

The

6^p

SHORT-WAVE MAGAZINE

Exclusively for the
Short-Wave Listener,
Experimenter and
Transmitting Amateur

FEBRUARY

1939

VOLUME II

NUMBER 12

MULLARD TRANSMITTING VALVES

Transmitting valves to meet every requirement can be selected from the Mullard range comprising:—

**ULTRA SHORT-WAVE TRIODES
SCREENED R.F. PENTODES
MERCURY VAPOUR RECTIFIERS
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Ask for a copy of the latest list of low and medium power transmitting valves

Mullard Wireless Service Co. Ltd.

TRANSMITTING DIVISION
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**TV03-10
ULTRA SHORT-
WAVE DOUBLE
TRIODE VALVE**

REPAIRS

Every type of English and American Receiver overhauled and repaired at reasonable rates. Send your Set to-day for Free Estimate.

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A popular COMMUNICATION TYPE SET AT THE RIGHT PRICE — TROPHY 8

The new all-British TROPHY 8 A.C. communication type receiver, has, quite definitely, met a long-felt want, testified by the amazing popularity it has evinced since it was first offered a matter of only 5 months ago. The performance of the TROPHY 8—without question—fully meets the requirements of the Short-Wave enthusiast. The price of the TROPHY 8 is reasonable and in fact we have been complimented on many occasions on this, the most serious endeavour to date, to provide an efficient general-purpose communication-type instrument at a price within the reach of everyone. Order your TROPHY 8 NOW!—the Trophy best-seller in the World's best-selling range of Short-Wave receivers.

TERMS: 15/6 with order, balance in 18 monthly payments of 15/6.

12 GNS

- 8 International Octal Valves.
- 5 Wave-bands, 43 M.C. to 545 K.C. Complete coverage.
- Continuous Band-Spread Dial.
- R.F. on all bands. A.V.C. and B.F.O. on-off switches.
- Beat Frequency Oscillator with separate pitch control.
- High impedance output socket for generally preferred separate P.M. speaker.
- Headphone jack.
- 12 months guarantee including valves.

TROPHY 3 A.C. and BATTERY MODELS

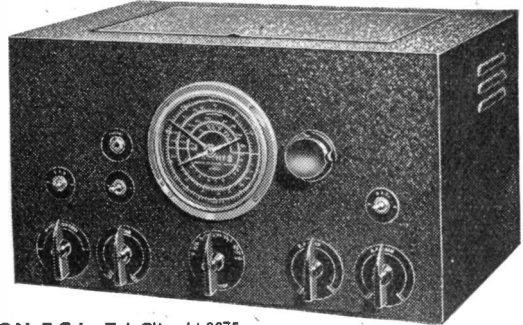
Employing straight 3-valve circuit (A.C. model utilises 2 valves plus rectifier). Exceptional sensitivity over the whole of the effective wave-range of 6.2 to 550 metres. Slow-motion tuning with entire absence of back-lash. Moving-coil speaker incorporated. Housed in pleasing black crackle finish metal cabinet. The TROPHY 3 is the ideal stand-by short-wave receiver for the enthusiast and it is admirably suitable for the short-wave beginner. Headphone jack fitted.

Guaranteed for 12 months including valves.

A.C. MODEL for A.C. mains only 200/250 volts. Terms 7/6 down and 18 monthly payments of 7/9. **£6:6:0**

BATTERY. Supplied less batteries. Terms, 7/- down and 18 monthly payments of 7/-. **£5:15:0**

The Trophy 3 is supplied with self-locating inductors for 12-52 metres. For complete set of inductors covering 6.2 to 550 metres, add 16/9 to cash price of receiver.



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41 (SM2), HIGH HOLBORN, LONDON, W.C.1. Tel. Holborn 3248.

SEND FOR COMPLETE TROPHY LISTS

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you need an

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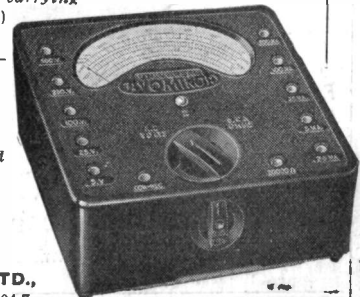
ELECTRICAL MEASURING INSTRUMENT

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Electrical Measuring Instrument

This compact precision moving-coil instrument covers all A.C. and D.C. testing. It has 22 ranges for measuring A.C. voltage, D.C. voltage, current and resistance. All readings are direct. No calculations. The high total resistance of the instrument—200,000 ohms—ensures accurate readings. Complete with interchangeable testing prods and crocodile clips; leads and instruction booklet ... **£5 10s.**

(Leather carrying case, 10/-)



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13 precision meters in one. This accurate moving-coil instrument has 13 ranges . . . voltage ranges sufficient for measuring H.T., L.T., Grid Bias, Mains and Eliminator voltages; milliamp ranges for testing all receiving valves and radio apparatus; resistance ranges for all resistance tests. In case complete with interchangeable testing prods and crocodile clips; leads and instruction booklet. **45/-**

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THE SCIENTIFIC
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CATHODE RAY TUBES

TYPE CR3.
3" Screen
7-pin base
Green Screen

PRICE £2-2-0

TYPE CR3A.
3" Screen
9-pin base
Blue Screen

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of great value to experimenters and
servicemen. Numerous illustrations.

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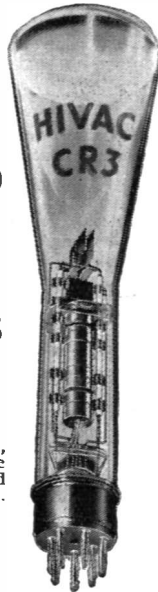
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VALVES FOR CATHODE RAY EQUIPMENT—

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| HVU1. | High voltage half wave rectifier,
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| GR1. | Grid controlled rectifier, mercury
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Further details of the above and full details of the
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All units are ready mounted
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Type SS. The Standard X Cut Crystal. Temp. Co-efficient
23 cycles per Mc. Max. R.F. crystal current 100 mA.
PRICE ... Type SS unit ... 20/-
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VALVES IMPEX First Grade American types
5/6. Octals 6/6. RAYTHEON
First Grade American 6/6 and 7/6. HYTRON HY25
similar to T20 16/6, 866 Jr. 7/-, other types from 5/6.

"Competitive" Tubes, slightly sub-standard but
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80, 83V, 84, 85, 5Z3. 3/- each:— 6A7, 6C6, 6D6,
6E5, 38, 42, 45, 46, 58, 75, 78, 25Z3. 3/6 each:— 59,
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3/9 each:— Octal type, 5V4, 5Y4, 6A8, 6B8, 6C5,
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6Q7, 6J7, 6L7, 6V6, 6F6, 6X5, 25A6, 25A7, 25V6,
25Z6; 25L6, 25N6. 4/- each:— 6L6C.

English type valves from 2/3 each. All B.V.A. types
supplied.

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Let us have your orders for prompt delivery.

Genuine Eidson T9 American crystals, 7 Mc, 10/6
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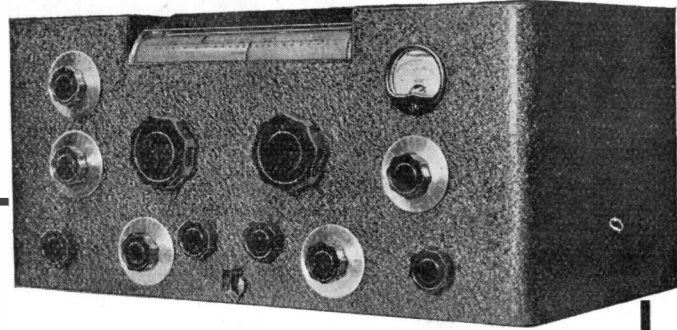
Resistances ½ to 100 watt from 4d. each.

Electrolytics, etc., etc.

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THE LATEST

“EDDYSTONE” COMMUNICATION RECEIVER

Type E.C.R.

We particularly invite every reader of this announcement—including YOU
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The Chassis, Coil Unit and Crystal Unit are die-cast and the most complete screening is employed everywhere. The Superheterodyne circuit comprises 10 valves, including Rectifier. Switched coils cover a waverange of 9.5 metres to 190 metres, 33 megacycles to 1.6 megacycles, divided into 4 wavebands. Electrical bandspread tuning is employed. A crystal gate is fitted with phasing condenser and variable selectivity control. Volume controls for R.F. and L.F. adjustment. An “R” meter calibrated in decibels, B.F.O. control and switch and A.V.C. on and off. 3 Watts output.

PRICE £45

Post the Coupon for descriptive literature and performance specification of this wonder model to:
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Clip off and post in 1/4d. env. S.11.



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Taylor T20 and TZ20 17/6, Taylor T21 Beam tube 14/6, Taylor T40 and TZ40 24/-.
Hytron HY25, 16/6, HY40 23/-, HY51 42/-, 866 Jr., 7/-, Raytheon RK-11 15/-, RK-39 22/-, RK23 and RK25 27/-.
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A.C.S. RADIO TECHNICAL MANAGER **G2NKG**
16 GRAYS INN ROAD, LONDON, W.C.1
Telephone: HOLBORN 9894-5

VALVES T20, TZ20, 17/6. T40, TZ40, 24/-, 866, 10/-, 866, jnr., 7/6. RCA 955 acorn, 25/6.

IMPEX First grade American. 5Z3, 53, 59, 79, 89, 46, 83, 6L6, 6V6, 25L6, 6A6, 6K7, 6N7, 6C5, 80, 50, 10.

S.W.R. STANDARD 19-in. RACKS AND PANELS,
in Black or Grey Finish.

35-in. Racks	£1 2 6	7-in. Panels	3 0
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Chassis and brackets, 5/6.			

72 ohm Transmission Line, absolutely weather-proof and very low loss.....5½d. per yard.

150 ohm Concentric Cable transmission line. The ideal feeder line for cutting out B.C.L. interference and for maximum transference of power 1/3 per yard.

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Super Sky-Rider, £32; Challenger SX18, £25;
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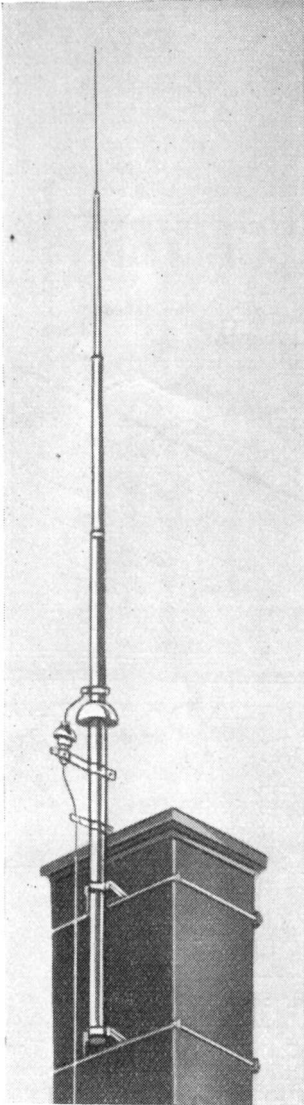
H.P. Terms available.
All EDDYSTONE COMPONENTS in stock.

Send for lists.

SHORT WAVE RADIO, LTD.
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HAMRAD

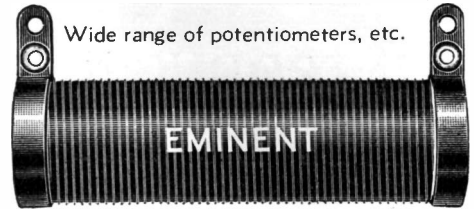
Your local dealer deserves your support. Buy Hamrad lines from him. Appointed dealers at time of going to press at foot of opposite page. If your local dealer does not yet stock, order direct.



Sky Reacher Antenna. Actual antenna length 3.5 metres. Mast approx. 54 ins. All in very light alloy. Complete with angle-irons for fixing and clamp for concentric cable. £3 11s. 6d. Parts supplied separately.

Aerial Feeders. 72 ohm flat 5½d. yard. 350 ohms flat 6d. yard. 150 ohm braided concentric 1/4 yard.
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Resistors in immense variety. 1 watt 100 ohms to 5 megs. 4d.; 3 watt 100 ohms to 5 megs. 8½d.; 8 watt wire-wound (illustrated) 50—10,000 ohms 8d., up to 20,000 1/1, up to 50,000 1/3. All values and types of resistors at low prices from ¼ watt upward.



Wide range of potentiometers, etc.

Flat wirewound resistors — high wattage ratings. Air spaced windings on Frequentia formers. Tolerance plus or minus 3%. Wide range. Following are typical examples.

500 ohms	240 mA	...	1/1
1,000 ohms	200 mA	...	1/1
5,000 ohms	130 mA	...	2/1
10,000 ohms	70 mA	...	2/8
20,000 ohms	50 mA	...	3/-
30,000 ohms	50 mA	...	3/9

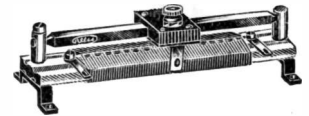


Illustration shows slider set fitted to flat resistor. Makes fine potentiometer. Price (excluding resistor) 1/6. Fits resistors up to 10,000 ohms.



CERAMIC Bushes, Washers, Tubes, etc. Trolitul Bushes and Washers. Just what hams have wanted for years. Make inexpensive feed throughs, stand-offs, etc. Transform old type Rx condensers into modern low loss jobs for a few coppers. Ask your dealer to show you samples. Illustrated are our Transito Bushes. Drill ¼ hole in chassis, pass bush through and lock in position with special washer. Frequentia insulation. 1/- for 10.

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More Amenit Formers. Last lot sold as soon as received. Vertical type former, standard 5 pin base, ribbed and threaded, 1/8. Other Amenit lines available.

Flexible sleeving, 1st quality, red, green, black, yellow, 2 mm. bore. 1/1 dozen lengths.

Paxolin Valveholders, American types, 4 and 5 pin 2½d., 6 pin 3d., 7 pin 3½d. Octal, 4d.

Valve holders, Ceramic, Trolitul, Amenit, Moulded, etc., in stock.

ON THE WAY — LOOK OUT FOR FURTHER ANNOUNCEMENTS

A new super Communications Receiver, 11 tubes, new type xtal gate, R. meter, 6.5 to 400 metres continuous coverage, many new features, British made, ready soon. £25 approx. The finest value yet offered. Orders being booked.

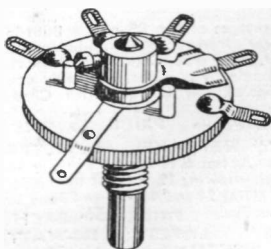
We have relinquished the Howard agency to take up this receiver — it's good!

Another batch of T9 XLs and Ceramic holders just in ! Selling rapidly already. First come first served.

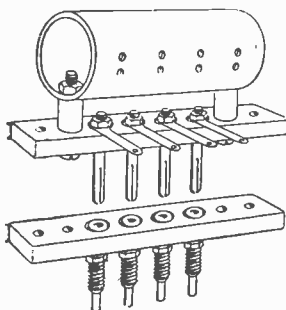
HAMRAD WHOLESALE, 259 LADBROKE GROVE, LONDON, W.10
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Trolitul Switches. 2 way 1/3, 3 way 1/5, 4 way 1/6, 5 way 1/7, 6 way 1/8, 7 way 1/9, 8 way 1/10, 9 way 1/11.



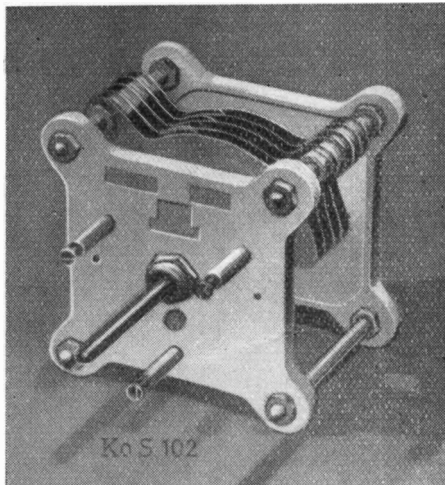
Calit Former now reduced in price. This popular former now costs only 3/6 complete. Former measures approx 1" x 2 1/4". Real low loss, FB for tx or rx. Many other types available.

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Transmitting condensers. For the ham who appreciates quality. Frequentia D end plate (no closed metal loops to absorb energy), silver-plated metal parts. 2,000 V test. 5,000 V test to order.

100 mmF 29/4 400 mmF 36/8
200 mmF 31/2 500 mmF 40/4
300 mmF 33/- 2x400 mmF 69/8

Similar but smaller condensers for low power transmitters, receivers, etc. State requirements.



TUBES

Hamrad Competitive tubes. Slightly sub-standard but electrically perfect.

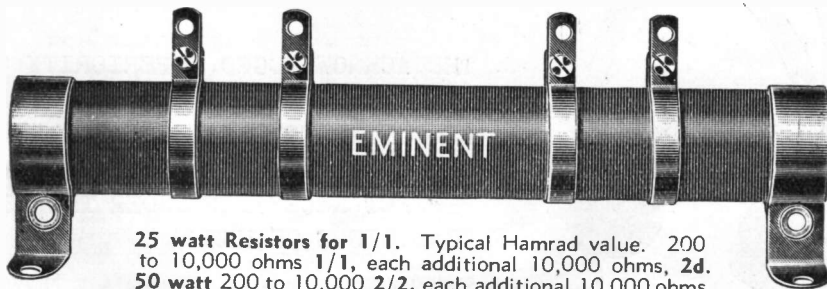
2/6 each—2A3, 2A5, 2A6, 2B6, 2B7, 6B6, 6F7, 43, 47, 49, 53, 55, 56, 57, 76, 77, 79, 80, 83V, 84-6Z4, 85, 5Z3. 3/- each—6A7, 6C6, 6D6, 6E5, 38, 42, 45, 46, 58, 75, 78, 25Z3.

3/6 each—59, 83, 6G5, 6N5, 6U5, 6J5, 6A6, 6B7, 25Z5. 3/9 each—Glass Octals, 5V4, 5Y4, 6A8, 6B8, 6C5, 6D8, 6F5, 6H6, 6J6, 6K6, 6K7, 6N6, 6N7, 6P7, 6Q7, 6J7, 6L7, 6V6, 6R7, 6S7, 6U7, 6V7, 6F6, 6X5, 25A6, 25A7, 25V6, 25Z6, 25L6, 25N6. 4/- each—6L6G.

Rx tubes—Hytron at appreciable saving. First grade. National Union and Ken-Rad at attractive discounts. Raytheon from stock.

Tx Tubes—Hytron HY25 (T20 equivalent) 16/6, HY40 (T40 equivalent) 23/-, HY51 (T55 equivalent) 42/-, HY86S Jr 7/-, Guaranteed 9 months. Other types available.

Raytheon RK11 15/-, RK18 55/-, RK20a 88/-, RK23 27/-, RK25 27/-, RK34 22/-, RK38 75/-, RK39 22/-, RK41 22/-.



25 watt Resistors for 1/1. Typical Hamrad value. 200 to 10,000 ohms 1/1, each additional 10,000 ohms, 2d. **50 watt** 200 to 10,000 2/2, each additional 10,000 ohms 2d. **100 watt** 200 to 10,000 ohms 2/10, each additional 10,000 ohms, 2d.

LONDON—A.C.S. Radio (G2NK Manager) 16 Gray's Inn Road, W.C.1. Holborn 9894.

H. B. Crowe (G6CO), 22 Ch pstead Gardens, N.W.2.

Farradio (G8KZ), 348 Portobello Road, Kensington, W.10. Ladbroke 3143.

BELFAST—H.F. Services (G13ML), 3 King's Crescent. Belfast 53206.

BIRMINGHAM & DISTRICT—Midland Ham-Radio Services (G5FH & G6CG), 313 Oldoury Road, Smethwick, Broadwell 1338.

CONWAY, N. WALES—J. W. Bevan Evans (GW3GL), The Aplary. Conway 156.

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HENLEY ON-THAMES—R. G. W. Page (G5TP), Stoke Row.

IPSWICH & DISTRICT—Wakelins Wireless Ltd. (G2AN), 66 Norwich Road, Ipswich. Ipswich 3856.

LANCASTER—W. E. Ostle (2DYU), 49 King Street, Lancaster. Lancaster 641.

AGENTS WANTED

NOTTINGHAM & NOTTS—Wilfred Henstock, 29 39 Forest Street, Sutton-in-Ashfield. Sutton-in-Ashfield 90. And at Nottingham and Mansfield.

ROMFORD & DISTRICT—G3FT, 3 Geneva Gardens, Chadwell Heath, Essex.

SALISBURY—Southern Radio & Electrical (2ACC), 85 Fisherton Street. Salisbury 2108.

SURREY—Raylec Ltd. (G6UB), High Street, Banstead, Surrey. Burgh Heath 1365.

THORNE, YORKS.—Benson & Farmer (G5GJ), 4 Crowle Road, Church Baulke.

G5NI - Communication - Receivers



NATIONAL NC-44

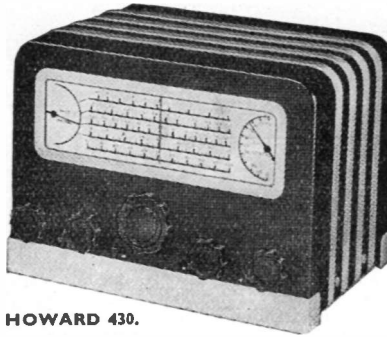
This new NC-44 Communication Receiver combines capable performance with exceedingly low price. It employs seven tubes in a super-heterodyne circuit with a 6K8 first detector and oscillator having exceptional stability and conversion gain, two 456 KC IF stages, diode second detector, AVC with ON-OFF switch, CW oscillator and 25L6G beam tube output (2 watts UPO). A coil switch with silver plated contacts selects the four ranges from 30 MC to 550 KC. A full vision dial is calibrated directly in frequency, and a separate electrical band-spread dial makes accurate tuning easy. There are separate controls for RF and Audio Gain. The Self-contained power supply operated on 105-130 volts A.C. **PRICE with tubes 16 GNS. & speaker chassis 16 GNS.**

RADIOMART

Telephone: Midland 3254.

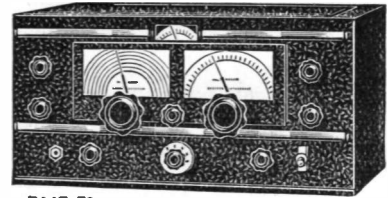
HOWARD 430. Six Tubes, four Bands from .54 to 40 Mc., Iron-cored IF's, Ceramic Coil forms, Beat Oscillator, Headphone Jack, Doublet Antenna Connections, Bandspread, Send-receive Switch, etc., **AND IT COVERS 10 METRES. PRICE 9½ GNS.**

HOWARD 450 A. 12 Tubes, 6 bands, 65 Mc. to 540 kc. Complete with Crystal Filter and Speaker **PRICE 30 GNS.**



HOWARD 430.

**44, HOLLOWAY HEAD,
BIRMINGHAM, 1.**



RME 70

All the advantages of the 69 plus a Built-in Noise silencer, Iron-cored IF's, Illuminated DB R Meter, new type Crystal Filter with phasing and selectivity Controls, Relay and Break-in Control, new Cabinet with Chromium trim.

Lower in **PRICE 35 GNS**

"BLILEY" NEW VFI 40 METRE CRYSTAL. At last a variable frequency 40 metre crystal, allowing 12 kc. shift on fundamental and giving 24 and 48 kc. on 20 and 10 metres respectively. **PRICE 45/- EACH.**

"OHMITE" LATEST 100-WATT DUMMY ANTENNA. True 72-ohm impedance on all frequencies at any power up to 100 watts. Get to know the true efficiency of your Transmitter. **PRICE 20/- EACH.**

SPECIAL OFFER. Fully shrouded Transformers by America's largest manufacturer. While they last. T7260 400 400 v. 150 m/A. 6.3VCT. 4A. 5V3A, 12 6 : T7236 375 375 v. 121 m/A., 6.3VCT. 4A. 5V3A 10 6 : T7326 350 350 v. 100 m/A., 6.3VCT. 3A. 5V3A. 8/6 : T7307-350 350 v. 80 m/A., 6.3VCT. 3A. 5V3A. 7/6 : T7030 310 320 v. 80 m/A., 6.3V4A, 5V3A, 7/6 : T464919-10V4A Primary Tapped 110-250V, 5/6. Chokes interleaved and impregnated : 20 Hy, 500 ohms 100 m/A., 4/11 ; 15 Hv, 250 ohms 60 m/A., 1/11.

Catalogue 1½d. 70-p. Manual 7½d.



TYPE "A"

50/- Per Pair

Supplied wound to special resistances without extra charge.

Used by H.M. Royal Navy, British and Foreign Air Services, the B.B.C., etc., and by radio amateurs throughout the world.

Descriptive Leaflet "S.W."
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The
Short-Wave Magazine

No. 12, Vol. II.

FEBRUARY, 1939

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Published on the first Wednesday in each month at 84-86
Tabernacle Street, London, E.C.2. Telephone: Clerkenwell
8230. Annual subscription: Inland 8s.; Abroad 10s., post paid.

AUTHORS' MSS.

Articles submitted for Editorial consideration must be typed
double-spaced with wide margins, on one side only of quarto
sheets, with diagrams shown separately. Photographs should
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Contests

Editorial

AT THIS PERIOD of the winter DX season, we have coming upon us contests of various kinds, in which a large number of amateur transmitters are interested, and many of our readers will be going over their equipment in preparation for the strenuous days ahead.

To our mind, there is much to be said both for and against contests. On the one hand, a healthy competitive spirit is aroused, serious entrants put their stations to a severe test—and only those who go in for the American DX competition know just how severe it can be, both on man and material—and there is much interest, excitement and even experimental value attached to the whole business, for in these days it really is something to get only a moderately high place in a DX Contest open to the world.

But there is another aspect, and not the obvious one of “pot-hunting.” Rules which are watertight for unscrupulous entrants are difficult to formulate, it is hard to avoid giving some part of the world or a particular group an advantage over all others, and above all there is the incentive to go to almost any lengths in order to win. Selfish operation breaks out like a rash, power limits are forgotten, and friction arises between competing operators and those who wish to use the bands in the ordinary way.

For not all amateur transmitters—and actually only a comparatively small percentage—are interested in DX Contests as they are staged at present. Admittedly, the difficulty is to make them equally fair and attractive to everyone, though in this respect the ARRL DX Contest (where entrants compete only with others in their own country in working American and Canadian stations) is quite the best one open for world-wide participation.

But apart from the British Empire and America, there are other countries also interested in contests, who naturally want to organise their own. The result is that about this time of year there is one contest after another coming in this or that category, with needless duplication, intense band-occupancy (though this is not much that we should worry about) and even condemnation in print of one country running a telephony party while another is organised for CW!

It seems to us that something should be done about all this through the International Amateur Radio Union—but can it? The answer is No. And so we shall probably see the Contest Scramble going on till amateurs themselves weary of the situation or demand one annual effort, and one only, organised for world participation.

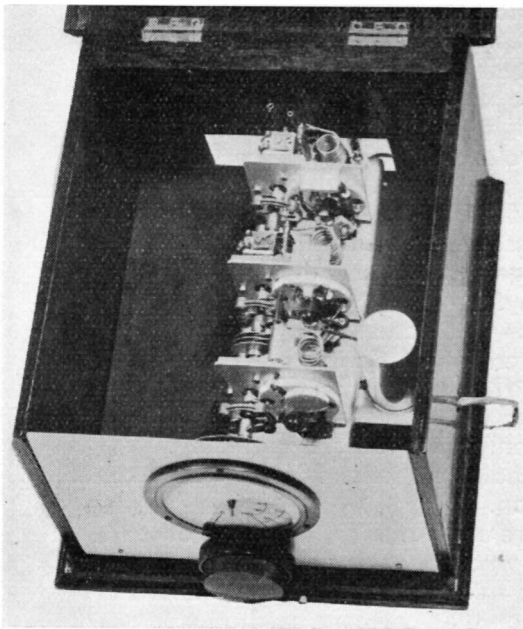
*Austin Foster
G6FO.*

56 Mc Notes

By A. J. Devon

February Test Schedule—G5BY's Equipment—More G DX — American News

THE FOOTNOTE to last month's article asking for a line from all those interested in 56 Mc has brought a surprising response. From this, from our general correspondence, and by indirect information from the more populous amateur centres, it appears that while there may not be a high degree of regular activity, there is yet a great deal of latent interest in the band. Many new stations are being equipped for 56 Mc operation, and there are now a large number of listeners anxious to know when signals are likely to be found on the air.



Inside G5BY's 56 Mc Superhet. This unit feeds into the HF stage of his I-V-2 straight for the IF 2nd. detection and output stages. Note the ganged tuning and symmetrical layout—one of the neatest pieces of amateur work we have seen.

In view of all this and the importance of co-ordinating effort and fostering regular activity (which is the prime requirement) we now announce a short series of 56 Mc Tests to take place towards the end of February.

● The Schedule

The dates and times chosen are Wednesday, February 22 to Sunday, February 26; 2100-2300 nightly, Saturday afternoon 1500-1600, and Sunday 1100-1300, 1500-1600 and 1830-1930, all GMT.

These short periods have been fixed thus because (a) they avoid the fatigue of protracted operation, (b) are convenient for most people, (c) will find good conditions for DX G working if they occur,

and (d) are all known by previous experience to be times at which G DX is possible.

Taking it all in all, therefore, we feel that this Test schedule should attract plenty of support from all who wish to find out what really can be done on 56 Mc.

We would particularly stress the importance of calling and listening at regular intervals throughout the periods *even if the band seems dead*. This is frequently productive of listener reports from DX and totally unexpected QSOs, as we can testify by experience. Use CW in preference to 'phone, keep calls fairly short—not more than three minutes, or five at most—and don't send too slowly. The latter suggestion is not as odd as it seems, because again experience shows that fairly fast sending will nearly always beat QSB. Unless fading is to inaudibility for a matter of minutes, fast double sending under bad conditions will usually keep the signal Q5 or at least the gist of the message intact.

As to reports, we should naturally like these, even if negative, as soon as possible after February 26, giving all details of stations worked and heard, QSOs cross-checked, gear used and other relevant information. The full story will appear in our April issue, and we look forward to having plenty of interesting material to discuss.

● Gear at G5BY

Hilton O'Heffernan, G5BY of Croydon, has turned his attention to 56 Mc in no uncertain fashion, as the following details of his equipment will show; he is, incidentally, not only one of the stations showing the most consistent G DX on 5 metres, but is another who previously has had reports from the States—like G6DH, GM6RG and G2MV.

The 56 Mc superhet at G5BY, of which a photograph appears herewith, consists essentially of an RF stage, mixer and oscillator as one unit with ganged tuning, feeding into his straight TRF (used on all other bands) as the IF, 2nd detector and output portion. The actual valve arrangement is 956 acorn tuned RF, 954 acorn mixer, 955 acorn oscillator, SP4 IF (6000 kc) with regeneration, SP4 as second detector, S4VB as BFO, and usual audio stages. Further input gain is obtained by tuning the aerial feeders, the resulting output at the LF end—with the audio gain nearly at zero—often bringing in G6FO's signals at "phones on the table" strength.

The transmitter line-up is as follows: '53 (3.5-14 Mc)—Pen4V (28 Mc)—Pen A4 (56 Mc, series tuned)—push-pull PM24D's (56 Mc buffer, series tuned)—push-pull 35T's as 56 Mc PA. Except in the first stage, the whole transmitter is link-coupled throughout. Separate power supplies and heater transformers are fitted, and the input to the final can be anything from 100-220 watts; there is enough audio power available fully to modulate the QRO input.

It is worth mentioning, too, that G5BY does all his own design and constructional work and that

he favours the use of wooden shells and chassis, rather than metal. . . We concur.

● The Aerials

Those at present available for 56 Mc are a rhombic aimed west, a W8JK (illustrated here) and a Yagi, the latter two beam arrays both rotatable through 180 degrees from the receiving position and showing much ingenuity in mechanical design, in that they can also be swung through 90 degrees in the vertical plane to change the polarisation.

Two sets of feeders come away from a junction box on each beam system—one pair goes up to the remote controlled transmitter at the top of the house and the other comes down to the operating room on the ground floor; the change-over from "send" to "receive" is made by a relay in the junction box on the mast, and actuated from the operating position.

Thus, when opening a schedule on 56 Mc, G6FO (for example) calls for a few moments while G5BY "feels" for the signal on his directional aerial. On going over to "send," G5BY is automatically focused on G6FO. An interesting point arising here is that it is sometimes necessary to direct the beam off the line for maximum results—this having been noticed with G6DH (61 miles) more than once.

That this "off the line" phenomenon is well known and must be watched for when working with beams is proved by the tests which have been conducted between this country and the States by professional engineers using the higher communication frequencies. It has been found that not only does the vertical angle of arrival vary considerably, but also that the horizontal direction of the most useful ray is very often well off the Great Circle line joining the two points; as an instance, deviations up to 50 degrees have been observed between Daventry and New York.

This in turn indicates that a fixed beam, even if accurately lined up on the Great Circle path and sharply tuned, will be quite capable of throwing the signal well away from the desired point for a great part of the time. Not only that; under conditions where rays are arriving at varying strengths from several angles in different directions, a fixed beam will usually give worse results than almost any other type of aerial, owing to the cancellation effects and pronounced artificial fading produced. This is the explanation of the point made in our January notes, to the effect that a plain aerial under good conditions will do just as well as a beam—and 56 Mc results as recorded recently in these pages prove this to be perfectly true.

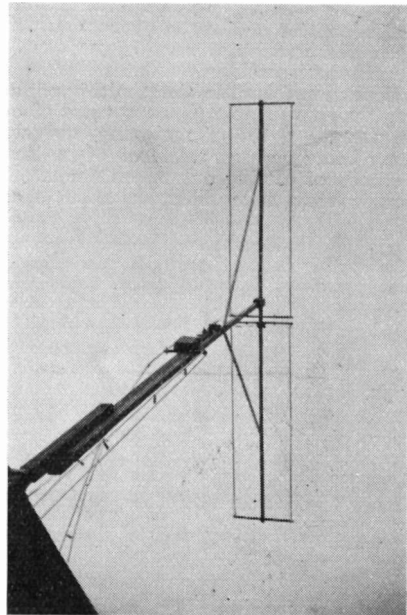
Hence, it follows that for a beam to be of any practical use in 56 Mc work, it *must* be made rotatable, and preferably variable in the vertical plane as well. Moreover, while operating, various "lay-offs" should be tried. Then, the performance of any plain aerial can be improved upon, though this discussion also lends force to our own contention that for amateur use an omni-directional aerial of the bent long-wire type is desirable at locations where a variable beam is impracticable.

● News Item

GW8WU, Cardiff, established a new record for G5BY (132 miles) by logging him in QSO with G6FO; the latter has been quiescent for the last month, rebuilding the whole of the 56 Mc equipment, which will be ready for regular schedule-

keeping again soon. A short period of operating on January 8 produced two solid afternoon and evening QSOs G6VA-G6FO (124 miles), another contact G5BY-G6FO (126 miles) and yet a third one G6XM-G6FO (98 miles), which has been the best bag yet for one day.

G2BI has heard G5BY (82 miles), and a contact G2BI-G6VF (27 miles) is worth mentioning because it is the result of much trying. G2IN of Southport is not only on 56 Mc, but able to radiate CC on 112 Mc (2½ metres) as well! He is very anxious for co-operation on this frequency; we should like to hear something about the receiver side, too. G5WU (Penarth) has at last got his big Collins warmed up on 56 Mc. G5MP of Hythe hears F's much better than G's, and remarks that spells of good conditions appear to be localised.



The W8JK rotatable beam at G5BY, Croydon, which can also be swung into the vertical plane. The junction boxes housing the change-over relays can be seen on the mast. It is this aerial which has given such consistent contact with G6FO, Newport, at well over 100 miles.

● American News

From W9BNX's March notes for RADIO, it is evident that 56 Mc DX has evaporated completely in the States, at least for the time being. Though QRO stations with beam aerials are still blossoming, contacts are in terms of 100 miles or so; it is also most interesting to find that now they have the same type of conditions in the States as we have here, the superiority of stabilised CW and straight receivers is being recognised!

But E. H. Conklin passes on a tip for users in this country of commercial superhets (communication receivers) which are supposed to cover the 56 Mc band but in fact perform poorly on it—"Almost any purchased receiver will work better on 56 Mc if the grid clips of the RF and detector valves are removed and new tuned circuits hooked in. This does not require cutting into the set and is often the easiest solution of the sensitivity problem."

Aerials Worth Trying

By
Austin Forsyth, G6FO
(Editor)

Two Systems—And a Feeder Idea for Awkward Locations

THE SUBJECT of aerials is a never-ending problem for the amateur transmitter and is almost as important on the receiving side, to which at least two of the radiating systems described here are applicable. Whether it is an attempt to improve results, overcome some local difficulty, or just the fascination of trying "a new aerial," there is always something to be said or written or done in connection with that outside circuit on which at least 75 per cent. of our reliance must be placed.

A particular problem is the multi-band aerial—something which will do well on several of our frequencies without a lot of matching and stubbing and tuning being necessary. Most of us know the usual methods of getting out on one or two bands, and there is very little difficulty about feeding a

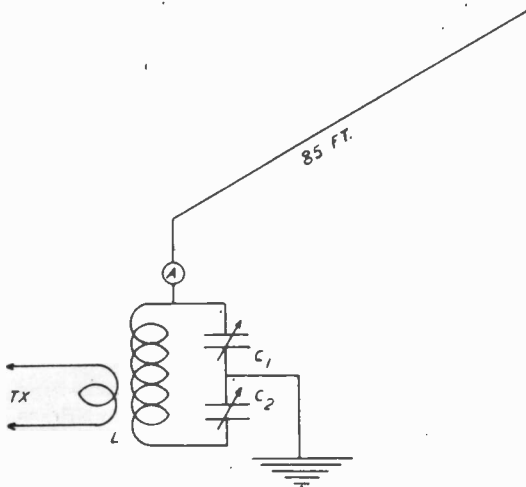


FIG. 1.

The Matched End-on terminating circuit. C_1, C_2 , should be .0005 mF for all-band operation 1.7-28 Mc, or .0003 mF for 3.5 Mc and upwards. The system will also take power very effectively on 56 Mc with smaller condensers and careful adjustment.

doublet on one frequency. But it is quite another matter to evolve a system which radiates reasonably well on frequencies lower than the fundamental, as for instance, 3.5 and 1.7 Mc when less than 100-ft. of wire can be erected. So far as 1.7 Mc is concerned, the secret is an aerial-counterpoise system, worked Marconi fashion, with as much wire out as possible. This has been axiomatic amongst 1.7 Mc operators for the last seven or eight years.

● The Matched End-on

Counterpoises not always being practicable, and the problem still being a multi-band aerial operated as conveniently as possible, look at Fig. 1, which is

a slight modification of the well-known Collins coupler.

The coil L is linked to the transmitter output tank and tuned with the two condensers C_1 and C_2 , which are earthed at their mid-point, operation being as follows: With the link at the transmitter end disconnected, the output stage is tuned to dead resonance in the usual way. With C_1 and C_2 at minimum capacity, the link is then put on and C_1 gradually rotated towards maximum till the plate current begins to rise. As it comes up, C_2 is adjusted to keep the circuit in resonance, i.e., minimum obtainable plate mA. Suppose PA plate current at dead resonance is 12 mA. On moving C_1 it is pulled up to 35 mA; then by resonating with C_2 it can probably be brought back to about 25 mA (on these figures). The process is continued till the normal loading of the PA is obtained, C_1 being used to "draw," and C_2 to "resonate." The degree of loading is thus controllable within very wide limits, a little preliminary experimental work with the links at transmitter and aerial tuner ends being desirable to ensure that there is enough coupling to allow the tuner to draw fully from the PA tank.

Of course, the usual precautions against overloading must be taken. The amount of draw should not be such as to "kill" the RF in the tank; the setting for highest output is where the RF as indicated by a loop-lamp or neon held near L is at maximum. If this is over the required input, either the links can be backed off or condensers C_1 and C_2 adjusted for lighter loading. It does not matter which, so long as resonance is maintained.

All the adjustments are made with the aerial on. Opening the aerial switch after tuning will cause a large change in plate current—whether it is positive or negative depends upon the settings of C_1 and C_2 in relation to one another and the PA tank, and has no bearing on the operation of the system, since disconnecting the aerial puts the whole circuit out of tune. But the point is that there should be a change of plate current when the aerial is switched out—showing that it is taking load. Also, after having tuned the aerial side, it should be found that the PA tank condenser is still at dead resonance; that is, it ought not to be possible to reduce plate current any further on the tank side.

The theory of this system is simply that the circuit C_1-C_2-L can be made to match, within reason, any wire to any frequency. Our own tests show that there is a certain amount of magic in the length of 85-ft. Hundred-foot aerials do not take well to the higher frequencies like 14 and 28 Mc, and 60-70 foot wires are difficult to load up on 1.7 Mc.

● Values

The fact remains, however, that if one can get up 85 feet of wire and use it with this matching

circuit, effective radiation can be obtained on all bands 1.7 to 28 Mc. As to values, if the latter range is required, C1 and C2 should be .0005 mF and of a good low-loss design, and the coil L as follows: 1.7 Mc, 24 turns, 4-ins. diam., link 5 turns; 3.5 Mc, 18 turns, 3-ins. diam., link 3 turns; 7 Mc, 7 turns, 3-ins. diam., link 2 turns; 14 Mc, 4 turns, 3-ins. diam., link 2 turns; and 28 Mc, 4 turns, 2-ins. diam., link 1 turn.

The length of the earth lead affects these values to some extent, so that suitable coils which happen to be available can be used to determine the best ratio for any band by shorting out a section turn by turn and then making L up accordingly.

Since the system works by adding sufficient inductance to the aerial to make it quarter-wave, half-wave, three-half-wave, full-wave or five-half-wave, it follows that the ammeter A will show different readings from band to band, since its electrical position will alter considerably. That these readings are high, low or different is no indication whatever of the radiating efficiency of the aerial, and should only be used as a guide when coming back to a particular band from time to time.

● Results

As to results with the Matched End-on—it has been in use at G6FO for over five years from three different locations, and under these varying conditions has consistently given DX such as the whole of the British Empire and all continents five or six times, W6, VE5 and VS6 on 14 Mc, VK, VU and PY on 28 Mc, VE on 3.5 Mc, and W on all bands, with W1-9 worked several times on 14 and 28 Mc, on one occasion in the 1936 season on the same day, both bands. This has all been CW only, with inputs under 50 watts, and does not include 1.7 Mc, on which frequency W was worked just six years ago with quite a different type of aerial. 1.7 Mc coverage with the Matched End-on appears up to average, but there has not been much opportunity of trying DX with it.

The results outlined above are not claimed as startling in any way—they are in fact put forward with due modesty and some trepidation, in view of

the brilliant records held by some of our readers—but they do at least show the aerial works.

It is also of sufficient interest to add that the Collins Company, manufacturers of the well-known American commercial transmitters, adapt this coupler to their designs in such a way that the matching system C1-C2-L becomes also the tank of the final stage.

● Remote Feed

Fig. 2 shows a useful and effective arrangement which will help to overcome that common difficulty where the aerial comes in at the back of the house and the gear must be laid out somewhere at the front—or at any rate some similar condition where it is not easily possible to bring the end of the aerial and the transmitter tank reasonably near one another.

The tuned circuit A, which can feed any type of end-on aerial, such as a 66-footer for working on 7, 14 and 28 Mc, is linked back to the transmitter-receiver position with a low-impedance line, which can be any reasonable length and run along picture rails, skirting boards or under the carpet. As is well known, this type of feeder-line has very low losses—or should have if the material used for insulation is the right kind and the line as a whole is untuned, as in this case, where it simply pipes RF from one end to the other.

The station end is taken to a DPDT switch, connected as shown, and the method of adjustment is as follows: With a coil-condenser combination at A which tunes the required frequency (a replica of the transmitter tank circuit is always right), the DPDT switch is opened and the PA tuned to dead resonance or minimum plate mA. With the switch closed in the “send” position, the circuit at A is resonated, i.e., plate mA pulled up to the required loading, such that RF output is not “killed,” and the links adjusted so that this maximum setting coincides with the highest reading of the plate meter, within the limits of input power and available RF output. The point here is that it is essential to have smoothly-variable link coupling at one end or the other, and preferably on the PA.

A practical difficulty immediately presents itself—that of seeing the plate meter while tuning at A. This can be overcome either by enlisting the aid of an intelligent (even if non-technical) helper, or running the plate meter out on a long lead where it can be seen. In the latter case, put a couple of RF chokes in series near the transmitter and by-pass them to earth, or queer things may happen.

Once the adjustments have been found for the working bands, the change from one frequency to another can be made very quickly.

For the 72-ohm line, the new Hamrad product, using a high-grade synthetic insulating material and so drawn that the leads lie parallel, has been tried and can be thoroughly recommended for the aerial applications mentioned here—also for link coupling on transmitting gear and for feeding UHF aerials where a low-impedance line is required.

● Reception

The idea of Fig. 2 can clearly be extended to the receiving side. The link should be coupled to the first tuned grid circuit—either RF, detector or, in the case of commercial sets, to the “doublet” ter-

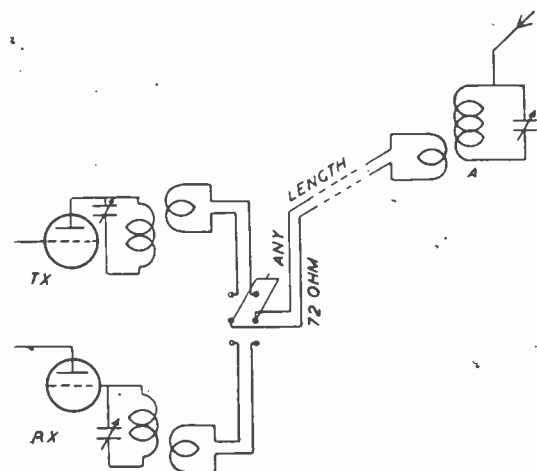


FIG. 2.

Remote feed arrangement, applicable to both transmission and reception. Fully discussed in the text.

minals—and if the coupling to the receiver is made fairly tight (to flatten the resonance peak at A, which will not affect the adjustment for transmission) it will be found that any signal in the working band can be peaked on a tuned RF stage, with a marked improvement in signal strength and general liveliness. Obviously—because the aerial circuit is thus automatically most responsive over the band for which it has already been tuned for transmission.

If transmission is not required, the system can be tuned up quite simply for reception only by getting a fairly strong signal on the speaker (so that it can be heard from where the circuit A is to be adjusted) then swinging the tuning condenser at A till the signal peaks. It is clear that it is as well to pick a test station which is somewhere near the middle of the band being used, so that the tuning at A will hold over the whole range. This is where the adjustment of the links comes in. Too loose, and though signals peak nicely, there is a falling off in signal strength away from the check signal setting; too tight, and there is not enough peaking effect. Something between the two will improve selectivity as well, due to the better discrimination of the aerial circuit.

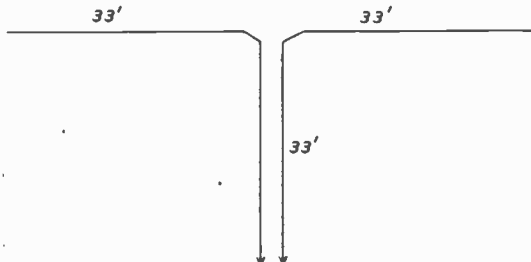


FIG. 3.

A multi-band system for frequencies above the fundamental. The feeder is 350-ohm and the aerial takes power by tapping direct to the split output tank, no tuning being necessary. See text for the idea.

For both transmission and reception, it will be found that this system is a complete answer to the particular location problem involved. In fact, it was worked out for a staff member who was in precisely this difficulty—his aerial comes in at the top of the bathroom window, where the circuit A sits on a little shelf, with the tackle in another room, requiring about 25 feet of feed-line—and it is to his successful testing of the idea and his enthusiasm for it that this detailed description is largely due.

● Centre-Fed Multi-Band

Fig. 3 shows an arrangement which, though we have not actually tried it, should give good results, since the idea is sound. Briefly, for 7, 14 and 28 Mc operation, two 33-ft. arms are fed at the centre with 23 feet of 350-ohm line.

Then, on 7 Mc, the system is a centre-fed Hertz with quarter-wave feeders; on 14 Mc, the feeders become half-wave, and the roof two half-wave Zepps back-to-back. On 28 Mc, the same is repeated, except that the system is then full-wave.

The coupling to the transmitter output stage is obtained simply by tapping the feeders an equal

(Continued in next column.)

Notes and News from the East

By Wm. H. G. Metcalfe, VU2EU

AMONG INTERESTING REPORTS for December is one from VU2FO, who says that conditions on 14 Mc down in Jubulpore have been very good for DX, especially VK and ZS. European stations have again been poor, with the exception of one day, November 17, when G2IO, G5DQ, G5MY, G6GH and G6TD were all received at S6-8 on the speaker, using an 0-v-2 receiver. G5UG and G6TD generally put a very consistent S5 signal into VU whatever the conditions.

During November, VU2FO worked over 50 W's, some of the best of the other QSOs being VE5, W7, K4, K6, HI and YN. Asiatic stations worked regularly are XU7CH, XU4XA (QSL Box 685, Shanghai), XU7CW, XU6TL and VS6AH, all on the HF end of 14 Mc. PK4KS is putting out very strong 'phone and appears to be working good DX. "C7CK" is a trick call used by XU7CK to raise DX, and cards should be sent via Box 685, Shanghai.

● New Zealand

BSWL-981 in N.Z. mentions that the latest commercial SW BC station to go into operation out there is 4ZB on 4.3 Mc, daily 1200-1800 GMT. This station was built by ZL4BB and later will probably sign 4ZF. ZL2JQ works outside the regular hours allotted to New Zealand amateur 'phones, and can be heard at 0630 in QSO with W2IXY.

VK9XX, 9BW and 9WL are on 14 Mc 'phone, while VR4AD and VR4BA (British Solomon Is.) look for DX on CW.

● Rare One Coming

In future all correspondence for VU2EU should be addressed W.E.S., c/o Peshawar District Signals, Peshawar, North-West Frontier Province, India. Unfortunately, he is not allowed to do any amateur work at his present QRA, but hopes to be active in a new and rare country very near VU some time in May, so watch for it! A queer one heard recently by VU2EU was ZR9O, CQ'ing on 14395 kc.

Two stations in the N.W.F.P. are VU2HU and 2MA, both licensed in December. QSL via VU2EU, as above.

FN1C is again active and can be heard daily passing traffic to AC4YN at 1430 GMT. He uses a rotating beam with 9 watts to the final—QSL direct to FN1C, D. Paterson, Gondalpora, Chandernagore, French Bengal.

Finally, look for VU on 28 Mc between 1000 and 1200 GMT.

distance from the null point till the required loading results. This, of course, pre-supposes a centre-tapped tank coil. No other tuning is required, the match in each case being "average" and good enough for quite effective three-band operation. On 7 Mc, it is sufficient to fan the ends of the feeder across a 3-in. insulator.

Messrs. Hamrad again come to the rescue with the feeder line, since they have just produced 350-ohm cable, held together with the same material as used for the 72-ohm line, and with even lower losses. Both types retail very cheaply, are all-British, and guaranteed impervious to weather.

1.7 Mc Breaks for DX!

Consistent Transatlantic Working during January

Early Sunday morning, January 8, saw intense G activity on 160 metres and some amazing DX contacts were made with the States, of which the following is extracted from the many reports reaching us.

Peak period was 0500-0830 GMT—just as forecast for our Tests this month—when W1BB worked G2PU, G5RI, G5QY and G6WY. VE1EA did even better, with G2CF, G2JK, G2RC, G5JO, G5QY, G5XH, G6GH, G6HQ and G6MK to his credit, while stations heard by VE1EA were G3AH, G5MY, G6GL and G6GM.

W1AW worked G2PU, G5RI, G5QY and G6WY, and W1DIZ, with only 6 watts input, hooked G6WY! G's heard at the ARRL Hq. station W1AW were G2CF, G2IZ, G2MI, G5PR, G6GL and G6RB.

Then, on this side, G3JU heard VE1NA on 'phone at 0505 and W1BLV, W8BLP and W1ERX on CW. On January 6, G3JU must have established a record for at least one American station—he logged W5BFM on 'phone, R4 at 0718, followed by W2JGR, again on telephony, at a solid R5 for half-an-hour to 0755.

Other 1.7 Mc DX news is that G2PU also worked W8PK, and on January 15 FA8BG, the latter hearing VE1EA, while on this date G2MI contacted an HA for an unusual European and G6GM had a QSO with W1BB.

With the exception of the 'phone logged by G3JU, most of this happened between 1710 and 1800 kc, the frequencies to watch in the forthcoming Tests being W1DIZ, the QRP exponent, on 1760 kc, W1BB 1798 kc, W1AW 1800 kc, and W1ERX 1880 kc—apparently using CW in their 'phone band, and worked by G6WY for his fourth W at the sitting on January 8.

During a third early-morning session on January 22, still more DX came through: VE1EA (1775 kc) worked G6WY, G6GM and G6GL, W1DIZ had another contact with G6WY, while W1BKL (1730 kc) and W8BQ (1715 kc) were heard. W2FJY

(1730 kc) worked G2PL and G6GM, 'PL also getting a contact with W1KUW (1710 kc). FA8BG showed up again on January 22, working G2MI, GW5FI, G6GL and G6WY, and an OZ was heard.

Our congratulations to all concerned on a fine piece of work and an outstanding DX record, which in our opinion not only establishes 1.7 Mc as a seasonal DX band but also stands as one of the best collective efforts in the history of Amateur Radio. For practically all the stations mentioned, it was a case of "first time across on 1.7."

● The Magazine 1.7 Mc Tests

These Tests will be due to commence within a day or two of this issue being published, and the results outlined above augur well for their success. We take the opportunity of reiterating the importance of adhering to the schedule given in the last issue and keeping any QSOs obtained as short as possible in order to allow others their chance to get across.

The calling and listening schedule should be maintained by anyone not called from the other side, any DX heard being named, i.e., if you hear a station, call it. If he comes back, take the QSO—but otherwise do not transmit out of turn. And remember that DX means the States and Canada, not Europeans, since the primary object of the Test is to give an opportunity for Transatlantic working.

The MAGAZINE Test starts on February 4, thence every other day till February 16, during the period 0430 to 0730 GMT each day. From 0430-0440, W/VE calls and Europe listens; from 0440-0450 Europe calls and W/VE listens; from 0450-0500 W/VE calls and Europe listens—and so on at ten-minute intervals.

And let us have those reports as soon as possible after February 16—see our January issue for full details.

The MAGAZINE Services

READERS ARE at liberty to use our free Query Service on any matter connected with amateur transmission and reception, short-wave listening and for information on SW broadcast stations.

Though in practice the service is very comprehensive, one stipulation is that we cannot undertake design work involving replies running to many pages, with the preparation of multi-valve circuits and layouts. Sometimes, we are presented with problems of this sort which would take at least two days of some staff member's time.

We also draw the line at giving QRAs which appear in the latest Call-Book, nor can we give advice, even "in confidence," on the relative merits of commercial receivers and other similar equipment. Test reports on manufactured products appear from time to time as space becomes available, and readers will find our candid opinion expressed therein.

The clearance in the Query Department is now about 7-10 days, due to the very large demand on it—we usually have from 40 to 50 letters in the average day's mail—and the fact that staff mem-

bers' time must also be given not only to the preparation of the next issue, but also to experimental and constructional work for the one after that. Therefore, because you do not get a reply by return, it does not mean that your letter has been filed, burnt or thrown away. And we are always glad to know the result of our diagnosis, explanation or suggestion—as the case may be.

The one rule on which we *insist* is that all queries must be accompanied by a stamped addressed envelope and the coupon from the current month's issue.

● Small Advertisements

As p. 40 is now carrying an average of fifty readers' insertions a month, we not only advise that space should be booked as early as possible (those held over will get first place the following month) but also that in future we shall give priority to readers' small advertisements of wholly radio interest; we already do not accept those which are non-radio in character.

On The Amateur Bands

By Old Timer

LAST MONTH we discussed in general terms our ideas for making the 7 Mc band a fit channel for all to use—not only now, but in the difficult years that face the radio amateur. We propose here to particularise on certain methods of operation which we do not consider to be in the best interests of the majority, but before launching our attack there are a few brighter aspects which, in fairness to all, should be mentioned before the dismal side.

For the last two years, the newly-licensed amateur has shown better judgment in his first few months on the air than his predecessors; the general operation, both on 'phone and CW, has been of a higher standard than we used to expect from the new licensee. We feel that this has largely been brought about by help from more experienced amateurs, and the fact that most operators to-day realise that there is an unwritten code of behaviour to which it is advisable to adhere. Amateurs are more "operator conscious," realising that the individual can only be judged by his signal or sending; this improvement is continuing at an accelerated pace and we hope it may eventually reach the mentality of all who use the amateur bands.

We quite realise that 7 Mc will not be really "cleaned up" until the Spanish Civil War is ended, although the number of propagandist stations appears to be diminishing, and with the hope that this unhappy affair may soon come to an end, we must turn nearer home and rectify our own troubles.

● Duplex Telephony

One of our Scottish readers, James Mathieson of Lanarkshire, wrote a very wise letter which appeared in last month's Correspondence pages. Although a listener, and therefore like the owl (who listens and says nothing), he felt forced to bring the very prevalent trouble of endless duplex operation into the light of day. Our own observations show that certain stations using about 100 watts will continue the whole of Sunday afternoon for two or three hours without once switching off their carriers. The vast majority of amateurs are not over-blessed with spare cash; therefore, imagine the feelings of a QRP operator whose crystal frequency falls under that of a constant-carrier duplex station. Apart from the fact that our licence lays it down that we must listen on our own frequency every ten minutes, we have no hesitation in condemning this practice as selfish in the extreme. From a scientific standpoint, successful duplex operation is a highly desirable method of communication, but we must remember that the 7 Mc band is getting increasingly crowded by transmitters who have as much right to use it as we have. So we appeal to those who delight in duplex working to experiment with suppressed-carrier telephony; not partly suppressed either, but such that the carrier is inaudible when no modulation is impressed on it.

This heading applies both to CW and telephony operation, and is one of the best methods of reducing interference. Say what you have to say without hesitation and remain on the air for the minimum time possible. By doing this, you will make it possible for another station to work intelligently on your frequency without having his remarks lost underneath a lot of "73's" "Good DX" etc., etc. Invariably, we notice in a case where a large number of questions is asked during a lengthy transmission that some do not get answered owing to the fact that they have been forgotten by the weary listener—make your "overs" short and to the point. There is another type of operator which frankly annoys us; the fellow who knows he has a good microphone voice and prefers to talk rather than listen to what the other man has to say; make your QSOs balanced, not "all you and none of him!"

● Multiple QSOs

Undoubtedly, the finest method of reducing QRM is the multiple QSO with stations using the same or adjacent frequencies. This system is proving increasingly popular, and we have no hesitation in recommending that Sunday mornings be devoted to contacting only those stations that are working near your frequency. Always listen first on your particular spot in the band and then "butt in" at the first opportunity if others are using it; we don't suppose for one minute they will mind, in fact our own experience shows that "the more the merrier" is the general rule, and reports from five or six stations are of more value than a single one. If another station is heard later, he may be called by one of the group and brought in to prevent further interference.

● The New 7 Mc

We learn on good authority that the BBC has already allotted two channels for 100 kw stations between 7200-7300 kc, to commence operation in September this year, radiating programmes for Asian listeners. It is not likely, however, that these transmissions will be continued after 5 p.m., but we must still face the probability that Continental Governments will also earmark channels in this 100 kc section of the band, working during our evening hours. Let us realise that 7200-7300 kc will be of little use to us after September, and woe to anyone who QRMs the BBC! The Iraqi BC station, YI5KG, is already on 7200 kc. See the notes elsewhere.

● A Correction

In the October issue we gave details of the "G2BI" aerial as used at G3GH, and unfortunately mentioned that the feeder was tapped 12-ft. 3-in. from the centre; this should have been "12 feet 3 inches from the end" of the 34-ft. top. The

original specification given by G2BI made the tapping point 4-ft. 3 $\frac{3}{4}$ -in. from the centre, thereby leaving 12-ft. 8 $\frac{1}{2}$ -in. from the end, the feeder being 45-ft. 8 $\frac{1}{2}$ -in. to make the long arm and feeder equal a length of 67-ft. As there appears to be a discrepancy of 5 $\frac{1}{4}$ -in. in the feeder tap position between the original specification and that used at G3GH, it would be interesting to know what difference this variation makes in actual practice.*

● Power and the Aerial

H. Beadle of Keighley, Yorks, rightly says that the aerial is of more importance than the power, but factor of location must not be forgotten. He heard a well-known G6 tell a W on 7 Mc that he was using 200 watts to effect the contact and wonders why such power is necessary if a good aerial is used. The answer to this is, of course, that low power and a good aerial will not get you through when conditions are poor, but the added power to the good aerial will do the trick, 50 watts in some localities only equals 10 watts in others, especially when the 10-watt station is situated high up on a hill. Five watts on a mountain top is all that is required to work the world. Commercial communication companies use hundreds of kilowatts fed into multi-beams to maintain a reliable service—no, it doesn't do to decry legitimate QRO.

The well-known Cambridge station at 52 Gilbert Road, very active on all communication bands. The gear is laid out with accessibility and efficiency as the primary considerations.

● G2PL, Cambridge

Peter Pennell needs little introduction, as his signal is familiar on all bands from 28 to 1.7 Mc. G2PL is interested in all branches of Amateur Radio, and is a good example of the balanced type of amateur transmitter of which we spoke last month. VE1EA has been worked on five bands, VU2AN on four and G2PL is always looking for DX on 1.7 and 3.5 Mc, where he holds some excellent records. Recently, he has had to share the ether with G5DQ, who lives next door, but as we hear both these stations frequently it would appear that their amicable (and sensible) arrangement works out very nicely. The easily accessible layout of his station should be a guide to many who desire all-band operation coupled with efficiency.

● An Aerial Problem

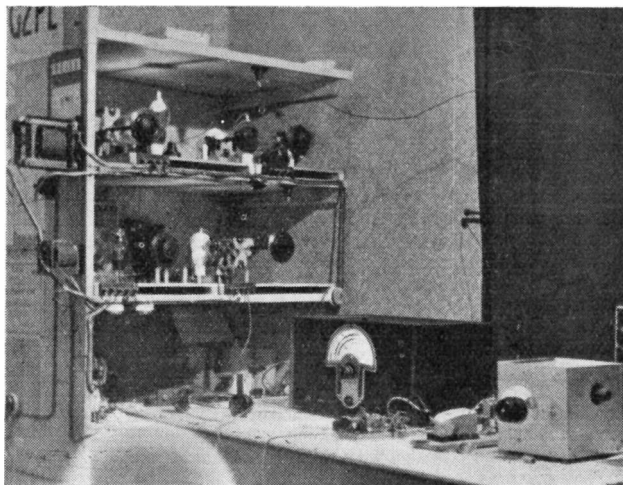
G6HU of Barkingside, Essex has never worked a W, and is now appealing to readers to help him with suggestions for a suitable aerial. At present he uses a "W3EDP," pointing SE-NW, fed at the SE end. He wishes to have an aerial on 7 and 14 Mc

* [The "G2BI" is derived from the Windom, which lays down definite figures for various frequencies. The graph tap position can usually be improved upon to suit the gauge of wire used and other individual factors.—Ed.]

which will cast a lobe into U.S.A. We suggest a common or garden 67-ft. Zepp or single-wire fed arrangement which will radiate in the correct direction, according to our Great Circle map. However, suggestions will be welcomed from all whose aerials face in the same direction as that of G6HU.

● Adjusting "Bugs"

G3LK of Hove asks us to point out that there are many stations (mostly newcomers) who purchase a "bug" key, and then set the dots at 40 wpm and send the dashes at 12 wpm, the result being too horrible to describe. Always set the dots a little faster than you can send them rhythmically on a straight key, and your fist will sound much better. It is good practice to attempt to send so that the man at the other end does not realise that you are using a bug, only that you have very steady and well spaced keying.



A Log Book

of 80 pages, with the standard rulings and Q code, is now available from Messrs. Webb's Radio at 2s. 6d. Their supplement catalogue is also out, listing a wide and fully detailed range of communication receivers, also McElroy keys and code-learning equipment. An interesting addition to Webb's own range is the "Apex" exciter unit, a three-stage three-band rig with automatic switching in the output tank, provision for three spot crystal frequencies, and ECO or CO drive at will.

If You Use

'phone on 56 Mc, it might bring you DX reports if you signed distinctly on CW at the end of each transmission. Speech carriers too weak to resolve are constantly heard on 5 metres—but even an R2 beat will give a Q5 CW signal. And always indicate the band on every transmission by "56 Mc" or "five."

Two-Valve Superhet Adapter for 7 Metres

Easily Built—Total Cost 30s.

By G. C. Turner, G5IH

AN ADAPTER for the reception of the transmissions on the Alexandra Palace sound frequency at distances outside the normal range gives much scope for UHF experimental work, as the design following can also be applied to the 56 Mc band.

Low cost has been a primary consideration, and provided there is a 6-volt filament supply available, should not exceed the very reasonable figure of £1 including valves. Results reach the standard of the sound equipment in expensive television receivers, in a location about 60 miles from Alexandra Palace, and at sea-level.

● Construction

The circuit is almost self-explanatory. All the coils are mounted permanently on their respective condensers, and are wound on 1-in. diameter corks. Self-supporting coils were found to introduce queer microphonic effects when the volume from the loud-speaker was at all great.

Coupling to the broadcast receiver is taken from a tuned circuit, the gain over the choke method being very noticeable. The pre-set condenser, C10, should have a coil of about 150 turns close-wound on it. This can be tuned for an intermediate frequency of about 1500 kc, which may be found to be suitable. A little experiment with the intermediate frequency is recommended, as some broadcast receivers have a definite peak pick-up at certain frequencies, depending upon the method of aerial coupling. The best way of determining this correctly is to place the tuned circuit C10, L4 in the aerial lead to the broadcast receiver and vary the pre-set condenser until a disappearance of all sounds emanating from the ether will indicate resonance.

The valves are screened in cocoa tins. This method is cheap, effective, and dispenses with valve-

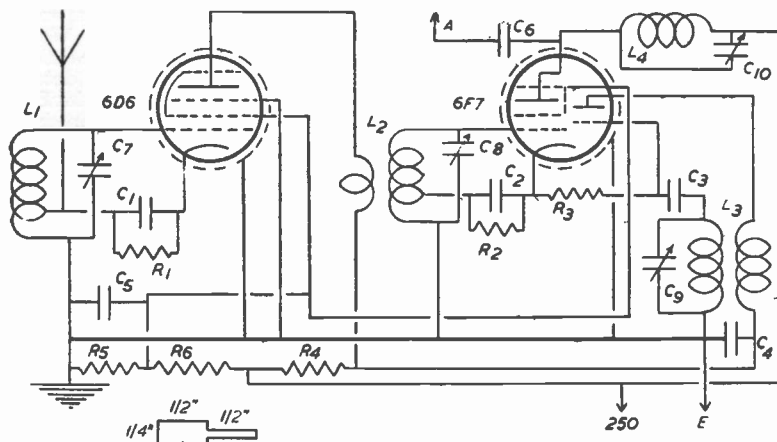
holders and their possible losses. Holes are first punched near the top and bottom for ventilation. Next, a hole is cut in the bottom of the tin to fit the valve base, which has a few turns of insulation tape round it near the glass. The valve is now placed in the tin with the base through the hole, and more tape round the protruding base will hold the valve firm. The tin lid is screwed to the base-board, and, inverting the valve, the tin is placed in the lid.

To avoid the danger of soldering direct to valve pins (the connections inside the pins may be unsoldered in the process) pieces of tin are cut as shown in the illustration. The wide end is wrapped tightly round a valve pin, and the thin end is used as a solder tag. These should now be removed and the "tube" closed slightly at the tag end. This may lack the appearance of the ready made valve-holder, but it really is low-loss, which is important when dealing with the higher frequencies.

The layout can be left to the constructor except for the necessary point of screening the three tuned circuits. No additional screening is necessary provided that the first detector and oscillator circuits are mounted one each side of the 6F7 can, and the RF stage C7/L1 on the side of the 6D6 can remote from the other tuned circuits. All small components are suspended in mid-air by the thick wire used for connecting up; this also helps to shorten leads.

● Housing

The whole adapter is built into a full-sized biscuit tin. If enamelled black, the appearance is quite effective. The lid of the tin becomes the panel and a base-board is screwed $\frac{1}{4}$ -in. from the edge and held by large brackets to avoid any movement. The tin must be carefully earthed.



Complete circuit of the superhet adapter for 7-metre reception from Alexandra Palace. Values are given in the text. It is essential to screen the valves by the method described; points marked A, E, go to the input of the BC receiver, and inset a sketch of the valve-pin connecting tags.

The leads to the broadcast receiver should be as short as possible. Twin flex is quite satisfactory in avoiding intermediate frequency pick-up.

A convenient place for the HT tap for the adapter is on the lower voltage side of the loud-speaker field coil on the BC set. Other tapping points will readily suggest themselves.

Coil-Details (wound on 1-in. diameter corks. Wire gauge 16):—RF stage, L1, 6 turns spaced to cover 1-in. Cathode tap $\frac{1}{2}$ -turn from earth end; 1st Det., L2, ditto, with 3-turn coupling coil close to earth end; Osc. coils, L3, 5 turns each wound continuously to cover 2-ins. With both coils wound in the same direction the connections, starting from either end, should be: 1 anode, 2 HT, 3 grid condenser, 4 earth.

● **Operation**

Attach aerial to cathode tap of 1st detector coil and tune to maximum frequency. Next tune the oscillator until a hissing sound is heard; the two circuits are now more or less in step and should be kept so while searching for the transmission. This should be *audible* without the RF stage. Having found the station, transfer the aerial to its permanent position and tune the RF stage. Final adjustments can be made and no further tuning is necessary except for the oscillator side. The annoyance of drift on this stage can be avoided by switching on the adapter about 20 minutes before it is required.

If the permanent circuits are accurately tuned there may be considerable cutting of the higher

audible frequencies. The tuning can be slightly staggered without appreciable loss in signal strength; this will help to bring out the excellent quality of the Alexandra Palace transmissions.

Although the type of aerial is not of great importance in this circuit, a specially effective one used with the adapter is 33-ft. 9-in. long, at an angle of about 45 degrees to the ground, with the *high* end towards the transmitting station. A single wire lead-in is tapped 12 feet from the house end.

LIST OF PARTS AND VALUES

- C1, C2, C4, C5—.01 mF, non-inductive.
- C3—.001 mF, ditto.
- C6—.0002 mF, ditto.
- C7, C8, C9—15 mmF variable, Premier.
- C10—.0001 mF, pre-set, Premier.
- R1—500-ohm, 1 watt.
- R2—1500-ohm, do.
- R3—100,000-ohm, do.
- R4—30,000-ohm, do.
- R5, R6—50,000-ohm, do.
- Slow-Motion Dial, LT Transformer, 6.3v., 1 amp., 6D6, 6F7 valves (Premier). Biscuit Tin, Wire, Insulating Tape.

The Peckham Challenge

This challenge was taken up by the Bolton Radio Society and the Sheffield Short-Wave Club. The rules have been made as simple as possible. Here they are:—

1. Time and Date. 0500 to 2400 GMT, February 19.
2. Only three members per Club, selected by the Committee beforehand, to participate.
3. Telephony stations only to count for points, using all amateur bands except 56 Mc.
4. Except on 1.7 Mc, stations outside Europe only to count for points, not including W1-4, W8-9 and VE1-3. On 1.7 Mc *all* stations heard, including G's, will count.
5. One point will be given for each station identified, and a multiplier will be used according to the total number of bands upon which reception is recorded in each Club entry, i.e., 43 stations heard on four bands would make the score 172 points, and 80 stations on two bands would be worth 160 points.
6. Entries must reach this Office, addressed to The DX Scribe and marked "Club Contest" on the envelope, by Monday, February 27. Each log must be signed by the Club secretary, who will be responsible for the fair conduct of his Club's entry, and all three logs must be sent in together by him.
7. Logs must be in an individual entrant's own writing, and neatness, legibility and detail will be taken into consideration.

8. The DX Scribe reserves the right to reject the whole or part of any log or logs submitted, and his decision must be taken as final.
9. This Contest shall not be eligible for any Magazine award.

POISONALITIES AGAIN . . .

THE TORTOISE who takes at least three minutes to throw all the switches in his station and change over.

* * * * *
THE CHIRPER who says that his self-excited rig is as good as CC.

* * * * *
THE SWANKER who hides his poor knowledge of code by complaining of QRM, but has always worked something extraordinary at some impossible hour "the night before," usually on a band on which such stations are never heard.

* * * * *
THE STAMP COLLECTOR who steams SWL reply envelopes and does not QSL.

* * * * *
QRO that has no time for QRP, QRP that despises QRO; CW that abhors 'phone and 'phone that hates CW.

* * * * *
THE CODE IMPROVER who verbally adds "s" to 73 and makes it "best regards's".

"The Short-Wave Magazine" circulates throughout the World

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A NEW COMPLETE RANGE OF 7 HIGH FIDELITY PA AMPLIFIERS FOR AC or AC/DC MAINS OPERATION.

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3-watt AC Amplifier	40/-	£2 : 15 : 0	8-10-watt AC/DC Amplifier	£4 : 10 : 0	£5 : 5 : 0
3-watt AC/DC "	40/-	£2 : 15 : 0	15-watt AC "	£5 : 15 : 0	£7 : 0 : 0
6-watt AC "	£5 : 5 : 0	£6 : 0 : 0	Black Crackle Steel Cabinet 15/- extra.		

30-60-watt AC Amplifiers or Modulators, completely wired and tested, in Black Crackle steel case. Power Pack in separate case to match

30-watt £12 : 12 : 0 complete. 60-watt £15 : 15 : 0 complete.

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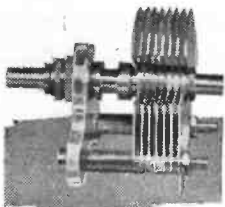
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20-30 Watt, 29/6



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TROLITUL Insulation. Certified superior to ceramic. All-brass construction. Easily ganged.

15 m.mfd.	1/6	100 m.mfd.	2/-
25 m.mfd.	1/9	160 m.mfd.	2/3
40 m.mfd.	1/9	250 m.mfd.	2/6

All-brass slow-motion Condensers, 150 m.mfd.,

Tuning, 4/3; Reaction, 3/9.

Double-Spaced Transmitting Types.

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160 m.mfd.	4/6		

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AMERICAN VALVES.

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UNIVERSAL TYPES, 20 v. .18 amps., S.G., Var-Mu., S.G., Power, H.F. Pen., Var.-Mu. H.F. Pen., 4/6 each.

13 v. .2 amps. gen. Purpose Triodes, 5/6; H. F. Pens. and Var.-Mu. H.F. Pens., Double Diode Triodes, Oct. Freq. Changers, 7/6 each. Full-Wave and Half-Wave Rectifiers, 5/9 each.

BATTERY VALVES, 2 volts, H.F., L.F., 2/3. Power, Super-Power, 2/9. Var.-Mu-S.G., 4-or-5-Pin Pentodes, H.F. Pens., V-Mu-H.F. Pens., 5/- Class B, 5/- Freq. Changers, 7/6.

NEW TAYLOR TUBES

T.40. TZ.40. NOW IN

STOCK. Price 24/- each. Prices

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now 10/-; 866 Junior, 7/6; T55,

45/-; 203Z, 52/6; 745, 45/-; T.20

and TZ.20, 17/6 each.

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0-1 m.a.	...	25/-
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0-80 m.a.	...	22/6
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0-250 m.a.	...	22/6
0-1 m.a. movements with calibrated scale volts—ohms—m.a.	...	27/6

MODEL No. 21 MODEL No. 311. 3-in. square case, 3 1/2-in. diameter round case.

0-1 m/A	... 18/6	0-1 m/A	... 22/6
0-10 m/A	... 17/6	0-10 m/A	... 20/-
0-50 m/A	... 17/6	0-50 m/A	... 20/-
0-100 m/A	... 17/6	0-100 m/A	... 20/-
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MODEL 311. 0-1 m/A. movement, with calibrated scale, volts-ohms-m/A., 25/-.

VOLTAGE MULTIPLIER RESISTANCES, guaranteed accuracy ± 2 per cent. All standard ranges, 1/3 each.

TAPPED SHUNT to provide readings of 5 m/A., 25 m/A., 250 m/A., and 1,000 m/A., 5/6.

PREMIER SHORT-WAVE KITS

Are all sold complete to the last detail. All valves and coils are included as well as theoretical and wiring diagrams, and lucid instructions for building and working. Thousands are giving excellent results all over the world.

Each Kit uses plug-in Coils and the Coils supplied tune from 13 to 170 metres. All Kits are supplied with a steel chassis and Panel.

1 Valve Short-Wave Receiver or Adaptor Kit	17/6
1 Valve Short-Wave Superhet Converter Kit	20/-
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2 Valve Short-Wave Receiver Kit	25/-
3 Valve Short-Wave Screen Grid and Pentode Kit	58/6

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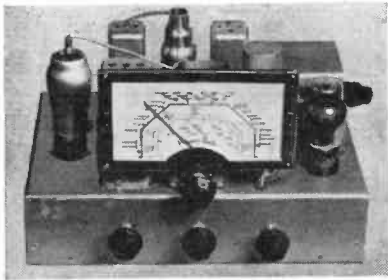
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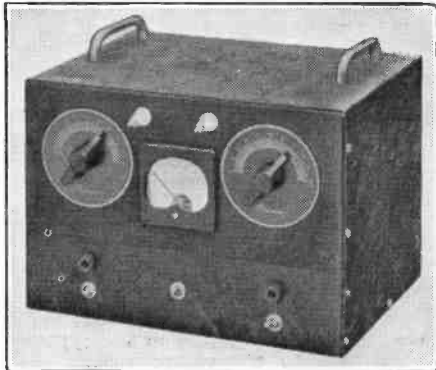
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5 v., 3 " CT. ...	8/6
6 v. 2 " CT. ...	8/6
6.3 v., 3 " CT. ...	8/6
7.5 v., 3 " CT. ...	8/6
10 v., 3-4 " CT. ...	11/6
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3,000 volt Test Type

2.5 v., 5a CT. ...	11/6
2.5 v., 10a CT. ...	12/6
10 v., 4a CT. ...	14/6



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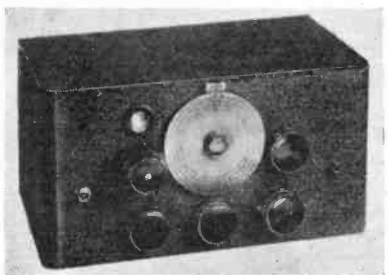
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Provision for single wire or Di-pole Aerial. International Octal Valves for 200-250 v. mains (AC). Built into Black Crackle Steel case providing complete screening. 10½ in. Moving Coil Speaker in separate steel cabinet to match Receiver. Complete with all tubes and Speaker ... **£8-8-0**

Listeners' DX Corner

By The DX Scribe

Lawrence Delve, BSWL350, 27 De Villiers Avenue, Great Crosby, Liverpool, 23, uses a Lissen bandspread receiver. Since taking the snap he has replaced the European map with one of the world.



ONE OF THE chief objects of the Corner is to give collected information of interest primarily to the listener and AA man. We have always kept well in mind the fact that many of our readers will eventually graduate through the "artificial aerial" stage to full license, and our policy will be continued in this direction, although we know that many transmitters already licensed follow our destinies month by month.

In view of the above, we were very pleased to have a letter from an "old faithful"—John Burt, first an SWL, secondly 2DKQ and now, G4AB, at the age of 17. He thanks us for all that the DX Corner has done for him, and we hope he will continue to report occasionally to this feature on some of the better things he hears.

● The 1.7 Mc Carriers

We are glad to tell you that we have at last cleared up the mystery of those persistent carriers that used to clutter up the middle of 1.7 Mc, especially on Sunday mornings. If it had not been for the fact that they stopped about three months ago, we should not have arrived at the solution, but we always believed, rather vaguely, that they were connected with Radio Normandy, and it now appears that these carriers were merely signals from the numerous oscillators of nearby BCL superhets radiated by their receiving aerials. The fact that they formed a cluster rather than a common frequency shows that the IF used for different receivers varies slightly; if you work it out, taking the centre of the band as about 1870 kc and then subtract the IF of the BCL receiver, you will arrive at the old frequency (approximately) of Radio Normandy. This shows that large numbers of modern BCL supers are using an intermediate frequency of between 350 and 450 kc. Now that Normandy has changed to a lower frequency, these unwanted signals will have shifted outside the LF end of 1.7 Mc, so we have peace again until such time as another popular BC station uses a frequency between 1300 and 1500 kc.

● QSLs Received

Con. G. Tilly, Bristol, from VE9AT, 4ZK, 4IF, CE3CH, CN8BA, U3BX, CO8BC, VS7RA, PY7AI, 6AG, YU7AY, HK3CG, VP2AT, ZS2N, 6DK, VK6MW; D. J. Mathers, of Dublin, from ZS5BK, 2N, YM4AS, YU7LX, and numerous Europeans; W. J. McClune, of Londonderry, from ZS5AQ, 5Q, 6CF, SU1AX, VK7RZ, ZL4AQ, YV4AE, HK5JD, VU2FS, 2CQ; C. E. Teesdale, 23 Queen Street,

Boston, Lincs, from YS2LR (QSL via **W5FNX**), VQ5ELD, F18AC, PK1MF, FQ8AB, XU8MR, J7CR, 5CC, HS1BJ, ZD2H, 4AB, CT3AN, **CR7AY**, VU2FH, VK6PK, VE5LD (N.W.T.), VP5PZ, VS6AH, VS1AA, ST2LR, VQ3HJP; VQ4CRE and rare W's. This last list is for CW reception only, and shows what a knowledge of the code will do! Frank Hitchcock of London, S.E.1, from TF3C, SU1AM, CO2SV; Ray Small, of Harrow, from ZE1JA, HI4V, XZ2EZ, 2DY, PK1ZZ, 4JD, VP3MR, 3BG, VS7RF, ZS2N, K6OQE, 6OJI, CR7BH, KAIME and VK's; Nigel Neame (2AUB), of Brighton, from W6's EOW, IKV, PBD (Ariz.), FT, VK4JP; L. J. Coupland, of Boston, Lincs, from K6ED, 6AKP, 7EVM, 7KD, VE5LD, VP1AA, 2AB, 4TP, ZC6AQ, VK9VG, 7QZ, 6OR, VR4AD, CR7AY, FB8AD, ST2CM, VQ2FJ, 3ALT, 4KTC, XU8LS and ZB2A—again, CW rewarded him. He kindly sends us the photograph of VR4AD.

● CW only

VK9VG, in New Guinea, also a rare one, uses 100/150 watts CC at the HF end of 14 Mc and 'phone on 14I00 kc. Another Boston enthusiast, C. E. Teesdale, reports some excellent 14 Mc CW DX—VP6LN, HI6Q, VQ8AI, VS6BE (China Command HQ, Hong Kong), VK4HN (Papua) and VU7BR, whose full QRA is T. J. Brown, Bahrein Petroleum Co., Bahrein Island. This latter station is ex-G5TB who was issued with the rather strange prefix of VU by the India Office, which controls these matters in Bahrein; VS8 is supposed to be the correct one. VQ5ELD is very active in Uganda and can be QSL'd to L. H. Durham, Post Office, Entebbe; YS2LR works on both 28000 and 14400, is an ex-W operating under cover, and has a very handsome card which can only be obtained by sending reports via W5FNX.

● 7 and 3.5 Mc 'Phone DX

K. W. Wiseman, 6 High Street, Chelmsford, Essex, has been listening on 7 and 3.5 Mc, and was rewarded on 7 by VP2LC (Miss Marie Devaux, "Chesterfield," Castries, St. Lucia), 4TK, 6MR and 6TR between 2130 and 2200 GMT on January 8, while 3.5 Mc yielded W1,2,3,4,8, and VE3QR on December 27 between 0040 and 0120. There is no doubt that these frequencies will produce much DX of great interest both on 'phone and CW and will prove a welcome change from 14 Mc listening. H. Owen, of Newcastle, Staffs received his first YV on 7 Mc—YV4AX on CW. A Greenland station (OX) is active on 3.5 Mc CW and has worked some G's.

● 1.7 Mc

We are publishing a few of the 1.7 Mc SLP logs in "Calls Heard" and will also give some more next month with the other SLPs. Conditions were the best so far recorded on that date, and a glance at Martin Bourke's Jersey log will show what can be received on this frequency. If any of you stayed up till about 5 a.m. you would have been rewarded by Transatlantic signals from W1, W8 and VE, besides FA8BG actually on during the SLP. J. Heath (2FRJ), "Heathcot," Hedge End, near Southampton, asks if a two-way 'phone contact has ever been made between W and G on "160"; we think so, but forget the exact details, as it was believed to be about 1925 and that's a long time back, even for your Scribe!* We hope that this month will produce another 'phone contact during our 1.7 Transatlantic Tests. Joseph Walker (2DCF), 12 Howard St., Ancoats, Manchester, reports FA8BG, F8RJ and OZ2PX during the SLP and says the QRM was just like 7 Mc, while Martin Bourke has heard 12 countries in 3 continents on 1.7! We hope that all listeners who can read CW will support the MAGAZINE Tests, as we feel pretty confident that the results will surprise the most hard-boiled amateur. T. Brown (2FYH), 15 Apsley Street, Partick, Glasgow, W.1 is willing to listen on 1.7 Mc any time after 1800 GMT.

● The Six-Continent Round Table

R. Gammons, BSWL 1037, "Asthall," The Slade, Headington, Oxford, was fortunate to hear the six-continent round table which took place on January 4 between W4DLH, G5ML, HK5AR, VK4JU, VU2CQ and SU1WM (R. Gammons read it as SU1AM). The actual exchange of reports between these six 'phone stations was achieved in the incredibly short time of 1 minute 50 seconds, thereby beating easily their previous record (on January 4 last year) of 3 minutes 20 seconds. We don't think we'll talk any more about record HACs after this!! R. Gammon is very pleased about it, as his receiver was only an 0-v-1 with run-down HT batteries and a half-wave aerial. The time of this feat was about 1300 GMT and it had all been arranged on the previous day.

● Queries Answered

D. J. Mathers, 36 Lower Beechwood Avenue, Ranelagh, Dublin, queries SU5KW, VP2ZA and ZB1U. SU5KW is believed to be ex-G5KW operating in Cairo, VP2ZA uses 1ZA, 2ZA, 3ZA, 4ZA or 5ZA according to which country he visits, as the station is on a ship; therefore we fear you cannot count him as different countries! ZB1U is fairly newly-licensed, C/o Naval Wireless Station, Rinella, Malta. W. J. McClune had his card returned from OY1AA (why don't you believe your DX Scribe?), and N. J. Rutter, of Swindon, wants to know if TG9BA is ex-TG5—we believe that this is not the case, and do not know what has become of TG5 unless he was asked to close down! Bud Hawkins, 8 Robertson Avenue, Bovington Camp, Wareham, Dorset, asks if we know anything of some station that sounded like "VQ4ETJ" in QSO with ZS6AJ. This would almost certainly be VQ5EJT, who can be QSL'd via VQ5ELD, and we suggest that "Nairobi," the QRA heard, should have been

* [Records are hazy and we cannot trace any 'phone QSO.—ED.]

Entebbe. Gordon Hepburn, c/o D. Collins, 26 Livingstone Street, Clydebank, Scotland, is anxious to have further details of "A-3-Radio Texas" heard on November 15 at 1930 GMT on 14 Mc 'phone. We feel sure that this call was G3RT, only that it is possible that Gordon, being used to a Scottish accent, did not recognise the speech of another part of the British Isles. We have no information about G3RT but perhaps he will check his log and then write Gordon and put his mind at rest! W. W. Pollard rightly points out that the latest edition of the Call Book lists Zanibar as VP1 whereas the correct prefix should be VQ1. VP1 is for British Honduras. He asks if conditions are bad just now as his newly rebuilt 0-v-1 will not bring in the DX on 7 or 14 Mc. It depends when you listen; some nights have been very poor, but others excellent—it all depends if you strike a lucky evening. E. Trowell, of Sheerness, Kent, requests the QRA



VR4AD, A. W. Dickes, Tulagi, British Solomon Is. He uses 20 watts to that neat two-stage rig and an Eddystone Four receiver.

of ZC6EC. This station is operating under cover in Jerusalem, and we cannot disclose his exact QTH. ZC6AC is in a similar position, and ZC6RL is also believed to be another so situated.

Several readers have pointed out a danger in publishing lists of operators who have the courtesy to QSL. It is felt that these good-natured ones may be inundated with too many reports, and in order to stop such a possibility, we suggest that a coupon should accompany every report to these stations. After all, it is very useful to know that our coupon is not being cast upon the waters! Some readers have sent us information on those stations who QSL'd with and without coupons, but we are not going to tell you who sent a card without the IRC—it just wouldn't be fair! W. J. McClune noticed that W 'phones were received amazingly well on 3.5 Mc at the beginning of the month, but they were all working each other. This is an interesting point, because W/VE telephony stations use 3900-4000 kc,

DX CORNER

with W between 3950 and 4000, which is well clear of the nearest frequency used by British stations, i.e., 3720 kc, while the Americans do not usually listen for Europe, and vice-versa.

● The Season's DX Contests

Do not forget the DX Contests to take place in February and March. The BERU* (CW only) runs between 0001 GMT February 4 and 2400 GMT February 7 (Senior event) and from 0001 GMT February 9 to 2400 GMT February 12 (Junior section). The ARRL DX Contests will be held as usual in March and the CW portion will take place from 0001 March 4 to 2400 March 12, the 'phone "dog fight" being staged at the same times from March 18 to 26. Heaven help the man who overmodulates! The SARRL (South African) Contest came off in January and large numbers of ZS's were heard during the weekends of the 7-8 and 14-15. Then there is the far-famed "Coupe REF" between all French-speaking countries and their colonies. The 'phone portion is over February 18-19, midday to midnight, and the CW contest from February 26 noon till February 27 midnight. Many of the rarer French prefixes show up for this.

● Countries

Norman Vaus, of Bournemouth, claimed to have heard 36 countries in 5 days, but now Martin Bourke comes along with 50 countries between 1500 on January 6 and 1010 on January 7—a total of 19 hours 10 minutes listening time. To give an idea of what he heard he quotes CN8, CR6, CT, CT2, CX, D, EI, ES, F, FA, G, G(C.I.), GI, GM, GW, HA, HB, I, K7, LA, LU, LX, LY, OH, ON, OQ, OZ, PA, PK (Java), PY, SM, SP, SU, SV, TF, U (Russian S.F.S.), U2 (White Russia), VE, VK, VP1, VQ2, VQ8, W, XU, YL, YM, YV, ZE, ZL and ZS. No cheating here, an honest 50! We wonder how long this record will last? He has now received 158 countries with 63 on 28 Mc. P. V. Jacobs, 63 Douglas Road, Goodmayes, Essex, would like to see an official country list, but as there is already one in existence, we suggest you get a copy of the January editions of "QST" or RADIO.

● Set-Listening Periods

Feb. 12 1800-2000 GMT—14 Mc (British Empire CW Stations only)

Feb. 19 1100-1300 GMT—28 Mc.

Feb. 25 2230-2400 GMT—1.7 Mc.

Feb. 26 1900-2100 GMT—7 Mc.

It will be noted that the 14 Mc SLP takes place during the Junior BERU Contest when there will be a grand chance to receive new parts of the British Empire. Please *do not* include lists of G calls in any but the 1.7 Mc period, as these do not usually give an indication of receiver performance.

● Notes

Peadar O'Mongaigh, Ballaghaderreen, Co. Roscommon, Eire, informs us that VP1BA has come to the end of his tether as far as QSL'ing SWLs is concerned. Patrick Whittle (2OAW), 32 Burleigh Gdns., Southgate, London, N.14 would like to get in touch

* [BERU—"British Empire Radio Union," a nominal amalgamation of the national amateur societies of all the countries in the Empire.—ED.]

with other SWLs in his area (YLs not excluded), and promises to teach them the code. A. Hamilton (BSWL 24), 165 Cambridge Road, Kilburn, London, N.W.6 reports the QRA of CR6AI—Joao Carlos Chaves, Box 62, Mossamedes, Angola—and he QSLs! N. J. Rutter, of Swindon, is to be congratulated on hearing PK6XX on January 8 at 0905 GMT; he informs us that the QRA of K7FLP is incorrect in the Call Book and should read:—Box 79, Fairbanks, Alaska. His log is full of *really good DX*.

A few frequencies from the log of F. J. Rutter, 324 Wigan Road, Standish, Wigan, Lancs, which he guarantees to within plus or minus 5 kc—TG9BA 14317, YV5ABQ 14120, HK3CW 14312, FB8AH 14390, OA4L 14085, VQ2HC 14030, FB8AD 14340, CE3AT 14010, and HH2D 14140. Bud Hawkins tells us that ZS4H does not want cards. N. I. Neame, 39 College Place, Brighton, 7, heard HK1BM and HK1AO on 7 Mc 'phone at 0300 GMT. Bob Everard is not to be outdone by Willard Parker's claim in last month's Corner, and has also received over 2,000 cards, including more than 100 countries verified on 'phone. Gordon Chalwin, 86 Frimley Road, Camberley, Surrey, sends his first list of CW received, largely European but including YM4AD, 4AV and ZB1K. L. Bragborough, 2DUX, 15 Crowtrees Crescent, Brighouse, Yorks, will take tests on 56 Mc, as will H. W. Darvill, BSWL282, 15 Ridge Crest, Enfield. Birmingham readers interested in USW or Morse practice should write H. H. Parnham, 2DZM, 85 Great Tindal Street, Birmingham, 16.

DX FORECAST FOR FEBRUARY 1939

North America,	(All times GMT)	7 Mc	14 Mc	28 Mc
Eastern States of U.S.A.,	VE1, 2, 3, VO, K4 and West Indies ...	2200-0800	1300-2200	0100-1800
Western States of U.S.A.,	K7, VE4, 5 and XE ...	0000-0800	1600-2000	1500-1730
			0600-1000	
Central America	...	2200-0800	1500-0800	1100-1600
South America.				
All ...	...	2100-0800	1900-0900	0700-0900
	(Note:— S. America is frequently heard when U.S.A. signals are absent)			1100-1600
Africa.				
ZS, CR7 ...	...	1900-2100	1600-2000	0700-1600
VQ2, 3, 4, OQ, ZE, ZD, FB, etc.	...	1900-2100	1600-2000	0800-1500
FA, FT, CN, SU, ST, I7 ...	...	1700-0900	0800-2200	0800-1500
Asia.				
J, XU, MX, VS1, 2, 3, 6, 7, UO, FI, HS, etc. ...	...	1800-2100	0800-1000	0800-1030
			1200-1700	
YI, ZC6, VU (north), US, 9	...	1700-2200	0800-1000	0800-1200
			1200-1800	
Oceania.				
VK, VK4 (Papua), VK9 ...	...	1900-2100	1400-1800	0900-1200
			0700-1100	
ZL, VR2, 4, 6 ...	...	1900-2000	1600-1800	1000-1130
			0600-0800	0700-1100
PK, KA, K6 (Guam) ...	...	1900-2100	0700-0900	1000-1130
			1400-1800	

Note:— Signals may frequently be absent from 14 Mc between 0100 and 0500 during February.

We regret that owing to our contributor's temporary indisposition, the next article in the Cathode-Ray Tube series will not appear till next month.

CALLS HEARD SECTION

1.7 Mc

Set Listening Period I

(January 7-8, 2300-0010 GMT)

M. C. BOURKE, 2AOU, "Creditor," Samares, Jersey, Channel Islands. 1-v-1 (battery). Two 33-ft. Windoms. **C2AX**, BI, CD, CF, DI, DF, DH, DU, FO, HW, IJ, JK, JL, KO, MI, NJ, PU, QM, RC, UJ, WS, XC, XP, ZZ, 3BU, BY, DH, GH, JK, KF, LZ, MD, PM, PU, SI, WA, YB, ZL, 4AS, AU, 5BM, DQ, HS, IL, JA, JH, JO, JU, KP, LF, MQ, MV, NC, OH, PA, PX, QV, RI, SF, TN, TO, VT, WW, 6AB, BQ, CT, DQ, FO, GM, GN, HG, KP, MC, NF, NM, OM, RB, SQ, UT, VD, WY, YR, 8AB, BD, DV, GN, JM, JR, MD, ML, MW, NF, NL, NV, PX, QZ, TR, US, VN, WF. **CW2BG**, HH, 6KY, 8HI, JY, WU. **FASBG**. **F3MD**.

K. BUNSTON, Broad Hinton, Wilts. CW-C2HW, FO, CV, UD, XP, XC, XS, PU, SU, CF, IZ, 3MD, GF, WQ, PZ, ZJ, KS, XS, GF, LZ, 5IL, IJ, WU, KV, QY, BM, RI, DQ, MY, JO, ZT, PR, TO, HS, JH, OH, AO, 6CT, FO, VC, YP, OM, WY, YU, RB, NF, GH, GL, YR, UT, SQ, 8NL, US, NF, WF, BI, PX, JP. **CM2LQ**, 5ZX, 6JJ. **CW2WO**, 5FI, 6AA, 8HI, WU.

J. C. WARDHAUCH, 2DTT, 20 Hall-gates, Hexham, Northumberland. 1-v-2.

CW and 'Phone-C2CD, CF, GA, JL, NJ, RI, ZP, 3LZ, WA, 5IJ, IL, KT, MY, NG, PX, PU, QY, TO, ZQ, ZT, 6CU, KS, NF, NM, UT, VC, 8AB, BD, JM, MW, QZ, TR. **CM6JJ**. **CW2WO**, 6KY.

ALAN MACFARLANE, 2DMH, 132 Burscough Town, Ormskirk, Lancs. 1-v-2. 66-ft. Window.

C2AO, CD, DF, GN, HW, JK, JL, KO, MI, NJ, PU, QM, SC, SI, UJ, XC, XG, XP, ZP, 3AH, BY, FM, GD, GH, JT, JU, JV, IZ, MD, OA, PJ, WA, ZA, ZJ, 4AS, AU, 5AO, DQ, FN, GT, HS, IL, JO, JU, KT, MY, NC, OH, PR, PX, QY, RI, RY, SF, TN, TO, VT, WU, WW, XH, ZT, ZQ, 6AB, CT, FO, GL, GM, HG, HB, KS, MC, NF, NM, OM, QA, RB, SQ, UT, WY, YR, YU, 8AB, AH, BD, BI, GN, JM, JR, MD, ML, MW, NF, NL, NV, PX, QZ, TR, US, VN, WH, WF. **CW2GV**, WO, 5FI, 6KY, OQ, 8Y, WU. **CM6IZ**, 6SR, 8SV, E15J. **F3MD**. **FA8BG**.

E. KESTIN, G3ZL, 55 St. Mary Street, Weymouth. 1-v-1. 135-ft. Zepp-fed to centre, 30-ft. high. E-W.

C2CD, DU, FO, IZ, JL, JM, MI, NJ, PU, RY, XS, YF, ZP, 3DZ, GF, MD, SI, WA, 4AK, 5BM, CU, GT, GY, HS, IJ, JU, KT, MY, NF, OH, PR, PX, QY, RI, TO, VT, WW, ZQ, 6AB, CI, CU, OQ, LF, NF, UF, UT, VC, YP, 8JM, MD, NL, TR, US, WF, WR. **CM5DX**. **CW2GV**, 6KY.

H. OWEN, 2 Campion Avenue, Basford Park, Newcastle, Staffs. "All-World Two." 33-ft. end-on. ENE-WSW.

CW-C2AX, CF, DU, JL, LK, MI, MN, PU, RC, UJ, XP, 3AH, MD, SB, XS, 4AU, 5HS, IJ, JO, JU, MY, PR, QY, TN, TO, WW, ZQ, 6GL, NF, NM, OM, RB, 8AB, BD, GN, JM, JR, ML, NF, NL, QZ, TR, US. **CW2WO**, 8WU.

1.7 Mc General

C3PZ, 61 Broadway, Northampton. 1-v-1. 33-ft. vertical (TX aerial: W3EDP). 24.12.38-8.1.39. * Indicates QSO.

CW-C2AO, HW, IX*, IZ, JV, NJ*, PU*, RI*, WS, YY*, ZP*, 3BY, GF,

BU*, HS*, JK*, JU*, LZ, PJ, WQ, YZ*, 4AK, AU, 5BM, DQ*, FN*, HS*, JO*, JU, KT, LO, MY*, PK*, QK, QY*, RI*, RY, TD, TO, UQ*, 6CT, GH*, GL, GM, HB*, LF, MC, MK, NF, NM, RB, SQ, VC, VD*, WY*, 8AB, BD*, FX, GI*, IV*, JM, MD, NL, QZ, ST, VN*, WF. **CW2BG**, WO, 5FI, OD, 6AA. **CM5QM**, 8SV*. E16F. F8JT. VEIFA. W1BB, BKL, ASN.

G6CI, 19 Melville Road, Coventry. 0-v-1. * Indicates QSO.

G2CF*, NJ, AF*, IN, AJ, IX*, VQ, DF, BF, OP, NZ*, VY*, XS*, AO, 3GF, JT, OA*, JW, VT*, PN, IS*, JU*, YZ*, BU*, 5KT*, IH, JU, KV, RI*, IL, TO*, ZQ, NC, AO, FY*, MY*, 6TC*, DB, TR*, CD, OI, FK, QM, KP*, YU*, GI*, YR, AA, OS*, 8NL, JM, BI, NV, NF*, MD, AF, PR*, QZ*. **CM3UU***, UA*, 6XI*, HB, 8SV*. **CW5TC**, 8CT*, WU*. **F3AR**. **ON4OQ**. **F8RJ***. **SM7QY**. **D4SZK**. **OZ2PX***. **E15S***.

A. HAMILTON, BSWL24, 165 Cambridge Road, London, N.W.6. Dec. 12, 13, 14, 18, Jan. 9, 11.

CW-C2AO, AX, BF, CF, DF, FO, MI, QM, TG, 3BU, GH, HS, JU, JW, UJ, WA, ZJ, 4AK, 5AO, BM, CU, GT, IB, IL, KV, MY, PR, QY, RI, TN, ZQ, 6CD, CI, GL, GM, HB, HD, NM, PA, RB, VC, YR, YU, ZR, KP, 8AF, GG, JR, TL, VN, WF. **G18LF**. **CM6LG**, 8SV. **CW5FI**, OC, TC, 6KY. **F3MD**.

'Phone-C2KT, NV, XP, 3GH, GW, WC, 5CZ, MM, TO, 6GO, HG, SQ, 8JM, NL, TL. **CW2BG**. **F3HD**.

J. HEATH, 2FRJ, "Heathcot," Hedge Lane, Nr. Southampton. 0-v-1. 55-ft. inverted "L." N-S. 3.12.38-11.1.39, 2200-0000.

'Phone-E15J, 6F. **F3HD**. **C2AJ**, AO, CF, DP, DQ, KG, KJ, KT, JO, LN, MI, NV, OQ, PO, PU, RA, RI, XC, 3AJ, BY, GH, GW, LN, OJ, PW, UJ, ZQ, 5BL, BM, BK, CL, CO, CU, CZ, GM, JB, JO, LM, MM, MS, NS, QY, TN, TO, VT, YA, ZQ, 6GI, GO, HN, IM, IO, LL, LO, ML, NF, NM, OI, SQ, VK, YP, YV, 8FU, GN, JW, LT, ML, NL, NV, ON, WF. **CM6SR**. **CW2BG**, 5BI, LG, TC, 8CT, HI.

3.5 and 3.9 Mc

C. TILLY, BSWL319, Bristol 6. 1-v-2. Indoor beam. 27.12.38-4.1.39. 2230-2400.

'Phone-FA3QV, 8CF. **VE1GR**. W1ALJ, AXO, BNO, DQ, IFG, 2DC, HJV, 3CGB (portable N.C.), 4ACZ, DOZ, 8PUN.

7 Mc

A. HAMILTON, SG-V-QPP. CW-CM2BK, BZ, PF, 8RD. K5AG, AM. **LU2BD**. **TALAA**. **Z55DM**. **VK2OE**. W5DDJ, DGB, FOL, HHH, HHV, KC, NN. **VE1CY**, KV, KX, OD, 2OM, 3AJX, ARA, AUB, AUF, AUQ, AXB. 'Phone-PY2GA.

14 Mc

K. BUNSTON. 0-v-Pen. 3.12.38-8.1.39. 'Phone and CW-CX1BC. **CM2AO**. **CO6OM**. **CR7AG**. **CT2AW**, BC. **F88AH**. **FT4AR**. **HCIJW**. **HH3L**, 2B. **H7C**. **HK3CC**. **K4DTH**, ESH, FAY, FCY, RJ, 5AA, 7FNE. **LU6DJ**, NY, AD. **OQ5AS**, AV, HR. **OY3X**. **PK1RI**, 4KS. **PY1AJ**, DS, HI, GJ, 2AR, DN, 4AA, EJ, CT, 8AH. **U81B**, 9ML, WR. **TF5M**, 3C. **VE3AJX**, AR, ACD, KC, XQ, BV, HJ, 4AE, AGA, JE, OG, SS, TJ, RO, 5AAD, HR, VO, EF. **VK2ABG**, ADE, ADK, AGH, AGK, AHA, AHP, AJ, AJU, AKR, AOE, AO, AWA, EO, HP, KS,

SO, QL, 3DM, KX, XQ, TV, XZ, VQ, DJ, PG, ST, ZU, 4CG, HN, JB, RC, UR, 5GM, GS, JS, LW, PM, WK, 6AF, FL, LJ, KZ, SA, XI, YL, 7LZ, RZ. **VO1B**, 3F, X. **VP4TK**, 6MR. **VQ2HC**, MI, XI, 3HJP, 4KTB, 5ELD, 8AI. **VU2CQ**, DR, ED.

W6BAX, CHE, CQS, CXK, CXW, EGH, GBU, GHU, GVM, IBZ, IKQ, JEZ, INP, KWA, LCA, LYM, MRB, MVK, NCM, OI, OS, PNO, TE, 7AMX, AUP, AYO, BQT, DW, GWL, NHI, PA, 9KZL (N. Dak.), BYV (Kansas). **XU2AW**, 4XA, 8XA. **Y12BA**. **ZC6EC**. **ZELJA**, JG, JL, JT. **ZLICN**, CK, DM, DQ, GI, LS, LZ, MQ, 2GN, GW, NT, 3FZ, GU, JA, 4CM, GY, FB, FK. **ZS1AX**, CN, CT, CG, CJ, DG, DO, 2AL, N, X, 4AA, 5CX, AB, AQ, BK, DM, F, AG, CW, 6AB, BT, CH, CF, CJ, DW, DV, EB, ED, EH, EU, EJ, L, DL.

N. J. RUTTER, 23 Bouverie Avenue, Swindon, Wilts. 0-v-2 (all LS). 50-ft. wire in roof. 4.12.38-8.1.39.

'Phone-CE3AT, 4A1. **CN1AF**. **CO2HS**, LY, RG, RR, WM, 6OM, 7CX, 8BC. **CT3AB**. **CX1AA**, 2AU, AW, BK. **E4TRM**. **F88AD**, AH. **H1CFE**. **HK1AH**. **H8SC**. **K4FKC**. 60QE, 7FLP, FST. **K41AP**, JP. **LU1JC**, 2AO, 4BC, CZ, 5CK, 8AY. **OA4R**. **OH2OI**. **PK6XX**. **PY1GR**, HJ, 2AG, AK, CK, DA, DU, DV, HV, JC, LM, MI, 3EN, 4CB, CT, 5BF, 7GA, 8AD. **SU1AL**, AM, AX, GP, RD, TM, WM, 2JR. **TF3C**. **TG9BA**. **VE3AAA**, ACU, ADB, ADC, AFD, BV, EO, GK, HC, HI, HK, JV, LL, OJ, QL, QZ, SM, XQ, YW, 4ACF, ADV, EO, JJ, JW, KN, NI, SS, VD, WJ, ZK, 5AIK, EF, PD. **VK2ACL**, AGU, AHA, AJM, CE, LA, NO, OB, OQ, TR, UC, VA, 3BM, HG, KX, SB, ZX, 4JP.

VO6B, D, J. **VP4TK**, 6MR, YB, 9G, L, R. **VQ2HC**, 4KTB. **VU2CA**, C. **W5DUK**, 6AM, AQJ, CQS, EJC, GVM, IKQ, ITH, NYD (Honolulu), OCH, OI, 7BVO, CAM, 9WJJ (Col.). **YL2CG**, RP. **YV1AP**, 4AE, 5AG, AO, **ZELJA**. **ZS1AX**, BL, 2AF, AV, AZ, X, 4H, 5BK, 6AJ, DD, DF, DW, DY, S.

28 Mc

BOB EVERARD, "Belle Vue," Nelson Park, St. Margarets-at-Cliffe, near Dover, Kent. Sky Champion. 8.12.38-8.1.39.

'Phone-ZE1JZ, 3AX, 7AG. **Z55T**, AW, 2AF, **LUIDA**, DJ, **K4SA**, EZR, FAY, FRT, 5AN. **VP3AA**, 6MR, YB. **CO2WM**, 7VP. **VO2N**. **CM8BA**, AV, AJ, MI. **PK1VY**, 2VL, **XZ2EX**. **VK2GU**, 4AP. **T12RC**, AV, 3AV. **CE2BX**. **PY2CK**, AK, MI. **SUIRD**, CH, NW, GP. **H17G**. **KE21Y**. **VE1CO**, ET, DR, AA, KK, 2OG, KX, MX, FK, AB, 3AQ, FB, AKY, AIW, KE, AVB, HY, ZI, ANF, ARW, JW, AFR, QD, KF, 4ALO, BF, SF, 6PRD, MDX. **W6QDC**, POZ, IKQ, EOW, KY, ITD, AK, KYI, ITH, IJP, PDB, PSP, GCX, NLS, PWH, NKF, NNR, LSN, MVM, 7ACD, FAI, RFI, 9ZVE, ZKL, RCT, WCY, WFO, PPI, DR, WZH, USI, WDA, UEW, YDC, DUU, ZNA, ACS, DFO, DRO, NVS. New Mexico 5FUa, HDH, ZA.

M. C. BOURKE, 2AOU. 1-v-2. 4 1/2-wave Window.

'Phone and CW-FB8A. **I2J1**, 3FZ. **K4EZR**. **I1HFT**. **DA**. **Q6PW1**. **PY2CK**. **T12RC**. **VK2VI**. **GT**. **3VU**. **5LD**. **VP3AA**. **VU2AN**. **YV5AF**. **ZE1JN**. **JR**. **JZ**. **ZS1AX**, 2BJ, 4AP, 5T, 6CR, DY, L, S.

Acknowledgement.

P. W. Gifford, Bournemouth; D. J. Mathers, Dublin; L. G. G. Morgan, Bournemouth; J. P. Sawyer, Croydon; P. Whittle, Southgate; K. W. Wiseman, Chelmsford.

HAVE YOU HEARD . . . ?

Compiled and Presented by F. A. Beane, 2CUB

MANY INTERESTING events have occurred recently in the broadcast bands and so, without further preamble, I will disclose the news that I am bursting to tell!

● Authentic Notes from Iraq

When stations are inaugurated without first receiving publicity in the press there are, invariably, many wild conjectures as to identity or call-sign, a recent example being the new Baghdad station heard near 7200 kc—I being one of those to refer to it erroneously as YLJG. However, here at last is some authentic information secured direct from the station's Technical Supervisor and Announcer, I. Hassan, who is also supervisor of the Wireless Station, Civil Airport, Baghdad. The correct call of this newcomer is YI5KG, first broadcasting station of its kind in Iraq.* There are four transmitters at the station, operated for different purposes, on different frequencies, all being crystal controlled. The 1000-watt transmitter radiates on a frequency of 7.2 Mc with a regular programme, 1230-2000 daily, begun and concluded by the playing of the Iraqi National Anthem, and comprised chiefly of Eastern records, readings from the Koran, news in Arabic, military and Western music, etc.

A 400-watt transmitter is to be heard on 6.9 Mc, radiating mostly Western music from 1430 until close down (not stated in GMT). A further set of similar power is left as stand-by in the event of any emergencies. On 14.2 Mc an 80-watt station relays the Baghdad medium-wave programme from 1500. A fifth transmitter is on its way to Baghdad and will broadcast on the "commercial bands" with 1,500 watts power.

The owner of these stations is H.R.H. Crown Prince Faisal Ghazi of Iraq, and the title of the broadcasting centre "Qasr el Zehoor Broadcasting Station, Baghdad, Iraq." Reception reports may be sent either to this address or that of the Supervisor given above.

● Latest Japanese and Chinese Activities

The Broadcasting Corporation of Japan's latest programme leaflet (kindly supplied by H. W. Darvill, BSWL282, Enfield) states that a JLG, 41.18 m, 7285 kc, now participates in the daily 1930-2100 broadcast for Europe, in conjunction with JZJ, 25.42 m, 11800 kc. No other change appears to have been made.

Shanghai, China, has recently sprung into prominence with XGOY, utilising both the 25 and 31 m bands. I first logged it one Saturday at 1708 when in the vicinity of 31.53 m. The call-sign was given repeatedly between typical Chinese music and short sketches, strength being excellent, though marred by a severe heterodyne. Unfortunately I did not hear the close-down (believed to have been in the region of 1900) as I dare not commandeer the

* [And apparently the first BC station in the new 7200-7300 kc band—though a little too near the edge.—Ed.]

family receiver any longer, my own den being far too cold for such a vigil at the time!

Other Chinese broadcasters to search for are:—XOZ, Chengtu, 19.34 m, 1445-1530; XGAP, Peking, 31.38 m, 1400-1900 (reception in Europe doubtful because of DJA); XOY, Chengtu, 32.02 m, 1445-1530 and XGFA, Weichow, 43 m, operating in the early afternoon. Several of these have been reported in this country, but so far I have been unable to listen during their schedules and so have yet to log them.

● From the S.A.B.C.

The revised schedule of the South African Broadcasting Corporation's short-wave service is as follows:—

ZRD, Durban, 30.75 m, 9753 kc, weekdays 0445-0550, 0830-1230 and 1400-1645. Saturdays as above with exception of 1700-2100 on 61.5 m. Sundays 1030-1200 and 1400-1630 on 30.75 m.

61.5 m, 4876 kc, weekdays 1700-2045; Sundays 1700-2020. Power 300 watts.

ZRH, Pretoria, 31.5 m, 9523 kc, weekdays 1000-1230; Sundays 1030-1200.

49.94 m, 6007 kc, weekdays 0445-0550, 1500-2030; Sundays 1400-1700 and 1715-2015.

ZRK, Capetown, 31.23 m, 9606 kc, weekdays 0445-0550, 0820-1220 and 1400-1645; Sundays 0830-0930 (or 0900-1000), 1030-1200 and 1400-1645.

49.2 m, 6097 kc, weekdays 1700-2100; Sundays 1700-2020. Power 5 kw.

ZRJ, Johannesburg, 49.2 m, 6097 kc, weekdays 0445-0550, 0815-1230, and 1400-1630; Sundays 0830-0930 (or 0900-1000), 1030-1200 and 1400-1630.

49.94 m, 6007 kc, weekdays 2030-2100. Power 200 watts.

Reception reports should be addressed to "S.A. Broadcasting Corporation, P.O. Box 4559, Johannesburg" and accompanied by a reply coupon.

● News from North, Central and South America

Mr. Donald Flann, of the Knickerbocker Broadcasting Co., Inc., WMCA Building, 1657 Broadway, 52nd Street, New York City, requires reception reports on their new ultra-high frequency station W2XQO, 26.55 Mc, operating daily 1700-0200, relaying WMCA of New York City. It has been heard in Great Britain.

W3XAU, CBS's international station in Philadelphia, has been granted three new frequencies, viz.: 15270, 21520 and 25725 kc, and retains 6060 and 9590 kc, formerly used on non-directional aeriels. All but the 25 Mc channel are to be put into immediate use, while the last named will be reserved for future use. Schedules are:—

Daily on 21520 kc, 1800-1930; 15270 kc, 2000-2400. Sundays on 9590 kc., 0030-0345; 6060 kc, 0400-0700. Mon. Thurs. Sat., 6060 kc, 0030-0400 and 0430-0600. Tues. Fri., 6060 kc, 0500-0600 and 0030-0430 on 9590 kc.

Wednesdays, 6060 kc, 0030-0400 and 0500-0600.

The first international broadcast radio transmitter in the United States west of the Mississippi river will be erected on Treasure Island, site of San Francisco's World Fair, and will be in readiness for operation in the middle of this month. The call will be W6XBE and frequencies 9530 and 15330 kc, duplicates of those used by the General Electric Company for W2XAF and 2XAD. However because of the difference in time the new stations will be able to operate without interference and provide, more or less, a twenty-four hour service. Power will be 20 kw with directional aerials beamed to the Far East and South America. Programmes will be derived from the Exhibition and the Blue and Red NBC networks, and the schedule 0500-1100 GMT. These newcomers will, of course, be operated by the GEC.

● Latin America

Earl R. Roberts (Indianapolis, USA), of the NNRC, gives the following new calls for the Colombian stations:—

MANIZALES, 6103 kc, HJ6ABB (ex-4ABB).
 BARRANQUILLA, 6050 kc, HJ1ABG (unchanged).
 BOGOTA, 6015 kc, HJ3CAX (ex-3ABX).
 MEDELLIN, 5880 kc, HJ6ABU (ex-4ABU).
 BOGOTA, 4895 kc, HJ3CAH (ex-3ABH).
 BUCARAMANGA, 4890 kc, HJ7GAH (ex-7ABD).
 MEDELLIN, 4880 kc, HJ4ABP (unchanged).
 ARMENIA, 4870 kc, HJ6FAH (ex-4ABH).
 SANTA MARTA, 4860 kc, HJ2BAJ (ex-2ABJ).
 CARTAGENA ?, 4860 kc, HJ1ABZ (ex-?).
 BOGOTA ?, 4850 kc, HJ3CAF (ex-?).
 BOGOTA, 4840 kc, HJ3CAB (ex-3ABD ?).
 CARTAGENA, 4830 kc, HJ1ABE (unchanged).
 CALI, 4820 kc, HJ5ABD (unchanged).
 CUCUTA, 4810 kc, HJ2BAC (ex-2ABC).
 IBAGUE ?, 4790 kc, HJ6FBC (ex-6ABC ?).
 BARRANQUILLA, 4785 kc, HJ1ABB (unchanged).
 BUCARAMANGA, 4775 kc, HJ7GAB (ex-7ABB).
 BUCARAMANGA ?, 4760 kc, HJ7ABB (ex-?).

Mr. Roberts adds that calls are being allocated as follows:—HJ1A—, HJ2B—, HJ3C—, HJ4D—, HJ5E—, HJ6F— and HJ7G—, the letter following the numeral corresponding to that numeral. It appears that many stations have yet to change their calls—an old Colombian custom, and one that has been adhered to for at least eight years! When accustomed to this system we should be able to identify them more easily, however! Incidentally HJ3CAX, "La Voz de Colombia," Bogota, is now heard in the region of 50.08 m.

Other items of interest. HIZ, 47.50 m, now employs three chimes, slogan "Broadcasting Nacional" heard (as does HIN) and appears to announce as HIZ and HIIZ; a YV3RX, "La Voz de ?," Barquisimeto, is heard near 5000 kc; ZP14, Villarrica, Paraguay, 25.59 m, heard from about 2300 to 2330; COCQ on new wavelength of approximately 33.5 m and HI9B, "Broadcasting Hotel Mercedes," Santiago de los Caballeros, a good signal around 2230 on 44.98 m, also an unidentified station near 6540 kc with announcements in Spanish and German, heard at 2400.

● From Europe

Here in brief are a few items of interest. Oslo may now be heard on 25.56 m via LKQ, 0900-1400, in addition has frequencies of 17.75 Mc (LKW) and

15.17 Mc (LKV); a Lithuanian, announcing as "Lieutvos Radio Kaunas," can be received near 32.2 m around 1700; the 48.85 m Helsinki station, with familiar OFD interval signal, well heard around 1900; SP48, Warsaw, 48.86 m, with lady announcer, requesting reports at 1900; Moscow signing-on 30.95 m at 2000; ZAA, "Radio Experimental Tirana," Albania, 38 m, closing at 1900 with National Anthem, and HVJ on 48.47 m (not 48.75 m as incorrectly given in station list) and testing with NBC on 25.55 m at 1830.

The Eire Minister for Posts and Telegraphs informs us that his department is not yet in a position to furnish details of the new short-wave station to be erected near Athlone. All reports should, therefore, be treated with reserve.

Calls and frequencies of the new Imperial Short-Wave Centre at Prato-Smeraldo, near Rome, Italy, are as follow:—2RO1, 6.085 Mc; 2RO2, 6.98 Mc; 2RO3, 9.63 Mc; 2RO4, 11.81 Mc; 2RO5, 15.17 Mc; 2RO6, 15.3 Mc; 2RO7, 17.77 Mc; 2RO8, 17.82 Mc; 2RO9, 9.67 Mc and 2RO10 15.19 Mc.

Finally, thanks are due to the PHOHI, Hilversum, Radio Centre, Moscow, Statsradiofonien, Copenhagen, and others, for schedules, which, unfortunately, cannot be included due to lack of space. The necessary corrections will be made to the station list, however.

● Readers' Letters

George Mills, 13, Critchley Street, Ilkeston, Derbys., is anxious to correspond with fellow readers re radio reception, and submits an interesting letter-*veri* from JDY. The latter operates on 9925 kc with 10 kw 1200 to 1245 (music and news for Manchus and Japanese); 1245 to 1300 (news in English), the programme being derived from JQAK. The QSL card is particularly brilliant, according to Mr. Mills. Geo. S. Dean (Sheerness) asks about the "World Wide Broadcasting Foundation." Write to The World Wide Broadcasting Foundation, University Club, Boston, Mass.

Desmond R. Hill (London S.E.15) reports W4XB (now with 5 kw and desiring reception reports), VP3BG's latest QSL; the Delhi stations; W9XJL and 9XUP between 1600 and 1800; VK2ME Sundays at 0715; COCW, Havana, 47.43 m, with 4 chime signal and title "La Voz del Radio Philco"; VQ7LO's new owners as "East Africa Broadcasting Co., P.O. Box 777, Nairobi," and ZP14 on 25.59 m. V. Smytheman (Birmingham) reports YI5KG, JLG, ZAA on 40.07 m (?) from 1730 to 1900; the new Kaunas station on 33 m from 1630 to 1830; ZRH at good strength at 2000; a station on 49.94 m, signing-off at 1500 with "God Save the King," obviously XYO, Rangoon, an extraordinary good catch; LSY3, "La Voz de Argentina," 16.56 m, 1900-1930 on Fridays; LRU, 19.62 m, with a relay of the Pan-American Conference in Lima, and asks why Cuban reception has been so poor of late. That I cannot answer, except to add that Latin-American reception has been comparatively poor recently, that COCW, 47.43 m, is well heard, although marred by a bad carrier hum, and COCQ, former "star" of 30.77 m, has moved to approximately 33 m, where it is less conspicuous.

A second report from George Mills states that COCQ is sending out a new, beautiful QSL; COCA and VP3BG are both sending new cards too, and the former has changed its address to "Ave Italia 464, Havana."

A Push-Pull Power Oscillator

And Ideas for Transmitter Construction

Described by "Tester"

EDITORIAL NOTE.—The mantle of A. A. Mawse (of "Transmission for Beginners" fame) has fallen temporarily upon "Tester," to whom he has relinquished these pages for a short time.

The reason is that A. A. Mawse is now in the throes of getting himself a full call.

He therefore spends his nights searching feverishly for readable CW on the amateur bands when not trying to copy GFO, and his days muttering Morse noises, while a buzzer and key screwed to his desk drives the Office frantic at critical moments.

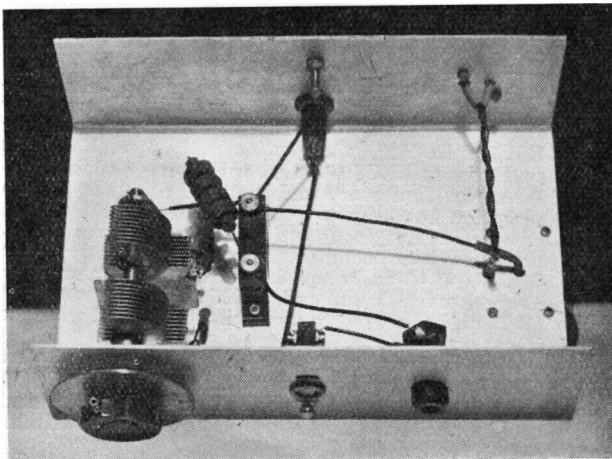
When this phase in the development of an amateur transmitter has been safely passed—and we hope it will be soon—A. A. Mawse will resume his articles which, having been of a pronounced AA flavour hitherto, will be based more upon his practical experience on the air.

* * * *

Pausing only to remark that the Editor may allow a bulletin to be issued from time to time on the patient's progress, we describe and illustrate this month a simple but extremely effective power oscillator; though not new, it was inspired by the interest in last month's "Twin-Triode Transmitters" article, many readers asking for more of the same thing.

● Circuit and Construction

The circuit is given in Fig. 1 and the form of construction adopted is clear from the photographs. As set up, the oscillator is arranged for operation on 7 Mc, though it can be used on any frequency range for which crystals are available. Note that a circuit like this is essentially a one-band affair—it has no tricks like doubling, though with some very active crystals, a certain amount of second harmonic output is obtainable by connecting the plate side in parallel, when it will become as shown



to the right of Fig. 2 on p. 23 of the January issue (where V2 is a push-push doubler).

The point about using an arrangement of this kind as a fundamental crystal oscillator is that it enables one to get very much more RF output, and in a much simpler way, than is possible with practically any other circuit. Some regenerative oscillators—involving multi-grid valves like the APP4g, many more components, and at least two tuning controls—will give as much, but we have yet to find an oscillator design which equals this for RF output combined with absolute simplicity.

The twin-triode used is the new Mullard TVO3-10, and the whole layout is designed round it. The TVO3-10, electrically equivalent to the American RK.34 (which is in turn very similar to the 6A6) has its anodes brought out to the top of the bulb and a British 5-pin base, the pin connections being: Centre-pin, cathode; normal filament pins, heater; normal grid and anode pins, grids. Note that in the latter case, the grid pin and anode cap in each pair of triodes "answer" one another, i.e., the anode cap is vertically above its corresponding grid pin.

The TVO3-10 mounts on an Eddystone type 950 valve-holder, which is held off the chassis with a pair of type 1029 1½-in. insulating pillars, the right angle joint being made with Meccano brackets fixed with the screws which hold the grid sockets of the valve-base. The tank side L1/C1 consists of a Q.C.C. centre-tapped "Ten Watt type" coil, 3.5 Mc size, plugged into a suitable Q.C.C. base, and tuned with a Polar type "E" two-section .00016 mF condenser connected split-stator. This enables the electrical centre of the coil—which must be accurately determined for push-pull operation from the RF point of view—to be located automatically by the rotor of the tuning condenser. Thus, the essential balance of the tank circuit is obtained.

The Polar type "E" is particularly useful for this sort of work, as it is of small physical dimensions, has very low losses, and is of adequate capacity to cover most requirements.

The cathode-biasing resistor R3 (1000 ohms, 10-watt) by-passed with C3, .002 mF, can be included to safeguard the TVO3-10—by preventing the plate current rising too high when the crystal goes out of oscillation—and also puts a little extra bias on the grids. This is not actually necessary, nor was it included in the model illustrated. R1, R2, are each 25,000-ohm 1-watt Lab resistors.

Underneath the chassis of the power oscillator. Quite straightforward and everything visible.

In Fig. 1 on p. 23 of the January issue, the condenser C3 should go to the anode of the CO valve, and not as shown. This is a drawing error for which we apologise.

C2 is a Dubilier type 620, .002 mF, 500v. DC working, RFC an Eddystone type 1022, the on-off switch a Bulgin S.80, the close-circuit jack a Premier, and the chassis, which is 9-ins. by 6-ins. by 3-ins. deep, comes from Peto-Scott. A Clix "All-in" terminal for the HT inlet, a plain one for HT negative, a miniature plug-and-socket for the LT supply and an Eddystone type 1097 scale-knob for C1 completes the parts list.

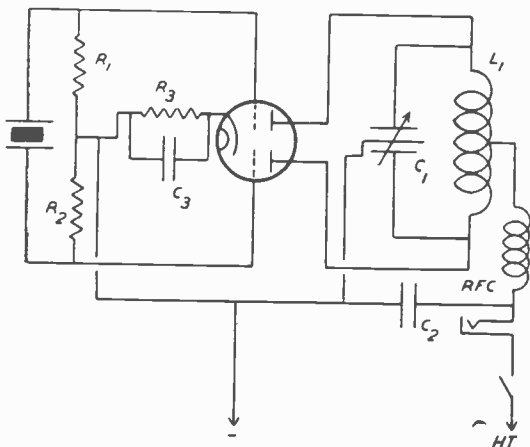
● Mounting the Crystal

This is where we exercised a little ingenuity! The crystal itself is in a Q.C.C. type U holder, which fits in a pair of Eddystone valve-sockets salvaged from the frequentite holder we broke, when building the HV Power Pack described in December. These sockets are in one piece; flatten the curved flange and drill a $\frac{1}{8}$ -in. hole where the small hole will be found. The sockets can then be slipped on the pillars carrying the valve-holder and, before being tightened under the nuts, spaced so that the crystal holder fits them. The grid ends of resistors R1 and R2 are soldered to the shanks of the sockets, and the job is complete. The cathode lead picks up the other two ends on the way down through the hole in the chassis, the joint being insulated with a piece of sleeving—as are all five of the wires passing into the sub-space.

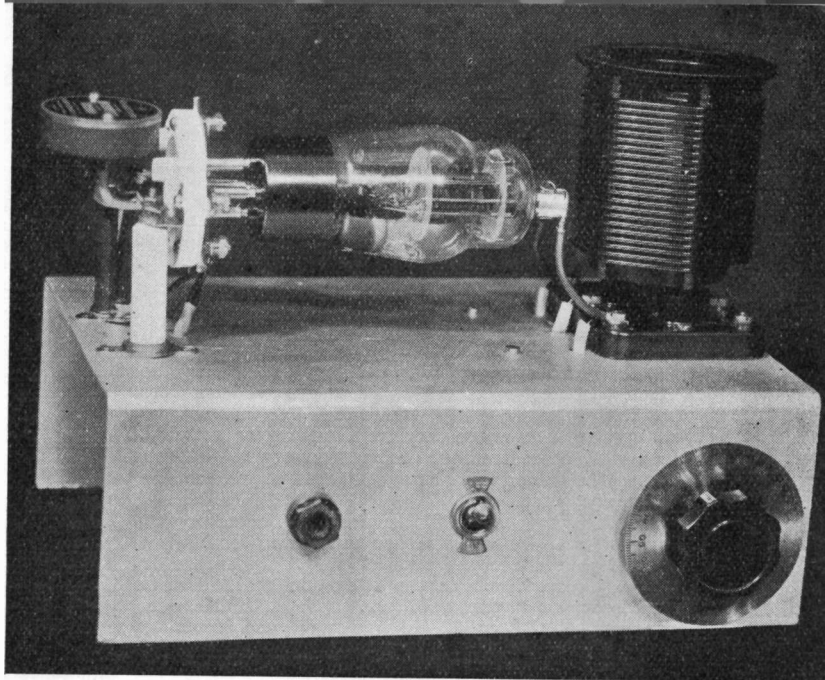
The heading photograph suggests the method of mounting the crystal holder, and will supplement this description.

● Operating Data

The heater of the TV03-10 takes 0.8 amps. at 6.3 volts, and the plate voltage can be up to 300. The anode dissipation is 10 watts the pair, so, like the RK.34, it can be run to at least 20 watts input with the average loading; in fact, in Class-C CW, safe operating figures would be 400 volts with 50 mA plate current. For our little oscillator here, how-



Circuit of the power oscillator, with a Mullard TV03-10 arranged in push-pull. It can be run at 12-15 watts input on load.



ever, 300 volts is about right, and the plate current should not exceed 50 mA.

Switch on heater supply, let the valve warm up, apply HT, and with a meter plugged to the jack, swing C1 till the needle flicks back. The "edge" will be found to be about 15 mA, so allow the standing plate current with the oscillator running unloaded to be 20 mA. It should be possible easily to burn out flash-lamp bulbs in the usual loop tester.

* * * *

IMPROVED WOODEN CHASSIS*

The photograph on page 30 shows about all we have to say—except to remark that as wood is so much cheaper, easier to work and more efficient—especially on UHF—than metal, we cannot see any reason why it should not be used much more on the RF side. For audio work, of course, metal is nearly always desirable, and where screening or electrical isolation is essential in an RF circuit (as for an ECO driver) it can—when the shell is of wood—be placed in a steel or aluminium box bolted to baseboard or panel. We can hear cries of "RF stability better with metal." Yes, because the losses go up so much that everything is slowed down! Actually, apart from the special case where screening is demanded by circuit considerations, RF efficiency in many transmitters we know would improve considerably if dry wood were used instead of a massive steel assembly.

The wooden shells illustrated here are made from "Venesta" flooring blocks, which consist of oak-faced $\frac{1}{4}$ -in. plywood, obtainable from any decorators' supply house. 4-in. wide runners can also be had, so that the three-piece chassis to the left in the photograph, which has a panel and baseboard 12-ins. square, costs under 2s. 3d. complete. Moreover, it can be finished any colour, looks well in the natural, and the pieces can be bought over the counter ready-cut dead square in standard sizes.

The larger assembly, which is shown "opened out" to indicate how one part of the transmitter or other equipment can be built on one baseboard and panel and the rest on the other, the whole thing

(Continued at foot of next page.)

Conditions—The Month's Survey

Fairly Steady and Improving

FOR A great part of this period the sun was so much obscured by cloud that few observations were possible. Consequently, it is difficult to connect the changes in short-wave conditions with solar activity. However, there were no marked ionosphere storms during the period, and magnetic conditions were also relatively quiet.

At the beginning of the period (December 15) sunspot activity was rather high and conditions generally good for the time of year. December 18 was a typical day. In the afternoon the American broadcasts on 26 Mc were fair, those on 21 Mc were good and W3XL on 17 Mc was very good, while on 14 Mc the Americans were rather poor. At 1700 VLR was strong on 9.58 Mc. After dark the optimum frequency fell rapidly so that 14 Mc signals quickly improved. By 2300 the optimum was in the region of 11 Mc, North American broadcasts being weak above this, though the 14 Mc stations were still there, and South Americans on much higher frequencies were audible.

For a few days after December 18 F layer ionisation levels were low and conditions were poor. On December 22 the ionisation level rose and conditions improved. There followed a long period of relatively good conditions, though a minor ionosphere storm was reported in U.S.A. on December 27. This fade-out was not noticed here, and 14 Mc was usually good till 2200, though at 2300 11 Mc was sometimes the highest frequency for long distance reception.

On January 1 a rapid deterioration of the higher frequencies occurred after dark and 9 Mc was the optimum by 2000. Incidentally the lower frequencies improved considerably and on this day W3XAU (6.06 Mc) was strong in the early evening. Low ionisation of the F layer was recorded on this

and the three following days but magnetic conditions remained quiet.

● A Large Sunspot

Between December 29 and January 11 a large sunspot crossed the sun's disc, its area on January 3 being 520-millionths of the visible hemisphere. It was not in an active state, apparently, for no ionosphere storm followed closely on its central meridian passage, which occurred on January 4.

From January 2 to January 7 conditions remained relatively good, but deteriorated markedly on January 8, 14 Mc DX being poor soon after dark. There was then a gradual improvement to January 11 on which day sunspot activity was increasing. On January 12 American signals on 14 Mc were still coming in after midnight. Sunspot activity remained high till the end of the period and kept conditions up.

The improvement which now seems to be occurring is no doubt partly due to seasonal changes and partly to high sunspot activity. The latter usually increases in February and if this happens short-wave conditions will probably return to the equinoctial type.

Our publishing date is the first Wednesday, which varies between the 1st and the 7th from month to month. Supplies as ordered are sent out to the Trade in ample time, and once again we ask that readers pursue their newsgents if the paper is not available on the first Wednesday. Furthermore, any newsgent can obtain copies through his wholesaler. Better still, your regular order "helps you, helps him and helps us." We are always glad to hear from readers as to any delay or difficulty in their particular localities.

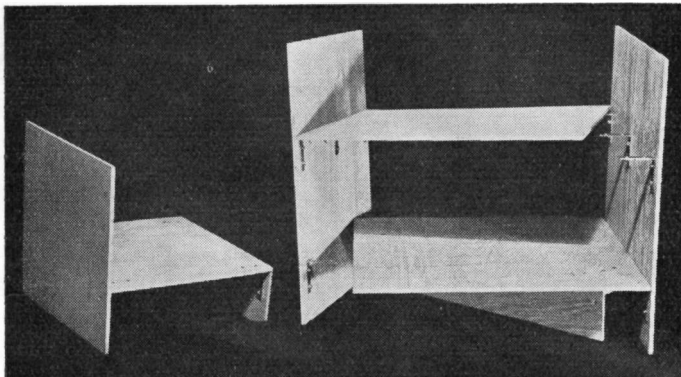
IMPROVED WOODEN CHASSIS (continued from page 29)

then being put together and fixed square with the brackets, is made of the same sort of wood in the next size. The four pieces are each 18-ins. by

18-ins., with a diagonal runner fitted across the bottom shelf to carry any extra weight, such as a small power pack. The cost of this bigger chassis, complete as illustrated, works out at 7s. 6d.

The fixings used are Woolworth 1d. brackets, secured with $\frac{1}{4}$ -in. 4.BA countersunk screws and nuts. The holes are drilled out $\frac{3}{16}$ -ins., allowing enough play to take up any slight errors in setting out. Tightening up on the screws draws the countersink into the wood till the head is flush.

For those who like finish, Woolworth's paint counter offers a wide assortment of lacquers and hard-drying enamels in various colours.



Wooden chassis assemblies. Neat, simple, cheap, practical and highly efficient.

... HERE AND THERE ...

Cleaning Unglazed Ceramics

Alcohol and similar spirits are useless for cleaning off unglazed ceramic valve-holders and similar components, while rubbing with the finest sandpaper only makes matters worse.

An ordinary soft-rubber eraser or the so-called "art cleaner" used by artists and draughtsmen will, however, be found to have almost magical properties. It should be rubbed lightly over the surface, working in one direction only, and should itself be free of graphite from old pencil erasings.

Coming—Another British Communication Receiver

Messrs. Hamrad send us advance details of an 11-valve set shortly to be marketed by them at a very competitive price. Retail sales will be handled exclusively through appointed Hamrad dealers, of which there are now about thirty in different parts of the country.

A brief specification of the new receiver is as follows: 6.5-400 metres in four bands, with electrical bandspread and vernier control; RF amplification throughout the range, followed by mixer, separate oscillator, two IF stages, diode detection, amplified AVC, BFO, LF amplifier and rectifier for the built-in power supply. An "S" meter is fitted, with a signal-meter amplifier, and the audio output is $3\frac{1}{2}$ watts.

The crystal gate is of new design, specially effective for noise limiting, with the bandwidth adjustable from 300 to over 5000 cycles by single control, the vernier tuning being used on the maximum-selectivity setting. The aerial input is arranged for 350 ohms matching, which suits practically all tuned-feeder and single-wire types.

The panel controls are RF and LF gains, crystal bandwidth, crystal phasing, BFO on-off, BFO pitch, AVC on-off, band-set, band-spread and electrical vernier.

The receiver will be housed in a crackle-finish steel cabinet and will be available for rack-mounting if desired.

SWLs, N.B.

We have been advised by the Divisional Controller of the Foreign Section, GPO, that letters, apparently reception reports, are being mailed to South Africa insufficiently stamped. Readers should remember that practically all Empire mail is now carried by air, the postage rate being 1½d. each half-ounce, or 1d. for a postcard. Failure to observe this is likely to cause annoyance to the addressee and often results in the refusal of the packet as a surcharge equivalent to double the deficient postage is demanded upon delivery.

Directional Aerials

The Mann Variable Directional Aerial is a successful design which has been extensively tested on the receiving side and has many applications in transmission—particularly on frequencies above 14 Mc. The more exact possibilities the system may have in the latter connection are now being fully investigated, and the results will be published shortly.

Testing

We are at the moment trying a B.T.S. "Trophy 8," on which further information will appear in an early issue. This is a superhet which covers very adequately the requirements of the general SW listener, and also incorporates features of interest to the amateur transmitter—BFO with pitch control, stand-by switch, and AVC on-off. The wave-range is 7-600 metres in five switched bands, with mechanical band-spread. We find the 28 Mc performance surprisingly good, with little or no oscillator creep, though the lack of a tuned RF stage means the inevitable second-channel and becomes troublesome on 14 Mc.

Enthusiasm — 56 Mc

True story of a really keen experimenter. Driven desperate by his inability to cure hand-capacity effects in his straight receiver, and after having tried numerous re-builds, modifications, hints, tips and ideas, he finally divested himself of his trousers, and with his hands well on the controls, sat down on an earthed copper plate. The joke is that the improved earth connection made hand-capacity slightly worse!

The Fox 15T

We have recently run a test on this very neat and effective little 'phone/CW transmitter, which is of the type to appeal to the beginner, the more advanced man wanting a reliable stand-by, and the CWR operator.

The circuit uses a 6L6 in tritet for two-band operation, and can be run to an input of 20 watts. The modulator section is arranged 6C5-6L6, class-A, with properly designed matching, and the power pack is incorporated. All that is required to put the set on the air is a mains connection and aerial/earth system, which can be single-wire or twin-feeder type. A desk-mounting carbon microphone giving satisfactory speech quality is included, with the change-over from CW to 'phone by switching, and cathode keying to allow break-in operation. A panel meter reads all circuits.

The transmitter complete is only 13½-ins. by 9-ins. by 9-ins. deep, with all controls on the front panel. The layout is extremely neat and compact, the highest-grade components are used throughout, and inspection beneath the chassis shows a parts arrangement and wiring which are a credit to the designer. The chassis itself is housed in a black-crackle steel cabinet with the aerial and mains connections at the back.

Results on both CW and 'phone were good and quite consistent with the input used for the obtainable RF output. In this connection, the effectiveness of the transmitter depends almost entirely upon the adjustment of the load—since the RF circuit is single-valve only—and we suggest that Messrs. Fox could, with advantage to inexperienced operators in particular, supply much fuller information on this with their operating instructions.

The Fox 15T, complete with first-grade Raytheons, crystal to a specified frequency, microphone, and coils for any two bands costs £10 nett, coverage for the CWR frequency being 7s. extra.

The Communication Receiver

Some General Considerations and Points of Design

By "Omega"

THE DESIGN of communication receivers has progressed far more quickly than that of the commercial "all-wave" BC set, mainly because the average user of the communication receiver has sufficient technical knowledge to be able to dictate, in some measure, to the designer.

For instance, the amateur prepared to pay a high price for a really well-designed receiver expects to obtain high electrical efficiency as the primary consideration. If given a choice between two identical sets, one housed in a beautifully finished cabinet, and the other in a plain but practical steel one, he would be more likely to choose the latter, knowing that a better performance can reasonably be expected from totally screened apparatus—other things being equal.

In the same way, the amateur is not prepared to lose flexibility in order to gain single knob control. Even so, a communication receiver can have too great a flexibility of control; a multiplicity of knobs, instead of making operating easier, tends to make it more difficult.

● Locating Controls

A major point in design is therefore to decide upon the minimum number of controls to perform all the necessary variable functions in the receiver, and yet allow the operator to adjust them with one hand whilst writing with the other. The average person being right-handed, this calls for a layout in which the most frequently used controls are easily operated by the left hand, which should be the governing factor deciding the positioning of them. In general, main tuning, heterodyne oscillator tuning and volume control should come easiest to the hand.

These allow the operator to follow a station the frequency of which is varying; on code reception, to adjust the beat-note to a frequency most suited to his ear, and to compensate for variations in strength.

The above remarks apply for all types of reception excepting the heterodyne oscillator which, on 'phone will only be used for finding stations, and therefore it must be switched off for telephony reception. This can be provided for by a toggle switch ganged to the oscillator tuning control, thus allowing the stage to be brought in as required.

Switching off the heterodyne oscillator for 'phone, however, means a wastage of one valve, but it can be arranged that while the BFO performs its natural function on CW, it is used as an AVC amplifier on 'phone. This is quite a useful innovation, especially on a small set with insufficient RF or IF gain to load the AVC diode fully. The tuning indicator, if one is employed, is best situated in the centre of the control panel, for in this position it is easily readable and also preserves the symmetry of design.

Providing the essential controls are on the left of the panel it is immaterial where the others are placed, and they can be arranged to give more convenient wiring to their associated components on the receiver chassis.

Main requirements in a communication receiver from the point of view of performance are:—

- High Signal/Noise ratio
- Good Sensitivity.
- Adequate Selectivity, preferably variable.
- Good Reproduction with plenty of audio output.
- Ease of Control.

The quality of reproduction is unimportant for code reception, and in the opinion of some amateurs, for speech as well, but there is no reason why it should be impaired by anything except side-band cutting due to high selectivity, and in this case variable selectivity will permit good quality when adjacent channel interference is absent.

● Signal/Noise Ratio

A high signal/noise ratio is essential, but unfortunately it is often extremely difficult to obtain a low noise-level in a "high gain" receiver. In a good design the self-generated noise should be mainly due to thermal agitation in the conductors of the first stage, but in a superhet frequency-changer noise is almost unavoidable, although it can be reduced to a minimum by efficient design in the FC stage.

It is surprising how frequency-changer noise can be reduced by providing a sufficiently large input to the FC, and for this reason one RF stage should always be employed, which also serves to reduce second-channel image response.

Frequency-changer noise can be further reduced by making its anode-load mainly capacitive. Since the anode-load is usually the primary of an IF transformer this necessitates stripping some of the turns off the latter and re-trimming to the intermediate frequency. The reduced primary inductance will then enable the IF trimmer to be screwed down, thus increasing the capacity across the primary. Actually, there is a limit to the value of C/L that may be used, but this is best found experimentally. It may even be necessary to shunt an external capacity across the primary trimming condenser.

Noise due to "shot effect" can be lessened by reducing the anode voltage of all pentode RF and IF amplifying valves. Bringing down the screen voltage has a similar effect, but does not limit the stage-gain to the same extent, consequently it is a good plan to use normal values of anode voltage and lower that on the screens, even if the number of IF stages has to be increased to compensate for the decrease in overall amplification.

● Sensitivity

High sensitivity is fairly easily obtainable, its limiting factor being noise and instability. Effective earthing in the IF and RF stages should produce a high gain without any further precautions, but in the case of extreme instability, decoupling—or even double decoupling—in these stages will usually solve

(Continued at foot of next page.)

The Other Man's Station

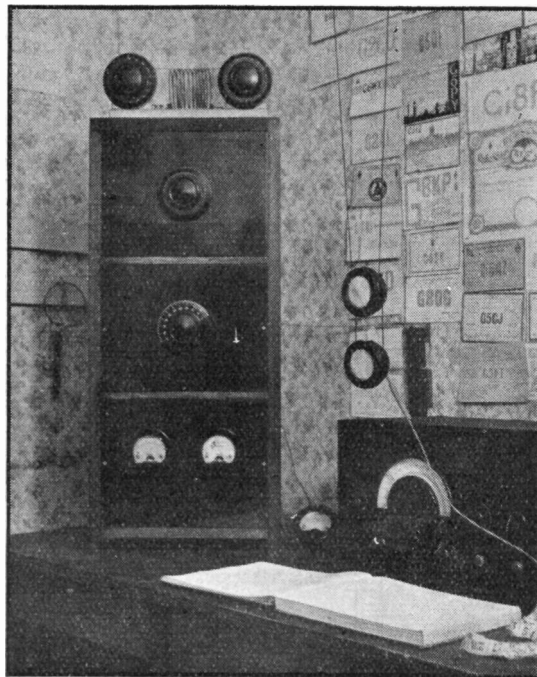
GI8PA

DR. J. B. PARKE, who is D.Sc. of Queen's, Belfast, operates GI8PA at 68 Bawnmore Road in that city, and the photograph we reproduce gives an impression of quiet efficiency.

The transmitter, designed for 7, 14 and 28 Mc, consists of a 6L6-210 arrangement running at 25 watts input and modulated by a pair of 6L6s; the speech-amplifier is three-stage, RC coupled, with a crystal microphone.

Two receivers are used, a ten-valve 5-80 metre Marconi superhet, and a 2-V-1 for DX working. An interesting point about the latter is that regeneration is used on both the tuned RF stages, resulting in greatly improved selectivity and high signal gain. This is a feature which might with advantage be included more frequently in amateur receivers.

Dr. Parke's experimental interest is largely in aerials and, what will be new to many readers, 60-centimetre waves. He tells us that a curious feature about working on 60 cms. is that the operator's body temperature tends to rise. We have sometimes imagined we noticed something like this on 56 Mc, and we are of the opinion that RF generators on frequencies above 100 Mc should be handled with care and for short periods only, as the effect of prolonged exposure to these waves may conceivably be dangerous.



GI8PA does not keep his Amateur Radio to himself; he is also the operator of GI3FH, the station of the Belfast Methodist College Radio Society, at which institution he is a member of the science staff. They have a particular problem at GI3FH, in that the supply is DC. The transmitter is 6L6-6L6, with 8 watts input on 7 and 14 Mc.

THE COMMUNICATION RECEIVER

(Continued from previous page)

the problem satisfactorily. By isolating the receiver chassis, and earthing at the earthing terminal only, unwanted coupling between stages can be avoided, and stability greatly assisted in consequence. Unfortunately this method is not always practicable as many components are earthed directly to the chassis by their fixings. In any case, it is always advisable to employ separate earthing bus-bars for each stage.

● Selectivity

Selectivity is mainly dependent upon the number of tuned circuits employed, but the remarks regarding earthing in the above still apply, since coupling between stages, other than via the tuned circuit coupling elements, should be avoided.

Variable selectivity is a great advantage and some form of it should always be fitted to a communication receiver.

As near as possible distortionless amplification is required for good reproduction, and the means of attaining it are well known, but apart from distorting amplifiers, reception with a superhet is often marred by second-channel image response. In general there are two effective ways of reducing

image response. The first is good pre-selection and the second the use of a high intermediate frequency.

● Image Suppression

The pre-selection can seldom be made good enough (unless there are a large number of tuned circuits in the RF stages) to provide really efficient image suppression, but neither can a high enough intermediate frequency be obtained with normal circuits. The solution is the triple-detector receiver employing two IF's, the first being high enough to suppress image response and the second the normal IF for amplification and selectivity. With such a circuit the two methods for reducing second-channel interference can be used simultaneously; that is, some degree of pre-selection, and a high intermediate frequency. As a result, almost perfect image suppression can be obtained with this type of receiver.

For Servicemen

Messrs. Holiday and Hemmerding, Ltd., 74-78 Hardman Street, Manchester, have available an interesting five-page folder describing some of their small tools, accessory kits and gadgets for the service engineer. These include speaker centring gauges, trimming tools, car radio accessories, slide rules, and some useful books on the subject of servicing.

CORRESPONDENCE

1.7 Mc — Useful Comment

May I take the opportunity of endorsing the remarks of G3HS in your December edition regarding reports on 160-metre DX. Much good long-distance work could be done on this band despite the 10-watt limitation if only listeners would spend more time on it. The 7 Mc logs sent in by your American readers in eastern USA are very useful, but I am sure it would be greatly appreciated if they could put in a few hours on 1.7 Mc at weekends, when some of us (optimists) would be able to assess our chances of Transatlantic working.

All this I mean as a routine observation on the band—not just an occasional session as is encountered at such times as your annual 1.7 Mc Tests for, useful as these may be, more favourable opportunities for W DX might crop up at other times.

The transmitter here is a CO-PA, using British valves—AC/Pen-PM.24B—and on 1.7 Mc is always operated with the same aerial and power input: A W3EDP working as a Marconi against a 51-ft. counterpoise, with $7\frac{1}{2}$ watts to the PA. The best DX so far is an RST-559 report from an SWL in Germany.

From the contacts I have had on the band with this aerial, I have drawn up a table showing QRK against distance at different times of the day, and I can now forecast fairly accurately what report I shall get at a given distance and time. If any reader has had a reasonable period of experience with a similar type of aerial, I should be very glad if he could give me his data in the same connection.—RAYMOND WAITE, G3PZ, 61 Broadway, Northampton.

[We hope readers in the States will comply, and congratulate G3PZ on his patient work on 1.7 Mc field observations. His log of some recent W DX appears in the Calls Heard Section.—ED.]

56 Mc Schedules Wanted

I have recently been licensed for 56 Mc, and should appreciate any reports or other co-operation. I am testing on 'phone and CW each night 2230 GMT onwards, and on Saturdays and Sundays 1400-1500 GMT. I should be pleased to arrange any other times. The transmitter is CC, with 25 watts input on 59168 kc.—G. V. MARCHBANK, G8UB, 3a, Chatsworth Road, Morecambe and Heysham, Lancs.

Stamps and DX

It appears that many amateurs have a side-line in stamp-collecting and it occurs to me that readers of the MAGAZINE could form some sort of an exchange club when sheets or books of surplus stamps could be circulated at intervals. A small charge might be made for certain stamps or they could be exchanged for others of similar value. If the suggestion meets with your approval, I am willing to undertake the work of organising.—MORRIS CASEY, G8JC, 1 School Road, Coalbrookdale, Ironbridge, Salop.

[Readers interested should write Mr. Casey direct, as we feel that the only function of the Magazine in this case can be to give publicity to his suggestion.—ED.]

Link v. Capacity Coupling

My first licence dates back to those distant days of 1912 but I have been closed down since 1926, when I used a self-oscillator on 120-150 and 440 metres, working from batteries. As I am now starting transmission again and have mains power, I have been particularly interested in the "Two-Band Two" described in December, but there are points which puzzle me somewhat. In some designs, link-coupling is advocated between CO and PA, while you advise capacity. You also say that the CO should not go on oscillating with the key up, but I have read that with this particular valve (the APP4g) it does not matter if it continues to oscillate when keying in the screen.—DUDLEY F. OWEN, G2BC, 18 Western Road, Flixton, nr. Manchester.

[The question of what type of inter-stage coupling to use over frequencies 1.7 to 14 Mc is largely a matter of opinion. We consider link-coupling is not necessary on these lower frequencies if the general layout is kept as compact as possible, though it is a different matter if the stages are far apart physically; then, link-coupling becomes desirable on any frequency. On 28 and 56 Mc we favour link-coupling under all conditions. A great advantage of capacity-coupling is that one tuned circuit is eliminated, which in itself makes for a more compact design, and it can be taken that in the "Two-Band Two" link-coupling would be no advantage.]

As regards keying, it is clear that the CO must not continue oscillating sufficiently strongly with the key up as to give even a slight amount of drive to the PA; if it does, a spacer will be radiated as RF cut-off will not be complete. This is the crucial point, and it does not matter if the crystal does oscillate feebly with the key up, so long as there is not enough RF in the CO tank to "trigger" the PA.—ED.]

Suggestions

Those of us who have the 24 issues of the MAGAZINE and want some article in a back number have to go very carefully through each one to find what we want. Why cannot we have an index? This could be issued at the end of each volume as a loose-leaf folder, at a small charge to those who wanted it, and made to fit your binder.

In every article of a constructional nature, we are told how to get a given result or effect, but no one ever thinks of telling one what to do if the readings or adjustments do not work out as they should. Could something be done about this in future articles?—G.W.F., 2FJR, 76 Bridge Road, Sutton Bridge, Lincs.

[We have been toying with the idea of a free index at the end of this volume—but 2FJR gives us inspiration; it's coming. Many others have also asked for one. As to what to do when things go wrong, so many can do that it is impossible to catalogue them. It takes all our space to give the details we try and make as complete as possible to explain just what should happen! If difficulties arise, they are willingly dealt with by the Query Dept.—ED.]

(Continued at foot of next page.)

BOOK REVIEWS

By The Editorial Department

At this time of year, a number of books become available which are of interest to all who are concerned in any way with the short waves, whether for transmission or reception, and below we review some of these, though only briefly due to the exigencies of space.

Radio Amateur Call Book. The winter edition of the Call Book, which is indispensable to transmitter and listener alike, gives the call-sign, name and address of every known amateur radio operator in the world—and there must now be something like 70,000 of them. In addition, the international prefixes by which stations of different nationality are identified are given by countries, alphabetically, and on a map of the world showing exactly where they are. Additional information on commercial stations transmitting press and weather reports, with their frequencies, together with a time conversion chart and the various reporting codes used by amateurs complete a 290 pp. publication which costs 6s. post free from G5KA (Dept. SM.2), 41, Kinfauns Road, Goodmayes, Ilford, Essex.

The Amateur Radio Handbook. This is a 300 pp. manual dealing with amateur transmission and reception, and represents the co-operative effort of some dozen British amateurs covering between them nearly the whole field of Amateur Radio. Though this Handbook shows somewhat uneven treatment of the different subjects and cannot compare with the American publications in detail, range or completeness, it does bring out various aspects which are of particular interest to British amateur transmitters and some of the chapters—those on Fundamentals, Aerials and Television—are very good.

The main criticisms are the paucity of general constructional information, the lack of up-to-date transmitter designs, and the sketchy treatment of modern receivers, which subject as a whole is disposed of in only twelve pages. There is also far too much reference to back numbers of the "T. & R. Bulletin," and it is still necessary to hunt up catalogues and manufacturers' information for the base connections of the valves named in the somewhat meagre tables given. The final chapters—dealing with what might be called the appendices of Amateur Radio—are useful and interesting, though more care could have been given to compiling the bibliography. At least three journals long defunct are included, and one is incorrectly addressed.

The appearance, make-up, print and illustration are excellent, with clear and well-drawn diagrams which are a model of their kind. The Amateur Radio Handbook costs 3s. post free (abroad 3s. 6d.) from the Radio Society of Great Britain, 53 Victoria Street, London, S.W.1.

The RADIO Handbook. The fifth edition of this well-known American publication runs to nearly 600 pp. and undoubtedly gives most of the answers

to any problem likely to be met with in Amateur Radio. The book is very well sectionalised, the theory and construction of one particular side—such as Receivers or Telephony transmission—being dealt with separately. Of the twenty chapter headings, useful ones include Workshop Practice, Exciter Construction and Test Equipment; we doubt the practical value of that on Radio Therapy, though it is of some academic interest in that it gives one an idea of the tremendous interference-creating potentialities of UHF machines.

The UHF chapter proper covers some very interesting equipment, and as regards receiver and transmitter design and construction for the ordinary communication frequencies an enormous amount of practical well-illustrated detail is given, for both CW and 'phone working. The valve reference data is better laid out, fuller and more complete than in any other publication we have yet seen. The RADIO Handbook is 7s. post free from G5KA (Dept. SM.2), 41 Kinfauns Road, Goodmayes, Ilford, Essex.

The Radio Amateur's Handbook. Yet another Amateur Radio manual, this time published by the American Radio Relay League, with over 500 pp. on the theory, practice and construction of amateur-band receivers, transmitters for 'phone, CW and UHF, aerials, and in fact everything else likely to be of interest to any amateur, whatever his scope or standard. This is the sixteenth edition of the first amateur handbook that ever was and we, who have them all, look on the "ARRL Handbook" as the mirror of the progress of Amateur Radio for the last seventeen years.

The present edition is well up to the standard of its predecessors and has a particularly interesting catalogue section which is a valuable guide to the American market, while it is sufficient indication of the practical value and technical accuracy of the Radio Amateur's Handbook to say that this edition prints 60,000 copies, is sold all over the world, and is also available in the Spanish language. It costs 5s. 6d. post free, and is obtainable from G5KA, address as before.

The Radio Manual. Not an amateur handbook this time, but a manual of some 1,000 pages covering the whole field of radio, including Broadcasting, Aviation, Marine and Police, and therefore of interest to the professional engineer and general student. It is American, written from the American point of view, and provides general information on all aspects of Radio. Of its author, George E. Sterling, one may say that he is one of the foremost American engineers and a well-known writer on radio. His book is priced at 25s., from Messrs. Chapman and Hall, 11 Henrietta Street, Covent Garden, London, W.C.2.

The RK.20 on 56 Mc

I should be very glad to hear from anyone who has been successful with an RK.20 as doubler or Class-C power amplifier on 56 Mc.—W. CROSSLAND, G5CI, 13 Queens Road, Tankerton, Whitstable, Kent.

[The Tungram equivalent of the RK.20, OS-40/1250, is satisfactory as a 56 Mc P.A. —Ed.]

More Piracy

I would be glad if you could make it known that my call-sign is being pirated by someone with both CW and 'phone. I have received cards from stations I have never worked, have not yet used 'phone, have been QRT since September last, and will be so till April, 1939, as I shall be at sea.—R. J. MURRAY, G3PT, H.M. Troopship "Somersetshire," Southampton. Home QRA: 74 Admiral Street, Liverpool, 8.

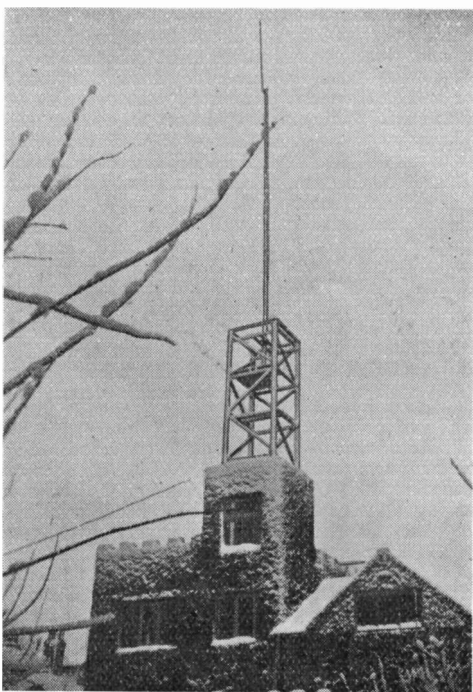
The Month's Club News

By S. W. Clark, 2AMW

(Assistant Editor)

WE SEEM to be accumulating quite a collection of club QSL cards—this month the first two reports contained additions for our special album. That from Bradford's G3NN is postcard size and unusually attractive. G5KX (Southport) is fortunate in that the Town Council has provided the supply. Two photographs of Southport, with some interesting facts of recent aeroplane take-offs to America from the sands, make up the card and the club has evidently acquainted the town's publicity department that they too required some space on it.

It is felt that secretaries' names and addresses should appear with these notes; therefore, each report mentioned will have a line at the end of these pages. If any reader requires similar information concerning other groups (there are 140 in our file) we shall be pleased to recommend his nearest society.



Southport Amateur Transmitters' Association's new Headquarters and 56 Mc aerial.

Apologies to Bolton and Deptford clubs for a slip last month. We had overlooked Southport's claim; however, the pictures will be published in rotation, so that Bolton and then Deptford will follow.

● From the North

BRADFORD S.-W. Club has taken our map flag 12 miles higher during the month, but we shall not be satisfied until more north-country secretaries

show readers that their part of the country is club minded. G5KU gave a send-off to Bradford's second session by lecturing on "Correct Station Operation." The next three Friday nights will be devoted to "Short-Wave Receiver Design," H. Beaumont; "The Milnes Gas-operated Receiver," H. Milnes; and a G6BX talk on "AC Operation." G3NN hope to send some of their QSL cards to America during this month, in connection with the MAGAZINE 1.7 Mc Tests.

Pictures of SOUTHPORT Amateur Transmitters' Association's aerial tower (mentioned last month) are acknowledged and we show here a very fine photograph of this, over S.A.T.A. headquarters, which were opened a few weeks ago. Jan. 11 saw a majority assembly in the new shack to debate the merits of class-A or B audio amplifiers for amateur use; agreement on the latter was eventually reached. G2IN is seeking 56 and 112 Mc co-operation, and radiating CC signals on both. 5ZI, 5KX, 6YR and 8QG will be on for our 1.7 Mc Tests next week; the first two also want schedules with E1 and G's on 56 Mc. G5KX says it's not "56 Mc" for him, as the GPO have granted him permission to operate between 58520 and 59980 kc!

Liverpool is certainly well catered for in clubs, BOOTLE showing up as yet another headquarters (The Merseyside Amateur Transmitting Society). Here the clubroom has been rebuilt by members who pay sixpence a week for the privilege and also that of calling in at any time of the day. Tuesdays are however the meeting nights, at present devoted specially to the newcomer in transmission.

DONCASTER readers will be interested to know that they have club facilities at Chamber's Cafe in Waterdale each Thursday at 7 p.m. The venture has been started along sound lines and will no doubt receive generous support from a thickly-populated amateur fraternity. The Society will shortly have its own HQ. G3NJ and BRS193 are enthusiastic 56 Mc workers, and the AAs are striving hard for full calls.

Sole representative of THE POTTERIES district is N. Staffs Amateur Radio Society. Most of the members are SWLs interested in Amateur Radio and want to assist in any tests on all bands. G3UD and two AAs are attending to the society's ambition to run a transmitter. We hope N.S.A.A.S. will one day tell readers how they make insulators in the kitchen range, so that wives and mothers in other parts of the country may be thankful that *their* menfolk at least spare them that!

● Hamfest

On January 19, a gathering of some 36 transmitters, AA men and SWLs from all parts of Monmouthshire and East Glamorgan found themselves at the Butchers' Arms, BLACKWOOD, as guests at the Blackwood Club's annual "do," under the chairmanship of Mr. W. G. Pond. A very pleasant evening lasted until well after stop-tap and was

enlivened by, among others, GW5TJ who revealed himself as a most accomplished conjuror. Among those present were GW2BG (holder of the oldest licence in the Valleys), GW5FI (Regional Controller, C.W.R.) was his deputy G8GN, and G6FO (Editor, "S.-W.M."). Mr. Moore of Blackwood gave a most interesting account of his brother's own pioneer radio work in this locality contemporaneously with Marconi's early experiments.

A "Radio General Knowledge Bee" was tried as a new idea at the CARDIFF and District S.-W. club's first meeting in new rooms. The four Thursdays in February are booked for a full variety of events.

● Home Counties

Ice-bound roads round KINGS LANGLEY prevented some members from attending the West Herts Amateur Radio Society's recent successful party, but has caused no backsliding in individual enthusiasm. G3NR (secretary) is asking for 56 Mc reports on 'phone and CW; G3MI, by working LU2DA, claims WAC (3MI being an associate of 2CUB, we wonder why the S. American came in last!); 2DFT is changing his call-sign soon; G3PV is out to confound the critics by modulating a one-valve transmitter, not for economic reasons but because he believes a 1-valve 7 Mc portable has possibilities of development in this direction.

"Annual General Meeting" instantly brings to mind something quite apart from the usual club night—everyone has an amendment ready and the officious wonder why (and secretly hope!) such enthusiasm lasts just 1/52nd part of a year. MAIDSTONE Amateur Radio Society saw their second AGM through on January 10. Changes in executive were few. P. M. S. Hedgeland (with treasurer R. B. Booker) was accorded a vote of confidence for another year's service. G5XB is President. G8UC will operate the club's G3WM as soon as construction is completed.

A few miles away, GRAVESEND and District Amateur Radio Society report a strong programme arrangement for their fortnightly Monday meetings. G6WY has lectured here, together with well-known manufacturers' representatives. G5IL, G2IZ, G2TN, G3LW and G6PG form the transmitting nucleus but membership is not limited—any SW-minded prospective is welcome.

The NEW MALDEN Radio Society had a Junk Sale on January 9 and the next four meetings (8 p.m.) are Feb. 6, March 6, April 3 and May 15. We rather expected to hear of the successful tracking of a Tocal ECO merchant who has been flipping up and down the 14 Mc band—maybe the Jan. 9 meeting was the outcome!

The Hallicrafter diversity receiver was technically explained and demonstrated by the Secretary (H. Cullen, G5KH) at the January gathering of the S. London Radio Transmitters' Society. This month (1st) G2ZL discussed amateur-made superhets at the WEST NORWOOD Brotherhood Hall.

Not a few of the Surrey Contact Club's meetings have been of a reminiscent character. In January

one of the oldest members (Mr. Barnes) was persuaded to relate early experiences of marine wireless communication. The resulting vote of thanks by visitors to CROYDON for the talk and demonstration of Marconi instruments was as hearty as any previous. Next meeting Feb. 7.

G8ZD gave us an interesting story of the WEST LONDON District's third annual dinner. 95 members and visitors listened to the secretary's address, followed by some "looking back" speeches. The remainder of the evening was given up to "fast, and a little furious," fun.

The recent social of The Robert Blair Radio Society (2FZA) provided means for fitting the ISLINGTON headquarters with cathode-ray equipment and a test bench. Morse classes are a weekly feature. The slogan "Join this happy and progressive Society," is a good one.

We have watched Mr. Beardow (G3FT) bringing up ROMFORD and District Amateur Radio Society until it now includes 10 full calls and 15 AAs among 35 members. He will be reporting progress just now to the AGM.

WILLESDEN and District S.-W. Society's secretary (2FTD) has, however, another story. He complains of a lack of ham spirit among newcomers. "They have joined us, taken our facilities and then left." Mr. Talbot would like to know if other Clubs have been similarly treated. If 2FTD would have a quiet chat with some neighbouring secretary we are sure Willesden will be better able to guard against such unhappy experiences.

EDGWARE Short-Wave Society have increased membership three-fold since March and now that the usual features are gradually being added it seems likely that this is only the starting point. Cups are offered periodically, and enthusiastically contested. "E.S.W.S. Club Magazine" has made its debut. If any readers live near the Constitutional club, take a tip and call in for a copy one Wednesday—that is if you enjoy reading good humour.

Future meetings for those interested in DOLLIS HILL Radio Communication Society are Feb. 14, 28, March 14, 28. The new committee are waiting to welcome all visitors.

PECKHAM District S.-W. Club are proud of a new call (G3ZF), drawn from the AA ranks. He has not forsaken old friends, and is directing erection of the club transmitter, which is being built on rollers. G6AQ is receiving some return for his past support to the club, for members have offered to help him rig a new aerial whilst the transmitter is serviced. There is great interest in and preparation for the forthcoming "Three-Club DX Contest."

● South Coast

A Film show at EXETER a few days ago, with G5QA as commentator, commenced the winter session. The programme to follow looks inviting.

January's main WEYMOUTH event was a Ham-fest—darts, refreshments, cinematograph show and demonstration of UHF gear, wavemeters, etc., by G5XR. All enjoyed themselves, even two members

Read "The Short-Wave Magazine" regularly

awaiting the GPO test. During February there will be visits to local electricity undertakings.

A Spelling and Question Bee proved a great success at BRIGHTON'S last meeting of 1938. This branch of The World Friendship Society of Radio Amateurs are now considering a PA stage for their 2FNZ, and with five licence-holders we should soon report completion.

EASTBOURNE and District Radio Society commence another Club year with optimism. Membership has risen to 27, with 7 call-holders, since being re-formed in 1937.

Addresses of Secretaries of Clubs reported in the above notes.

BLACKWOOD—W. H. Mudford, G6BK, 3 Albany Road, Blackwood, Mon.
 BOTTLE—C. Cunliffe, 368 Stanley Road, Bootle, Liverpool.
 BRADFORD—G. Walker, 2AWR, 33 Napier Road, Thornbury, Bradford.
 BRIGHTON—F. R. Jupp, 2FAD, 35 Brading Road, Brighton, Sussex.
 CARDIFF—H. H. Phillips, 2BQB, 132 Clare Road, Cardiff.
 CROYDON—A. B. Willsher, 14 Eytton Gardens, Wallington, Surrey.
 DOLLIS HILL—E. Eldridge, 79 Oxgate Gardens, N.W.2.
 DONCASTER—A. Dickinson, 2FJO, 111 Sprotboro Road, Doncaster, Yorks.
 EASTBOURNE—T. G. R. Dowsett, 48 Grove Road, Eastbourne, Sussex.
 EDGWARE—F. Bell, 2DQQ, 118 Colin Crescent, Edgware, Middlesex.
 EXETER—W. J. Ching, 9 Sivel Place, Heavitree, Exeter.
 GRAVESEND—G. V. Haylock, 2DHV, BSWL801, 28 Longlands Road, Sidcup, Kent.
 ISLINGTON—W. Jennings, 82 Craven Park Road, Stamford Hill, N.15.
 KINGS LANGLEY—A. W. Birt, G2NR, 6 Hempstead Road, Kings Langley, Herts.
 MAIDSTONE—P. M. S. Hedgeland, 2DBA, "Hill View," 8 Hayle Road, Maidstone, Kent.
 NEW MALDEN—J. D. Kingston, G3VK, 51 High Drive, New Malden, Surrey.
 PECKHAM—L. J. Orange, 11 Grenards Road, Peckham, S.E.15.
 ROMFORD—Rowland C. E. Beardow, G3FT, 3 Geneva Gardens, Chadwell Heath, Essex.
 SOUTHPORT—R. Rogers, G6YR, 21 Chester Avenue, Southport.
 THE POTTERIES—P. Weaver, 626 London Road, Oakhill, Stoke-on-Trent.
 WEST LONDON—H. Wilkins, G6WN, 539 Oldfield Lane, Greenford, Middlesex.
 WEST NORWOOD—H. Cullen, G5KH, 164 West Hill, Putney, London, S.W.15.
 WEYMOUTH—E. Kestin, 55 St. Mary Street, Weymouth.
 WILLESDEN—G. H. Talbot, 2FTD, 5 Linden Avenue, Kensal Rise, N.W.10.

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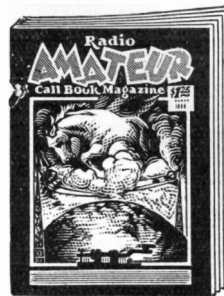
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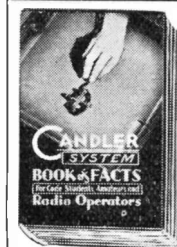


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HF Pentodes (7-pin) 2s. 6d., LS5 4s., 6D6 2s. 6d., 31 2s. (both new), Philips Barreter 1904 4s., Triodes 1s. All guaranteed.—2DJO, 4 Hill St., Aberdeen.

BENJAMIN—Magnavox PMMC 8in. LS and Transf., very sensitive, 10s.; E'stone 6-pin Coils (9 to 1000m) 15s. set; RAF Key, 4s.—2DJO, 4 Hill St., Aberdeen.

4-v. SW AC RX (Chassis), adj. req., suit beginner, 50s. carr. pd. Ex. Radio Books, mags., comps. for Stamps, PC for list.—Avery, 621 Pershore Rd., B'ham 29.

B.T.S. Battery Portable, 4v, SG, with batts. In perf. cond. Only bought last summer. Offers to W. W. L., 1 Ashness Road, London, S.W.11.

ERICSSON Phones wanted. 4000 ohms, in good condition, or other good make.—W. W. L., 1 Ashness Road, London, S.W.11.

ROTARY Converter, bargain. With starter, 230 DC in. 230 AC out. Ideal Tx station. Offers.—G3XL, 14 Chichele Road, N.W.2.

"SKY CHIEF" for Sale, 6 months' use, £9 10s. or offer; also Peto-Scott Converter, 30s.—3 Geneva Gardens, Chadwell Heath, Essex.

USED but OK: 42LE 10s., PT25 7s. 6d. AC2/Pen/DD 5s., LS5 5s., AC/PI, VP2I, PT2I, 4IMXP, TDD4, 59, 47, 80, 7s. 6c6, at 2s.—James, 230 Sydney Rd., N.10.

BULGIN MI 0-6A 5s., Lesdix MI 0-50 mA 2s. 6d., Ferranti AF3 5s., AF4 4s., AF8 3s. 6d., Pye "Matchall" OPT 5s., DO20 5s.—James, 230 Sydney Rd., N.10.

"S.W.M." Class-B 1, valve, 4 coils, fones. Exch. for power pack, 500v, 120 mA, 6.3a-7.5v LT's.—2DKG, 68 Winston Ave., Marton, Blackpool, Lancs.

NATIONAL Union 6L6G Valves, list 18s. ea., new, in sealed cartons. Post free 8s. 9d. each.—Camp, 71 Sudbourne Road, Brixton, S.W.2.

VARLEY High Inductance Choke, 300hy, as new, also 2 JB.00015 Conds. Offers.—E. Hartley, Mill House, Forge Mills, Coleshill, Ar. Birmingham.

METERS. DC (WE and ET), 0-10 mA, 0-300 mA, 0-20 v, 0-2 Kv Static. Perf. cond., no reasonable offer refused.—Potts, 376 Uxbridge Road, W.12.

EXCH.—ED. VT13B, PM2DX, 230XP, 6D6, 6A7, 75, 43, for Hivac B230 and SG220SW.—Potts, 376 Uxbridge Road, W.12.

FOR SALE or Exch.—£6 of SW, AW and BC Components (send for list) for SW Receiver.—Salisbury, High Street, Garstang.

EXPERIMENTER'S Components for sale, £6-worth, new Mains Valves, I.F. Coils, Mains Transf., etc., all cheap. List from Salisbury, High St., Garstang.

CONVERTER, 80-watt, 24v DC to 220v AC, £3.—Hill, Robin Hood, Catsfield, Battle, Sussex.

SALE—New T40 19s., RK39 19s., 500v. 250mA Transf., with I.T., 25s., 46, 47, GX25, merc. ant. switches. Offers—G2KC, 97 Bellemoor Rd., Southampton.

ELECTRIC Clock for your stn.—Perf. time, no winding, alarm, 14s.—D. Gray, Culvers Close, Winchester, Hants.

SW Det-Pen, batteries, MC speaker, AW Coil unit, .00015 Cond., Transf., 4 good valves, etc., 50s. or (?)—E. Wain, 175 Brinkburn Road, Darlington.

SHORT-WAVE BROADCASTING STATIONS

Abbreviations: S—Sunday; M—Monday; T—Tuesday; W—Wednesday; Th—Thursday; F—Friday; Sa—Saturday.
All times GMT, twenty-four hour system.

M.	KC.	CALL-SIGN, LOCATION, SCHEDULE.
13.91	21,570	W2XE Wayne, w'days 1230-1500, Sa, S 1300-1800
13.92	21,565	DJJ, Zeesen, 1100-1250.
13.92	21,550	GST, Daventry.
13.93	21,540	W8XK, Pittsburgh, 1100-1300.
13.93	21,530	GSJ, Daventry, 1045-1700
13.94	21,520	W3XAU, Philadelphia, 1800-1930.
13.95	21,500	W2XAD, Schenectady, 1300-1700.
13.97	21,470	GSH, Daventry, 1045-1350, 1400-1700.
13.99	21,450	DJS, Zeesen, 0505-1030.
14.23	21,080	PSA, Rio de Janeiro, F 1750-1800; 1st Th of month 1615-1700.
15.77	19,023	HSGPJ, Bangkok, M 1300-1500.
16.84	17,810	TPB3, Paris-Mondial, 1430-1600.
16.86	17,790	GSG, Daventry, 1045-1350, 1400-0130.
16.87	17,780	W3XAI, Boundbrook, 1400-0400.
16.88	17,770	PHI2, Huizen, S 1125-1430, M, T, Th and Sa 1225-1430.
16.89	17,760	DJE, Zeesen, 0505-7030, 1100-1250.
19.52	15,370	HAS3, Budapest, S 1400-1500.
19.56	15,340	DJR, Zeesen, 0505-1600.
19.56	15,330	W2XAD, Schenectady, 1715-2300.
19.60	15,310	GSP, Daventry, 2115-2300.
19.61	15,300	VDB, Bandoeng, 0030-0700.
19.62	15,280	LRU, Buenos Aires,
19.63	15,280	DJQ, Zeesen, 0505-1600, 2150-0350.
19.64	15,270	W2XE, Wayne, Sa, S 1830-1930, weekdays 1800-2000.
19.66	15,260	GSI, Daventry, 0800-1015, 1720-1830.
19.67	15,243	WIXAL, Boston, 1730-2000 ex. Sa; S 1400-1500.
19.68	15,243	TPA2, Paris-Mondial, 1100-1600.
19.70	15,230	OLR5A, Prague, Sa, S at 2200, occasionally 1255-1555 and/or 2255-0155.
19.71	15,220	PCJ2, Huizen, T 0630-0800; W 1430-1630.
19.72	15,210	W8XK, Pittsburgh, 1300-2100.
19.74	15,200	DJB, Zeesen, 1300-1400, 2150-0350.
19.75	15,190	OIE, Lahti, 0605-0900 1400-2200.
19.75	15,190	TAQ, Ankara, 1030-1200.
19.76	15,180	GSO, Daventry, 0800-1015, 2115-0200.
19.76	15,180	RW96, Moscow, mornings and afternoons.
19.78	15,170	OZH, afternoons.
19.79	15,170	TGWA, Guatemala, weekdays 1745-1845; S 1745-2215.
19.79	15,170	SM5SX, Stockholm, 1600-2200; S 1400-2200.
19.79	15,170	XEWV, Mexico, temporarily discontinued.
19.80	15,160	VUD3, Delhi, 0230-0130 0630-0845.
19.80	15,150	YDC, Bandoeng, weekdays 0330-0700, 0930-1530 (Sa until 1630), 2300-0030; S 0030-0700, 0930-1530.
19.82	15,140	GSE, Daventry, 0800-1530.
19.83	15,130	TPB6, Paris Mondial, 1200-1415.
19.83	15,130	WIXAL, Boston, S 1400-1600.
19.84	15,123	HVJ, Vatican City, 1530-1545.
19.84	15,120	SP19, Warsaw, 2300-0200.
16.89	17,760	DJE, Zeesen, 0505-1050, 1100-1250.
19.89	15,080	RKI, Moscow, S 1800; 0000 onwards with RW96.
20.04	14,970	LZA, Sofia, 1100-1230, 1800-2015; S 0600-2230.
20.08	14,935	PSE, Rio de Janeiro, W 2100-2110; Th (ex. 1st day of the month) 2000-2030; Sa 2000-2030; 23rd day of the month 2100-2130.
20.38	14,720	RWG, Moscow, irregular.
20.64	14,535	HBJ, Radio Nations, S 1545-1630, M 0750-0845.
22.00	13,635	SPW, Warsaw, 2300-0200.
24.52	12,250	TFJ, Reykjavik, S 1840-1930.
25.00	12,000	VZSPS, Moscow, between 1100 and 0315.
25.03	11,991	RR6, Vitoria, Spain, between 0900 and 2400.
25.08	11,962	CB1180, Santiago, between 2100 and 0430.
25.08	11,962	H12X, Trujillo, W and Sa 0100-0315.
45.17	11,920	T12XD, San Jose, 1600-1830, 2200-0400.
25.21	11,900	CD1190, Valdivia, 1600-1900, 2100-0000, 0100-0400.
25.22	11,887	TPA3, Paris Mondial, 0700-1000, 1615-2300.
25.24	11,885	TPB7, Paris-Mondial, 0230-0500.
25.25	11,880	VLR3, Melbourne.
25.26	11,870	W8XK, Pittsburgh, 1900-0300.
25.29	11,860	GSE, Daventry, 0800-1530.
25.34	11,840	OLR4A, Prague, 1855-2130, occasionally 1255-1555 and/or 2255-0155 (this session sometimes taken by OLR5A-OLR5B).
25.36	11,830	W2XE, Wayne, Sa, S 2000-2300; 2330-0400; w'days, 2030-2300, 2330-0300.
25.38	11,820	XEBR, Hermosillo, 1700-2100, 0200-0400.
25.40	11,810	I2RO, Rome, between 0940 and 1800.
25.43	11,801	DJZ, Zeesen, 2150-0350.
25.42	11,800	COGF, Matanzas, 1200-0500.
25.42	11,800	DJZ, Vienna.

M.	KC.	CALL-SIGN, LOCATION, SCHEDULE.
25.42	11,800	I2J, Tokio, 1930-2100.
25.45	11,790	WIXAL, Boston, 2145-2330.
25.47	11,780	HP5G, Panama City, 2300-0300.
25.47	11,780	OF6, Lahti, 0605-1705.
25.49	11,770	DJ11, Zeesen, 1630-2125, 2150-0350.
25.51	11,760	OLR4B, Prague, see OLR4A 25.34 m.
25.51	11,760	XETA, Monterrey, 1830-2030.
25.51	11,760	TGWA, Guatemala.
25.53	11,750	GSD, Daventry, 0800-1015, 1400-1515, 1720-2100 2115-0130.
25.53	11,740	COCX, Havana, 1300-0600 (0500 Mondays).
25.55	11,740	SP25, Warsaw, 2300-0200.
25.57	11,730	WIXAL, Boston, Th and Sa 0100-0300 (Pan-American programme).
25.60	11,720	CJRX, Winnipeg, 2300-0500; S 1800-0300 (M).
25.60	11,720	CR7BH, Lourenco Marques, 1710-2100; S 1500-1900.
25.61	11,718	TPA4, Paris-Mondial, 0000-0215, 0230-0500.
25.62	11,710	YSM, San Salvador.
25.63	11,700	SPB, Motala, 0620-0700, 1600-2115.
25.64	11,700	HP5A, Panama City, between 1640 and 0300.
25.64	11,700	CB1170, Santiago, 1600-2000, 2200-0500.
25.65	11,690	"Radio Boy Landry," Saigon, 0400-0600, 1030-1400.
25.66	11,685	NGJ, Hankow, 1200-1230.
25.67	11,676	IQY, Rome, 1837-1935, 2000-2030.
26.01	11,530	SPD, Warsaw, as SPW 22 m.
26.31	11,400	HBO, Radio-Nations, S 1845-1930, M 0750-0845.
27.17	11,040	CSW2, Lisbon, evenings.
27.27	11,000	PLP, Bandoeng, see YDC 19.8 m.
28.30	10,600	ZIK2, Belize, S, W, F 0145-0200.
28.48	10,535	J1B, Taihoku, around 1400.
28.93	10,370	EAJ43, Tenerife, between 1935-0100.
29.04	10,330	ORK, Ruysselede, 1830-2000.
29.24	10,260	PMN, Bandoeng; as YDC 19.8 m.
29.35	10,220	PSH, Rio de Janeiro, M, T, W, Th and Sa, 2300-2400; T 0030-0130; F 2300-0030 (Sa).
30.12	9,980	COBC, Havana, S 1155-0500 (M), weekdays 1155-0515.
30.22	9,925	JDV, Dairen, 1200-1300.
30.43	9,860	EAQ, Madrid, evenings.
30.51	9,833	COCM, Havana, S 1300-0200 (M); weekdays 1300-0430.
30.52	9,830	IRF, Rome, 1710-1800, 2300-0025, 0030-0200.
30.80	9,740	CSW3, Lisbon, evenings.
30.93	9,700	"Radio Martinique," Fort-de-France, 1615-1745, 2300-0100.
30.94	9,690	IRAI, Buenos Aires, M to Th 2300-0200; F 2100-2200 and 2300-0200 (Sa); S, M and Holidays 0000-0200.
30.94	9,690	TI4NRH, Heredia, 0200-0300.
30.95	9,690	ZHP, Singapore, 0940-1440, also Sa 0525-0640; S 0340-0640.
30.95	9,685	TGWA, Guatemala, 0300-0430.
31.02	9,670	W3XAI, Boundbrook, 2200-0600.
31.06	9,660	LRX, Buenos Aires, 1430-0330; S until 0430.
31.09	9,650	CS2XA, Lisbon, T, Th, S 2000-2300.
31.09	9,650	W2XE, Wayne, weekdays 0330-0430.
31.11	9,645	HH3W, Port-au-Prince, 1800-1900, 0000-0200 (or 0230).
31.12	9,640	CXA8, Colonia, 2330-0500.
31.13	9,636	I2RO3, Rome, until 0200.
31.13	9,636	JFAK, Taihoku, 0600-0730, 1300-1525; S 1300-1515.
31.21	9,612	HJ1ABP, Cartagena, between 1200-0330.
31.23	9,607	HP5J, Panama City, 1700-1830, 2330-0330.
31.23	9,606	ZRK, Klipheuvell, S 0830-0930, 1030-1200, 1400-1645; weekdays 0445-0550, 0820-1220, 1400-1645.
31.25	9,600	XEYU, Mexico City, around 0100.
31.25	9,600	RW96, Moscow, 2300-0130 (or later).
31.28	9,595	PCJ, Hilversum, S 1825-0225 (M); T 0000-0130, 1845-2050; W 0000-0315; Th 0000-0300.
31.28	9,590	VUD2, Delhi, 0230-0430, 0630-0845.
31.28	9,590	VUD3, Delhi, 1230-1730.
31.28	9,590	VK6ME, Perth, M to S 1100-1300.
31.28	9,590	VK2ME, Sydney, S 0600-0600, 1000-1600.
31.28	9,590	W3XAU, Philadelphia, T, F 0030-0430, S 0030-0845.
31.32	9,580	VLR, Melbourne, S 0500-1230; weekdays 0225-1330; Sa until 1400 and 2200-0330 (S).
31.32	9,580	GSC, Daventry, 2115-0420.
31.35	9,570	KZRM, Manila, M to F 1000-1400, 2130-2300; Sa 1000-1500, 2130-2300; S 0900-1600.

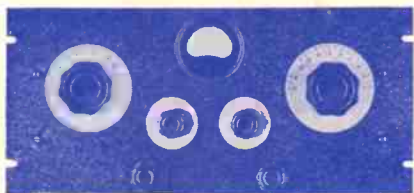
(31.38—52.50 m Stations were given last month.)

QUERY COUPON

S.-W.M. 2/39.

WEBB'S APEX 3 BAND EXCITER OR COMPLETE TRANSMITTER

A very cleverly designed and economical three stage crystal and E.C.O. Exciter unit, built on to a standard Eddystone 19 in. panel, with appropriate brackets and chassis.



EXCITER : Front Panel view APEX 3.



EXCITER : Rear view of APEX 3.

The general design of the instrument covers very flexible frequency change on any of three wavebands with instant switching from one waveband to another. Provision is made for a selection of three crystals, all of which may be left inserted in the transmitter, whilst a fourth position of the crystal control switch automatically brings into operation the E.C.O. valve. The circuit covering this valve—an 89 is employed—ensures extremely stable E.C.O. control, with very easy provision for checking E.C.O. frequency against any crystal in use.

The entire line-up of the exciter is as follows:— 89 E.C.O., 6N7 (metal double triode), the first section of which is used as C.O., the second as doubler or buffer, driving into an RK-39 beam power tetrode. The tank circuit of the RK-39 P.A. is designed to cover three wavebands without coil changing, the condenser control being ganged to a coil selector switch to adequately cover the 10, 20 and 40 metre amateur bands.

Cathode keying of the RK-39 is employed, and an output of up to 15 watts R.F. can be obtained from the instrument. Loose-coupled link circuit is provided for direct coupling to the aerial (80-ohm feeder) or for linking to a final independent P.A. stage. A high-grade moving-coil milliammeter, 2½ in. diameter, is fitted.

EXCITER : Price, complete with all tubes, coils, and one crystal (without power pack) **£15 10 0**

POWER PACK : This 450-volt Power Pack, with necessary filament supply, built on to independent Eddystone panel, with appropriate brackets and chassis **£6 10 0**

This power unit is so arranged that a further power unit for, say, the modulator, or other additional equipment may be built on to the one chassis; i.e., only one half of the chassis is occupied.

A SPECIAL 10-15 WATT CRYSTAL CONTROL TRANSMITTER, designed originally for use with the C.W.R. and R.N.W.A.R., it is capable of operation on all amateur frequencies, in addition to the special frequencies allotted by the above reserves.

The entire instrument is built on an Eddystone Standard 19-in. panel with appropriate brackets and chassis. Crystal oscillator circuit employs a 59 tube driving a 59 as a neutralised P.A., giving an extremely stable C.C. note, with an R.F. output of up to 15 watts. Built on to the single chassis, in addition to the transmitter proper, is a power pack with ample output for efficient drive, and employing an 80 type rectifier.

Provision for keying in the cathode circuit of the second 59 is made, while the P.A. coil is fitted with an adjustable link suitable for attachment direct to 80-ohm feeder line.



C.W.R. TRANSMITTER.

PRICE OF INSTRUMENT COMPLETE with tubes, one set of coils for any band, but exclusive of crystal, is **£8 0 0**
 Valpey Crystals, 1.7, 3.5, or 7 m.c., in enclosed mounted holder 15/6 extra.
 Additional sets of coils 7/6 per set.

WEBB'S RADIO

(C. WEBB, LTD.)

BIRMINGHAM DEPOT
41 CARRS LANE

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