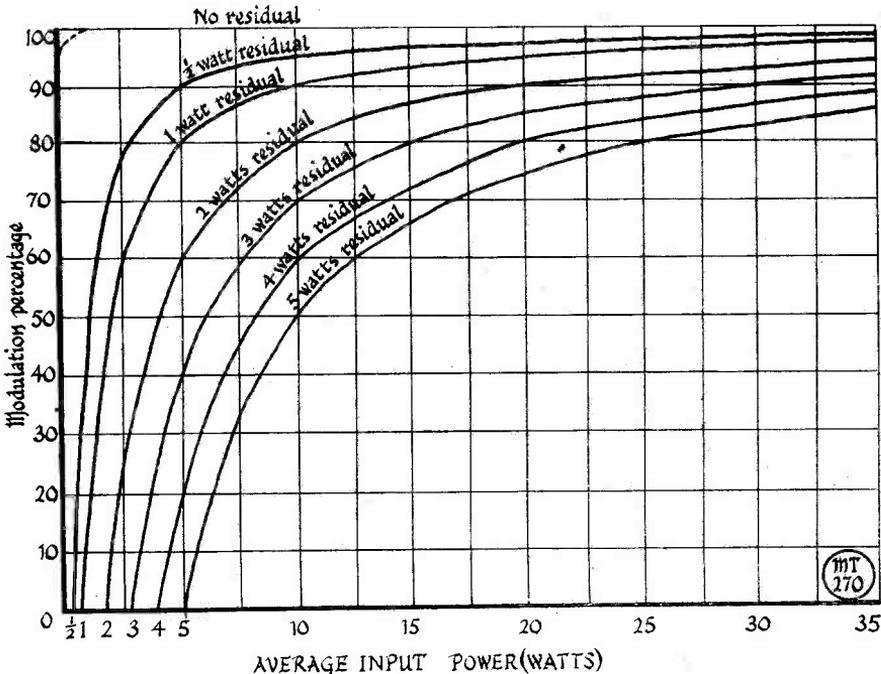


Fig. 4. A family of curves, applicable to any valve, showing the constancy of modulation with the circuit suggested by G3ENI. The influence of the degree of "residual carrier" on the depth of modulation at various input levels is also brought out by these curves; for instance, with 1 watt of residual carrier, 90% modulation is obtainable with 10 watts input, increasing to 97% modulation at 30 watts input.

tions relating to prevention of feedback are taken. If necessary, a portion of the voltage from the speech rectifier unit can be used for receiver muting through the AVC line.

The writer does not claim that Controlled Carrier Constant Modulation is

a remedy for all ills, but it does possess a number of peculiar advantages which make it worthy of more than passing interest. G3ENL, who can be found on 145.29 mc, welcomes other people's views and will be pleased to discuss it with interested stations.

Calibrated Variable Condenser

FOR ACCURATE
CAPACITY
MEASUREMENT

By Rev. F. NESS, M.A. (G3ESV)

WITHIN a very short time after it has been constructed and calibrated, a grid dip oscillator assumes a position of increasing importance in the station of any experimentally-minded amateur. But to realise the full possibilities of this versatile instrument one accessory is required, namely, a calibrated variable condenser. With the two combined, one can instantly find the answer to such questions as:—

(a) What capacity swing is required to make this coil cover the 10-metre band?

(b) What is the inductance of that iron-cored coil, and how far can it be varied by adjusting the slug?

(c) How many turns are required for a coil to be self-resonant at 3.6 mc, allowing for 25 $\mu\mu\text{F}$ stray capacity?

These and similar questions crop up regularly when receivers, excitors, VFO's and other items are being designed and built, and any apparatus which gives a ready answer deserves consideration. Commercially-made variable air condensers of sub-standard calibration accuracy are tremendously expensive, even the second-grade types costing upwards of £15, and their purchase is not worth considering. A reasonable substitute, adequate for most amateur purposes, can be made, and at G3ESV a great deal of thought and experiment has been devoted to the matter. The problem is two-fold: The choice of a suitable condenser, and its calibration.

The need is for a well-constructed variable, of low losses and low minimum

As our contributor rightly points out, a calibrated variable condenser, like the GDO, is one of those instruments which only becomes essential after its usefulness has been experienced. Condenser assemblies calibrated to sub-standard accuracy can be purchased—but it is very much cheaper and far more satisfying to provide your own. This article explains how a commercial condenser which is readily obtainable can be scaled and calibrated to meet amateur requirements on the communication bands.—
Editor.

capacity. It should have a linear capacitance law over most of its range. Because of the method of calibrating suggested below, it is essential for it to have an actual capacitance very close to the nominal listed value. Last (and far from least) the manufacturing tolerances must be small and should preferably be known.

All these requirements are satisfied by the Eddystone range of Microdensers, and Cat. No. 586 was selected as being the most suitable value. An enquiry to the makers brought the following data:

Nominal capacity (maximum)	140 $\mu\mu\text{F}$
Minimum value at maximum setting	140.5 $\mu\mu\text{F}$
Maximum value at minimum setting	5 $\mu\mu\text{F}$

And these figures can be relied upon to be within 5% accuracy. Furthermore, the shape of the stator plates is such as to ensure a straight line capacitance law over most of the 180° movement of the rotor. Here was good news indeed. Attention could now be devoted to devising a suitable method of calibration for use where laboratory standards are not available.

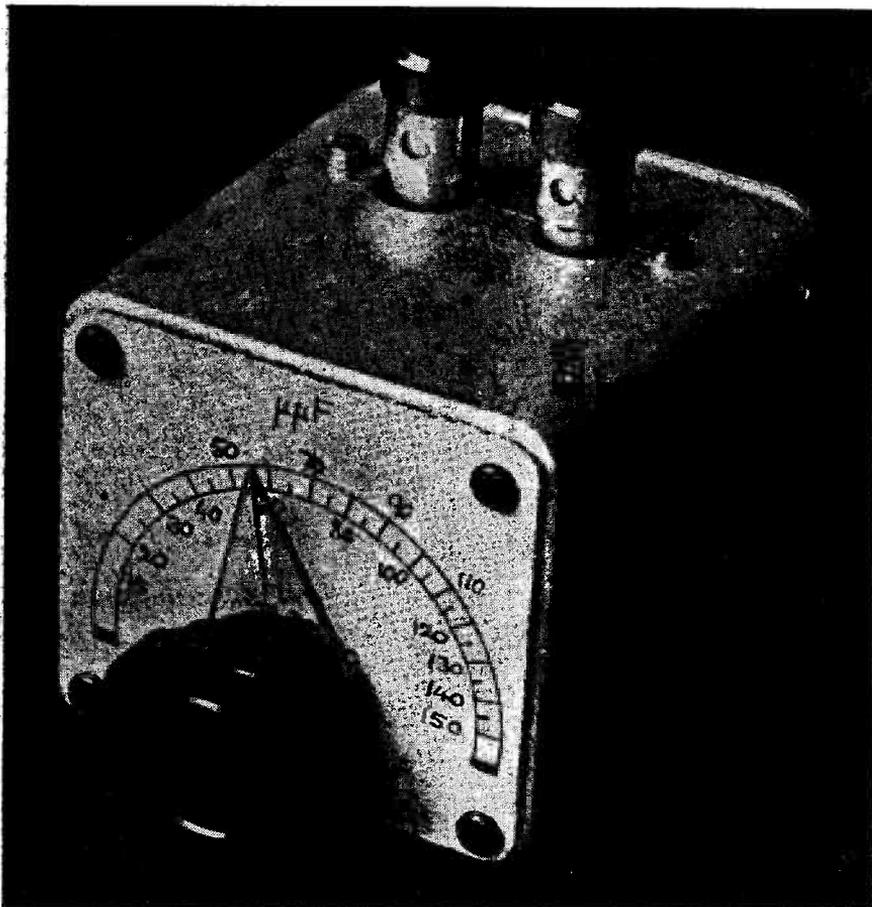
Design Considerations

A calibrated condenser of any type should be totally enclosed in a screening box, with the moving vanes of the condenser connected to the box. Such a procedure unfortunately raises the minimum capacity considerably; but to off-

set this, the condenser is saved from knocks and ill-usage, and the readings are not affected by hand capacity. The box actually employed was of aluminium and measured $2\frac{1}{4}$ in. by $2\frac{1}{2}$ in. by $2\frac{1}{2}$ in. high*. Two spring loaded terminals (ex-U.S.A.) were mounted on a thin strip of polystyrene and arranged to project through generous clearance holes in the box. They were connected to the condenser by short lengths of copper braid about 1 inch long. Excessive lead-length puts inductance in series with the condenser and should be avoided, as it gives rise to rather disconcerting results. A cardboard

scale was fitted to the top of the box, and a pointer was made from celluloid with a line scribed along its underside and filled with black paint. Careful measurement with a Sullivan laboratory-type variable condenser showed the maximum capacitance to be exactly $150 \mu\mu\text{F}$ with this particular arrangement. The scale was therefore calibrated against the standard every $10 \mu\mu\text{F}$, and even with the added stray capacity of the box and terminals, linearity of calibration was found to be excellent down

*Actually a screening can from a spare coil set for the American aircraft radio receiver, type CW-46048D.



Our contributor's own version of the calibrated variable condenser discussed in the article. By using a manufactured component the tolerances of which are known, an accuracy well within practical requirements can be achieved.

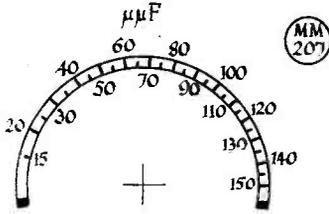


Fig. 1. Tracing of the scale obtained after calibration (reduced for reproduction). The heart of the instrument described by G3ESV is an Eddystone Type 586 140 $\mu\mu\text{F}$ Microdenser, which is SLC over the greater part of its range and within 5% of the stated maximum and minimum capacities.

to 40 $\mu\mu\text{F}$, when the effects of the increased minimum capacity began to make themselves felt. The minimum value is 15 $\mu\mu\text{F}$, showing that some 8 $\mu\mu\text{F}$ was due to the screening box and connections. Due to the linearity of the scale, it is perfectly legitimate to subdivide the scale markings with the aid of a ruler, and by this means capacitances can be read off within a couple of $\mu\mu\text{F}$. Greater reading accuracy is not justified, and it would be silly to attempt it with such a simple arrangement.

Now, provided that the lay-out described is followed closely and a "Chinese copy" of the original is made up, there is no reason why its calibration should not agree very closely with the one described. And, in this case, there is no reason why the actual scale shown in Fig. 1 should not be used. It can either be cut out and pasted neatly on a card, or it could be copied and enlarged by a tracing method.

Construction

Here are some details and measurements to help with the actual construction. If a box of the right size is not to hand, one can be made up from 20 SWG copper sheet or tin plate to the required dimensions, the joints being carefully soldered. The correct position of the condenser in the box is shown in Fig. 2. Orient it so that the moving vanes project towards the side of the box. In addition, lower the condenser by means of thick brass washers or other suitable spacing material until only as much of the threaded bush projects as is required for the lock-nut to engage firmly. This keeps the fixed vanes well spaced from the sides of the

box and avoids excessive stray capacity. The terminals are mounted 1 inch up from the base of the box, and are spaced $\frac{3}{8}$ in. centre-to-centre. Arrange the knob and pointer so that the condenser vanes un-mesh in a counter-clockwise direction, uncovering the broad ends of the stators first. Verify this as a check. The photograph shows the completed assembly.

If the work is done carefully, one can be reasonably sure of a maximum capacity within a few per cent. of 150 $\mu\mu\text{F}$. It is only necessary to fit the scale so that the pointer is opposite the 150 $\mu\mu\text{F}$ mark when the plates are fully meshed for the job to be complete.

Direct Calibration

Those who have no confidence in ready-made scales have another alternative open to them. Both T.C.C. and U.I.C. advertise ceramic or silvered mica condensers to 1% tolerance. A 10 $\mu\mu\text{F}$ unit can be bought and, assuming a maximum of 150 $\mu\mu\text{F}$, subsequent calibration points at 10 $\mu\mu\text{F}$ intervals can be marked in by the method of repeated substitution, in conjunction with the GDO. Briefly the condenser to be calibrated is set at full capacitance, a coil of some 10 μH is attached, and the GDO is tuned to resonance. The 10 $\mu\mu\text{F}$ capacity is then placed in parallel across the tuned circuit with short leads, and the condenser readjusted to resonance. This point is marked 140 $\mu\mu\text{F}$. Without changing this setting, remove the small fixed condenser, reset the GDO to resonance and repeat the whole procedure. This method is more laborious and seems hardly worth while; but it

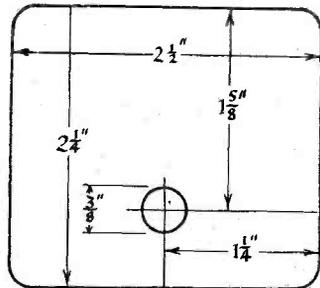


Fig. 2. Mechanical details of the metal box used to house the 140 $\mu\mu\text{F}$ condenser.

would cover any slight non-linearity in the capacitance law of the Microdenser.

The finished job is only a handful and cost less than 10 shillings. But few other items in the shack of comparable size and value will prove as useful. Inductance is measured by observing the capacity required to tune the coil to resonance at a known frequency. Reference to an Abac will then give the answer in a flash. Messrs. Iliffe & Sons publish a very useful set of Abacs under

the title of Radio Data Charts. Or the smaller ones in the *Wireless World* diary can be used. Formulæ exist for calculating inductance, but they are laborious in use and it is terribly easy to make mistakes. Abacs are far speedier in use, give an ample degree of accuracy, and are practically fool-proof!

The author wishes to thank Messrs. Stratton & Co. for their kind assistance in furnishing details about the manufacturing tolerances of their Microdensers.

Beating the QRM

AN EXPERIMENT
WITH QRP

By J. H. A. NEWTH (G3EJN)
and C. E. SUTTON (G3ANQ)

EVERYONE will agree that the congestion now obtaining on 80 metres CW is the worst ever experienced. Higher power, sensitive receivers, greater numbers, and immigration due to the sunspot cycle, have given us a foretaste of interference which we may have to accept as normal in the near future unless we can cope with it in some practical way. It is interesting to compare these conditions with those existing at sea in the previous post-war period thirty years ago, to note the common factors predisposing to such chaos, that we may be inspired to solve our own difficulty.

At sea, before 1914, the emphasis was on distance, and the Marconi $1\frac{1}{2}$ kW spark transmitter, magnetic detector and multiple tuner did work that may well be compared with the ten-watt rig and the 0-V-1 of the early days of Amateur Radio. But wavechange was cumbersome, and power variation non-existent save in a rudimentary way, so that one blasted the other man at 5 or 500 miles on the full $1\frac{1}{2}$ kW, just as many of us do nowadays, into the next parish or the other end of the country on the full 150 watts.

Then, about 1920, the Radio Communication Co. produced their $1\frac{1}{2}$ kW "Polar" spark transmitter, probably the finest set of its kind ever put on ship-board. It had four wavelengths and

This well-argued article amounts to a plea (and an appeal to reason) for more considerate use of power on the 80-metre CW band. The authors support their contentions by detailing the results of a series of careful tests carried out to prove that full power, or even a tenth of it, is totally unnecessary to achieve reliable communication over normal distances on the 3.5 mc band. The QRM is shown to be largely due to the spread, over quite long distances, of stations using far more power than is needed for solid contact. Every QRP operator, at least, will be in full agreement with the conclusions reached by the authors.—

Editor.

three power levels— $\frac{1}{4}$, $\frac{1}{2}$ and full—almost instantly variable by handwheels, and was a wonderful relief to operators working with the new valve receivers in increasingly congested seas. Many an old-timer must remember its clear penetrating note: as the voice of North Foreland and other Post Office stations.

In this respect, amateur transmitter design appears strangely static. Two schools have always existed, QRO and QRP; nearly as cat-and-dog to each other as phone and CW; there seems no middle course. Despite the obvious advantages and devastating interference of QRO, despite the amazing feats of QRP gear and the known facts of propagation, no attempt is made to combine the two, as in the old "Polar" spark set of thirty years before.

Some Investigations

The results of such inflexibility are now becoming painfully apparent on the crowded 80-metre amateur band, and a chance meeting thereon between the

authors one screaming Saturday night led to discussion and the experiments now to be described. Starting with the intention of establishing the minimum power required for effective "ragchew" communication over an average English amateur distance under the congested conditions on the band at the present time, G3ANQ/G3EJN have been forced to certain conclusions, technical and practical, which throw a new light on both general amateur and low power working.

The two stations are 100 miles apart, and the sketch shows the aerial layout of G3EJN at Bristol, in which will be seen a 132-ft. end-fed, two 66-ft. ditto, a 15-ft. aerial, and the site of a 12-ft. rod, which was attached to the window sill of the operating room at a height of 20 ft.. The dotted line shows an extra 66 ft. of wire added later, to make a folded 132-ft. end-fed, part of which was only 9 ft. high; otherwise, all aerials are at 25 feet.

The main transmitter is an ECO/BA/ED/PA, variable at 80 watts maximum, the VFO exciter of which, a W3735 drive unit (CNY series) employing two 807's, being adapted as a low-power ECO/PA transmitter with a W3736 aerial loading unit for PA tuning. This was used with a pi-coupler, the best type for loading-up the various aerials employed. Input was varied by a tapped HT supply. The receiver is a BC348R, working at full break off the spare 66-ft. aerial. G3EJN thus represents the "average" man and the "back garden" station, and both were constantly considered throughout the tests.

G3ANQ/A is situated on top of a 100-ft. building in West Central London, the aerial being a 132-ft. co-ax fed dipole, direction East/West, exactly 130 ft. above ground, and, due to the frequency and the disposition of the surrounding steelwork, a true half-wave high. The transmitter is a Clapp VFO/PA, and, normally, *half-a-watt* input gives ample strength, daylight or dark, over the British Isles and most of North-West Europe. Two-and-a-half watts, which give slight extra punch and some insurance against fading, were used throughout the tests. The receiver, fed from the dipole by a change-over switch, is a BRT400, which has a band spread of about 1 kc per degree at 3.5 mc; RF, IF and LF gain controls, and a $\frac{1}{2}$ kc maximum selectivity channel, which can be further sharpened symmetrically by the crystal phasing condenser, with

definite and sharp rejection either side of zero as required. A 1000 c.p.s. audio filter is also available, and an S-meter calibrated approximately in dB above 1 micro-volt up to a full-scale deflection of 100.

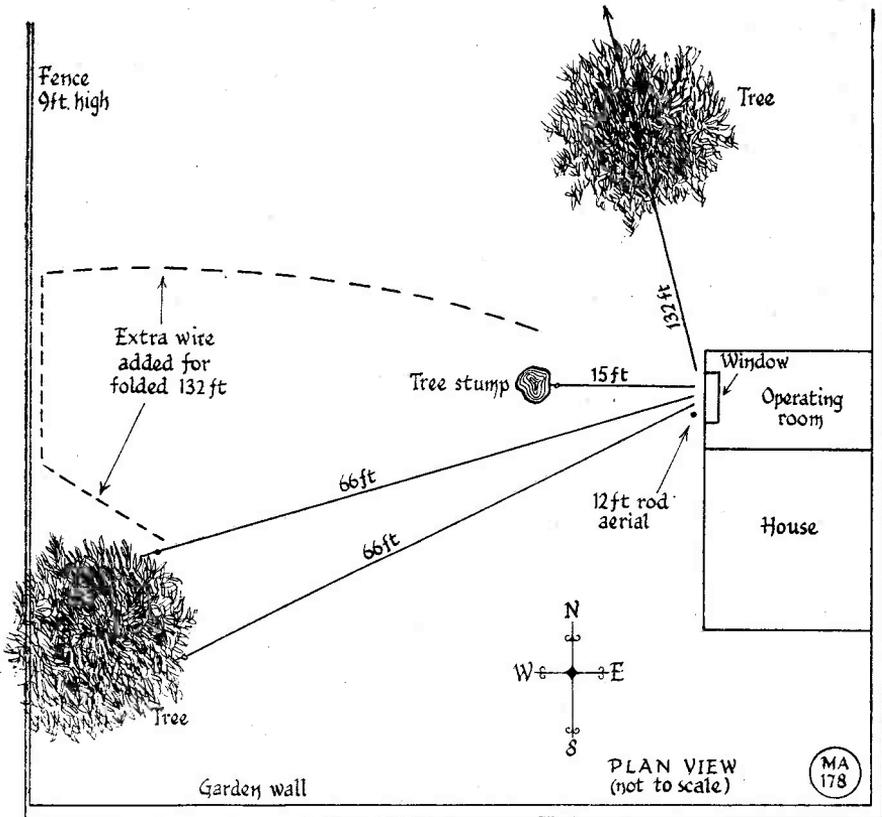
Scope of Tests

Tests were conducted between 6 and 8 p.m. several times weekly for over two months through February, March and April, 'EJN ringing the changes on his aerials and power levels, and 'ANQ reporting; his signal being used as a basis of comparison and indication of conditions. Starting with 60 watts on the 132-ft. end-fed at S7/8, 3.5 watts gave S5, with S6/7 peaks through heavy adjacent channel QRM. Later, 2.8 watts gave S6 average, with S7/8 peaks, against 'ANQ's steady S7/8 on the higher aerial; an example of the usual results obtained with the 132-ft. wire under good conditions.

But a change to the 66-ft. on the same power brought S5 average, which was found to be insufficient to counter a QSB of one S-point, insertion of crystal and reduction of RF gain at 'ANQ to stop receiver blocking from a QRO signal 3 kc adjacent. Here came the real difficulty. In spite of some amazing nights, with 'EJN at S7 and higher at times, using 3 watts on the 132-ft., S5 on the same power with the 15-ft. wire, and S4 on four watts to the 12-ft. rod, the level of the 66-ft. could rarely be coaxed above S5/6, so a 15-ft. counterpoise was added, raising the aerial current to nearly double.

This gave a decided improvement, S6 average, and S7 peaks, but, during a subsequent appalling night, it still gave insufficient margin on 3 watts to stand the wipe-out from S7 CW and S9 phone. 2 and 4 kc adjacent respectively, the S-meter of the BRT400 throwing sometimes to over 90 dB! In spite of this tremendous swamping, the 132-ft. wire, registering a nominal S6, gave just enough reserve to overcome this and the reduction of RF gain, with crystal fully rejecting and audio filter inserted.

Power was then raised to 10 watts, giving a fine solid S6/7 signal on the 132-ft., read with ease in London in daylight, 'ANQ, invariably one or two S-points higher, being only S6 and fading badly. The 66-ft. gave S5/6, and, with counterpoise, a full-bodied S6. 'ANQ then rising slowly to a steady S6 and S7 as darkness fell. This is also an example of the reversed phase fading of



The aerial layout at G3EJN, Bristol. It was with this combination that the tests discussed in the article were carried out.

the two stations due to their differently radiating aerials, an effect frequently encountered during the tests, and confirming previous observations at 'ANQ.

Further efforts to improve the 66-ft. aerial by centre loading gave no better results, it being found difficult to get a proper matching of the load inductance, but 66 ft. of extra wire, making a folded 132-ft., gave a punch scarcely inferior to the main 132-footer itself. It is probable that, due to its shape, this aerial is markedly directional, after the manner of a reflected searchlight, since a report from Gosport recorded a great drop in strength undetected at 'ANQ'; but its effect in raising the radiating aerial power, as is the case of the 66-ft. and counterpoise, should be noted.

First Conclusions

Summarising the foregoing and the results of many checks, the most striking characteristic is the strength and reserve power of 3 watts on the 132-ft. end-fed in either daylight or dark. This emphasis on reserve signal power and the constant struggle to obtain it has been the outstanding technical feature of the tests. Under reasonable conditions, such as the winter before, the 66-ft. aerial, with which 'EJN has simulated less fortunate workers, would give ample strength for consistent reception, but, again and again, under the incredible conditions now obtaining, the call from 'ANQ has been for a signal of S6 level, that it might stand a wipe-out of two or more S points and still be readable.

The London aerial, outward, gives a gain of nearly two S-points over 'EJN, but inward, the near and distant signals, plus local noise, form a wall of interference which must be heard to be believed. Thus 'EJN is at disadvantage rather than otherwise, for independent reception by G3DIC in London, and G3GUH in Gosport, reveal 'EJN as clearly readable when 'ANQ has found reception quite difficult. On 60 watts and the 132-ft., 'EJN reads S8 and 25 dB on the S-meter. Attempts to find his 3-watt reading have been impossible, since he has been at best the merest flicker on a QRM level of 20 to 90 dB, the latter being equal to the pick-up of 'ANQ's transmitter!

These QRM levels have been almost continuous, resulting in the RF and, sometimes, the IF gains being reduced to zero, the LF advanced, the crystal inserted, also the audio filter, bringing 'EJN's clear S6 signal to about S3 value, and making nonsense of the sensitivity of a first-class communications receiver. Similar, though less arduous conditions have been experienced at Bristol, due to the higher signal-to-QRM ratio, though even here reception has often been critical.

Discussion

When one considers that a 100-watt station in Yorkshire can block the BRT400, with key clicks to match, when a 150-watt station as many miles away, and 4 kc adjacent, can do likewise, throwing the S-meter to 90 dB; when 'ANQ, on his half-wave high aerial has many times exchanged equal and even superior signals with such stations, *running from 50 to 150 times his power*, the whole basis of 80-metre working seems simply fantastic. But for 'EJN, a typical amateur station in every respect, not only to succeed in penetrating such interference with his 3 watts and his 132ft., to say nothing of his 66-ft. aerial), but to be called upon to do so mightly for two hours on end as a matter of course, is the most fantastic thing of all!

One needs to appreciate the radiation pattern of the amateur 80-metre aerial, rarely more than 1/10th wavelength high, from which the power is thrown almost entirely upwards. It can be seen that 'EJN's aerial makes full use of this characteristic over the short distance of 100 miles, thus clearly demonstrating the gross waste of power with QRO.

Returning to the old marine problem and comparing it with our own, we can see at once that the radiation patterns of the 600-metre earthed Marconi-type ship aerial and the typical 80-metre amateur sky wire, either end-fed or otherwise, are essentially similar, and therefore the correction for interference should be the same.

The Only Solution

But whereas, at sea, this was effected by designers working under compulsory regulations, we must achieve our own relief by voluntary effort, and it is here that we must face the facts. Whether we like it or not, high power has come to stay, and it is incumbent on us to use it rationally by the re-design of transmitters to use 80-metre aerial characteristics to advantage by judicious power-level variation to suit distance and conditions. For this, the RST signal becomes indispensable. Quartering 60 watts to 15 should drop only one S-point, and the modification of a transmitter to retain full efficiency at this level is not unduly difficult. Experiments made later by the authors under quieter conditions in summer daylight prove this conclusively. 'EJN falling exactly two S-points from S8 to S6 on frequent and rapid changes from sixty watts to three.

It is evident that each man must solve the aerial problem and suitable transmitter power levels for himself, as a practical contribution to amateur communication, and this offers much scope for experiment in what has come to be regarded as a rather worked-out field.

We also need particular attention to that long-neglected side of Amateur Radio—specialised and selective receiver design. Interference is comparatively easy to handle by this means; it is the wipe-out effect of excessive power which is so deadly, since it renders such an instrument virtually useless.

There is, undoubtedly, a growing interest in Low Power working, regarded more perhaps as a sport than anything else, though much unobtrusive schedule work is done with small inputs. Although they take no partisan standpoint, the authors feel that, things being what they are, much of the needed effort in both directions may well have to come from the ranks of the Low Power workers, many of whom will inevitably have to adjust their operating to the new conditions. This is of great importance.

and a companion article sets out the story of the operating, and the shifts to which the two stations G3ANQ and G3EJN were put to carry out their experiments and maintain communication *unbroken throughout the schedule.*

Nothing the collaborators have said so far is in any way original, though it may be news to some, but they do hope

that they may have given some stimulus to design and, especially, that their audacity will arouse the devoted and enthusiastic QRP men to seek battle with the QRO and the exhilarating sport of devising new ways and means of securing communication (and survival!) in the fierce and sometimes brutal interference of today.

Frequency Multiplier Circuits

DESIGN
CONSIDERATIONS
IN
AMATEUR PRACTICE

By R. E. B. HICKMAN

FREQUENCY multiplication is a well-known and well-tried phenomenon in amateur transmitters, even though the basic engineering principles of such methods of operation may not be well understood.

To use a simple analogy, a frequency multiplier circuit may be compared to a pendulum, representing the tank coil, and an escapement, representing the plate-current pulse. When the escapement actuates the pendulum once each cycle, the frequency of the escapement may be said to be the same as that of the pendulum, and this condition may be said to represent normal amplifier action. If, however, the escapement actuates the pendulum only once in two, or three, cycles the pendulum frequency of oscillation will be twice or three times that of the escapement, and this condition may be likened to an electron tube acting as a frequency doubler or tripler. It will be realised from this analogy that, for a given driving power, the excursion of the pendulum will become smaller as the frequency multiplication is increased, simply because the escapement actuates it less often. Similarly in a valve circuit; as the multiplication factor increases, the plate current pulse occurs less often, and hence the plate pulse power must be increased if the DC plate input power is to be maintained.

Frequency Doubling

Fig. 1 illustrates the mode of action of a frequency doubler. The conditions shown are approximations only, but are representative of the general action.

It will be seen that the plate current pulse (shown shaded) occurs between the points of cut-off bias and most positive excursion of the grid voltage. Hence the correct bias voltage for frequency doubler operation is not only dependent on the transconductance factor of the valve, but also upon the relationship between cut-off voltage and peak positive grid voltage.

It will be noted that the plate current pulse has the same width X as that of the grid voltage curve X^1 during the period of plate current conduction. Fig. 1 also shows that two complete oscillations occur in the plate circuit for every single complete oscillation in the grid circuit (*i.e.* $2F^1 = F$). In other words, the circuit is operating as a frequency doubling circuit. In the figure, as

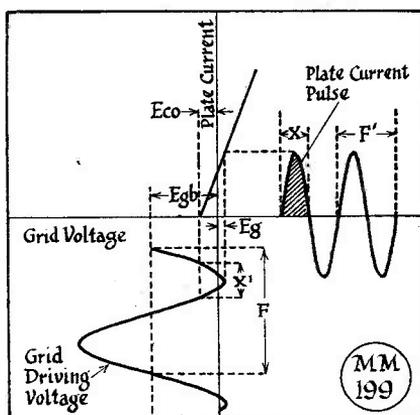


Fig. 1. Graphical representation of frequency doubler action, as discussed in the text.

drawn, plate current flows for exactly one quarter of the grid voltage cycle. In practice this 90° period may be varied from 80° to 140° without affecting the performance of the circuit. In the table herewith the figures given are based on a conduction angle of 120° for doubler operation and 100° for tripler operation.

Performance Limitations

There are three main factors which limit the performance of RF amplifier valves when used as frequency multipliers. These are (a) Maximum peak cathode current, (b) Maximum negative grid bias, and (c) Maximum rated plate dissipation. Optimum multiplier efficiency is at best a compromise.

Even though plate circuit efficiency may be attained in a multiplier stage comparable with that in a straight RF amplifier stage, limitations in the available peak cathode current and in the maximum grid-bias ratings of the valve reduce the output power of the multiplier stage to a fraction of that which may be obtained by operating the valve at lower plate circuit efficiency.

High efficiency multiplier operation necessitates high driving power, and hence results in lower power gain per stage.

The large number of limiting and compromise factors lead to the rejection of a great many valves as possible frequency multipliers. In general, those with a high transconductance and high wattage filaments are satisfactory valves for such applications. Beam types and pentodes, because of their high grid-plate amplification factors, make, in general, excellent frequency multipliers.

Operating Conditions

Table 1 enables the various operating conditions required for frequency multiplication to be calculated from the published data for RF amplifier operation.

Dp	=	Plate dissipation—Class C Telegraphy
Ep	=	Chosen plate voltage " " "
Es	=	Chosen screen voltage " " "
Erf	=	Peak RF grid voltage " " "
E_{dc}	=	DC grid voltage " " "
m	=	Grid-Screen Mu Factor (Pentode)
m	=	Grid-Plate Mu Factor (Triode)

When more power is needed than can be obtained from a single frequency multiplier, two valves can be used. Parallel, push-pull or push-push operation may be employed.

For parallel connection, the operation is essentially the same as for a single valve, but the available power output, and the effective input and output capacities, will all be doubled.

In push-pull operation, even order harmonics are suppressed and odd order harmonics increased. This method of operation is therefore best used in tripler circuits. Input and output capacities are halved compared with single-valve operation. This is an important feature at high frequencies.

In push-push operation, the grids are connected as for push-pull, while the plates are connected in parallel. This method of operation has the effect of suppressing odd order harmonics and increasing even order harmonics. Push-push operation is thus best employed in doubler circuits and gives higher gain than parallel connection.

TABLE 1

		Doubler Service	Tripler Service
Power Input	Pi	2.Dp	1.6.Dp
Maximum Plate Current	Ip	Pi ÷ Ep	
Cut-off Bias Voltage	Eco	Es ÷ m	
Peak Positive Grid Voltage	Eg	Erf — E _{dc}	
Grid Bias Voltage — Pentode	Egb	2 Eco + 0.8 Eg	3 Eco + 1.5 Eg
— Triode	Egb	3 Eco + 0.8 Eg	5 Eco + 1.5 Eg
Power Output	Po	0.5. Pi	0.38. Pi

Read Short Wave Magazine Regularly and Keep in Touch

Simple Bias Supply Unit

INGENIOUS AND
PRACTICAL

By J. L. GOLDBERG, B.Sc. (G3ETH)

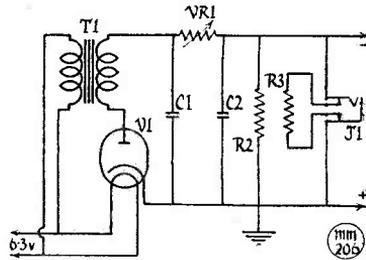
THERE are occasions when it is desirable to have a source of fixed bias available—for instance, as current limiting bias for a PA stage in the key-up position or as working bias in certain audio applications. Grid bias batteries are often used for this purpose, and the circuit described here was assembled from junk-box items to eliminate such batteries in as inexpensive a manner as possible. This particular unit is used at G3ETH to provide 18 volts fixed bias for a 6L6 modulator stage, but other voltages may easily be obtained.

Action

The circuit itself calls for little comment. A diode (EA50/VR92) is used as a half-wave rectifier with a simple smoothing filter. The transformer T1 is the item which enables the cost of the unit to be kept to a minimum; it is a component which is often relegated to the deepest depths of the junk-box—a surplus “high cycle” mains transformer used in this application with its 80-volt primary connected across the 6.3v. heater supply and its 350-0-350 volt winding used as the secondary, thus furnishing about 55 volts RMS to the diode anode. Any transformer having a ratio of about 9:1 will do, provided that the winding used as the primary has a sufficiently high impedance at 50 cycles to avoid presenting too great a load to the 6.3-volt supply.

Output Control

The only point which calls for further comment is the method adopted for adjusting the output. Owing to the comparatively high source impedance of this unit, it would normally be necessary to use a very high resistance voltmeter when setting the output voltage; while there are doubtless many who have a suitable instrument, such as a valve-voltmeter, the device adopted here will allow a less refined instrument to be employed for the purpose. The jack J1



Circuit of the bias supply unit suggested by G3ETH, using a discarded “high cycle” transformer; the valve can be any suitable diode. The function of VR1 and the significance of R3 are explained in his notes.

Table of Values

Bias Unit suggested by G3ETH

- C1, C2 = 2 μ F, 150-volt wkng.
- VR1 = 100,000 ohm variable, well rated
- R2 = 47,000 ohms, $\frac{1}{2}$ -watt
- R3 = See text
- J1 = Close-circuit jack
- T1 = See text
- V1 = EA50 (VR92), or any suitable valve diode connected.

has connected across its “closed circuit” contacts a resistance R3, which is equal in value to the internal resistance of the voltmeter which is to be used. The meter is plugged into J1, the variable resistor VR1 is adjusted to give the required bias voltage; then, when the meter is withdrawn, its loading effect is simulated by R3, and hence the output remains set at the required value. As an example, if a DC Avominor is used on its 60-volt range, R3 should be 20,000 ohms.

There is no reason why other diodes, such as the EB34 or 6H6, should not be adopted in place of an EA50 if desired.

XTAL XCHANGE

This feature has languished somewhat in recent months, and we are considering discontinuing it. However, if sufficient requests for insertion are received, we shall be glad to keep it going for the convenience of readers who wish to exchange crystals. The only offer this time is from G3EJ, Lyncroft, Dedman Dene, Hazlemere, High Wycombe, Bucks., who wants to exchange a 7081 kc crystal for one of 3520 kc or near.



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

TIME flies, and here we are, back at December in less time than it takes you to WAZ. Certain symptoms of the winter season are more or less evident, but for some reason the LF bands don't seem to be as good as they were at this time last year. We have got into the habit of assuming that because Ten and Twenty sink lower and lower, the other bands ought to be better. Instead of that, we have had an all-round sinking which, however, does show signs of slowing down by now. As usual, those who never acquired the smell of 1946-47 will tell you that conditions this year have been quite good!

Contests and Things loom large, and soon after you read this we shall be plunging into our kind of pre-view of the Top-Band Trans-Atlantics. The December 16 session (0500-0800) must be regarded as a band-warming party for the serious business to follow, starting on December 23 and continuing thereafter at fortnightly intervals.

The "CQ DX" Contest

This turned out to be the usual Merry Little Affair, with all sorts of people that you normally avoid suddenly becoming very desirable; and, conversely, lots of people who would never call you suddenly deciding that you are much to be sought after. G2AJ (Biggin Hill) put in a multiple entry on Phone, with two

operators. He and G3DAH, between them, collected 96,300 points with 64 countries and 25 Zones. On CW, 'AJ couldn't take it seriously because his health was below par at the time and he had to have some sleep—but, even so, he scored 124,800 points in 32 Zones and 75 countries. Of these, 29 Zones and 64 countries were on Twenty, so you can see that he wasn't even trying!

Many others, including G3ATU, G6QB, G3FXB and G5JU, treated the CQ Contest as a means of improving their 1951 Marathon scores, which fairly

Calls Heard, Worked & QSL'd

leapt upwards. Not on account of any rare or exotic fruit, be it said, but thanks chiefly to a nice ten-metre opening, on the Saturday morning of the CW section, and to a number of the more difficult Europeans who actually wanted to work G's!

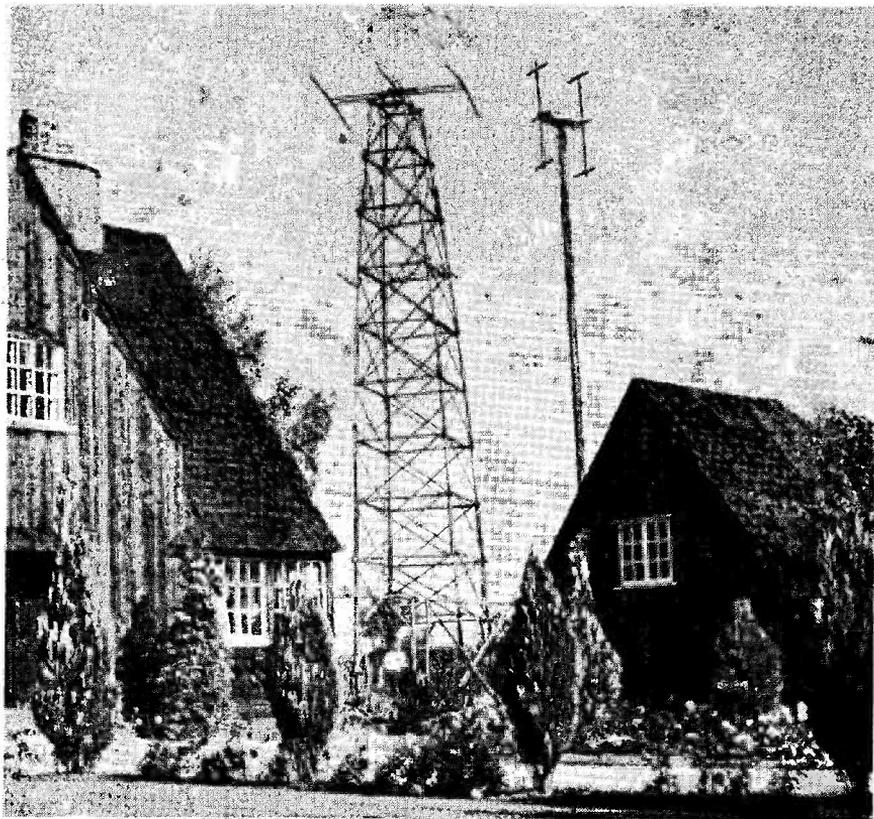
Clots' Corner

A special issue this month, to pay tribute to the Most Notable Clot of 1951. This was a gentleman working on 7 mc and calling himself "AC4Y." He gave his QTH as Post Box 4850, Lhasa (!) and when asked why he didn't use his own call instead of inventing funny ones, he replied: "Dr ob ai use my own call and name is Leo." With his signals coming in at RST-568 round about 0900 on Forty, we concluded that Mittel Europa had yet another one to answer for. Somehow the thing that made us laugh most was the idea of 4850 Post Boxes in Lhasa . . . and we're still laughing.

DX of the Month — Twenty

Without the 20-metre band we should have been well and truly sunk this past month or two. It has varied from "dead" to "brilliant," as usual, but has always carried something of interest, even immediately after a spell of Aurora conditions. G2AJ found himself two new ones—FB8BB and ZD6DU, both on CW.

G3ATU (Roker) says the Aurora actually helped him to pounce on VK1BS (Macquarie), and he says nobody's feelings were hurt in the act of working him, unless the W6 gang, into the midst of whom he squeezed, were mildly put out. 'ATU also raised HK1DZ on phone, and missed KW6AR and FB8ZZ (regularly!)



Aerial gear at G3ZI, Chobham, Surrey. The self-supporting wooden tower is home-built, and the beams are a 20-metre rotary and a 10-metre fixed array. The pole carries a 12-element stack for 145 mc, and in addition there is a 267-ft. long-wire aerial for all-band working. A full description of G3ZI will be appearing in our "Other Man's Station" series.

G2DRT (Spalding) noticed last month's comment on HV1AA and writes to say that he QSO'd an 11 station who lives in Rome and works in the Vatican City; this type told him that there is definitely no such call. G3CDC (Sherwood) reports contacts with CE7ZO, CR6AR, FI8KVA (1505), KT1LU and VR2CG (1952). Gotaways were FK8AL, VK1BS and VR2BX, and "funnies" were VQ9AX, XB3A and 4W1AC. The latter, by the way, is said to have been genuine and located in Yemen. Whether he had any connection with 8W4AF, we don't know. Time alone (and QSL's) will tell.

G3FXB (Hove) scoured the band during the CQ Contest and acquired

EA8BF, FF8AC and 8AG, FQ8AE, HP1LA, MD2JB, OQ5RA, YI3ECU and ZC4XP, DX at other times included OX5EL, VP1AA and VS7XG. New ones for G5JU (Birmingham) were KG4AF, OX3UD, PK5AA and FI8KVA. G3DO (Sutton Coldfield) raised HS1UN and ZS7C, both on phone.

G2HKU (Sheerness) collected EA8BF, I1NU/Trieste, HZ1KE and 1HZ, TF5SV, SU1GY, VQ4DO and 9S4AX, the latter being a new one. Those he missed were FF8AG, KG4AAE and VQ2AB. G5FA (London, N.11) worked HS1UN, KG6AAE and 6AAY, and also 3A2AG on phone.

GM3HLQ (Glasgow) is a new reporter, and he asks why all the bug

keys in the world seem to gang-up on him when he comes on. (It does seem like that, sometimes!) He is surrounded by hospitals, the nearest one being two hundred yards away and a fine radiator of X-ray and diathermy noises. 'HLQ worked TF7SF and KTIOC, and thinks he was having his leg pulled. We should say not, as that TF7 has been heard around the bands, and KT1 is the new prefix for Americans in Tangier.

Various people comment on the uncanny spell of conditions on November 6. They didn't last long, but the 20-metre band was completely upside-down in the morning and afternoon. For a start, we had an S8-9 report from a VK who was only S5, followed by an S3 report from a ZL who was S8—and these "one-way" conditions usually mean something interesting. Sure enough, by mid-day the band was chock-full of DX; along with the usual W2's were VK's,

ZL's, DU's, VS6's and FI8KVA fairly pouring in with an input of ten watts. Then up came a PY, round about 1215, so that it only needed an FA or CN to give an almost instantaneous WAC at mid-day! The late afternoon brought in a fine signal from FB8ZZ and very little else, and by 1800 the band was normal or slightly sub-normal.

Various Antipodean spies employed by this department tell us that FH8AB is good, and is situated in the Wallis Islands. It looks as though the old FW8AA was "unofficial" and that the FH prefix has now been allotted. (We don't care what the prefix is—we'd like to work 'em, anyhow).

Other tantalising trifles: VR7AA is said to be active on Nauru, and genuine; LB8CH is still to be heard from Jan Mayen; 4W1AC says "QSL to W2YEJ"; and ZD7AC has been heard but is regarded as slightly doubtful.

Forty Metres

And so to the 40-metre band, which hasn't been so good of late. This time last year it was fairly oozing DX in the early evenings, but this year it's only the night-owls who seem to squeeze anything at all out of it.

Sundry "pickings" resulted from the Contest, of course, but nothing of enormous interest. G3ATU worked a GD3, IS1CXF and VP5BN. G3FXB managed to find CN8, EA9, FA, HZ, LZ, MD2, ZC4 and 4X, but Gotaways included VQ2GW, VU7FK, Y13EFE and ZS5U. LZ1AA and EA9AP were likewise snapped up by G3ABG (Cannock). G5JU worked HZ1KE, OX3GD and SU1AD.

G2HKU heard EQ3B (RST-453!) and worked a YU and a VE. G5BZ (Croydon) had contacts with KV4, Y1, ZC4, ZL and ZS. G3HMC (Yeovil) heard some PY's and ZE3JP, but didn't manage to work them. G5FA did quite well with KZ5RG, OX3RD, SU, HG, VS7NG and others.

On the whole, the band is not attracting the DX stations as it did last year, probably on account of the further encroachment of what we can only call Pirate Broadcasters. We know that 7100-7300 is a shared band, but this wouldn't account for BC stations on 7015, 7025, 7040 kc and generally all over the place. Wonder who listens to these manifestations?

DX on Eighty

There has been some DX on 80 metres, despite the bad conditions; but

ZONES WORKED LISTING

POST WAR

Station	Z	C	Station	Z	C
Phone and CW			cont'd.		
G6ZO	WAZ	235	G3GUM	37	149
G6RH	WAZ	229	G2FYT	37	143
G6QB	WAZ	220	G3ABG	37	141
G4CP	WAZ	213			
G3ATU	WAZ	212	G2YS	36	135
G3DO	WAZ	209	G2HKU	36	128
G5YV	WAZ	205	G3CIZ	36	127
G8IG	WAZ	200	G6TC	36	118
G2FSR	WAZ	196	G2DHV	36	109
G2VD	WAZ	171			
G5GK	WAZ	163	GM3CVZ	35	114
G3BI	WAZ	162	G3HDA	34	103
G3TK	WAZ	157	GM3EDU	32	114
G3AAM	WAZ	154	G2BBI	30	101
G2IO	WAZ	154			
G3YF	WAZ	152			
G8IP	WAZ	144			
G3AZ	WAZ	133			
G5BJ	WAZ	126			
G5VU	WAZ	124			
			Phone only		
G2AJ	40	208	C8IG	39	170
G5BZ	40	200			
G2WW	40	183	G2AJ	38	170
G8KU	40	163			
G3FNJ	40	150	G3DO	37	166
G3BNE	40	134	G6WX	37	135
G5MR	40	130			
			G8QX	36	139
G3BDQ	39	172	G3COJ	36	134
G5FA	39	162	G2WW	36	134
GM3EST	39	158			
G3FXB	39	153	HC2JR	35	171
G2BJY	38	162	G2VJ	34	122
G3COJ	38	157	GM2BDX	34	116
G6QX	38	151			
G3FGT	38	148	G2BBI	30	98

we know they're bad up there when we hear G6GM working ZL'S on *Twenty!* G5BZ worked 4X, ZL and some new Europeans; G6QB managed just about the same.

G5MP (Hythe) tells us that during the Contest week-end he heard or worked the following: FF8AH, KP4KD, KS4AQ, KV4AA, VP5BF, Y12DK, ZC4XP, ZE2JJ, ZS2A, ZS5U and some 4X's. Other queue-forming stations, he says, were LX1JW, 3A2AG, 9S4AD and 9S4AX. But G5MP still thinks conditions very poor, and adds: "During the 1930's, using an 0-V-1 in a mid-London boarding house, the 80-metre band was packed with W's up to S5, though they were mainly using 210-type valves. Now, with 813's at their end and HRO's this end, plus a country location, one is lucky to find three of them during a search of the band."

G3ABG's activity on Eighty brought him in several new Europeans, plus FA8DA and 4X4RE. G3FXB had about the same kind of luck, but he missed out on LX1JW. G3ATU also filled in some European gaps and added AG2AK and EK1CW. GW3HHO (Swansea) worked an 11, 3A2AG and other Europeans. (Incidentally, it looks as though the Italians are now licensed for the band; we worked one and immediately got a card direct, saying "first G worked on 80"). G5FA managed 12 new countries—mostly Europeans—during the Contest.

An interesting note from G5UJ (Rotherham) is that he runs 6 watts of phone on "80," which has taken him over most of Europe; he has also worked OY, VE and VO on the same rig.

And G5RY (Liverpool) reports that on November 17, 0745 GMT, he raised ZK1AB for his first DX of the winter on Eighty—and very nice, too.

Ten-Metre Openings

It seems to be the general opinion that Ten has been rather better this year than last. Certainly, when anything happens to stir up a little CW activity, the band appears to be in pretty good shape. On phone there is plenty of activity all the time, but almost entirely with South Africa and South America until an East-West opening does present itself.

The Saturday morning and afternoon of the CQ Contest (November 3) pro-

TOP BAND TRANS-ATLANTIC TESTS, 1951-52

This is the last opportunity to remind readers that this season's series of Trans-Atlantic Tests starts on December 16. Full details are as follows:

Dates: December 16 and 23, January 6 and 20, February 3 and 17.

Times: 0500-0800 GMT: W/VE stations calling from 0500-05, 0510-15, 0520-25, and so on; European stations calling 0505-10, 0515-20, and so on.

Frequencies: W's and VE's in the 1800-1825 kc band, and also a few distant W's in the 1975-2000 kc band. Europeans in the 1715-1795 kc band, with, it is hoped, a restriction on CQ's in the 1775-1795 kc section.

Log Sheets: Log Forms, together with full details, available from *Short Wave Magazine*, 55 Victoria Street, London, S.W.1.

A post-card marked "Top Band Test Schedule, Please," with a large S.A.E., is sufficient.

duced some roaring activity, but, by contrast, the Sunday was dead. (This refers to CW, of course.) On the Saturday, G6QB managed to work such DX as VK6, VQ2, ZE, HC, CR7, KP4 and ZS, pushing up the Marathon score for this band to 42. G5JU leapt up to 44, and contacts included CE1AJ, CR7AD, EL10A and HZ1KE. G2BW (Walton) collected VK6, ZE, VQ2, LU, PY, HZ, MI, ZC4 and the like. On the Saturday referred to he heard 36 countries in 17 Zones on the band.

The star turn, however, was our phone specialist, GM2DBX (Methilhill), whose Marathon score for Ten now stands at 62! He worked several Europeans for the first time this year, and the DX part of it included CR6, CR7, MD2, VP6, ZD6, ZS7, ZS9 and others.

G3ATU worked VP6 and MD2, but missed PJ1UF, PZ1RM, ZP4BB and ZS7C, which was pretty hard luck. G3FXB raised CR7, FF8, HZ, MI, PY, VQ, ZC, ZE, ZS and the like—all, as he says, with the greatest of ease compared with *Twenty* or *Forty*.

Over

Top Band News

From GW3FSP (Rhigos) we glean the following authentic gen. about the GW/ZL tests. 'FSP was heard in ZL about a dozen times, the peak hours being 1850 GMT and 0720-0740 GMT. Strengths varied from RST 229 to 459. The first occasion was October 2 and the last October 19. G6GM (Hols-worthy) carried on a little longer, having been heard on October 16, 18, 19 and 22. ZL1AH has also been hearing W9CVQ (569, many times), W1BB and KV4AA. W1BB was heard by the GW boys, RST-569 at 0800 one Sunday morning in October.

For further DX news, see "News from Overseas," including an interesting offer of co-operation from 4X4CJ.

Otherwise the band has been in normal shape for the time of year. G2HKU, for instance, heard several OK's and an HB9 one night. Not many other countries in Europe are using the band now, with the DL2's excluded and the OZ's permission also cancelled. 'HKU tells us that our old friend DAC came up during a recent Top-Band contest, and asked all and sundry to move off 1885 kc. He did this very nicely, giving everyone an RST report, but was kept busy doing it for a long

FOUR BAND MARATHON

(STARTING JANUARY 1, 1951)

Station	Total Points	3.5 mc	7 mc	14 mc	28 mc	Countries
G3ATU	290	35	89	151	15	157
G6QB	277	30	68	137	42	156
G5JU	266	32	71	119	44	134
G3FXB	265	32	79	131	23	143
G2AJ	262	36	57	124	45	134
G5BZ	256	30	61	148	17	152
G6OX	239	37	78	103	21	123
G5FA	217	27	74	109	7	120
G3ABG	203	30	65	83	25	103
GM2DBX	184	1	30	91	62	108
G2BW	171	14	38	91	28	100
G8KU	149	16	28	96	9	101
W2WC	148	22	35	84	7	91
G6TC	137	14	37	71	15	77
G8IP	133	12	50	63	8	86
G3COI	107	19	18	68	2	75

(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).

time. Then, one Saturday evening, he was heard on 1875 kc, asking a phone station to move off.

All this prompts us to ask, not for the first time by any means, why more Top-Banders don't use the 1715-1800 kc portion at all? Compared with 1850-1900 kc, it's an absolute vacuum.

G5UJ (Rotherham) has been on One-Sixty with 5 watts for the last 18 months or so, and with a 66-ft. wire operated Marconi-fashion, has worked 9 countries and 43 counties.

The WAE Award

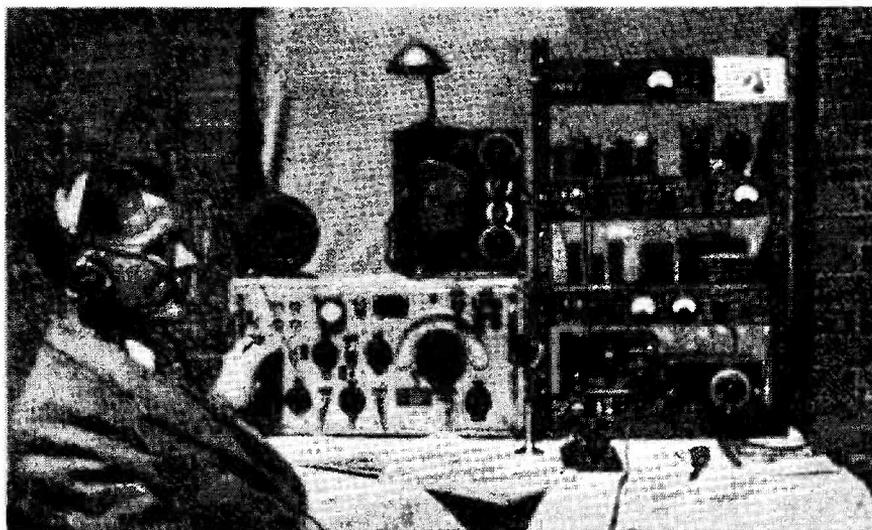
Several more enquiries about the exact details of the WAE Award are to hand. We understand, however, that the rules were amended on September 1 and that, among other things, it now costs roughly ten shillings. We suggest that anyone interested should write direct to DARC, WAE Manager, Fuch sienweg 51, Berlin.

News from Overseas

W1BB (Winthrop, Mass.) has been working hard on the organisation of the Trans-Atlantics on that side, and has visited VE1EA, who, he says, acts as Watchdog for the W's. If any European DX is about, Clarry of '1EA hears and works it about an hour before it gets to the W 1st. District. W1BB has been heard by ZL1AH on the Top Band, and so has W9CVQ, so there is no doubt that it will be a mighty interesting season.

ZE3JO (Salisbury) confirms the rumour that VQ1AA will be active round about now—operated by VQ4RF and a W5. 'JO understands that VQ1AA will be on 10 and 20 metres, phone only. Interesting contacts of late have been with FB8BB and HS1UN on 20 metres, plus a 40-metre QSO with ZD6HN. ZD6EF is active on Twenty. ZE3JO is in the act of moving to a six-acre plot 5000 ft. above sea level, so his 25-watt signals, already very good, are likely to improve!

ZE4JC, also in Salisbury, has been working with 24 watts of CW, 15 watts of phone, and an Echophone receiver. He made WAC on 20-metre phone within a fortnight of having worked his first DX station—VS1EH. Nice ones on CW have included 3A2AC, HS1UN, KB6AF, FR7ZA, FB8BB, EA0AC, KL7PI and lots of KH6's. He tells us that KH6 is one of the easiest countries to work from ZE-land, and ZL one of the hardest. There are so many applications for licences out there that the



G3FAY, Ipswich, says that he runs an unpretentious 25-watt rig for Phone/CW operation on all bands 10-80 metres, using straightforward circuitry without any frills—and very nice, too.

PMG is clamping down, and future aspirants will have to take a Morse test! (*Whew!*)

VK2NO (Sydney), a very old timer and an ex-G (in fact, ex-G6XG), has same interesting comments. He says we don't know what QRM is, for one thing. Within two miles he has sixty licensed amateurs, and within 500 yards there are seven very active DX'ers. They also suffer, Down Under, from "blokes who are phonetically warped and can't speak the King's English." VK2NO says "I gnash my molars at these morons who talk about 'Victor Fiddley Oboes' and 'Six Victor Six Georges.' And what about the idiot I heard calling 'Charlie Queen Dog X-ray'?"

He would like to see the formation of an "Ex-G" Club for all those who once held G, GM or GW calls and are now overseas. *Will all those in favour please drop a postcard and say so?*

4X4CJ (Tel-Aviv), who will probably have visited this country by the time this appears, is quite determined to stir up the Top Band this winter. He thinks he will be on for the Trans-Atlantics, using 35 watts and a 277-ft. aerial. For the purpose of working G's, he is prepared to come on at any time, and we have suggested to him that midnight might be as good as any. The 0500-0800 GMT

period will be a trifle late for him, as his sunrise occurs round about 0500-0530 in December and January. He is quite prepared to stay up all night and will arrange individual schedules on Saturday and Sunday mornings with anyone who wants them.

HC2JR (Guayuquil) writes that he follows this "Commentary" with interest, and he welcomes the proposed re-appearance of the Four-Band Table on a post-war basis. His point is that this method of scoring gives due credit to those who explore possibilities on all bands, instead of specialising on one or two. HC2JR also sends in a good score for "Zones Worked, Phone Only." We would like to see more such entries from overseas readers, though we know that it is 3.5 mc which is the factor with many of them.

MD1BA (Benghazi) tells us the glad news that the MD1 licence position has been rationalised at last. Two official licences have been issued, John Bull being MD1BA, and E. Angell being MD1VK. Civilians who are licensed in Cyrenaica will be given the prefix MC1, instead of the former MT1. MD1BA has found 14 mc the best band, and, with his 60 watts, has been getting "5 and 9" from KG6AAE and KG6AD. A 28 mc beam is in preparation.

VS6BE reports that XU6F is genuine but *sub rosa*; the QSL address he gives is good. W4GD (Memphis) writes to ask our help in prising cards out of GD3UB, HZ1KE, VK9XK, VR1C, VR2CD, VS6AE, VU2GB, YO3RI, ZB2A and ZS3K! Beyond printing this, there is little else we can do.

VQ4CW (Nairobi) is ex-G3GWD and, with a B2 assembly and dipole on 14 mc CW, is looking for G's in the London area. In about two months he has worked 10 desirable prefixes, and he promises to be a 100% QSL station.

A Warning

We have recently been informed by the GPO that the recording of amateur transmissions and the practice of playing them back over the air is *contrary to the terms of the amateur licence*. In view of the growing popularity of this practice, we feel that full publicity should be given to this statement, for the benefit of those who might, in all innocence, jeopardise their licences.

Miscellany

The "multiple QSL card" phenomenon is mentioned by GM2DBX, who has received six cards from different operators at OX3BD, and has worked nineteen different operators at MB9BJ!

G3DXC (Watton) recently worked ZB2A for his first ZB2 contact, and five days later walked in to collect his card

THE SHORT WAVE MAGAZINE DX AWARD

We are happy to announce that the first Certificate for the SHORT WAVE MAGAZINE DX Award goes to G2PL, Peter Pennell, 122, Foresters Drive, Wallington, Surrey.

His cards have been checked by the judges, who are satisfied that he has an actual surplus of QSL's for countries worked in accordance with the rules.

To remind readers of what the Award implies, it involves proof of the following:—

- 1) Three continents, 15 countries on 1.7 mc
- 2) Five continents, 40 countries on 3.5 mc
- 3) All continents, 80 countries on 7 mc
- 4) All continents, 180 countries on 14 mc
- 5) All continents, 90 countries on 28 mc

Our hearty congratulations to G2PL for the work that brings him Certificate No. 1.

in person, much to the surprise of ZB2A. 'DXC tells us that there are only two licensed calls on The Rock at present—ZB2A and ZB2C. He was very pleased with the amount of DX available down there, where the South-West path remains open all night and the South-East DX pours in all day. Finally, 'DXC tells us that DL4IA will be operating from Andorra for a while—but possibly before you read this.

The former G3ZP, of London, S.W.10, is at present *en route* for New Zealand, where he hopes to lose no time about acquiring a ZL call. Meanwhile, he sends his 73 to all the Top Banders he has had the pleasure of working while G3ZP.

G2BSA (Looe) kindly supplements the gen. about VQ1RF. The story, as he has it, is that VQ4RF, VQ3PBD and W5HBM will be running the "expedition," using Collins equipment on 10, 20, 40 and possibly 80 metres. The power will be 100 watts, the aerials a rotary and a Vee-beam, and the frequencies near 28200 and the HF end of Twenty. "Phone only" seems to be indicated.

G3GUM (Formby) passes on the information, from SP1JF, that SP, or SR, 3FB is a pirate and will not QSL. He adds that ON4QF is being highly mysterious about a forthcoming expedition of his, which will put a European country on the air "which has never had a licensed amateur, even before the war." Now where could that be, d'you suppose? The beans are at present unspillable because delicate negotiations are in progress.

QRP Notes

Referring back to the query, "Could It Be Done Now?" (see last month's "Commentary"), we are informed that in the best QRP circles 2 watts is regarded as QRO and that it certainly *could* be done now, and with less power. G3HMC, who has not been on the air long and has been mostly on 3.5 mc, has worked a few G's using 1 watt, a PA with 5 watts and several more with less than 8 watts. We had better define "QRP," for the present, as "anything less than 1 watt," and shall await claims of DX records with interest. (We could start it off with a ZL on 28 mc CW in 1949, but we opened up with 25 watts and deflated, so it shouldn't really count.)

Countries-That-Don't-Count

Last month we said the situation over DXCC was a trifle obscure. G3DOG (Brentford) kindly comes to the rescue with a post-card direct from ARRL Headquarters, and G3BID (London, N.W.3) confirms the information. The gen. is that the following countries, if worked after December 21, 1950, *do not count*: PK, FI, EP/EQ, AR, PJ, HS, J and OE (excluding Allied occupation forces stations in the latter two).

This is about what we suspected, particularly as we have HS and PK cards waiting for another DXCC sticker!

As an antidote to this sad news, we are told that a genuine YA station will be operating for about two weeks, and that the call will be YA3UU. If you hear him, don't assume that he's another phoney.

General Patter

G2YS (Chester) has moved to a new QTH and has perforce been off the air. But he will be back, complete with a 265-ft. long wire, which should do him some good in the Trans-Atlantics.

G3FXB has made a suggestion which we are very glad to see, since it is just what we intended to do in any case! He wants to see the old Four Band DX Table returned to prominence after this Marathon finishes; on a Post-War basis, just as it was when it left off. He also suggests that the present "Zones and Countries Worked" table should be made the subject of a 1952 Marathon, which we were also going to suggest.

After all, Zones 17, 18, 19 and 23 are "out" from now on, and a WAZ Table, starting on January 1, 1952, would give everyone an equal chance. Likewise, there would be no obligation to work on bands one didn't like, as Twenty alone should yield quite a good score for the book.

So that's the form; starting with the February issue we will present a WAZ Table in the form of a 1952 Marathon, and the Four-Band Table as before—that is, Post-War scores on all four bands, with the total deciding the order on the ladder.

Finale

This deadline business is going to be very tricky. You had warning last month, but may have forgotten, that the deadline for the January issue will be **first post on Monday, December 10**, which means sitting down and writing



An impression of FF8PG, Dakar, French West Africa. Unfortunately, he gave us no details when sending this print.

right now. This has been forced on us by the Christmas recess and all that that implies. So if we are a bit scanty in letters next month we shall have to get Arabackle Oblifork, I. McLott and El Bugg to write this feature for us. We, and the above unlovely trio, all join in sending you warmest Christmas Greetings. May you become more healthy and prosperous every time you send the magic formula, "Mri Xmas," from now on! So we will now say 73, BCNU, Good DX and—"MX."

GIFT SUBSCRIPTIONS

No apology for drawing attention to the sort of Christmas present which would be exactly right for your overseas friend or DX contact—a year's subscription to *Short Wave Magazine*, which costs 24s. post free for 12 issues, despatched on publication day each month to any address in the world. Order on The Circulation Manager, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

"THE OTHER MAN'S STATION"

We are always glad to have station descriptions for this feature, which has appeared almost without a break for more than five years. All we want is a clear, sharp photograph or two (dark, blurred or fuzzy impressions cannot be used) with detailed notes on the gear shown, amateur activity generally and the results obtained. We write the story from the data given—and pay a generous fee on appearance in print.

ABSTRACTS OF INTEREST

CURRENT TECHNICAL DIGEST

Each month we present brief references to useful practical articles appearing in the overseas radio press. These publications can be obtained on a sterling subscription basis on application to: Gage & Pollard, Publishers' Agents, 55 Victoria Street, London, S.W.1. We are informed that single copies of the periodicals mentioned can NOT be supplied.

CQ, July 1951

A simplified and improved break-in system is described by KP4IY. Basically, the method used is to key a relay, the coil of which is shunted by a biggish condenser. Thus when the key sends several dots the relay, in effect, sends a long dash. The relay contacts are used for switching the oscillator on and off, while the actual key operates the amplifier. This makes break-in working possible without the considerable disadvantages inherent in most methods of keying an oscillator, since the oscillator is not required to follow the keying, but only the main groups.

RADIO AND TELEVISION NEWS, July 1951

A compact 10-metre mobile installation, described by W6CQU, is indeed, compact enough to be mounted under the dash of the average car. Miniature valves are used throughout, with a 6AQ5 as the final and another as modulator. The RF output is stated to be 7 watts. The receiver consists of a crystal-controlled converter working into the car radio, and giving three wave ranges: 28-29 mc, 28.5-29.6 mc, and the standard broadcast band. The results claimed for this little mobile are extremely good, including contacts with 19 States, and KP4 and KZ5 while in motion—all in a period of three weeks.

QST, June 1951

Practical D.S.R.C. Transmitter Design is discussed in a significant article by W1DF. "DSRC", meaning "double-sideband reduced-carrier" telephony, is a group of bands that will be coming into increasing use on both sides of the Atlantic. The design in question employs grid modulation of a 3.5 mc transmitter using a pair of 807's, and although the entire input (RF and audio) averages less than 100 watts, the power output on the sidebands is almost the same as would be obtained from the same valves at full anode-modulation rating. A typical set of operating conditions shows that anode current without modulation is 35 mA, and with full modulation, 93 mA. Carrier output is 5 watts, and side-band output, with full modulation, 37.5 watts. These figures are significant enough to stir up another controversy among "fanciers" of the more popular modulation systems to-day.

QST, September 1951

An interesting article on Receivers for Radio-Controlled Models, by W3NPS and W3LQE/2, includes a discussion on the relative merits of four types that have become popular. These are the "gas triode" type, the quench-type super-regenerator, the combination of "squegg" and quench,

as used on the 70 cm. band, and an advanced design having one super-regen stage, one voltage amplifier stage, and a power amplifier. This is used for the tuned-reed selective audio control system, and a complete three-channel model weighs only twelve ounces (or 23 oz. with batteries and servo mechanism).

RADIO AND TELEVISION NEWS, June 1951

A table-top transmitter, with band-switching over four bands, and single-dial control with an output of 100 watts, is described by W0LQS. An 826 triode is used for the final, preceded by a 2E26 as a buffer, a 6AG7 as a doubler, and another 6AG7 as a Clapp oscillator, also doubling in its output circuit. A two-stage modulator provides for NBFM on all bands, and the two separate power supplies are both fully stabilised. It is not claimed that the transmitter is fully TVI-proofed, but all low-voltage and AC leads are run in screened wire and precautions have been taken with bypassing. As all the components are on and under the one chassis, the wiring is reduced to the absolute minimum. Specifications are given for winding the 22 coils used in the complete outfit!

PROCEEDINGS OF THE I.R.E. July 1951

An article on "Polycasting" by R. M. Wilmotte, may seem to have only a remote connection with Amateur Radio, but the ultimate consequences of such a system may well be far-reaching. Polycasting is a term applied to the system of broadcasting from a large number of low-powered stations (usually on the VHF or UHF bands). It has already been proved that far more power is required to cover a large area from a single station than from several smaller stations. At present, the main application of the system, as applied to the U.S.A., is to serve rural areas by locating the stations in small towns suitably chosen to give the type of coverage needed. BCI has almost ceased to be a problem in the USA, but it seems possible that TV will develop along these same lines—hence the rather interesting angle on Amateur Radio. Whether the TVI problem will be aggravated or ameliorated by such a system is difficult to forecast.

RADIO ELECTRONICS, July 1951

The many amateurs whose work is concerned with radio servicing will be interested in a suggestion by Joseph Zelle that the well-known BC-453 receiver can be used as a "Service Aid". He points out in a short article that it covers the IF's commonly encountered in most commercial superhets, and can be used as a signal tracer by coupling its input to various points in a defective receiver: it can also be adapted to the lining up of IF's. In fact it can be treated as a kind of low-frequency meter, and makes all kinds of IF checking very easy.

Will Your Station Pass an Insurance Inspection?

FIRST CLASS OPERATORS' CLUB

President:

GERALD MARCUSE, G2NM

Hon. Secretary:

S. G. MERCER, G2DPY

With the appearance of these notes, the Club will have passed its fifth year of post-war activity. The register shows a total membership of close on 350, spread over 32 countries.

Another anniversary has been the fourth Annual Dinner, held in London on December 1st, which was attended by a contingent of overseas members, including several from Holland. The Dinner will be fully reported in the next appearance of these notes.

Administration

At the close of the Club's financial year, some changes in office holders are taking place. G2ZC, Honorary Secretary since the post-war restart of the FOC, and G5PS, who later joined him to act as Assistant Hon. Secretary, are retiring from their onerous positions after long service. It is on these two members that all the work of the Club has fallen in the last few years, and members well know that the success of the FOC has been due to the untiring effort and enthusiasm of G2ZC and G5PS. One important result is that a smooth-running organisation can be handed over to their successors.

G2DPY takes over from G2ZC as Honorary Secretary, and to G3JZ falls the responsibility for the production of the monthly Circular Letters. Members will wish success and good fortune to their new office holders.

Committee

The present Committee have offered themselves for re-election, but as additional nominations have come in, a ballot will be held during December. The December issue of the C/L will contain a ballot paper, which will be posted to every individual member.

Marathon Contest

At the time of writing, logs were still coming in, but judging from only a few of those seen, activity seems to indicate that this year's contest has been a real "Marathon," as several claim points running into three figures.

The Contest opened on October 14 and closed on November 3, during

which time members selected 50 hours of watch, to suit themselves.

During this period of time, one point could be claimed for working any other member of the club, on all bands on which the station was licensed to operate.

Activity

Club members have not been idle, and we are happy to put on record that the headline news in the Editorial and in "DX Commentary" in the November issue of *Short Wave Magazine*—the new result on the Top Band, between Britain and New Zealand—features two FOC members, namely, GW3ZV and ZL1AH (ex-G3AH).

Less spectacular, but not without interest, is the fact that the Four-Band Marathon Table, in the same issue, shows two members taking 1st and 2nd places, with four others in the same table, out of a total of 16 call-signs.

Family Members

Amongst the call-signs of new members will be seen that of G3HUD. While the club contains more than one combination of father-and-son, it cannot often fall to the lot of many clubs to have on their registers a father-and-daughter, so the event may be a rarity. G3HUD is the daughter of that Old Timer G5HU, perhaps better known as ex-G15HU.

Election Notice

In accordance with the Rules of the First Class Operators' Club, the following are declared elected to the active membership list:

E. Storer, OZ7BG (Soborg);
W. T. Pickard, G8KP (Wakefield);
T. A. Macaulay, GM3GOF (Eiderslie);
H. J. Gratton, G6GN (Bristol);
Miss M. Holden, G3HUD (Sheffield);
D. O'Connor, G3GIO (Guildford);
T. H. A. Withers, G3HGE (London);
F. H. Lawley, G6ZG (Caister-on-Sea);
D. Rickers, GW3HEU (Wrexham).
A. J. Slater, G3FXB (Hove).

All communications respecting the FOC should be sent direct to: S. G. Mercer, G2DPY, 160 Old Shoreham Road, Shoreham-by-Sea, Sussex.

Random Jottings

By THE OLD TIMER

FROM time to time we hear of a fatal accident in connection with an amateur transmitter, its operator usually being the unfortunate victim. Various safety precautions are well-known and frequently discussed, but it seems that one very important point is overlooked. Is it *ever* wise to use series feed for the HT to the final stage? To obtain equal efficiency with parallel feed is only a matter of using the right sort of choke and condenser, and then one has the whole of the tank circuit at earth potential (in terms of DC). The tank condenser can be mounted directly on the chassis, and the coil can be handled, for band-changing, without the risk of even a condenser discharge. In such a PA the only lethal points are the anode of the valve, and the RF choke connected to the HT, the latter component being either well back on the chassis or underneath it. Series feed, by comparison, is *dangerous*. Why use it—even if you do get an extra three watts into the aerial?

REPENT AT LEISURE

Most so-called “rebUILds” just happen. They take shape in someone’s head a couple of days before everything is pulled to pieces. Then an overpowering desire to get back on the air results in a hurried job which is no better than the one torn apart. A bit of planning—on paper—beforehand is strongly to be recommended, together with a system of marking the wiring and identifying all the leads for future trouble-shooting. How many operators can produce a wiring diagram of the control and power circuits of their own stations? And how many even know which wire is which, without laboriously tracing through to the ends?

CAN YOU QRP?

Far too much power is being consumed for local and semi-local contacts these days. If you work a W on one of those nights when you are both S9, can you reduce power from 150 watts to 50 watts? Tap-switching on the HT transformer is the easiest method, of course, but *don't* use a knife switch and

wire it in a position where anyone (even the cat) can get across it. Heavy-type Yaxleys are excellent, and there are some fine all-enclosed DPDT switches on the surplus market. Failing transformer taps, the old series-lamp method is, of course, quite useful—but take care that it’s only the HT transformer that is so treated! Apart from QRP during a contact, low power is so useful for all kinds of tests; and some TVI-ridden amateurs might be able to get away with 50 watts instead of 150.

MONITORS

In these days of single-frequency QSO’s the vast majority of operators use the receiver as a monitor—suitably muted. This is seldom satisfactory on phone, however, and it seems highly desirable that a good phone monitor should form part of the equipment of every station. A built-in modulation indicator, of course, is also useful and almost essential. Some excellent designs have appeared in our pages from time to time, but it would be interesting to know how many people use them.

ALL-BAND AERIALS

Those who have to “make-do” with an end-fed aerial of some sort can take consolation from the fact that it is this very type that is, inherently, most flexible for use on several bands. The dipole is essentially a single-band affair, and the only centre-fed device that really comes in the multi-band class has to be quite long. Many fortunate people can manage to get up quite a length of wire, but the lead-in point seldom comes anywhere near the centre. If it *does*, some form of extended double-Zepp is strongly recommended; if it doesn’t, an end-fed 136-footer is an excellent five-band job.

MINOR NUISANCES

One of the small annoyances that one has to put up with is the frequent arrival of QSL cards of non-standard size. If one tries to keep the walls tidy, these set some tricky problems. The vertically-polarised types are especially exasperating. One either has to mount them horizontally and lie down to read them, or to set aside a corner for “vertical oddities”—unless one takes the easy way out and files them!

The S.440B on Two Metres

ANOTHER SURPLUS CONVERSION

By R. D. McQUEEN (G3DVP)

RECENTLY the S.440-B transmitter has been offered for sale (without valves) in the advertisement columns of *Short Wave Magazine*. Its circuit normally consists of a 6V6 CO at about 9 mc, two RK34 push-pull triplers to 81 mc and a neutralised push-pull RK34 PA. There is also a modulator using 6N7's. Eight jacks are provided which meter the grid currents of the two triplers and PA, and the cathode currents of oscillator, two triplers, PA and modulator. All coils except the oscillator coil have been stripped by the authorities. The valve heaters are wired up for 12v heater supply but can easily be rewired for 6 volts.

This equipment was bought in the hope that it could easily be modified into an efficient 2-metre transmitter.

Circuit Design

Following G2JU's article in the July issue of the *Magazine*, it was thought that the best approach was to use the 6V6 as an overtone crystal oscillator with a 6 mc crystal, with output at 18 mc, and to run each of the three RK34's as a push-push doubler: The first from 18 mc to 36 mc, the second from 36 mc to 72 mc, and the third from 72 mc to 144 mc, thus avoiding the Sutton Coldfield and Alexandra Palace TV frequencies. RK34's are particularly suitable for push-push doubler duty, since the anodes can be strapped very readily. Also, they are very robust valves and were designed for VHF applications.

Modulator

For simplicity, all the modulator parts were first stripped out, there already being a suitable modulator on hand; furthermore, the characteristics of the incorporated 6N7 modulator were unknown. It will be found that this stripping out can readily be done without interfering with the radio frequency circuits.

This article suggests yet another approach to getting going on the two-metre band. It gives all the necessary details for the conversion of the S.440B, originally designed for operation with the RK34 twin-triode in its doubler and output stages. As will readily be appreciated, the unit when modified as described by our contributor would make an excellent exciter for a 2-metre straight PA, or a driver for 70 cm tripler.
Editor.

Modification

In the diagrams, Fig. 1 is a sketch of the electrical and physical layout of the unit as it was before the original coils were stripped out, and with the undersides of the valve holders upwards; and Fig. 2 is a circuit diagram of the unit after modification. A table for the new coils is given.

Xtal Osc. The coil former was rewound with the coil L1 as shown in the coil table. The earthed crystal socket was disconnected from the chassis and the circuit rewired into the form shown in Fig. 2. This needs a minimum of alteration. The cathode choke and cathode resistor were shorted out.

First Doubler Grids. The original grid coil was missing. A coil L2 was wound as given in the table and wired across the split stator condenser C2, the centre tap being taken to an already existing lead (marked Y in Fig. 1) which goes to the top tag of the back tag panel. A $2\frac{1}{2}$ μF silver mica condenser C13 was also wired across the condenser C2. A one-turn loop of insulated wire was wound round the "cold" part of the coil L1, i.e. near the tapping point, and was connected to the coupling tube at one end of the latter; a similar one-turn loop $\frac{3}{16}$ in. in diameter was placed at the centre of the grid coil L2 and connected to the other end of the coupling tube.

First Doubler Anodes. The anodes of the first doubler were strapped together and taken to the adjacent pin of the split stator condenser C3, across which was connected a $2\frac{1}{2}$ μF silver mica condenser C14 and the 36 mc coil L3 (see coil table). The L3 centre tap was taken to the tag on the base of C3 to which the 1,000 ohm resistor R5

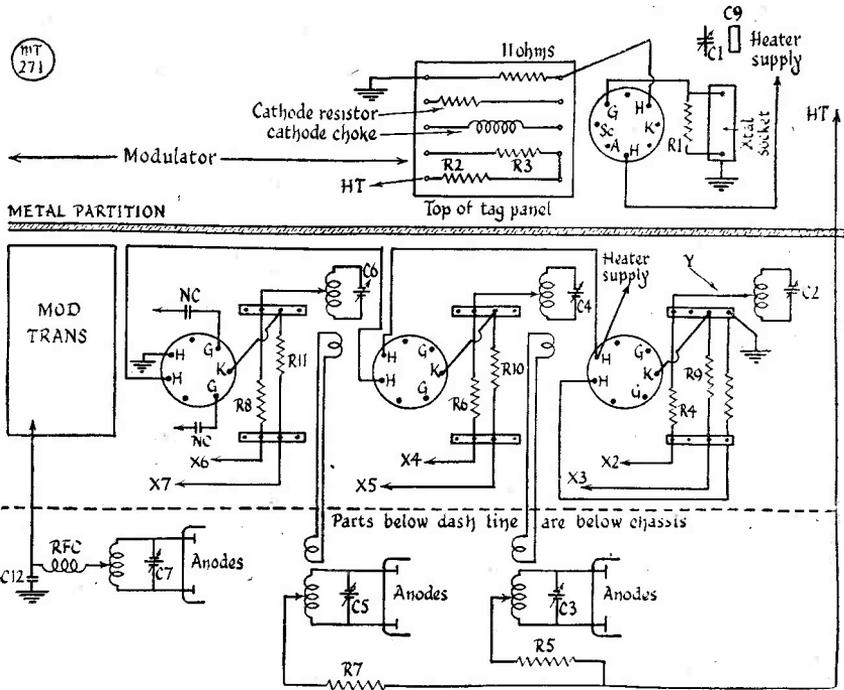


Fig. 1. This sketch is what might be called the electro-physical layout of the S.440B, in that it shows positioning of main items in the unit and the essential wiring detail. Small decoupling condensers are omitted for clarity.

is connected and also earthed via a .01 μ F condenser C10.

Second Doubler Grids. The second doubler grids were wired up in a similar manner to the grids of the first doubler using L4 (see coil table). The anode coil L3 of the first doubler was coupled to L4 down the second coupling tube, using the existing one-turn beaded links centrally placed on the coils.

Second Doubler Anodes. The anodes of the second doubler were strapped together and wired up in a similar manner to the anodes of the first doubler using L5 (see coil table).

Third Doubler Grids. The grid circuit is arranged in the same way as the other grid circuits, using L6, but it was found beneficial to increase the value of the grid leak R8 to 30,000 ohms. The neutralising condensers are not needed, since the final operates as a push-push doubler, and were dis-

connected; as might be expected with such a circuit arrangement, there has been no trouble with instability. The

Coil Table

COIL	No. OF TURNS	WIRE GAUGE SWG	LENGTH	REMARKS
L1	14	22	$\frac{1}{2}$ in.	Wound on original former. Close spaced.
L2	23	20	$1\frac{1}{8}$ in.	
L3	13	20	$\frac{3}{4}$ in.	Turns close spaced
L4	11	20	$\frac{1}{2}$ in.	
L5	7	16	$\frac{3}{4}$ in.	
L6	7	16	$\frac{1}{2}$ in.	
L7	$3\frac{1}{2}$	16	$\frac{1}{2}$ in.	

All coils $\frac{1}{8}$ " inside diam. All wire enamel covered. L2 to L7 are self supporting. L1 is tapped at 3 turns from start end. L3 to L6 are centre tapped.

coupling between L5 and L6 is via the original one-turn links and the third coupling tube.

Third Doubler Anodes. The anode circuit of the third doubler (the final stage) is series tuned, one end of the coil L7 going to the strapped anodes and the other to the nearest tag on the split stator condenser C7. This tag is connected through the choke RFC to the HT line, decoupled by the existing Ceramicon C12.

Jacks. It may be found necessary to change over the wiring of the jacks to allow use of customary jack plugs in every jack.

Setting Up

Disconnect the caps from the anodes of the second and third doublers and apply 300v HT and a heater supply. It will be found that as the CO tuning condenser C1 is moved up from minimum capacity, the output (as measured by the cathode current of the first doubler) increases and then falls off suddenly. Maximum drive is obtained with C1 at about half-mesh. Output can be peaked up by varying C2. The cathode current of the crystal oscillator was about 22 mA and that of the first doubler about 20 mA.

Tune C3 and C4 for maximum grid current in the second doubler; the grid should run back to over 100v negative, say -120v. Reapply HT to the anodes of the second doubler. Tune C5 and C6 for maximum grid current in the final stage, say 3½ to 4 mA.

Reapply HT to anodes of final. Tune C7 for dip, which should be about 22 mA or less off-load. Peak condensers C1 to C6 again. It will probably be found best not to load the CO too heavily in case it fails to come into oscillation every time the HT is switched on.

The cathode of the first doubler seems

Table of Values

Fig. 2. Circuit of the S.440B Unit as modified for Two Metres.

- C1* = 50 μF Variable.
 - C2* = 25 + 25 μF Variable
 - C3, C4, C5, C6, C7* = 12 + 12 μF Variable
 - C8, C10 = .01 μF
 - C9, C11 = .0005 μF
 - C12 = 40 μF
 - C13, C14 = 2½ μF
 - R1 = 47,000 ohms
 - R2, R5 = 1,000 ohms
 - R3, R4, R6 = 100,000 ohms
 - R7 = 10 ohms
 - R8 = 30,000 ohms
 - R9, R10 = 1,400 ohms
 - R11 = 40 ohms
- *Estimated value.

Added Components RS, C10, C11, C13, C14.

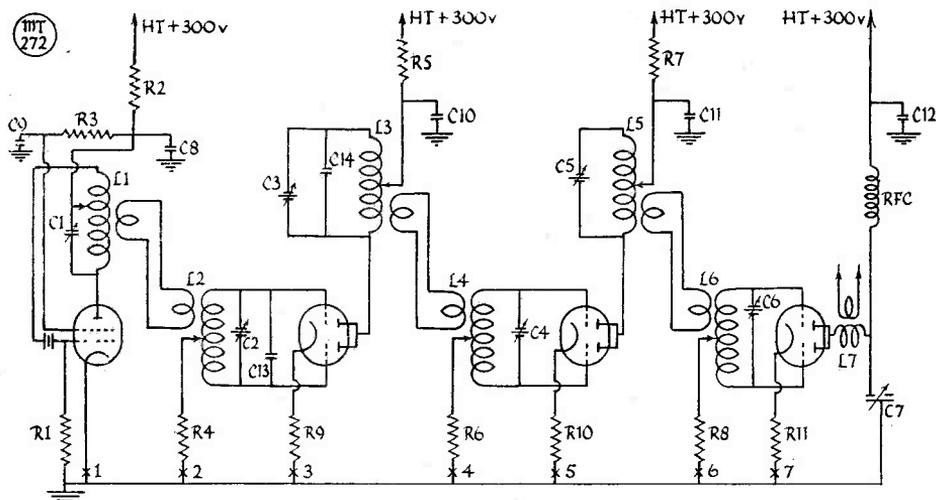


Fig. 2. Circuit of the S.440B as rearranged by G3DVP for output on two metres. X1/X7 are jack points, and the three RK34's are operated as push-push doublers in each case. Ample drive should be available for a straight PA on 145 mc.

the best of the four cathodes to key. The signal should be monitored to make sure that the crystal has, in fact, taken charge.

Results

The RK34 final will draw 80 mA or more when coupled to an aerial or load lamp, but with 60 mA (18 watts) as a more reasonable input, a report has been received from 100 miles of RST-569, using a fixed three-element beam of doubtful efficiency.

The resultant transmitter is neat and compact (14in. x 8in. x 7in.) and its adjustment is remarkably simple. Further, crystals in the range 6000 kc to 6083 kc (or specimens which can readily be ground into this range) are relatively cheap. If RK34's cannot be obtained, VT61A's would probably do equally well, but in this case the valve holders would have to be replaced by 5-pin bases to suit.

The amount of work involved in making this modification is very small, and few additional components are needed.

AMATEUR RADIO IN SPAIN

From G8BI (ex-ZB2A), of R.A.F. Lindholme, we have had an interesting account of a trip to Spain this last summer. A 3000-mile tour brought him into contact with many of the EA's, whose kindness and hospitality overwhelmed G8BI and his wife. Spanish amateurs, of whom there are about 500 now licensed, are under close control and supervision. Maximum power is limited to 50 watts, contact with any country behind the Iron Curtain is prohibited, and no /A or /P working is allowed. Infringement of regulations carries the penalty of fines up to £20! The permitted bands are 80, 40, 20 and 10 metres, and a VHF allocation which includes Two Metres and Seventycems. The normal supply voltage in Spain is 110 AC, subject to considerable fluctuations and frequently cut.



CORRECTION

In the circuit design on p.534 of our November issue — "Multi-Range Valve Voltmeter" — the connection between heater and cathode in the V3, V4 stages is a case of Nerror Crep' In. The cathodes return, of course, through R10 and R14 respectively, and not as shown.

THE SPEED OF LIGHT

The Department of Scientific and Industrial Research — an independent Government organisation established 35 years ago, having its own Parliamentary Vote and presided over by the Lord President of the Council — carries out, as its title implies, research projects over a very wide field and of great importance. One of D.S.I.R.'s responsibilities is the world-famous National Physical Laboratory. Here, interesting experiments have recently been undertaken to check the speed of light. A cavity resonator, of known and precise dimensions, is energised by RF; when the frequency is found at which the time of travel between the two ends of the resonator equals the time interval between successive waves, resonance is obtained. It is then a matter of measuring this frequency, to an accuracy better than one part in a million, and from this to calculate the speed of travel in the cavity. The experiment has proved that the previously accepted speed of light (186,325 miles per second) was in error by 11 miles per second.



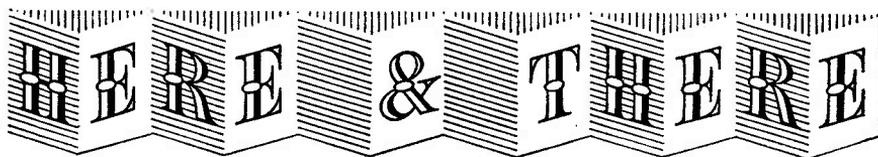
THOSE POSTAL TUBES

These are the cardboard tubes in which we send the *DX Zone Map* through the mail. They are strong, serviceable and make excellent coil-winding formers in the preferred diameter of 2½-ins.! But we find them very difficult to obtain, and if any reader, having extracted his Map, would scribble our address on the label and send the tube back, we would gratefully refund the postage.

CARDS IN THE BOX

Will operators listed below kindly note that we are holding cards for them in our QSL Bureau; as no address for these calls appears in any published list, we are unable to forward the cards. Please send a large S.A.E., with name, address and call-sign, to BCM/QSL, London, W.C.1. If publication in our "New QTH" feature, and subsequently in the *Radio Amateur Call Book*, is also desired, that should be mentioned at the same time.

G2ABU, 2DG, 2DTZ, 3ACZ, 3FCB, 3FRE, 3FSG, 3GSR, 3GTZ, 3HLW, 3HNU, 3HOT, 3HUJ, 3IIF, 5GZ, 5NZ, 5VL, 8PT, 8XY, GI5NO, GM3FRJ, GW2BPO.



Amateur Television

The current (December) issue of our *Short Wave Listener & Television Review* carries the latest report on the activities of the British Amateur Television Club, which now has over 100 members; among those who have joined recently are G2DD, G3AST, G3BIT, G3GDG, G3GMZ, G3HAU, G3IDR, G3XC and DL1BB. The B.A.T.C. exists to further the interests of those engaged in amateur TV transmission, and publishes its own journal, *CQ-TV*. The honorary secretary is M. W. S. Barlow, G3CVO, Cheyne Cottage, Dukes Wood Drive, Gerrards Cross, Bucks.

DX on One-Sixty

This month sees the commencement of our Trans-Atlantic Tests on the 1.7 mc band, with a large number of stations lined up for one of the more difficult DX attempts. Though the magnificent performance of GW3ZV/GW3FSP/ZL1AH/G6GM, reported in the November issue, has perhaps robbed these Tests of some of their interest, the fact remains that comparatively few G operators have yet succeeded in working the States or Canada on the Top Band.

Arthur Milne Spreads Himself

It was the RSGB's QSL Bureau manager who was put up to fire a broadside in reply to the Editorial appearing in our October issue. A ponderous homily, delivered with great uncton by a hard-working official whose own department has for long been the mainstay of the organisation he represents. Disregarding the personalities and the claptrap, A.O.M.'s main points emerge clearly as Representation and Commercialism.

As to the former, the GPO is a Government Department, and as such it will deal (as it must) with any responsible agency on matters of detail connected with amateur licensing. This is the bread-and-butter of the business, and is not the monopoly or prerogative of any particular organisation. Because *Short Wave Magazine* has not hitherto taken a hand in these matters, it does

not mean that we cannot.

On the charge of Commercialism, of which much is always made at every opportunity, A.O.M. is on even less secure ground. The national society is itself operated largely as a commercial publishing concern, in effect financed by its members. That these operations are beginning to involve them in considerable losses—with a much heavier deficit in prospect and the threat of an increased subscription to offset these losses—is no concern of ours, except on the issue of Commercialism.

The reply to that mythical stuff about "shareholders" and "boards of directors" is simply that all who read *Short Wave Magazine* with any degree of objectivity will be well aware that its policies are, and always have been, directed with the interests of amateurs generally as the first, last and only consideration. Indeed, the success of the *Magazine* could not have been attained otherwise. Its status is the measure of the integrity of these policies, formulated against a background of 25 years of experience.

And that is by no means all we have to say about this matter.

Whitaker Electronic Key

Any device which can make the sending of Morse easier and more accurate will be an attractive proposition to many operators. An electronic key comes nearest to fully automatic CW working. In the Whitaker version, a very well-made instrument, the paddle produces steady dashes when held to the left, and dots to the right. Thus, the paddle action is somewhat similar to that of a bug key, but is much easier for the operator; in particular, the timing between dot and dash speeds, and the spacing, is automatically correct. The Whitaker Electronic Key is provided with adjustments for space and speed control and dot/dash ratio. The instrument incorporates five valves, is self-powered (AC) and can be plugged straight into any usual keying circuit. It is quiet in operation and nicely finished in a grey crackle case, adequately ventilated.

VIII BANDS

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

ANOTHER Contest has come and gone. The full results cannot be published until next month, as much checking of distances and cross-checking of numbers, RST's and so on, has yet to be done. But it is possible to confirm, what is already guessed by most participants, that G3BLP is well in the lead. At the time of writing this piece, all other positions are uncertain, and at least six entries will require a careful scrutiny before even the runner-up can be determined. Some 200 stations appear to have been on the band during the Contest period, and, of these, just over one quarter have sent in entries. Naturally, your conductor would have liked a larger influx of logs (even though it would mean more work in preparing the final Tables to appear in the January issue), but, in view of the extremely poor conditions which prevailed during most of the Contest, the entry is really very encouraging.

On the matter of conditions, there appears to be almost complete unanimity of opinion! On the Sunday, when the rain deluged down all day accompanied by a gale, things were at their worst. Some surprisingly long distances were covered, however, under these adverse weather conditions. Many competitors commented on the remarkable consistency of signals from G3VM in Norwich at distances up to at least 170 miles. A glance at the times given by G3VM in his log suggests that his signals were audible in Portsmouth whenever he was

The Contest Preview—

High Activity under Poor
Conditions—

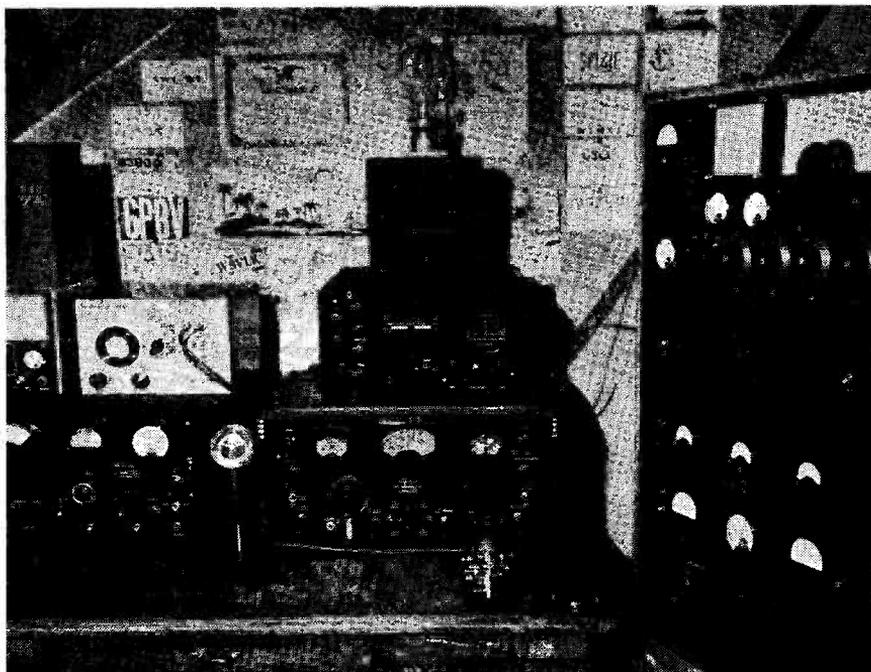
Some Good Seventycem
Contacts—

Station Reports & The Tables

active. For some reason or other, signals did not seem to be making the reverse path, and, from G3VM's point of view, that was rather unfortunate, as there is little doubt that if all the stations heard calling him on the Sunday evening had succeeded in making contact the second position in the Table would not have been in doubt. Your conductor cannot refrain from pointing out that, in contrast with these consistent signals from the low-lying East Anglian country, many of the hill-top stations in other parts of the country were inaudible at over 100 miles under the prevailing conditions and are well down the list.

In view of the generally poor conditions experienced in most Novembers (November 1948 was, of course, an exception) we are proposing to run next year's Contest somewhat earlier. September is probably the ideal month, but many are still on holiday, and we have no desire to clash with the Field Day scheduled for September 21. It is therefore probable that the first weekend in October will be selected. It is time we gave ourselves a break in the matter of conditions.

The scoring system tried this year met with almost unanimous approval; in fact, seldom has your conductor found such unanimity, unless it be on the conditions which existed during the Contest week-end! Many competitors, including some who fared badly, have stressed their desire that we use the same system next year, with no alterations whatever. Only real criticism came from G2HDZ, who says: "It should not be impossible to suggest a more equitable system of scoring which would have regard for power, aerial and height above sea level." Our quick answer to this is that it is up to every competitor who seriously endeavours to be the winner to operate his station at greatest possible efficiency, and it would not be right to penalise operators who use



The layout at ON4UV, Falt-lez-Manage, Hainaut, who is very active on VHF. He holds the ON/PA and ON/F "firsts" on Seventycems, and his other results have recently been reported in these pages. The 70-centimetre Tx uses push-pull 8912's in the output stage, operated as triplers. The receiver arrangement is crystal mixer with GG RF stage, and oscillator injection is GC on 405 mc.

their full licensed power, or who erect efficient aerial systems. If there is any general desire for a QRP 2-metre Contest using indoor dipoles, we shall be only too glad to organise such an event. And as for height-above-sea-level, we can only say that while G2XV and G3WW can score nearly twice as many points as G5BY and GW5MQ, there seems little proof for G2HDZ's further contention that height-above-sea-level has more bearing on the result than any other single factor. In spite of his criticism, however, G2HDZ says he had an enjoyable time and will be in future contests, even if we do not amend the rules.

Once again the Contest demonstrated that there is no comparison between the interest in VHF work in the South and that existing in other parts of the country. Whereas comments from the North include such phrases as "No signals heard at all throughout 24 hours" and "Only heard five stations

throughout the Contest," G3BLP worked 112 *different* stations, of which 80 were at less than 60 miles. G6CB worked 81 stations, 77 of which were less than 60 miles distant. Many other southern stations achieved 40, 50 or more contacts.

A criticism frequently levelled at Contests is the low level of activity which follows. Much of this is, we feel, illusory. After the high level of the Contest period, normal activity is bound to *appear* to be subnormal. The first night or two after the hectic hours of the week-end suffer as the exhausted competitors recuperate, but, excepting these few evenings, we have the feeling that an occupancy check on the band made just prior to the Contest and, say, four or five days after it, would show little difference. No doubt, many readers will differ from us on that. Judging from the remarks which accompanied most of the entries, the superactivity of the Contest was a source of

CONTEST ACTIVITY LIST

Based on logs received for the Two-Metre Contest

G2AHP	Perivale, Middlesex	G3CAZ	Gillingham, Kent	G4OT	Woodham Walter, Essex
G2AIW	Twickenham, Middx.	G3CFK	Gt. Yarmouth, Norfolk	G4PV	Lowestoft, Suffolk
G2ANT	Loughton, Essex	G3CGE	Southampton, Hants.	G4RO	St. Albans, Herts.
G2ATK	Shirley, Warwicks.	G3CGO	Luton, Beds.	G4SA	Steventon, Berks.
G2ATT	Southampton, Hants.	G3CJY	Cherryhinton, Cambs.	G5BD	Mablethorpe, Lincs.
G2BFT	Solihull, Warwicks.	G3CNF	Wanstead, London	G5BY	Bolt Tail, Devon
G2BMZ	Torquay, Devon	G3CQC	Torquay, Devon	G5CP	Sale, Cheshire
G2BRR	South Woodford, Essex	G3CKX	Hillingdon, Middx.	G5DF	Reading, Berks.
G2BN	Kingston, Surrey	G3CVE	Christchurch, Hants.	G5DS	Surbiton, Surrey
G2CBR	Ormskirk, Lancs.	G3CXD	Newcastle, Staffs.	G5HN	Reading, Berks.
G2CPT	Goole, Yorks.	G3DAH	Herne Bay, Kent	G5IG	Linton, Cambs.
G2CRD	Sunbury, Middlesex	G3DH	Bramhall, Cheshire	G5LI	Hampstead, London
G2DCI	Speke, Lancs.	G3DIV/A	Eastbourne, Sussex	G5LK	Reigate, Surrey
G2DD	Stanmore, Middx.	G3DJQ	Coleshill, Warwick.	G5LO	Chiswick, Middlesex
G2DPD	Barnes, Surrey	G3DUP	Northampton	G5MA	Ashtead, Surrey
G2DSW	Southampton, Hants.	G3DVP	Birstall, Lancs.	G5ML	Coventry, Warw.
G2DTO	Tooting, Surrey	G3DVQ	Purley, Surrey	G5NF	Farnham, Surrey
G2DVD	Slimfold, Sussex	G3ECA	Ilford, Essex	G5PY	Clapham Park, London
G2FJR	Sutton Bridge, Lincs.	G3EDD	Abington, Cambs.	G5RP	Abingdon, Berks.
G2FKZ	East Dulwich, London	G3EGV	Farnborough, Hants.	G5RW	Ikeston, Derbys.
G2FNW	Melton Mowbray, Leics.	G3ENI	Kew Gardens, Surrey	G5SK	Coventry, Warwicks.
G2FQP	Ramsey, Hunts.	G3ENS	Loughborough, Leics.	G5TP	Stoke Row, Oxon
G2FTS	Hailsham, Sussex	G3EOH	Enfield, Middlesex	G5UM	Knebworth, Herts.
G2FVD	Morden Park, Surrey	G3EYV	Clapham, London	G5US	Camberley, Surrey
G2FZU	Ikeston, Derbys.	G3FAN	Ryde, I.o.W. (Hants.)	G5WP	Woking, Surrey
G2HCG	Northampton	G3FD	Southgate, Herts.	G5YV	Leeds, Yorks.
G2HIF	Wantage, Berks.	G3FEX	Bramber, Sussex	G6CB	Wimbledon, Surrey
G2HF	Edenbridge, Kent	G3FGT	Birmingham, Warw.	G6CI	Kenilworth, Warwick
G2MQ	Amersham, Bucks.	G3FIH	Radstock, Somerset	G6CW	Nottingham
G2MR	Surbiton, Surrey	G3FMI	Chester	G6GR	Rickmansworth, Herts.
G2MV	Kenley, Surrey	G3FMK	Maidstone, Kent	G6GT	Reading, Berks.
G2NH	New Malden, Surrey	G3FRE	Stanton Hill, Notts.	G6HC	Thornton Heath, Surrey
G2NS	Bournemouth, Hants.	G3PFD	Wandsworth, London	G6HD	Beckenham, Kent
G2OI	Eccles, Lancs.	G3PSG	Clapham, London	G6JK	High Wycombe, Bucks.
G2OY	Pinner, Middlesex	G3FUL	Luton, Beds.	G6JP	Pinner, Middlesex
G2RI	Leicester	G3FUW	Hinckly, Lincs.	G6KB	Checkendon, Oxon
G2UQ	Whittlesey Cambs.	G3FZL	East Dulwich, London	G6LI	Grimsby, Lincs.
G2WJ	Gt. Canfield, Essex	G3GAV	Winchester, Hants.	G6LL	Cuffley, Herts.
G2XC	Portsmouth, Hants.	G3GBO	Denham, Bucks.	G6NB	Aylesbury, Bucks.
G2XV	Cambridge	G3GDR	Watford, Herts.	G6OH	Ascot, Berks.
G2YC	Hendon, Middlesex	G3GGJ	Cambridge	G6QN	Colliers Woods, Surrey
G2YL	Walton-on-the-Hill, Surrey	G3GHI	Purley, Surrey	G6TA	Balham
G2YU	Norwich, Norfolk	G3GHO	Road, Northants.	G6VX	Hayes, Kent
G3ABA	Coventry, Warwicks.	G3GHS	New Malden, Surrey	G6XM	Farnborough, Hants.
G3ABH	Poole, Dorset	G3GMX	Timperley, Cheshire	G6YP	Camberwell
G3ABM	Ellesmere Port, Cheshire	G3GMZ	Charlworth, Surrey	G6YU	Coventry, Warwicks.
G3AGS	Manchester, Lancs.	G3GSE	Kingsbury, Middx.	G8GL	Northallerton, Yorks.
G3AJP	Fritton, Suffolk	G3GUD	Derby	G8HY	Surbiton, Surrey
G3AJS	Forest Gate, Essex	G3GXO	Hounslow, Middx.	G8IC	Doncaster, Yorks.
G3AKU	St. Ives, Hunts.	G3GUD	Birmingham, Warw.	G8IL	Salisbury, Wilts.
G3A00	Denton, Lancs.	G3HAW	Wembley, Middlesex	G8KZ	Kensington, London
G3APY	Kirkby-in-Ashfield, Notts.	G3HBW	Chiddingfold, Surrey	G8LN	Plumstead
G3ARL	Sandown, I.o.W. (Hants.)	G3HCU	Liverpool, Lancs.	G8OU	Ashted, Surrey
G3ASG	West Ewell, Surrey	G3HII	Parkstone, Dorset	G8QY	Birmingham, Warw.
G3ATZ	Chester	G3HVO	Sydenham, Kent	G8SM	Molesey, Surrey
G3AUS	Torquay, Devon	G3HIR	Rugby, Warwicks.	G8SY	Cambridge
G3BA	Daventry, Northants.	G3IS	Chesham, Bucks.	G8RV	Abbey Wood, London
G3BGR	Worcester	G3MI	Norwich, Norfolk	G8VZ	Princes Risborough, Bucks.
G3BHS	Eastleigh, Hants.	G3VM	Preston, Lancs.	GW2ADZ	Llanymynech, Montgomery
G3BK	March, Cambs.	G3VX	Wimblington, Cambs.	GW2FVZ	Caerwys, Flint
G3BLP	Selsdon, Surrey	G3WWW	Wimbledon, Surrey	GW3ENY	Llandudno, Caern.
G3BOB	Euston, London	G4CG	Tonbridge, Kent	GW5MQ	Mold, Flint
G3BOC	Heswall, Cheshire	G4FB	Woodford, Essex	GW8UH	Cardiff, Glamorgan
G3BVG	Ealing, Middlesex	G4FH	Ealing, Middlesex		
		G4HT	Beckenham, Kent		
		G4IJ	Barnsley, Yorks.		
		G4KO	Norwich, Norfolk		
		G4MW	Cambridge		

enjoyment, even in the London area, where the sport of QRM-dodging becomes part of the fun. (Of course, there are those who write to us most of the year deploring the lack of activity, and then when a contest comes along accuse us of organising QRM!)

One or two correspondents have been asking why portable station participation is barred in our annual Contest. The immediate answer is because the Contest is intended for fixed stations! And if that, at first sight, appears to be no answer at all, may we suggest that there are special contests organised for portable stations in which fixed stations cannot compete, and in which fixed stations even find it difficult to obtain contacts due to their lesser points value to the competitors—so it restores the balance somewhat to provide an event confined to fixed stations only.

In any case, the main objective in the development of the VHF bands must be that of finding the way in which they can be used as communication bands for ordinary QSO purposes—since it is two-way communication (on some band or other) which is the main interest of the great majority of amateurs and the reason why they take out a licence in the first place. In this sense, the only fundamental difference between the VHF bands and the LF bands is that the VHF's are much more difficult, and therefore provide the element of challenge and satisfy the experimental interest latent in so many amateurs.

The man who spends time improving the performance of his home station, situated possibly in a poor location from the VHF aspect, deserves encouragement as much as the man who decides his location is no good and therefore gives his time to developing portable equipment which will give him results when operated from a more advantageous site. Admittedly, some fixed stations are in better positions than others and start with an advantage. (Position is not to be taken as a term synonymous for height). If, however, portable stations operating from specially selected sites are allowed to compete, the discrepancy between best and worst locations becomes even greater, and the man whom circumstances compel to stay at home stands an even poorer chance of achieving a reasonable score. May we repeat what we said on a recent occasion, that it is highly desirable that the various contests should have their own individual rules, organisation and

points system, for only in that way are a variety of different types of VHF station catered for.

In concluding this review of the Contest entries, on behalf of all competitors your conductor must express appreciation of the spirit in which the Contest was entered by almost everyone. This is very evident from the logs. It is natural and proper that every competitor would like to see his call at the top of the list, but most of those who participated knew from the start that that was not for them, yet they joined in the fun, endured the QRM and the bad conditions, and in many cases kept at it right to the end. Many logs are accompanied by a comment to the effect that the entrant expects to be at the bottom of the list. Grouses are, in fact, few and far between, and are even then usually couched in half-humorous terms. Some of them appear in "Contest Comment" below, together with other more complimentary remarks.

Contest Comment

"One can almost call the *Magazine* Contest the bright spot of the VHF winter. It certainly puts the Band to bed for its hibernation" (G3CGQ) . . . "G3BLP did not appear to eat or sleep" (G3EYV) . . . "The system of scoring was a great improvement" (G5MA) . . . "I hope this entry arrives too late for counting" (G8QY) . . . "There is no doubt that during contests the Zone Plan is a great help in cutting down the QRM" (G5HN) . . . "Most of the DX was nearly impossible to work owing to phone QRM, several stations not being in the London zone" (G5PY) . . . "I stuck out the period until about 9 p.m. on Sunday and then retired to bed half full of aspirins" (G3GBO) . . . "Certain well-known calls were absent from two metres during the whole week-end" (G3HBW) . . . "For the next contest I will have only *one* change-over switch" (G3HVO) . . . "I was amazed at the complete absence of signals from the south-west" (G3ABA) . . . "Enjoyed every minute I was on and looking forward to the next" (G5NF) . . . "I entered for the contest with loads of enthusiasm, an electric fire and 18 watts. I left the Contest with cold feet, low spirits and a feeling of overwhelming disappointment" (G3GHO) . . . "What about a different time of the year for the next one?" (G3BOC) . . . "I think the second-contact rule gives an advantage to those who need it least"

(G3GDR) . . . "Conditions just couldn't have been worse, could they?" (G2DSW) . . . "The psychology of reference numbers is interesting. What a lot of 222 and 777; 807 and the such-like are self-explanatory. I always use my telephone number" (G5UM) . . . "I was interested to find so much DX workable under such low barometric conditions" (G3BLP) . . . "If there are any vacant spots in the London zone, they did not show up!" (G2NH) . . . "Between TV hours the band was completely filled with colossal signals, but

by manipulating the beam and Rx, the wanted signal could always be copied with little or no difficulty" (G3GSE) . . . "As a contest, I think it was rather a farce; 90% of those taking part had no hope of being in the first three" (G2HDZ) . . . "I think it a mistake to limit contests to fixed QTH" (G4JJ) . . . "Thanks for a most enjoyable week-end" (G3DAH) . . . "I had a really enjoyable time" (G8VR) . . . "Explained to a London station at 10 w.p.m. that op. was old woman and not—repeat *not*—an old man, but he came back with "All OK, old man." (G2YL) . . . "Don't be rushed into agreeing that more space is needed for the London Zone—it would be empty 99.99% of the time anyway" (G4HT) . . . "One station seemed to occupy some time by calling stations which could not be heard by anyone else; this, no doubt, was to try and raise some activity" (G3GUD) . . . "Why is it necessary for a prominent G3 to call CQ for 5 minutes or more and then ignore the half-dozen or so stations calling him and go back to a station who had also just called CQ?" (G5LQ) . . . "One or two stations transmitted Morse of such a type that it is wondered how they ever passed the Morse test" (G2XV) . . . "There's little doubt this year's scoring system gave the contest to the chaps in the highly-populated areas" (G3VM) . . . "My barometer nearly wrapped itself round the stop at the wrong end of the scale" (G3FAN) . . . "Towards the end of the Contest, searching for a new station became somewhat tedious" (G5DS) . . . "It won't surprise me to find my call at the bottom of the list" (G3DVQ) . . . "The band did open at the end of both days, but with much QSB and cosmic noise" (G3FD) . . . "Once again I enjoyed the VHF event of the year" (G6CB) . . . "Weather conditions were foul" (GW5MQ) . . . "I do hope you will run this method of scoring in future contests" (G2OI) . . . "Compared with DX band contests, I thought this was remarkable for the good spirit which was shown by the competitors" (G6TA) . . . "After the VERON Contest it appeared to fall rather flat" (G2BRR) . . . "Bar. went down to 28.83 on the Sunday; wind force 60/70 mph! Pouring rain. Nil DX heard all day!" (G5BY) . . . "Never have I heard so many spurious radiations from indescribably filthy fone!" (G4HT) . . . "I had quite a good time in the Contest" (G5US) . . . "Came Sunday, and with it

TWO METRES	
ALL-TIME COUNTIES WORKED LIST	
Starting Figure, 14	
From Fixed QTH Only	
Worked	Station
54	G2OI
53	G3BLP (500)
52	GW5MQ (186)
51	G3EHV (310)
48	G2AJ (408)
47	G2NH, G3BW (122), G5WP, G6NB, G8SE
46	G4HT (446), G5BY
45	G5YV, G6XM (356)
44	G3ABA (222), G5MA
43	G2XC, G3WW, G3COJ, G5DF
42	G5BD
41	G3BA, G3DMU (192)
40	G3BK, G3CGQ, G5BM, G5DS (297), G8OU
39	G2IQ, G4SA, G5LI (285)
38	G3APY, G3VM (208)
37	G6YU (118)
36	G2FNW, G3CXD, G6CB (312), G8IP (258)
35	G2FQP, G6LK, G8IL (212)
34	G2CPL (288), G3FAN, G4AU, G4DC, G4RO, G5JU
33	E12W, G2HDZ, G2XS
32	G3AVO/A, G3FZL, G6CW, G6UH (267), G8QY, G8WV
31	G2AHP (249), G2CIW, G3HAZ, G5RP
30	G2BHS, G3BOB, G5NF, G8SM
29	G5UM (218), G6CI
28	G2DLJ/A
27	G3AKU, G3DAH, G3GSE, G3HBW, G3HCU, G5ML
26	G2FVD, G3BNC, G3FIH, G4NB,
25	G5SK, G4MR (155), G8VR
24	G2AIQ, G3FD, G3FXG, G3GBO, G8KI
23	G5PY, G6GR
22	G3AEP, G3BPM (189), G3CWW (206), G4RK, G8IC, GM3BDA
21	G3AGS, G3FMF, G5MR, G6XY
20	G2ANT, G3EYV, G8KZ
19	G3SM, G5LQ (176)
18	G3GOP, G4LX
16	G2AOL, G3FRE, GC2CNC, GM3EGW
15	G2AVR, G2DVD
14	G3CYY

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

a rather ominous shortage of DX" (G3HAZ) . . . "If more stations had used CW, I could have worked them" (G3ENI).

Other News

The whole period covered by these notes has been characterised by poor conditions. A few minutes' excitement occurred at G2XC on Sunday, October 28, when, on switching on the TV set at 1700, the sound was found to be accompanied by a loud rumbling noise, and the picture suffering from an unusual flickering. A quick land-line call to G3FAN confirmed that the same phenomenon was occurring in Ryde and that queer things were happening on ten metres. It was obvious that an auroral manifestation was in progress, but in spite of a check on two metres, no unusual happenings were noted, except for a suggestion of the "rumbling" noise in a very weak phone signal believed to be G4KD. The aurora was confirmed by the daily Press on Monday, 29th. No comments on this have been received in any of this month's letters, so it is assumed that either activity was not sufficient or that the auroral reflections did not extend up to 144 mc.

Around the stations, GC2CNC reports still active and says if G3WW wishes to work GC he will be pleased to oblige; he is on 144.13 mc CW at 2200 GMT. On the south coast, G3HVO is a newcomer in Parkstone, Dorset; he is using 15 watts and a 5-element wide-spaced Yagi. G2DSW (Southampton) has been having trouble with 300-ohm line in the rain; he has increased his RF input to 40 watts, but finds the same modulator still gives him reports of adequate modulation.

G3EHY (Banwell) reports things as quiet. He worked EI2W consistently



G3FAN, Ryde, Isle of Wight, who has done well with the GDX, at the base of his two-metre beam.

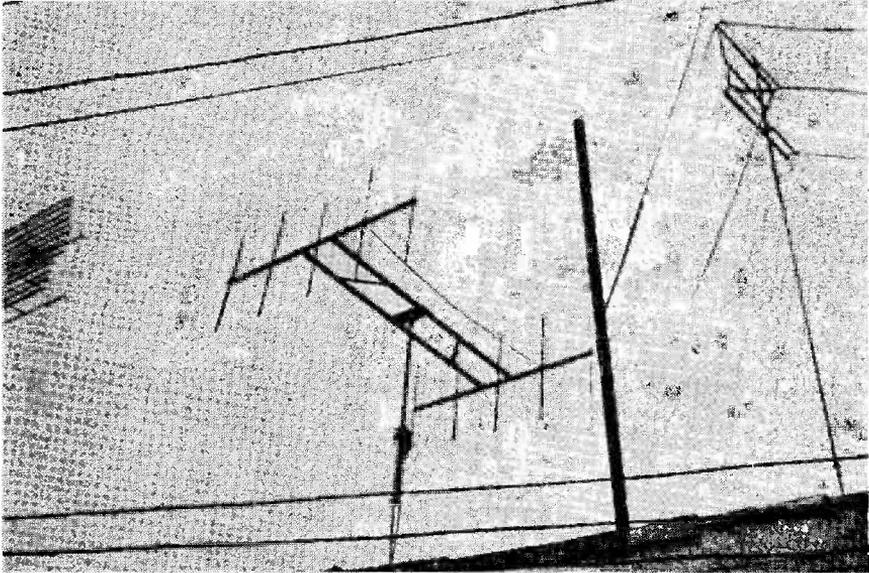
until the end of October, after which indisposition confined EI2W to his home. The Contest was completely spoilt by the weather and DX became impossible soon after the start. In late October, G3EHY worked GI3CQB once again. Regarding his location, G3EHY confirms that he is well below the 100-foot mark; 500 yards south of him is a ridge of hills rising to 220 feet, and just beyond them higher ground up to 800 feet. This spoils his DX chances to the south. To the north and north-east he has a clear run, except for some trees which he hopes will soon be cut down. GW3EJM, we understand, is now active from Langorse in Brecknock, and G4GR has moved to a new QTH near Newport, Mon. GW8UH is operating in Cardiff. Finally, G3EHY has been comparing "VHF Bands" of last month, with its story of DX heard and worked, with your conductor's notes of a few years

TWO METRES

COUNTRIES WORKED

Starting Figure, 8

- 12 G3BLP (DL, EI, F, G, GC, GD, GI, GM, GW, ON, OZ, PA)
- 11 G5YV (DL, EI, F, G, GD, GM, GW, ON, OZ, PA, SM)
- 10 G2HDZ, G6LI, GW5MQ
- 9 G3WW, G5BD, G5DS, G6XM
- 8 G2AHP, G2FQP, G2XC, G3ABA, G3BK, G3EHY, G3VM, G5BY, G5MA, G5UD



W6GHX, Los Angeles, competes with the local power line array and the nearby TV aeriels with a 2-metre vertically polarised beam.

ago. As he says, the progress is little short of amazing.

G5NF (Farnham), using a 12-element stack 30 feet high, heard ON4BZ at 1600 on November 3; the power supply at G5NF at present consists of a 12-volt accumulator and vibrator. G5RP (Abingdon) also heard ON4BZ. Amongst bench activities, G5RP has built himself a noise generator and a 25 to 150 mc grid-dip oscillator; the noise generator has a built-in output meter and power supply. In addition, an old HRO has been rebuilt and now has a 6C4 oscillator with stabiliser, and a crystal calibrator; it has also been TVI-proofed. G8DM (Shrivenham) is amused by the Activity List which last month quoted him as G8DM/A instead of plain G8DM, and put G2HIF into Buckinghamshire. (No doubt the latter resulted from your conductor being unable to read his own writing on the rough draft and so mistaking Bucks. for Berks.) G8DM anticipates listening to thermal noise and ignition on two metres most evenings during the coming month. G2HIF (Wantage) has erected his 5-over-5 at 40 feet. He suggests a system whereby a Reliability Table could be run in this column. More details of this are given below.

G3MI (Chesham) has been on Two for the past 18 months and now proposes to start on 420 mc. He has been doing much experimental work in an endeavour to get signals out of the valley in which he is situated. Best results so far have been obtained with a 6-element stack. The transmitter runs about 20 watts to an 832, and, with the exception of the AR88, everything is home-built.

G2HDZ (Pinner) found October 16 a good night when he worked four Continentals, as well as G3CFK for a new county. G2QY and G3GSE both draw our attention to the error in last month's "VHF Bands," whereby some stations seemed to be on the way towards a VHF DXCC. Yes, it should have been "counties" on p.556, not countries! G2QY has now worked 21 stations on 70 cm and asks for activity in the south, as he is badly screened to the north. G4HT (Ealing) worked OZ2IZ on October 8 off a folded dipole, and wonders if that is a record. G2AHP (Perivale) asks us to compile a list of stations who will undertake to operate on Two at least three times a week. He feels that, with quite a few new stations coming on the band, it is a pity that there is such little activity among the

older occupants. The QSL position, he says, goes from bad to worse, and in particular he wants some from Devon. He also requests a double number of the *Magazine* for Christmas.

G2DHV is now on 144.9 mc, CW only, with 20 watts to an RK34 tripler and a dipole aerial. G3BOB has been operating from a rather unfavourable location in central London, but hopes soon to move to south-west London. On 70 cm G2FKZ (Dulwich) has worked PAØPN on October 16, a very fine QSO. The PA was also heard by G3FZL, but no contact was made. G2FKZ asks for 2-metre Activity Week-Ends during the winter. G8VR (Upper Abbey Wood) has been shifting his gear into a spare attic. A motor-box is now mounted on the window-sill and a 4-element Yagi is up at 30 feet. His first contact off this new line-up was with G2XC at zero-hour in the Contest!

G3IDR (RAF, Henlow) has been working /P on Two from "the worst location in Beds." The Tx is a much-modified Type 50 with 9 watts to p/p TT11's; a folded dipole is 30 feet above ground. G3IDR is also working on 13 cm occasionally. G3CGQ (Luton) reports that he will be absent from "VHF Bands" for the next four months, but hopes to renew acquaintances in the spring.

G2XV (Cambridge) asks for a list of all known 2-metre station frequencies to be published. (The idea is good, and if news slackens during the winter months this might be possible. So, just in case, please include your frequency in next month's report.) G3WW, commenting on our remarks last month about his QTH, says that he is now informed by the County Surveyor that his height a.s.l. is 16 feet, and not 10 feet, which latter is the height of the surrounding fen. So G3WW is really on the top of a 6-foot mountain! Now we know why his is such a potent signal!

G6XY (Kenilworth) is in the process of rebuilding his two-metre rig. He hopes to be back very shortly. He comments that, notwithstanding G2IQ's recent article, the cascode converter is superior and simpler to get going well than the neutralised 6J6 circuit. As evidence of its superiority, he mentions that it is used in the latest radio-astronomy equipment.

G4JJ (Barnsley) states that nine members of the VHF CC owe him cards.

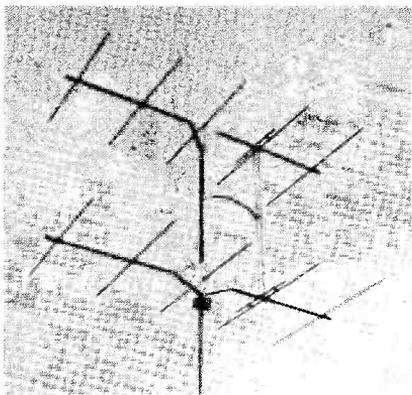
Further, seven of these in the course of the QSO said, "Pse QSL, here will sure do so." G2SU (Bradford) is active on 2-metre FM. G8IC (Doncaster) is preparing for 70 cm work.

G2OI (Eccles) reports a falling off in both two-metre and 70 cm activity in his part of the country. He is still anxious to see a narrow part of the 70 cm band agreed on for DX. GW5MQ (Mold) has been finding conditions patchy, with a peak on October 17 and 18. On the former date he worked five countries (G, GW, GD, GI and GM). In early November, GW5MQ had three contacts with G3APY on 70 cm; the distance is about 85 miles, and the weather was appalling. Signals were RST-569 both ways. On October 17 very weak signals were heard from G5BY on 70 cm. GW5MQ is stopping sending QSL's except to stations asking for them, or who send him one. His present record is 153 out, 48 in.

G8AO (South Shields) had some good contacts in mid-October with the Midlands, GM and GW. He is still hoping for a /MM permit, and when this materialises he will use 25 watts to an 832, a CC converter and a 6-element stack. Regarding 70 cm, G8AO says there is some talk in the north-east and, in anticipation of this developing into

TWO METRES COUNTIES WORKED SINCE SEPTEMBER 1, 1951 Starting Figure, 14	
Worked	Station
42	G3EHY
40	GW5MQ
37	G3BK, G5YV
36	G3WW
34	G2XC, G4HT, G5MA
33	G4SA, G5DS
32	G2NH
29	G3FAN
26	G8IL
25	G2AHP, G3VM
24	G2HDZ
22	G6YU
21	G2FVD, G2OI, G3BNC, G6CB
20	G2FQP, G3FD
19	G3AVO/A, G3CWW, G3GHO
18	G4MR, G8VR
17	G3HCU, G5ML
16	GM3EGW
15	G6CI

NOTE: This Table will run for one year until August 31, 1952



The neat 5-over-5 at G2HIF, Wantage, Berks.

activity, he has acquired a set of glide-path coaxial tubes. G8AO would greatly appreciate any information on VHF grounded-grid power amplifiers for 420 mc.

GM3EGW (Dunfermline) found activity low during October. A regular schedule was maintained with the Newcastle area. A number of interesting signals have been heard from time to time and there has been much speculation regarding their identity. EI2W, G3BLP, G3DJQ have been logged and G3CYY and GW5MQ worked.

Reliability Table

Further to G2HIF's remarks quoted above, your conductor is willing to organise a Table on the lines suggested, provided at least 10 operators participate. G2HIF's plan is as follows: The Table to run on a monthly basis. Each operator to choose from his log the best set of contacts with any single station during the previous month. Points to be claimed at 1 per 10 miles and multiplied by the number of QSO's. No more than one contact per day to be permitted. For example, G2XYZ works G5ABC 12 times during the month, the distance being 155 miles; then score is 15 times 12, i.e. 180 points. If you wish to participate in this monthly reliability test, just send in your figures for the month of December when you make your report in January.

The Clubs

There are a number of new members

of the Five-Band Club. These include G2SU, G3DAH, G3MI, G8IC, G8VR and GM3EGW. Details of qualifications for membership were published in last month's "VHF Bands." It may not, however, be clear from what we wrote then that by "practical interest" in VHF work we include *actual transmitting activity*. Applications have recently been received from operators who, so far as is known, are not active on any VHF band from a transmitting point of view.

In Conclusion

With the winter upon us comes the usual seasonal fall in activity and conditions. Headline news will be scarce. Please fortify your conductor by sending in those monthly reports regularly, and so maintain our claim on space for this feature until the DX of 1952 comes along and the column once more (nearly) writes itself! The best of good wishes for Christmas and the New Year to all correspondents and readers. The address for your letters, cards, criticisms, suggestions and complaints remains E. J. Williams, G2XC, *Short Wave Magazine*, 55 Victoria Street, London, S.W.1, and the latest date for next mail is **January 16** certain—the January issue itself will be devoted to the Contest report, and will be out on January 4.

BAGS OF MILLS

There are still parts of the country where the blessing of AC has not yet been conferred—and only those who, having been on DC (or perhaps "batts only") know what a difference an AC supply makes. In the old days, a 230-volt DC connection was not unusual, and numerous circuit arrangements were devised to make the best of it. A rotary converter giving a high-voltage DC output for HT supply, or an AC output made use of in the usual way; LT from accumulators kept trickle-charged by being connected in series with room radiators; the smoothed DC mains used as direct HT, quite enough for any ten-watt transmitter; and then the device of putting PA valves in parallel, and push-pull parallel, for increased power input. Even if the voltage was low, the current drawn from the mains was of no significance, as the one advantage of DC was that it gave you unlimited milliamps.

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.

E13E J. J. Murphy, Nicholastown, Kilcullen, Co. Kildare.

GW2HMO G. J. Jones, 11 Bigyn Road, Llanely, Carmarthenshire.

GW3BRO R. J. L. Hodges, 31 Salem Road, Tymaen, Port Talbot, Glam.

G3FZB G. E. Smith, Pittern Hill, Kineton, Warks.

G3GGQ R. S. C. Whitmore, 39 Byng Drive, Potters Bar, Middlesex.

G3GVF J. A. Lowe, Hillside, Hartley Witney, nr. Basingstoke, Hants.

G3HJP G. Cooper, 26 Stirling Street, West Hartlepool, Co. Durham.

G3HMB I. E. Elliot, Police Station, Kirklington, Carlisle, Cumberland.

G3HNC B. Dyer, 65 Pontefract Road, Ferrybridge, Yorkshire.

G3HOV 21a Spring Grove Street, Huddersfield, Yorkshire.

G3HPK G. Hamber, (DL2RW) School House, The Mint Yard, Canterbury, Kent.

G3HSL F. B. Peppert, 56 Stockton Road, West Hartlepool, Co. Durham.

G3HSV D. E. Alesbury, Myrtle Cottage, Rowlands Castle, Hants.

G3HSY R. J. Dixon, 90 Sherbourne Road, Cheadle Heath, nr. Stockport, Cheshire.

G3HTG G. Hulse, 25 Wilton Drive, Romford, Essex.

G3HTK A. G. Gasson, 24 Tower Hill Works, Witney, Oxon.

GM3HTL G. M. Jamieson, 66 Elmfield Avenue, Aberdeen.

G3HTN R. C. Fermor, 7 St. Margarets Road, St. Leonards, Sussex.

G3HUA R. E. Holloway, 73 Gainsford Road, Southampton, Hants.

G3HUG Tees-Side Amateur Radio Club, Joe Walton's Boys Club, Lower Feverham Street, Middlesbrough, Yorkshire.

G3HUH Miss V. E. Stent, 34 Laleham Road, Staines, Middlesex.

G3HUL D. M. Mallett, 9 Lane 10, Gentry Road, Norwich, Norfolk.

G3HUV E. Haytock, 5 Croft Road, Crossflatts, Bingley, Yorkshire.

G3HVE A. E. Broadbent, 78 Malthouse Meadows, Liphook, Hants.

G3HVF R. A. Fitzjohn, 10 Council House, Smeeth Road, nr. Wisbech, Cambs.

G3HVP F. E. Goddard, 108 Brookfield, Glossop, Derbyshire.

GM3HVT J. K. Smith, 50 Castle Crescent, Kennoway, Windygates, Fife.

G3HXB Capt. D. A. D. Moffat, B.A., A.K.C., c/o West Norwood County School, Carnac Street, London, S.E.27.

G3HXB/A Capt. D. A. D. Moffat, B.A., A.K.C., 71 College Road, Bromley, Kent.

G3IEW S. J. Heard, 11 Gatling Road, Abbey Wood, London, S.E.2.

G3III G. P. Lovelock, 8 Monks Road, Banstead, Surrey. (Tel: *Burgh Heath* 1685).

G3IIR E. W. Yeomanson, 9 Trevsbury Road, Sydenham, London, S.E.26. (Tel: *SYD* 7373).

G3INT F. P. Wharton, Vinnycote, Milespit Hill, Mill Hill, London, N.W.7.

G3IRR H. P. Cooper, 39 Strafford Avenue, Barkingside, Ilford, Essex.

G4TZ C. M. Benham, c/o Painton and Co. Ltd., Kingshorpe, Northampton.

CHANGE OF ADDRESS

G2AK C. H. Young, 112 Walsall Road, Aldridge, Staffs.

G2BFQ M. E. Edwards, 13 The Dell, Sudbury Town, Wembley, Middlesex.

G2CLX A. S. Davey, 50 North Street, Emsworth, Hants.

G2DHG M. S. Mitchell, 62 Ely Road, Worthing, Sussex.

G2DQI G. A. Lambourne, 114 Canterbury Road, Worthing, Sussex. (Tel: *Worthing* 2481).

G3AMF K. G. Thompson, 44 Malvern Drive, Woodford Green, Essex.

G3ARI L. N. Crawford, 73 Deepdene, Potters Bar, Middlesex.

G3AVE F. Flanner, 17 Scott Street, Vauxhall, Birmingham, 7.

G3BUF B. J. Fost, 38 Blanche Lane, South Mimms, Barnet, Herts.

G3EAR H. A. Drake, 21 Clockhouse Lane, Ashford, Middlesex.

G3EGB A. H. Hooper, 18 Beechwood Road, Chippenham, Wilts.

G3EJD D. G. Duff, 151 Eglesfield Road, South Shields, Co. Durham.

G3EVE Brighton and District Radio Club, c/o 44 Hawkhurst Road, Coldean, Brighton, 6, Sussex.

G3FAY J. C. Butters, A.R.I.B.A., 49 Newbury Road, Ipswich, Suffolk. (Tel: *Ipswich* 77170).

G3FSO R. A. E. Fursey, 45 Park Avenue, Hounslow, Middlesex.

GW3FWH S. G. Stephen, 120 Cardiff Road, Llandaff, Cardiff, Glam.

G3GJX E. B. Grist, 44 High Street, Redhill, Surrey.

G3GMI G. Smith, B.Sc. (Lond.), Woodlands Cottage, Uxbridge Road, Stoke Poges, Bucks.

G3GVV R. J. Hughes, The Northfield Hotel, Southfield Road, Tuffley, Gloucester.

G3HEV Ravensbourne Amateur Radio Club, Durham Hill School, Downham, Bromley, Kent.

G3HFZ Flt. Lt. J. H. G. Yardley, Officers' Mess, No. 107 M.U., R.A.F. Station, Kasfareet, M.E.A.F.15.

GM3HJC J. T. Coulman, 97 Broomhouse Crescent, Sighthill, Edinburgh.

G3YY C. T. Fairchild, 44 Hawkhurst Road, Coldean, Brighton, 6, Sussex.

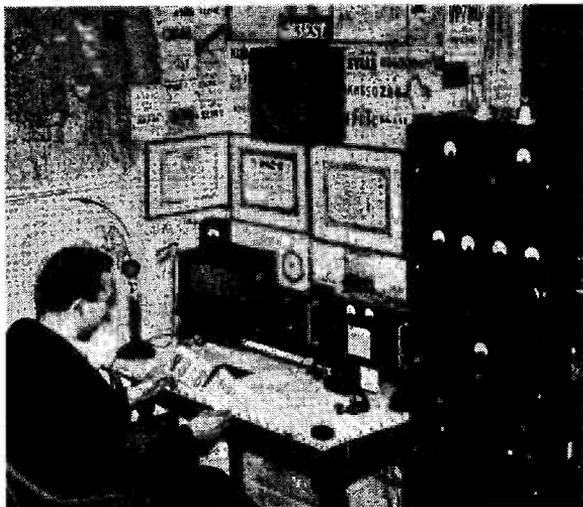
G4OQ G. C. Lidstone, Lawnside, The Bramblings, Rustington, Sussex.

G6LJ S. K. Lewer, B.Sc., 50 Chaldon Common Road, Chaldon, Surrey.

G8RY F. E. Wyer, 23 Belton Street, Shepshed, nr. Loughborough, Leics.

G8SA Dr. E. S. G. K. Vance, Sycamores, Huthwaite, nr. Mansfield, Notts.

The other man's station GM3EST



NORTH of the Border this time, for a description of GM3EST, owned and operated by A. E. Sinclair, Knoweside, 76 Jerviston Road, Motherwell, Lanarkshire—an FOC member and a keen and successful DX operator.

First on the air in January, 1949, the station is single-switch relay-controlled and equipped for BK working on CW. The main receiver is an Eddystone 750, modified to take a 6AK5 in the RF stage, and the frequency standard is a Class-D wave-meter. The VFO, running Clapp 6SH7-6SK7-6V6 and giving output on 3.5 mc, is at the operating position.

The transmitter is a home-built rack-panel job, the valve sequence in the RF unit (fifth chassis up the rack) being 6AG7-6L6-807-813. The speech amplifier-modulator (fourth chassis) runs

12SJ7-6SJ7-6J5-6J5-6SN7-p/p 6V6-p/p807 in Class-B zero bias.

For aeriels, GM3EST has a 40-metre "VS1AA" 35-ft. high, and a single-section "W8JK" lying N/S. These are fed through an aerial coupling unit in the top panel of the rack.

Interest at GM3EST is mainly in CW DX on Twenty, but the 10-, 40- and 80-metre bands are also worked with CW and phone. As at the end of September, the station record stood at 154 countries worked in 38 Zones, with DXCC and WAC held. In various DX contests, GM3EST has gained a high place for Scotland, notably being top-scoring GM in the 1950 VK/ZL event.

He says his ambitions are to rebuild to a neat table-top design, with rotary beams for Ten and Twenty—and to have a holiday on some DX island with an exotic prefix!

"NEW QTH's"

Appearance in this space is free and is open to any amateur—newly licensed and therefore not having appeared in the *Call Book*, or wishing to notify a change of address—who cares to send us the necessary information. It is *not* confined to direct subscribers, but is available to all who may wish to make use of the facility, including those who may only be casual readers of *Short Wave Magazine*. The point is that

sending a QTH to us ensures its publication in the *Radio Amateur Call Book*, in regard to which we have undertaken responsibility as agents for the G section. With the American publishers of the *Call Book*, it is our objective to make the G section as complete, and to keep it as up-to-date, as possible. We can only do this if we are notified of all new call signs as issued, and any changes of address, by the individuals concerned.

The Month with the Clubs

FROM REPORTS RECEIVED

With all Clubs settling down to their winter season on lectures, demonstrations, junk sales, constructional contests and, of course, the important social events, there is not much for your Club Secretary to comment on, except to wish all the Clubs, and all their members, a Happy Christmas and a very successful New Year.

This is also the time of year when we ask Club Secretaries *not* to send in their usual reports next month, as this space in the January issue will be devoted to a review of "MCC"—the Magazine Club Contest which will, of course, be all over by the time this appears in print.

Listening round on the Top Band during the MCC period (November 10-18) disclosed an encouraging level of activity. In view of the suggestion that the method of scoring this year would slow up the event, and make it less exciting, some calculations may be interesting: If only 21 Clubs entered (and at the moment of writing we do not know how many there will be) and all Clubs who did take part put in the full 30 hours, spread equally over the nine days, then the possible scoring rate is six new QSO's per hour, or one every ten minutes! If 40 Clubs entered, this becomes a possible scoring contact every *five* minutes—which most operators would regard as a high rate of scoring.

The logs for this year's MCC were due by November 30, and full results will appear in the next issue.

Next date for routine reports will be **January 16, 1952**, for the February issue.

With this report, we would be glad if all secretaries would be good enough to make a note of their Club membership—not for publication, but for our own records.

And now follow the month's notes from 31 Clubs . . .

Newbury & District Amateur Radio Society.—A very interesting lecture and demonstration on VHF gear was given at a recent meeting. The December meeting, which will be on the 21st and not the last Friday of the month, because of Christmas, will consist of a Home-Built Equipment Contest, the rules for which can be supplied by the Hon. Sec. A Bring-and-Buy Sale will also be held, commissions on sales being paid into Club funds.

Romford & District Amateur Radio Society.—On December 11, G3DNL and G3CRR will give a joint lecture on Tape Recording. Both these members have had considerable experience of the subject. On the 18th G3AKJ will lecture on TV; he is a new member and a great enthusiast for TV transmission, on which subject

he will lecture and demonstrate once a month. The AGM is on January 8.

East Surrey Radio Club.—At the November meeting the Club welcomed its patron, Tommy Price, the great speedway rider, who gave an interesting talk on his experiences in New Zealand—concerning both speedway and Amateur Radio. He visited several ZL amateurs during his successful season out there. At the next meeting G3BLP will give a talk. All meetings are held at the Barn Room, Lesbourne Road, Reigate.

Kingston & District Amateur Radio Society.—A highly successful exhibition was held on November 10. Stands were devoted to Measuring Instruments, Communications, Audio Equipment, Models,

QSL Cards, an Amateur Station and the two sets of entries for the G6BI Cup Competition (for home-built equipment). The Exhibition was opened by the Mayor of Kingston-on-Thames, and proceeds given to the United Appeal for the Blind.

Reading Radio Society.—The recent Annual Hamfest took the form of a stag party this year, and proved to be a highly successful evening, with a Quiz, a Film Show and the judging for various Cups and awards. The event finished with the traditional ragchew.

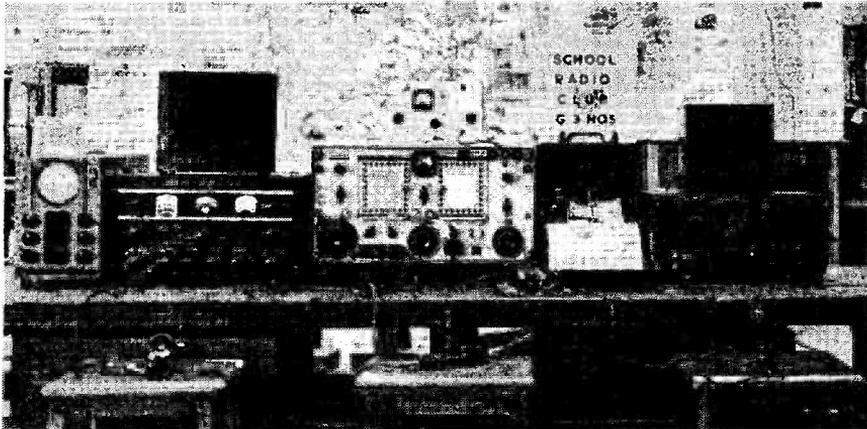
South Manchester Radio Club.—The AGM was held recently, and a new committee elected (note new Secretary's QTH, in panel). Highlights for the future include a demonstration of an automatic key on December 7, and a Film Show on December 21. On January 4 there will be a demonstration of home-built TV.

Stourbridge & District Amateur Radio Society.—This Club continues to meet regularly, and although there has been a slight falling-off in numbers, the enthusiasm remains unaffected. Recent lectures have covered such subjects as Simple Transmitters, Tape Recorders, and Sound and Hearing. The third Annual Dinner, held during September, was a highly successful event.

Torbay Amateur Radio Society.—For the second year this Club won the Quiz Cup, a competition held at the Plymouth Hamfest. Members of the Dartmouth Amateur Radio Society paid a visit on October 20, and the combined Clubs saw the Film Strip on Cathode Ray Tubes and Valves. On December 15 there is a lecture on Basics of the Transmitter. Meeting place—YMCA, Castle Road, Torquay.

Spen Valley Radio & Television Society.—Forthcoming meetings are as follows: December 19, Open Meeting; January 2, talk by G2BOO; January 16, Introduction to Mechanical Refrigeration, by Mr. L. L. Emmott.

Barrow Amateur Radio & Television Society.—Progressing well, Barrow is on the air with the call G3HVZ. Plenty of equipment is in use at Headquarters and the attendance at weekly meetings is consistent. The Annual Dinner will be held on December 14, and anyone in the Furness area who is interested will be welcomed, at the dinner or



The Army Apprentices School Radio Club, Aborfield, Reading, put on a show when their station G3HOS was operated by G3DXJ and G3HBU on the occasion of a recent Parents' Day.

at regular meetings, which are held on Mondays, 7.30 p.m. in the Castle House, Walney Island. Lectures for the next RAE will start four weeks after Christmas.

BIRMINGHAM UNIVERSITY RADIO SOCIETY

It is hoped to re-form a radio society in Birmingham University, the previous organisation having lapsed two years ago, when most of the members graduated. It is now desired to contact any past officer or committee member of the former society. Will any such person reading this please write, C. T. Dollery, G3GAF, at the Union, The University, Birmingham 15.

Battersea Polytechnic Radio Society.—This newly formed Club has started operations by installing a transmitter in a small room at the top of the Polytechnic (some 100ft. up), and hopes to be on the air almost immediately with phone and CW on 80 metres. The call will be G3FGB/A. One of the aims of the Club is to carry out some serious research on 420 mc and higher frequencies, and the VHF equipment should be going by next term. Membership is restricted to those who belong to the Students' Union.

Edinburgh Amateur Radio Club.—They continue to meet weekly on Wednesdays at 7.30 p.m., at Unity House, 4 Hillside Crescent, Edinburgh. Talks will be given on December 5 and 19

and the Club Tx GM3HAM will be on the air on alternate weeks. New members and visitors will be very welcome.

Liverpool & District Short Wave Club.—This old-established Club has returned to the fold. It has moved into its own quarters, the Tx has been fitted up, and will be active on the Top Band as G3AHD. Meetings are on Tuesdays at 8 p.m., Morse classes will be starting in the near future, and a winter programme has been arranged. This kicked off with a visit to the B.I. Callenders' Cables Ltd., and members of the Merseyside Society joined in. A welcome will be extended to any unattached amateur or SWL, who, the Club promises, will be "looked after".

Ravensbourne Amateur Radio Club.—Membership is steadily increasing. A recent event was a lecture on Cathode Ray Tubes, given by G2DHV and illustrated by two film strips. A course of lectures on Home Servicing has started, and a Williamson amplifier is being built. Morse classes are also running.

W.F.S.R.A. (Bedfast Club).—A most encouraging event for the Club has been the arrival of a parcel of *QST's* and *Handbooks* from the ARRL Headquarters. The technical publications section of the Mullard Organisation has also supplied books and magazines, of which this Club cannot receive too many. We are asked to point out that non-technical reading matter is just as welcome as technical. It should all be sent to

John Gill, 30 Sholebroke View, Leeds 7.

DEAL & DISTRICT

It is hoped to form a Short Wave Club for enthusiasts in the vicinity of Deal, Kent. Will all interested persons please make themselves known to B. Taylor, G3HWO, 12 Douglas Road, Mill Hill, Deal. Mr. Taylor was formerly Hon. Sec. of the Rotherham Radio Club, and will be pleased to do his share towards organising a new Club in Deal.

Brighton & District Radio Club.—This Club hopes to participate in a local Hobbies Exhibition, for which a committee has been formed and details worked out. A complete station operating on all bands from 14 to 1.7 mc will be set up, using phone and CW. The Club programme continues during December, with a demonstration of a home-built tape recorder on the 11th and an informal evening on the 18th. On January 1 the second instalment of the CRT Film Strip will be shown.

Cambridge & District Amateur Radio Club.—Next meeting is on publication date, December 7, at the Jolly Waterman, Cambridge, beginning at 8 p.m. It will take the form of a Social Evening, the ladies being invited, refreshments provided, and "the usual swindle" will be run, but for both sexes.

Clifton Amateur Radio Society.—Meetings are all well attended and several new members have joined. The Club station was entered for MCC. During the month there was a talk and demonstration on Tape Recording, a Junk Sale and a Competition Night. The future programme includes a Christmas party, a lecture on Test Equipment, and talks on Wave Filters and Selenium Rectifiers.

Coventry Amateur Radio Society.—Recent events have been a talk on The Mechanics of Music (by GSGR), the showing of the CRT film strip and an Exchange and Mart. December programme includes a talk on Power Supplies (G3FAB) on the 10th and the Annual Children's Party on the 17th. The Annual Dinner has been fixed for February 29 at the Opera House.

Edgware and District Radio Society.—Membership, which now stands at 65, is well up to the level of previous years. The annual "Converted Surplus" competition takes place on December 5, and the AGM is fixed for January 2. The Club Dinner and Show ("South Pacific") has been arranged for January 19.

Hounslow & District Radio Society.—The Club Tx, G3FHD, now has its 150-watt final and is "100-per cent TVI-proof". A new 3-element beam on a higher tower has enabled many good DX contacts to be made. The

constructional meetings, held on Sunday mornings, are gaining in popularity with members.

Lothians Radio Society.—The next two meetings are on December 13 (Exhibition of Home Constructed Gear) and December 27 (Sale of Surplus Gear). After that there will be a break, and meetings will be resumed on January 17. Instructional classes (both theory and Morse) are held at every session for the benefit of intending RAE candidates. Meetings are held fortnightly at 25 Charlotte Square, Edinburgh, beginning at 7.30 p.m.

Manchester & District Radio Society.—At the November gathering there was a talk on Receiver Design by G5YD, followed by a Junk Sale. The December talk, on Speech Clipping, will be given by G2HW. Meetings are on the first Monday, 7.30 p.m., at Manchester College of Technology. New members will be welcomed.

Neath, Port Talbot & District Amateur Radio Club.—At the AGM, in October, new officers and committee were elected and a very interesting programme sketched out for the coming season. The first two lectures, by GW3FSP, will cover BC1 and TV1. At a recent meeting a welcome guest was ZLIMP (ex-GW6AA). Meetings are held on alternate Wednesdays at the Royal Dock Hotel, Briton Ferry. Note new Secretary's QTH, in panel.

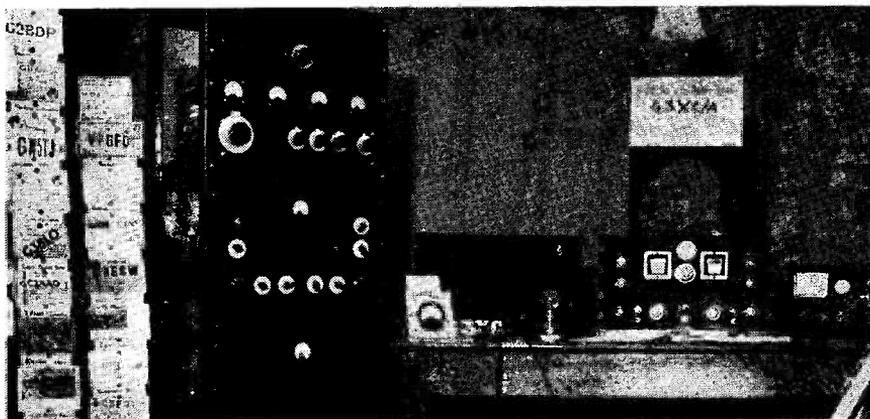
Pontefract Area Transmitting Group.—This is a revival of the former Pontefract & District Amateur Radio Club, and its aim is to foster interest in transmitting, rather than the usual gamut of radio and allied topics. Members are welcome who hold a licence or are "heading that way". Sessions are held fortnightly at the Fox Inn at 8 p.m. the next being on December 13, but there will be no meeting on December 27.

Surrey Radio Contact Club (Croydon).—At the November meeting G2RD spoke on the Operation of Valves in Typical Receiver and Transmitter Circuits. A committee member is in touch with Croydon Polytechnic, and it is hoped that a course for the RAE may be started there. On January 18 the Annual Dinner will be held, and this will be the occasion for the presentation of the Basil Wardman Cup to this year's winner.

Wanstead & Woodford Radio Society.—At the recent AGM the officers for the next twelve months were elected. Note panel for QTH of new Hon. Sec. The new committee began arranging a programme for the coming season, and many useful ideas for meetings were suggested. Some of the former rules of the Society were altered, to keep things in step with present conditions.

NAMES AND ADDRESS OF CLUB SECRETARIES REPORTING IN THIS ISSUE.

BARROW: J. G. Jackson, G3HQU, 40 James Street, Barrow-in-Furness.
BATTERSEA POLYTECHNIC: J. C. Watson, G3HHY, 41 Wroughton Road, London, S.W.11.
BIRMINGHAM UNIVERSITY: C. T. Dollery, G3GAF, The Union, The University, Birmingham 15.
BRIGHTON: R. T. Parsons, 14 Carlyle Avenue, Brighton 7.
CAMBRIDGE: T. A. T. Davies, G2ALL, Meadow Side, Comberton, Cambridge.
CLIFTON: J. Lambert, G3FNZ, 28 Canadian Avenue, London, S.E.6.
COVENTRY: K. Lines, G3FOH, 142 Shorncliffe Road, Coventry.
EAST SURREY: L. Knight, G5LK, Radiohme, Madeira Walk, Reigate.
EDGWARE: R. H. Newland, G3VW, 10 Holmstall Avenue, Edgware.
EDINBURGH: C. L. Patrick, 19 Montgomery Street, Edinburgh.
HOUNSLOW: A. H. Pottle, B.Sc., 11 Abinger Gardens, Isleworth.
KINGSTON: R. Babbs, G3GVU, 28 Grove Lane, Kingston-on-Thames.
LIVERPOOL: A. D. H. Looney, 81 Alstonfield Road, Knotty Ash, Liverpool 14.
LOTHIANS: I. Mackenzie, GM3FGJ, 41 Easter Drylaw Drive, Edinburgh 4.
MANCHESTER: H. Marshall, G4ND, 14 Greenway Close, Sale.
MID-KENT: B. E. J. Holmes, 62 Waterlow Road, Maidstone, Kent.
NEATH & PORT TALBOT: G. Thomas, B.Sc., 7 Evelyn Road, Skewen, Neath.
NEWBURY: A. W. Grimsdale, 164 London Road, Newbury.
PONTEFRACT: W. Farrar, G3ESP, Stanton, Hemsworth Road, Ackworth, Pontefract.
RAVENSBOURNE: J. H. F. Wilshaw, 4 Station Road, Bromley, Kent.
READING: L. Hensford, G2BHS, 30 Boston Avenue, Reading.
ROMFORD: D. L. K. Coppendale, G3BNI, 9 Morden Road, Chadwell Heath, Romford.
SOUTH MANCHESTER: F. H. Hudson, 21 Ashbourne Road, Stretford.
SPEN VALLEY: N. Pride, 100 Raikes Lane, Birstall, nr. Leeds.
STOURBRIDGE: W. A. Higgins, G8GF, 28 Kingsley Road, Kingswinford, Brierley Hill, Staffs.
SURREY (CROYDON): S. A. Morley, G3FWR, 22 Old Farleigh Road, Selsdon, South Croydon.
TORBAY: W. A. Launder, B.Sc., G3FHI, 15 Cambridge Road, St. Marychurch, Torquay.
WANSTEAD: J. Binning, G3AJS, 150 Upton Park Road, London, E.7.
WATERLOO (MANCHESTER): J. C. Henderson, 47 Maple Street, Cheetham, Manchester 8.
WEST RAYNHAM: Cpl. M. Allenden, C.R.W., R.A.F. West Raynham, Fakenham, Norfolk.
W.F.S.R.A. (Bedfast Club): J. Beavan, G3GBL, 296 Fore Street, Edmonton, London, N.9.
YEOVIL: D. L. McLean, 9 Cedar Grove, Yeovil.



The playing fields of Eton accommodated the Slough Festival Carnival (August 4—11) with G3XC/A in action on 3.5 mc phone. With a Hammarlund Super-Pro receiver and a 100-watt transmitter running push-pull 812's modulated by p/p 805's, 175 phone contacts were made over the week's working. Local amateurs were responsible for the erection of all gear, with G3BIT, G3DOJ, G3GMI and G3XC as operators.

Waterloo Radio Society (Manchester).—Meetings are held every Thursday at 8 p.m., and every Saturday at 2 p.m. They are devoted mainly to Theory, Morse and Constructive work. The winter programme will include several talks by outside lecturers. The address of the Clubroom is St. Albans Schools, Waterloo Road, Cheetham, and all visitors will be heartily welcomed on Thursdays and Saturdays. We are told that the heating arrangements have been improved and that a catering licence has been granted.

West Raynham Amateur Radio Society.—This Club has recently been formed, and members have been busy

decorating their newly-acquired premises. The reward is a smart-looking Clubroom. A licence has been applied for, and three members are awaiting the GPO Morse test. Gear available includes a VHF receiver and an AR 88, as well as a Tx under construction by the members.

Yeovil Amateur Radio Club.—Meetings have continued regularly on Wednesdays. Members were pleased to welcome home ZE3JQ, now awaiting his G call. He has told the Club about the advantages and otherwise of being a DX station. The Club Tx has now been equipped for phone operation, and a 150-watt PA is under construction by the

members; the present Tx will be used as a driver. Future plans include the construction of a high-powered modulator.

Mid-Kent Amateur Radio Society.—The M.K.A.R.S. meets every Friday at 8.00 p.m., at the Elms School, London Road, Maidstone. The club has a fair membership, although still young, and would like to see anyone who wishes to join. They have their own call G3HKL, and the Club station has already been on the air. Equipment is being built by various members, and a good Club station should soon be the result. Lectures and demonstrations are already under way, and a promising programme is planned.

DX ZONE MAP

The third reprint of our *DX Zone Map* is now available, with the Zone Area lists revised to date. Price is 6s. post free, of The Circulation Manager, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

MORSE PRACTICE SCHEDULE

We are informed that DL4HA is running Morse practice transmissions on Sundays, Mondays, Wednesdays and Fridays, in four 15-minute sessions between 2100 and 2200 GMT, on 3770 kc—and using 500 watts! While this service will undoubtedly be helpful, it is to be regretted that so much power is

being used on a good frequency in our 80-metre phone band. Reports are requested to: DL4HA, A.P.O. 171, U.S. Army.

NORTHERN RHODESIA

Latest advices disclose that as at September 4, 1951, there were 42 licensed amateurs in Northern Rhodesia, in the call-sign sequence VQ2AB *et seq.* In nearly every case the suffix is made up of two initial letters of the name of the operator.

AMATEUR RADIO EXHIBITION

Some comments on this will appear in our January issue, with notes on exhibits of particular interest.

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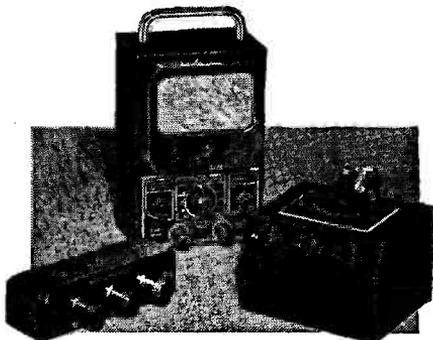
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Short Wave Magazine, Volume IX

RADIO G200 ANNOUNCES

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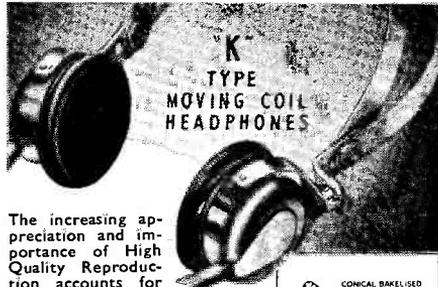
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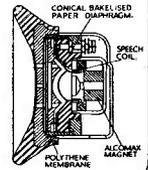
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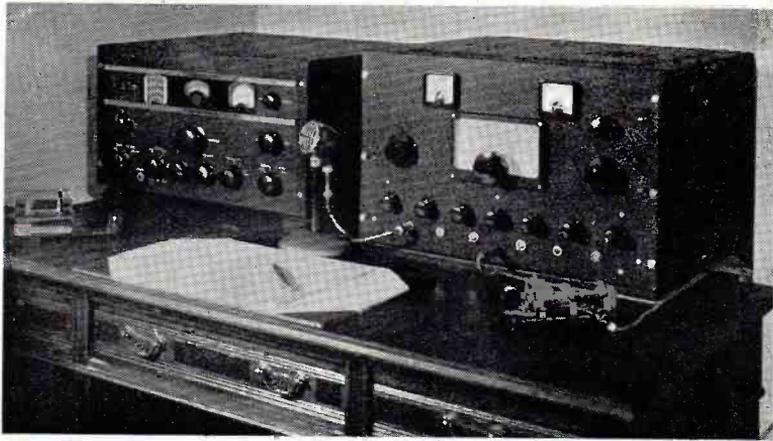
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