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The
SHORTWAVE

Magazine

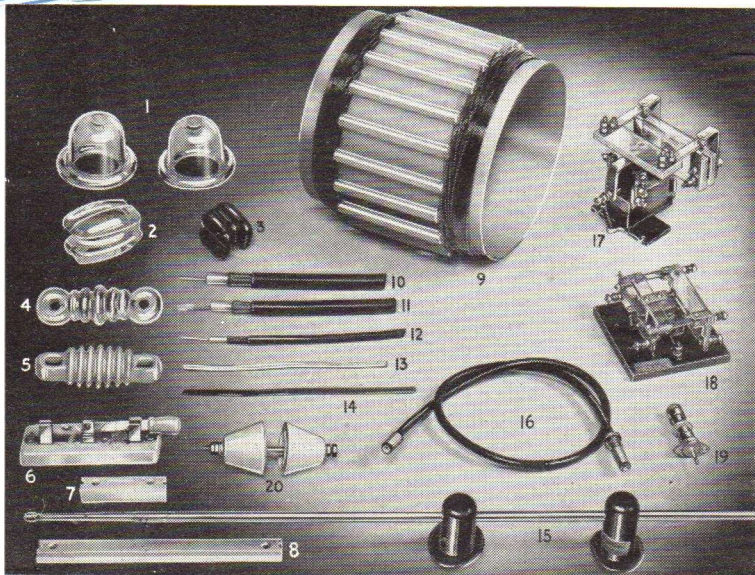


**EXCLUSIVELY FOR THE
RADIO EXPERIMENTER &
TRANSMITTING AMATEUR**

VOL. V No. 12 FEBRUARY 1948

Webb's FOR DIVERSITY OF STOCK

AERIAL INSTALLATION ACCESSORIES



- | | | |
|--|-----------------|---------|
| 1. Pyrex "Dome" Bowl Insulators .. | 1/4 | each |
| 2. Pyrex "Egg" Aerial Insulators .. | 1/3 | |
| 3. Porcelain "Egg" Aerial Insulators | 0/5 | |
| 4. Pyrex "Aerial" Insulators .. | 1/- | |
| 5. Eddystone No. 999 Aerial Insulators | 2/6 | |
| 6. S.P.D.T. Knife Switch .. | 1/6 | |
| 7. 2 in. Ceramic Spreaders .. | 0/8 | |
| 8. Ceramic Spreaders 6 in. 1/6, 4 in. | 1/3 | |
| 9. Webb's 600-ohm Feeder, ready built in 35 ft. lengths, with Polythene Spreaders securely moulded into wire every 20 in. Supplied on drums ready for winding off and immediate use. Per 35 ft. drum | 26/3 | |
| | Per 50 ft. drum | 37/6 |
| 10. Co-axial Cable 80 ohm (7/8 in. dia.) | 1/6 | per yd. |
| 11. " " " 40 ohm (3/8 in. dia.) | 1/6 | |
| 12. " " " 80 ohm (1/2 in. dia.) | 1/3 | |
| 13. Telcon 150 ohm Twin Line .. | 0/6 | |
| (Also available in 300 ohm, same price.) | | |
| 14. Belling-Lee Twin 80 ohm "Television" Cable .. | 0/7 1/2 | |
| 15. Webb's Car Aerial, available for either buffer or scuttle fixing | each 23/6 | |
| 16. Screened Leads and Connectors for Car Aerial .. | 3/6 | each |
| 17. Londex AECO15 Aerial Relay. D.P.D.T. changeover, rated for 15 amps R.F. Coil operation, 6 volts AC/DC .. | 110/- | |
| 18. Londex AECO4 Aerial Relay. D.P.D.T. changeover, rated for 4 amps R.F. Coil operation 6 volts AC/DC .. | 57/6 | |
| 19. Belling-Lee Adjustable Plug and Socket for 1/4 in. Co-axial Cable .. | 3/- | |
| 20. Eddystone Feed-through Insulator, No. 1018, 2 1/4 in. long .. | 2/6 | |

DURALAMIN TUBING

Strong and light, ideal for dipole elements, reflectors, directors, etc.

8 ft. 6 in. lengths ..	4/6
10ft. 6 in. lengths ..	5/6

(both lengths 3/8 in. O.D.)

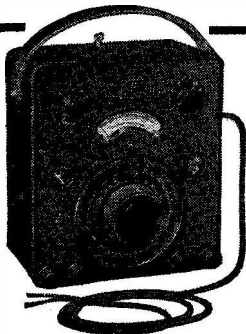
(We regret Duralamin is not suitable for transport and can be supplied to Callers only)

DELIVERIES IMPROVING

ON ALL



INSTRUMENTS



The 'AVO' TEST BRIDGE

A self-contained 50-cycles Bridge of exceptional accuracy for direct measurement of all normal values of condensers and resistances. Except at extreme ends of scale, accuracy is within 5%. Facilities also provided for condenser power factor measurements and leakage tests by the flashing neon method; resistance, capacity and large inductance measurements against external standards. May also be used as a valve voltmeter indicator for measurement of audio and radio frequency voltages.

Size: $7\frac{1}{2}'' \times 7'' \times 4\frac{1}{2}''$.
 Nett Weight: 4 lbs. 12 ozs.

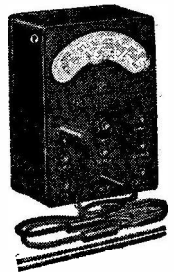
These MODELS IN STOCK for IMMEDIATE DELIVERY!

WE are steadily catching up on the ever-increasing demand for "AVO" instruments, and orders are being dealt with in strict rotation. We are pleased to announce, however, that we can now give delivery from stock of the three instruments here illustrated.

The 'AVO' VALVE TESTER

Indicates mutual conductance direct in mA/V. Tests Cathode/Heater insulation of an indirectly heated valve when the valve is hot; emission of diodes and rectifiers; indicates filament continuity and electrode "shorts." Coloured scale indicates valve as "Good," "Indifferent" or "Replace." No calculations of any kind involved. Works from A.C. mains.

Complete with Universal valve panel fitted with multi-roller Universal Selector Switch enabling all English, American and Continental valves to be tested. Valve data book containing test details of nearly 2,000 English and American valves also supplied.



The D.C. AVOMINOR

A 2½-inch moving coil meter for making D.C. measurements of milliamps, volts and ohms. Total resistance is 100,000 ohms, and full scale deflection of 300 v. or 600 v. is obtained for a current consumption of 3 mA. or 6 mA. respectively. Supplied with pair of leads, interchangeable testing prods and crocodile clips, and instruction booklet.

Size: $4\frac{1}{8}'' \times 3\frac{1}{8}'' \times 1\frac{1}{2}''$.
 Weight: 12½ ozs.

OTHER 'AVO' INSTRUMENTS

- | | | |
|----------------------------------|---|----------------------------|
| THE MODEL 7 UNIVERSAL AVOMETER | : | "AVO" ELECTRONIC TESTMETER |
| THE MODEL 40 UNIVERSAL AVOMETER | : | THE UNIVERSAL AVOMINOR |
| THE ALL-WAVE "AVO" OSCILLATOR | : | THE "AVO" LIGHT METER |
| "AVO" VALVE CHARACTERISTIC METER | : | ETC., ETC. |

● Complete descriptive Booklet available on application to the Sole Proprietors and Manufacturers:—

THE AUTOMATIC COIL WINDER & ELECTRICAL EQUIPMENT CO., LTD.
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Surplus Equipment

Many Amateurs have taken advantage of the recent offers of Surplus Government radio equipment, and have purchased various pieces of apparatus for use in their own stations. Most of this equipment needs modifying before it is put to this use, and we are experienced in this type of work. We invite your enquiries and will provide a quotation upon receipt of details.

RECEIVERS BC 312, 342, and 348. We can still undertake the alignment, modification of these popular receivers, including the fitting of S meter and Noise Limiter. Power packs also available.

AMPLIFIERS. Push-pull final Amplifiers are now available for the Amateurs who wish to use the maximum permitted power. The valves used are 807's or TZ40's, and the P.A. can be supplied complete with meters, condensers, coils, etc. Details and prices upon request.

GENERAL EQUIPMENT. We are supplying high wattage resistors from stock, and can still provide immediate delivery of these useful items of gear, as well as transformers, chassis, panels, racks, etc.

R.A.M. EQUIPMENT. Transmitters, including the popular T41P, power packs, field strength meters, H.F. Converters using 6AK5 series of valves, V.F.O.'s, etc.

LISTS. Our lists are available, and fully describe this equipment and give prices, etc. Have you obtained your copy?

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ODEON RADIO

G4HV

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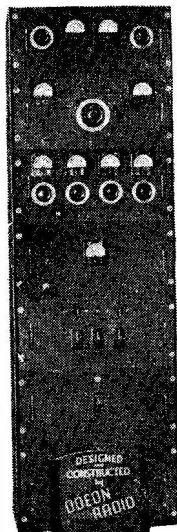


Illustration shows our 150 watt all-band transmitter, the good points of which are much too numerous to detail here.

A descriptive leaflet giving full specification will gladly be sent on request.

We also market a 75 watt rack built transmitter with many fine features, and a 25 watt unit which is a complete CW rig for the QRP man or the newly licensed amateur, or makes an ideal exciter to drive a high power amplifier.

Both of the above items are worth seeing.

Owing to the rapid expansion of business as our reputation grows, it has become necessary to increase our technical force and we are happy to announce that we have been fortunate in securing the services of two well-known amateurs who have taken up executive positions. **Col. P. A. O. Northey, A.M.Brit.I.R.E., G6FQ,** and **Mr. R. P. Heatley, A.M.Brit.I.R.E., G5OH,** will be pleased to meet old friends and to make new ones at this address, and we are now in a position to give even better service on the design and construction of amateur equipment.

56 COLLEGE ROAD, HARROW

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PLUG & SOCKET

For loud-speaker connections, twin screened lines, etc., with cord grip.

L.525. Plug. Price 4/6

L.1113. Socket. Price 10d.

STAND-OFF AND BUSHING INSULATORS

Invaluable as terminals for high frequency, high voltages, supports for coils, etc.

Equivalent shunt resistance : at 30m, 60% humidity, on metal base mounting.

L.1292. 10,000 volts 50 megohms. Price 4/9

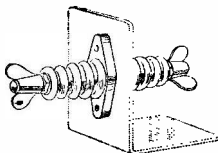
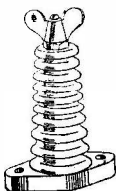
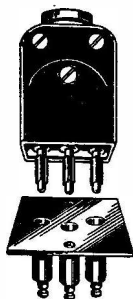
L.1277. 5,000 volts 25 megohms. Price 3/3

L.1296. 5,000 volts 5 megohms on metal panel mounting. Bushing insulator. Price 4/9

VALVEHOLDER

Designed for the rectifier valve in T.V. receivers. Peak working volts 3,000.

L.352. Price 2/6



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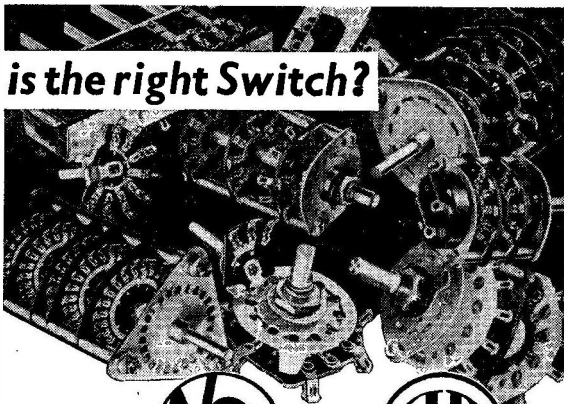
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... is it Rotary or Push-button or Slider? Is it wanted for circuit selection, band selection, tap switching? Is it for a new design or in quantities for a well proved circuit?

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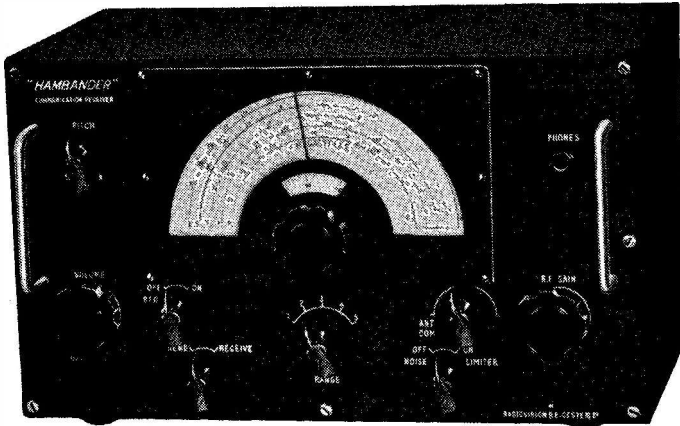


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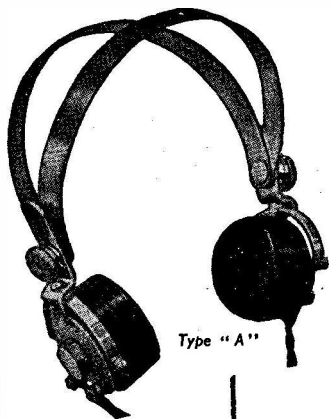
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Price 60/- per pair
FROM YOUR LOCAL DEALER

CALLING ALL AMATEURS!

5,000 S/W STATIONS

In a letter recently received by us from Mr. H. R. Lodge, of Worthing, Sussex, he says—

"With further reference to the S/W list of Stations heard on my ONE Valve Receiver using your TYPE 'A' Headphones, I have pleasure in reporting that I have now listed 5,000 S/W Stations mostly 40 and 20 metres with a few on 10 metres, with 130 Territories represented.

"Among the G Stations recorded were four working on low power. Henley-on-Thames ONE watt, Falmouth 3 watts, Lincs 5 watts, and S. Wales 8 watts.

"Am now out for ten thousand! But each additional thousand now is hard work; but, careful listening with these sensitive headphones should eventually secure the target.

"Yours sincerely,
H. R. Lodge."

HEADPHONES WHICH UPHOLD BRITISH PRESTIGE

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As far as conditions permit we propose to stock all the popular components of reputable manufacture normally required by the radio enthusiast. In addition, we have a wide range of selected ex-Government surplus equipment and components at strictly surplus prices

STOCK LINES

T.C.C. Micropack capacitors, 8 mfd 450 v., type CE19P, 4/6; Electrolytic capacitors, 8 mfd 450 v., type CE19P, 4/6; 16 mfd 500 v., type CE14P, 9/6
Dubilier Drillitic capacitors, 8 mfd 500 v., type BR850, 4/-; 16 mfd 500 v., type CT1650, 6/6; 8-8 mfd 500 v., type CT8850, 6/6; 16-8 mfd 500 v., type CT16850, 8/6
Atkins high "Q" dust-cored coils. All ranges, all types, 3/7 each; 3-waveband superhet pack, 16-47m, 200-540 m., 800-2000 m., size 1 1/2" x 2 1/2" x 2" deep, £2; As above, with H.F. stage, size 5" x 5 1/2" x 2" deep, £3/6-
Varley L.F. choke, type DP52, 5 SH 250 mA 500 ohms, 18/6; type DP10, 20H 140mA 250 ohms, £12/6; type DP51, 20H 120 mA 250 ohms, 18/6; Microphone transformer, type DP56, ratios 70 : 1 and 140 : 1, 12/6; Thermal delay switch, 4 or 6-3 v. heater, 10/-
Rola multimatch L/S transformer, type 42U, 10/6
Bryce auto transformer, 230/110 v. 60 watt, £18/3
Midget 2-gang condenser, 312 pF per section, size 1 1/2" x 1 1/2" x 1 1/2" high, 12/6

EX-GOVT. SURPLUS

Each component is unused and fully guaranteed at the time of sale.

Paper Condensers, 1.5 mfd 4000 v., size 4 1/2" x 1 1/2" x 9" high, 5/-; 8 mfd 600 v., size 4" x 2" x 5" high, 6/-

Aerovox oil-filled condenser, 4mfd

1000 v., complete with clip, 7/6

Sprague metal-cased tubular condenser with wire ends, .1 mfd

500 v. wkg., 10d.; .05 mfd

500 v. wkg., .02 mfd 750 v. wkg.,

.001 mfd 1000 v. wkg., all at 9d. each

Metalpack condenser in insulating sleeve, .25 mfd 500 v., wire

ended, 1/6

Micropack electrolytic condenser in insulating sleeve, 50 mfd 12 v.,

reversible, 1/9

I.F. transformers in solid brass case, grey finish, variable dust

cores, 1.6 mcs, size 1 1/2" square 4 1/2" high, 10/- per pair

Midget interval transformer, 1 : 4-3, with fixing clips size 1 1/8" diam., 1 1/4" high, 7/6; L.F. transformer as above, ratio 1 : 15, 7/6

Moving coil meters in original boxes, 1 mA f.s.d. square face 2" type, 7/6; as above, 5 mA, f.s.d. 7/6

SPECIAL OFFER

All these valves have been fully tested on our own premises before being offered for sale.

Genuine Canadian Westinghouse 1.4 v. peanut based valves—unused ex-Govt. surplus.

1T4 Super control RF amplifier pentode 7/8

1R5 Pentagrid converter 8/8

1R5 Diode pentode 8/8

Also television diodes (D1 type) with 4 v. heaters unused 8/-

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TO AVOID TRANSIT BREAKAGE

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2½, 5, 6, 10, 15 and 20 metres

Our experience of television aerial production for the trade, and some 2 years of manufacturing amateur beams, is your guarantee, for our gear has withstood the storms, and we have a host of satisfied customers.

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 - ★ Steel fixing brackets fit any mast 1½-2½ in. dia. and provides adjustable "tilt" for the head.
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- Low Windage and Weight; high strength. Performance; Gain 6 d.b. f/b. ratio 23 d.b. Price £5/18/6.

Q5R9 ROTATORS and DIRECTION INDICATORS

- ★ Weatherproof wire potentiometers, built-in gearing and driving arm, fits any installation, 17/6.
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**E.M.D.O. LTD.,
ACE WORKS, MOOR LANE, STAINES.**

SENSITIVITY 10,000 OHMS PER VOLT

Designed to meet the demands of Service and Plant Engineers, also Radio Amateurs. **21 Ranges**:—Volts: A.C./D.C. 10, 25, 100, 250, 500 & 1,000.

Microamps:—A.C./D.C. 0—100.

Milliamps: D.C. 2.5, 10, 25, 100 & 500.

Ohms: 0/10,000 and 0/1 Meg.

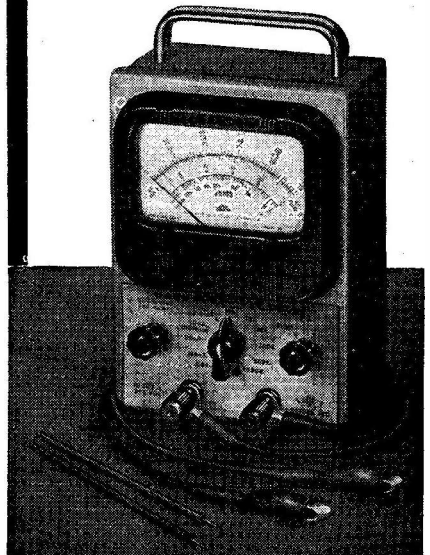
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Thanking you again,
I am, yours faithfully,
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P.S.—You may, of course, make whatever use you wish of this letter from "Another Satisfied Student".

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- (11) Intended for continuous service.
- (12) An American Air Force receiver.

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- 200-500 kc/s.
- 1.5-3.5 mc/s.
- 3.5-6.0 mc/s.
- 6.0-9.5 mc/s.
- 9.5-13.5 mc/s.
- 13.5-18.0 mc/s.

VALVE COMPLEMENT

- 1st RF—6K7.
- 2nd RF—6K7.
- RF OSC—6C5.
- 1st DET—6J7.
- 1st IF—6K7.
- 2nd IF—6F7.
- CW OSC—6F7.
- 3rd IF—6B8.
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A built-in dynamotor is used for plate supply when the receiver is operated at 28 volts D.C. This can be easily removed and replaced by a 200/250v A.C. power supply.

We give complete instructions for modification to 230/250 volt supply including 6.3 volt filament and 250 volt 50 ma. H.T.

Each receiver is brand-new and may never be again available at the price.

THIS IS YOUR OPPORTUNITY TO PURCHASE AT A "NEW LOW LEVEL."

OUR PRICE £30

Carriage 10/-. Case charge £2 (returnable)

We shall be pleased to quote for modification if desired.

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- B2 receiver with power supply AC/DC.

Your enquiries are invited.

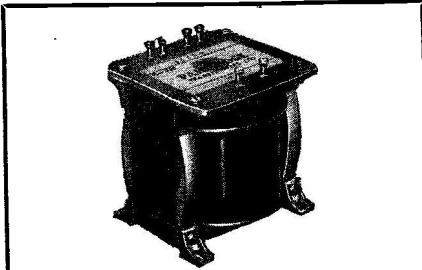
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I have designed a 20 Metre Duralumin Beam, giving HIGH GAIN and OPTIMUM PERFORMANCE, the Beam hundreds of Hams have been waiting for.

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Delivery will commence in 3 weeks' time, and the price will be a popular one.

WRITE ME TO-DAY, AND I WILL SEND YOU ADVANCE DETAILS, ILLUSTRATION, AND PRICE.

DO IT NOW—DEMAND WILL BE BIG.

HERBERT TEE (G8DC), 469 HIGHER BRUNSHAW, BURNLEY, LANCs.
(Owing to pressure of business, no callers at present, please. All Mail Orders.)

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I can offer a limited number of 30 ft. Duralumin Masts. They are ideal for the Ham, in three sections, and you can erect them without any help.

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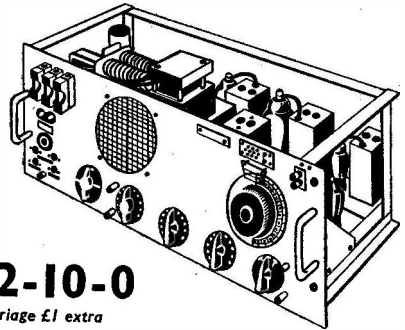
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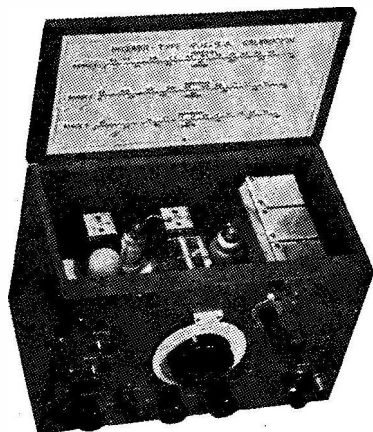
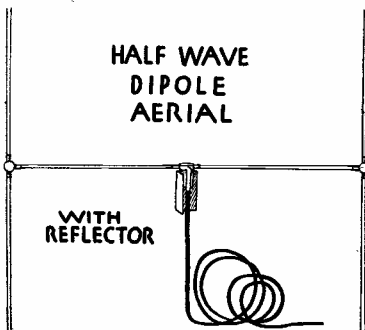
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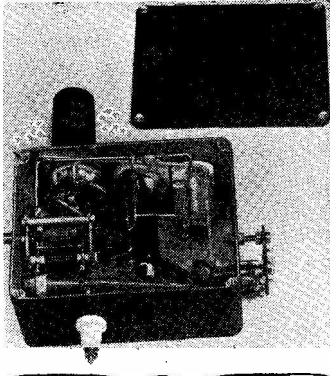
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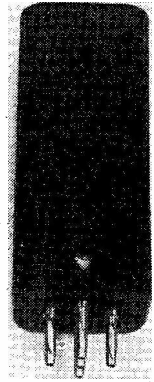
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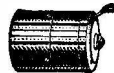
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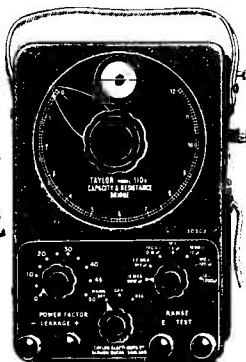
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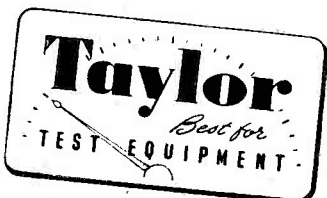
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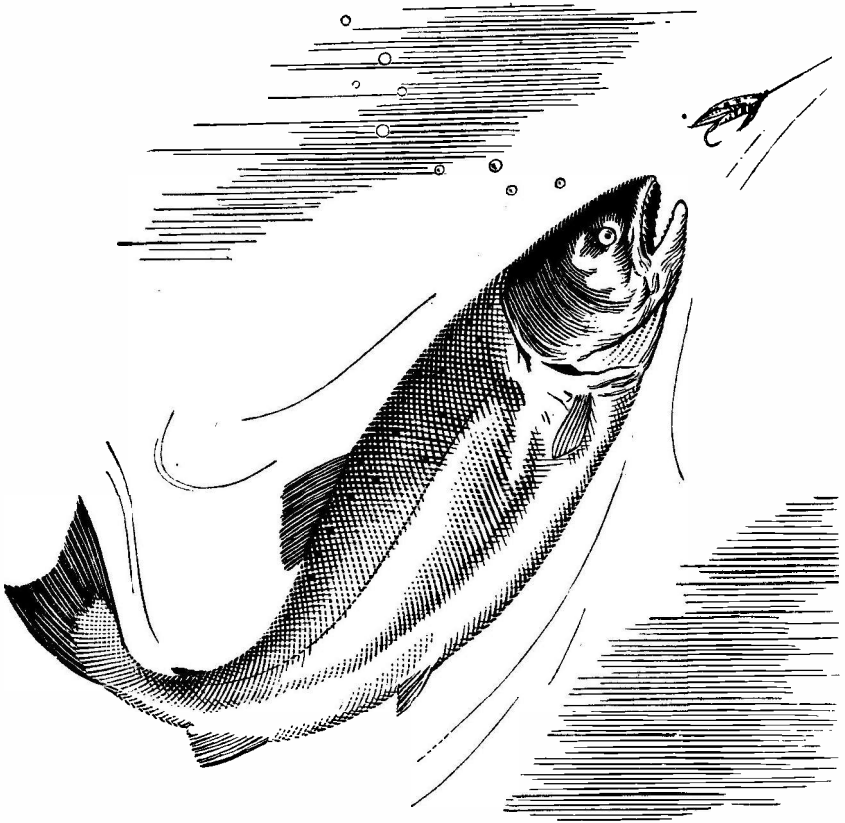
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SHORT WAVE MAGAZINE

FOR THE RADIO AMATEUR AND AMATEUR RADIO

Vol. V.

FEBRUARY 1948

No. 55

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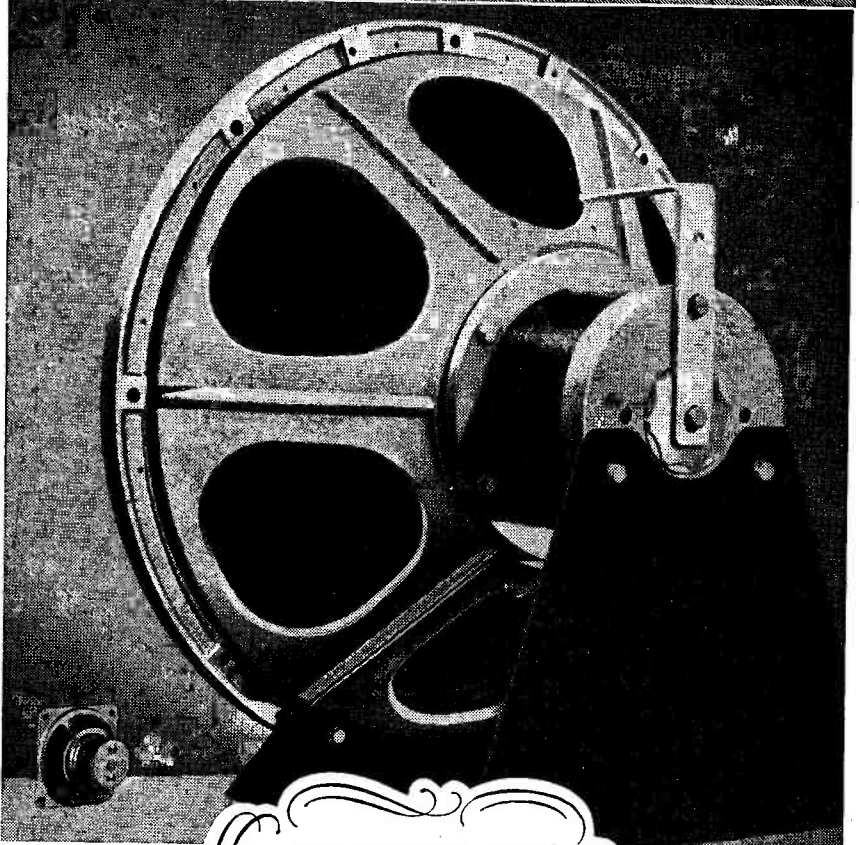
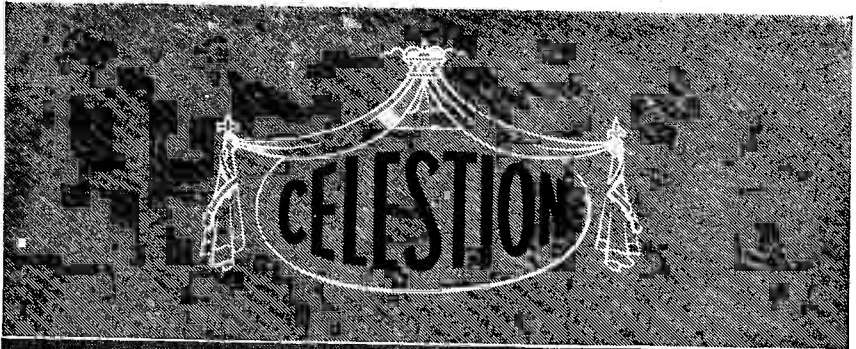
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EDITORIAL

Finance

The next issue of the *Short Wave Magazine* will be No. 1 of Volume VI. With effect from that issue, the cover price of the *Magazine* will be two shillings.

It is with considerable regret that we find it necessary to make this advance in the price of the *Short Wave Magazine*, and the step is being taken only with the greatest reluctance. But no reader will need to be told that, in common with all other business undertakings, our costs have been rising steadily. In the last twelve months, in particular, they have shown a steep increase. Moreover, in the immediate future we shall have to meet a further increase in production costs due to new wage agreements in the printing industry and a rise in the price of paper.

The costs to which we refer are those over which we have no direct control and are yet a first charge on our revenues — they can be summarised briefly as the printer's bill. The *Short Wave Magazine* itself, as an established concern, is managed with frugal care. But like any other business, it must show a reasonable margin of gain on its operations.

As we have taken the liberty to point out before, it is in every way to the advantage of the radio amateur as an individual and to Amateur Radio as a living and expanding force that a publication of the character of this *Magazine* should be a commercial success.

We feel certain readers will agree that what is, after all, a relatively small increase in price is justified and acceptable ; it will of course be our policy to continue providing a journal which maintains a high standard, in every sense of those words.

As some offset to the advance on cover price, we are glad to be able to announce that the direct subscription rate will remain unchanged at 20s. for twelve issues.

Austin Fox 12/60

High Gain VHF Converter

Design and Construction of a 50-58 mc Unit for Exceptional Performance

by HILTON O'HEFFERNAN (G5BY)

(Most readers will know that G5BY is one of the world's outstanding VHF operators, with a long record of achievement. Not so many may know that he designs and builds all his own equipment. During the recent spell of 50 mc activity, he brought into use a new converter which is giving superlative results. This article describes it in detail.—Ed.)

THIS converter was designed specifically to outperform both of the quite successful "acorn" converters in use by the author on the 50 and 58 mc bands.

Certain features—such as ease of trimming each stage without having to delve into the interior, ability to vary the aerial coupling from front panel, together with similar front panel control of the first RF stage trimmer—were considered essential in view of the experiences gained with the other two converters and much time was spent in determining a suitable layout which would give extremely short RF wiring.

Provision was also made to enable either transformer or capacitive coupling between stages to be employed (with variable coupling whenever the former method was used) and easy access to the coils was therefore necessary.

Like the other converters, it was designed to work into the common 1.6 mc IF channel of the main receiver, and to be switched into circuit when required. The Mullard EF54 valve was chosen for the two RF and mixer stages, with the EC52 as the oscillator valve.

The Circuit

During the summer of 1946, details of the Hallicrafters' unbalanced split-stator circuit were published. Intended, of course, for wide tuning range receivers, in the writer's opinion it nevertheless offered the worth-while advantage of keeping the sensitivity equal throughout the tuning range; even in a strictly one-band converter, this can differ somewhat when the L/C ratio becomes reduced at the low-frequency end of the tuning range.

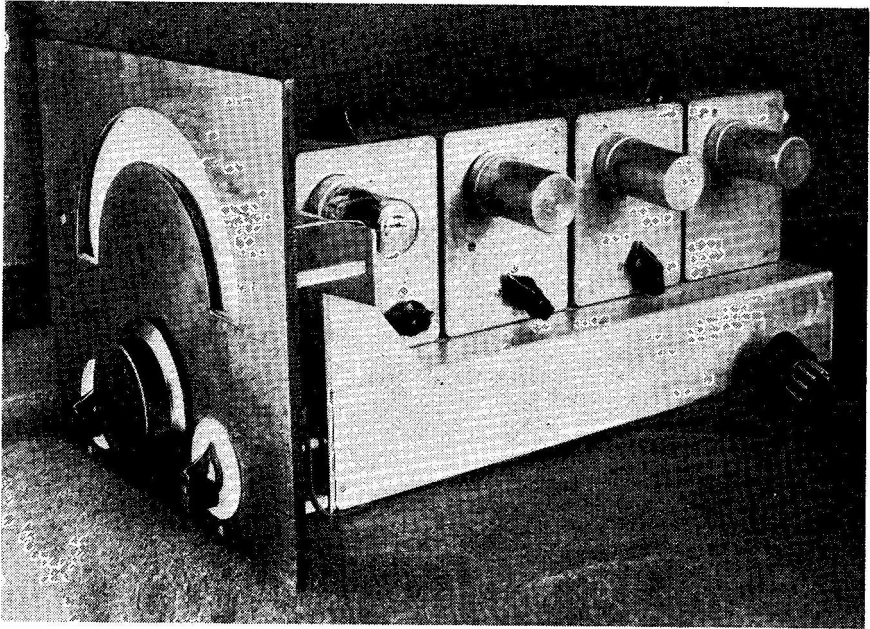
In the Hallicrafters' explanation of the circuit it was shown that, in a normally tuned RF stage, the gain must be greatest

at the high-frequency end of the tuning range due to the high inductive reactance of the coil. When split-stator tuning (with total capacity of the section next to the grid *one-fourth* that of the other section) is employed and the circuit tuned to the high-frequency end, approximately one-half of the voltage developed across the tuned circuit will be applied to the grid of the valve, since at minimum setting the capacity of the two sections will be approximately equal. When tuned, however, to the low-frequency end there is a 4-to-1 capacity difference between the two sections and as the RF voltage applied to the valve is a function of the reactance across which the valve input circuit is connected, approximately four-fifths of the total RF voltage is applied to the grid. Whilst inductive reactance at a given frequency increases as the value of the inductance itself increases, capacitive reactance increases as the capacity is decreased; therefore, connecting the valve input circuit across one-fifth of the capacity in the circuit has the same effect as tapping it across four-fifths of the coil.

Construction

Full-scale drawings were made and re-drawn until the writer was satisfied with the layout achieved. During construction not a single alteration—either mechanically or electrically—became necessary, so the considerable time spent on the initial design proved to have been really well worth while.

As will be seen from the photographs, each stage is contained in a separate Eddystone die-cast shielding box, which measures $3\frac{1}{2}$ ins. \times $4\frac{1}{2}$ ins. high \times 2 ins. deep. Additional isolation between input and output circuits is obtained by a home-made internal screen of 22g. aluminium running vertically right across the centre



Front panel controls on the VHF converter. Left to right : 1st RF trimmer ; main tuning ; aerial coupling. The four screening boxes, from panel to end of chassis, contain respectively oscillator, mixer, 2nd RF and 1st RF stages. Knobs beneath the valves trim the associated inductances ; the 10-way plug connects the converter into the 1.6 mc IF/AF channel of the main receiver.

of each of the EF54 valve sockets, thus screening the grid and anode connections. All components associated with the plate and screen circuits are located in the right-hand compartment thus formed together with the 6.3v. heater and 250v. HT supply leads.

These boxes are used for screening purposes only and are not allowed to carry any earth return currents. All the tuning and trimming condensers are insulated from the boxes and leads run from the "earthy" sides direct to one common point (actually the screw holding the valve socket in place). For the same reason an insulated flexible coupling is used between each of the ganged tuning condensers. Attention to these details makes just that difference between a converter that really performs and another—using the identical circuit—that merely "works." The importance of these precautions cannot be stressed too highly.

The four main tuning condensers were standard Eddystone 25 + 25 $\mu\mu\text{F}$ split-stator type. To secure the 4-to-1 capacity difference advised for the Hallicrafters circuit, two of the three stator plates were

removed from that section which would be connected to the grid of the valve. In the case of the condensers to be used in the RF and mixer stages the remaining stator plate left in place was on the *outside* of the rotor plates, so that it meshed with *one* rotor plate only. For use in the oscillator stage, the plate left *in situ* was one that meshed between *two* rotor plates, thus giving the necessary extra capacity swing ; in the interests of stability, the oscillator is operated on the low-frequency side of the signal and also has extra shunt capacity across the tuned circuit.

Trimmers

The 15 $\mu\mu\text{F}$ trimmer condensers are connected between the free end of the tuning coils and earth and give about a 2 mc frequency range. They are located immediately below the split-stator tuning condensers ; those for the second RF, mixer and oscillator stages are adjusted by the knobs beneath the respective valves, whilst the first RF stage trimmer is controlled by the left-hand knob on the front panel. With regard to this control and also that for varying the aerial coup-

ling (right-hand front panel knob) it should be mentioned that the depth of the chassis was limited to $2\frac{1}{4}$ ins. in the writer's case. The reason is that this converter, whilst at present operating alongside the main receiver, was designed to dimensions that would enable it to be later substituted for the existing built-in acorn converter. This restricted chassis depth means that a special hand-made right-angle drive unit has to be employed for each of these controls, in addition to a flexible driving shaft.

It will be noticed that 3-30 μF Philips air trimmers are used, connected right across the tuning coils of each stage. These were employed, initially, as a temporary measure to help in lining up the circuits without spending a lot of time in coil pruning, since the 2 mc coverage of the 15 μF condensers is really too small for quick location of the band—although, of course, ideal for their actual purpose of keeping the circuits in trim. This converter was put into service on the 58 mc band during last summer and used to work twelve countries, with one other heard. It so outperformed the 58 mc acorn job that its use on the 50 mc band for the autumn F2 DX was obviously indicated. Not wishing to disturb the carefully adjusted 58 mc coils if this could be avoided, the capacity of the 3-30 μF air trimmers was increased from their full-out 58 mc position and the 50 mc band was obtained with an estimated setting of 20/25 μF . This gave a coverage of 50 to 53 mc, with excellent band spread over the most-used 50-to-51 mc portion. Comparative tests on 50 mc against the acorn converter (using 954-954-955 and employed for the first-ever European reception of 50 mc U.S. signals, November 24.

1946) indicated that it was possible to make solid copy of weak ground wave commercial harmonics on the new converter, whilst these signals *just could not be heard* on the acorn job. This satisfied the writer that the extra 20/25 μF capacity shunted across the 58 mc coils was not doing much harm !

Coupling Control

Vertical polystyrene rods, quarter-inch diameter, are used in the screening boxes to vary the coupling between coils. In the first RF stage variation of the aerial coupling is obtained by the right-hand front panel knob. It can alternatively be

Table of Values

High Gain VHF Converter

- C1, C11, C21, C29 = 3-30 μF , air trimmers, Philips
 C2, C12, C22, C30 = 25 + 25 μF , Eddystone, modified as per text.
 C3, C13, C23 = 100 μF , ceramic.
 C4, C14, C24, C32 = 15 μF , Eddystone.
 C5, C6, C7, C9, C15, C16, C17, C19, C25, C26, C33 = 500 μF , midget mica.
 C8, C18, C28, C31 = 50 μF , ceramic.
 C10, C20, C27 = 0.01 μF , tubular
 R1, R5, R9 = 330,000 ohms
 R2, R6 = 140 ohms
 R3, R7 = 1,000 ohms
 R4, R8 = 2,000 ohms
 R10, R12 = 4,700 ohms
 R11 = 220,000 ohms
 R13 = 47,000 ohms

All resistors are $\frac{1}{2}$ -watt.

- RFC1, RFC2, RFC3 = Eddystone S/W RF chokes
 L1 = 5 turns, No. 16 tinned copper, length $\frac{1}{2}$ in.
 L2, L4, L5 = 4 turns, length $\frac{3}{4}$ in.
 L3 = 4 turns, length $\frac{1}{2}$ in.
 L6 = 3 turns, length 1 in.
 L6 = 3 turns, length $\frac{3}{8}$ in.

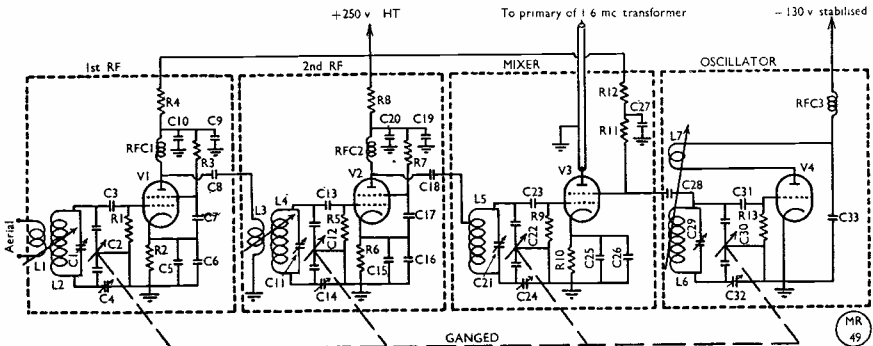
Note: All coils are $\frac{1}{2}$ in. I.D. L5 tapped $\frac{1}{2}$ turn from grid end. All originally designed for 58 mc band.

V1, V2, V3 = Mullard EF54.

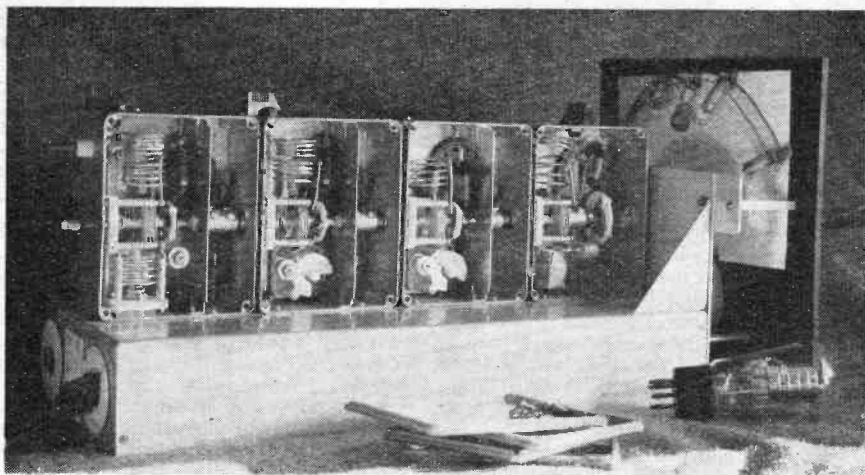
V4 = Mullard EC52.

4 screening boxes, Eddystone

1 chassis - $15\frac{1}{2}$ ins. \times $6\frac{1}{2}$ ins. \times $2\frac{1}{2}$ ins. (see text).



The GSBY VHF Converter circuit complete, discussed in detail in the text.



G5BY's VHF converter with sides of screening boxes removed. Aerial input upper left ; coil coupling controls are top knobs ; note oversize flexible coupler in oscillator compartment (nearest main dial) to carry torque of the four ganged condensers.

adjusted by the knob on top of the first RF screening box, should the front panel control ever be required for a different purpose—such as manual gain. The knob on the top of the second RF stage varies the coupling of the intervalve transformer. Capacity coupling having proved successful between this stage and the mixer, no such control is needed, but the provision is there should transformer coupling be tried out. On the top of the oscillator compartment is the knob which controls the coupling between the anode and grid coils—thus altering the degree of feedback and, in turn, the amount of injection into the mixer. This has proved particularly successful in obtaining a worth-while improvement in the signal/noise ratio of the mixer stage.

Experiences of other experimenters using the EF54 valve as a mixer had indicated that the best signal/noise ratio was obtained—at the expense of some gain—when using screen grid injection, so this method was employed and has given every satisfaction.

The tuning coils are soldered direct on to the split-stator condensers and *the length of the grid leads is just that of the 100 μ F ceramic condenser*. Aerial coupling, intervalve transformer primary and oscillator anode coils are mounted on the polystyrene rods by means of 6 BA screws which pass through clearance holes drilled in the rod. The leads to the aerial coupling

coil should be of stranded insulated wire to permit constant movement without breakage; the other coils can employ ordinary thin solid wire, since variation of these couplings usually only takes place during the initial lining-up process. The author regrets the somewhat untidy appearance of the coils, but their original neatness suffered during the tuning-up procedure and, since this converter was busy doing its stuff on the 50 mc band when the photographs were taken, just nothing could be done about it!

The controls on the back of the chassis, visible in one photograph, are jack for insertion of low reading milliammeter and rotary 4-position 2-pole switch, which enables the anode current of any one of the four valves to be measured. These figures are recorded on the centre tablet.

Performance

Both the RF stages, being designed to work "flat out," operate with maximum permissible anode and screen voltages, together with the minimum cathode resistance. Each adjacent pair of the four separate cathode pins of the EF54 valves was paralleled and by-passed with a separate condenser to the common earth point.

It is impossible to produce any trace of self-oscillation, with both RF stages exactly in tune, no matter how loosely the aerial be coupled. Without the aerial

connected, traces of self-oscillation can be observed at certain frequencies, but even this is not always possible unless the supply mains are unusually high in voltage. This extreme stability, coupled with high gain, is considered to be due to the care taken with the shielding, by-passing and earth return wiring and results in a converter which is unusually free from critical adjustments and whose performance remains constant over long periods. The overall gain of this converter proved to be much greater than that of the others used to cover the 28, 50 and 58 mc bands; so, in order to avoid having to reduce the IF gain every time the new converter was switched into service, the mixer grid circuit was detuned (by varying C24) until the

gain was reduced to a uniform level. Tests indicated that this change had still further improved the signal/noise ratio.

One of the greatest improvements over the acorn converters has been the freedom from drift. Due to the oscillator valve being completely clear of the tuning components, drift is limited to about the first fifteen minutes of operation from cold, and is roughly 20-25 cycles (at 50 mc). Once the valve elements themselves have assumed their normal operating temperature, no further perceptible change in the calibration takes place—since 50 to 51 mc occupies some $3\frac{1}{2}$ ins. of dial space any such drift would be very obvious. Calibration also remains constant over long periods; after a month of intensive operation it was possible to set the tuning to a given frequency by dial calibration, switch on the crystal frequency meter and obtain a readable beat note.

Results

Using this converter during the October and November periods of high MUF, a total of 135 DX amateur stations was received in the 50 mc band. These comprised four S. Africans, one Egyptian and one Suez Canal station—all on telephony; the remaining 129 being located in the U.S. and Canada. All American Districts, except the Seventh, and at least 25 States were heard; the two-way contacts obtained between November 6 and December 1 numbered 175. Harmonics, in the 50 mc band, were received from commercial telegraph stations in S. America and Asia; Oceania being the only continent from which no 50 mc signals could be positively identified.

IS YOUR CALL HERE ?

Cards are held for the operators listed below, of whose addresses we have no record. Please send a stamped addressed envelope of a convenient size, with name and call sign and a note as to whether you want your QTH published in "New QTHs," to BCM/ QSL, London, W.C.1. This is a full and sufficient address for our QSL Bureau. Cards will be forwarded on the next fortnightly G clearance.

2ABR, 2ADL, 2ALB, 2AMA, 2BFB, 2BMW, 2BQY, 2BTU, 2BWL, 2CFK, 2CJ, 2CQ, 2DTG, 2DXB, 2FCV, 2FIG, 2FOC, 2FSO, 2FVC, 2HAI, 2HZF, 2NQ, 3ACI, 3ACP, 3ADB, 3AKJ, 3AM, 3AMH, 3AMW, 3ANF, 3ANX, 3APD, 3ARG, 3ART, 3ASX, 3ATZ, 3AUP, 3AVV, 3AVZ, 3AXT, 3AXW, 3AYO, 3AYS, 3AZS, 3BBY, 3BCH, 3BCK, 3BCQ, 3BDI, 3BGI, 3BGN, 3BGP, 3BHW, 3BIK, 3BIS, 3BJU, 3BKD, 3BKH, 3BLR, 3BMJ, 3BMR, 3BMV, 3BMY, 3BOF, 3BOS, 3BPJ, 3BPZ, 3BQS, 3BQY, 3BRE, 3BRS, 3BSI, 3BUD, 3BVA, 3BZF, 3CAI, 3CBA, 3CBZ, 3CCL, 3CDQ, 3CEV, 3CEW, 3CFY, 3CGZ, 3CHO, 3CIW, 3CLB, 3CLD, 3CMI, 3CMT, 3CNJ, 3CPG, 3COF, 3CRF, 3CRR, 3CRV, 3CTM, 3CUG, 3CUM, 3CVB, 3CVW, 3CWI, 3CYL, 3CZF, 3FW, 3JV, 3LM, 3MM, 3OD, 3TP, 3XT, 3ZC, 4DH, 4FG, 4HB, 4KM, 4PV, 4RJ, 5BC, 5BW, 5WL, 5YB, 6GA, 6II, 6KL, 6OA, 6OY, 6PW, 6SP, 6UC, 6VY, 6WF, 8AU, 8AV, 8DG, 8FC, 8HG, 8KX, 8KY, 8LR, 8PT, 8TB, GC3CGK, GM2ASY, 3AKN, 3BTX, 3BUX, 4AA, GW2ABJ, 2BBO, 3AZQ, 3CMR.

SAFETY THOUGHT

You may have taken a few vague precautions to prevent your small harmonics coming into contact with what they should not touch when watching "Daddy playing his wireless."

But even if things are fairly safe for your little chirps, what about yourself? Are all your tank circuits parallel-fed (they should be), and have you a quick on-off switch to knock the whole outfit cold if anything begins to happen? And if you have (which we doubt), does your XYL know where to find that switch, supposing she heard a crash and found you rigid with 1000 volts paralysing your nerve centres?

Oh, yes, it can all happen . . . but it need not if you will just take a little time to take a little care.

Inexpensive 100-Watt Modulator

807's in Zero-Bias Class-B—Full Operating Data with Details of a Suitable Speech Amplifier

By A. B. WRIGHT (G6FW)

PART I

(Here is G6FW's modulator design for the 100-Watt CW Phone Transmitter described in the last two issues. A modulator of this type can of course be matched to any suitable RF unit. Quite incidentally, the article also gives a great deal of useful practical information on the design, construction and testing of speech amplifiers and modulators generally, and so will be of particular value to those about to embark on telephony operation.—Ed.)

IT is assumed that sooner or later the constructor will wish to add 'phone to the 100-watt 14/28 mc transmitter, described in recent articles in the *Short Wave Magazine* (December, 1947, and January, 1948), and there are probably many readers who will be interested in a modulator which, although capable of putting out 120 watts of audio, is by no means hard on the pocket.

The modulator and speech amplifier to be described fits all these requirements as it makes use of a pair of 807's in the zero-bias Class-B circuit, details of which have recently been published by the R.C.A.

Good work can, of course, be done by running the 807's in Class AB2, as described in G6QB's article on modulation some time ago (*Modulating the Carrier*, August, 1946). Unless, however, a highly stable source of voltage for the 807 screens, and an equally stable source of bias voltage, usually batteries, is available, the full audio output of which the valves are capable will not be realised.

807's in Class-B

The design which follows does away with both these requirements by running the 807's in Class-B with zero bias.

Normally, this mode of operation is confined to triodes specially designed for zero bias application, but recent experiments by W2RYI of the R.C.A. have evolved a method of adapting 807's to zero-bias Class-B operation by means of an easy modification.

The secret is to drive the 807's on the *screen grid*, connecting the control grid to the screen grid *via* a resistor. The data published by R.C.A. shows the optimum value of this resistor to be 20,000 ohms. A discussion as to how the value of this

resistor affects the valve characteristics, or the effect of connecting the 807 as a triode, is outside the scope of this article, but the figures quoted for operation of the valves in Class-B are quite impressive, and it is interesting to note that the R.C.A. specify Class-B operation as the method of realising the full audio output of 120 watts, with but 5.3 watts driving power and an anode voltage of 750.

Driver Requirements

Another interesting and important point which emerges when comparing zero-bias 807's with normal zero-bias Class-B triodes, is that whereas the latter valves require a low-voltage high-current source of drive, the 807's require high voltage excitation with low current.

Thus, unlike 807's run in Class-AB2, operating the valves in Class-B means that a comparatively constant load is presented to the driver stage, the actual grid impedance of a pair of valves being given as 14,200 ohms. The driver requirement for 120 watts output, according to the published characteristics, is 555 peak grid-to-grid volts at 5.3 watts, which is somewhat more than required to drive the same valves in Class-AB2. This is no disadvantage, however, as the power can easily be obtained by using two triodes such as the 2A3 as a push-pull driver, as recommended by the R.C.A.

As mentioned previously, however, the load presented to the driver stage is more or less constant in this circuit, and it has been found that a 6L6 connected as a tetrode, with 350 to 400 volts on its anode, will drive the 807's to approximately 100 watts output, with negligible distortion on speech input.

Speech Amplifier

Using the preceding data as a basis, a straightforward three-stage speech amplifier was built up, and as will be seen from the circuit diagram (Fig. 1), it is quite conventional and free from frills. A "speech level indicator" was incorporated in the amplifier, using a magic-eye valve and double-diode triode amplifier, for reasons explained later, but this can be omitted with no detriment to performance.

The first valve, a 6J7, is a normal high-gain voltage amplifier with provision for crystal microphone input, resistance-capacity coupled to a 6J5 which drives a 6L6 in Class A as a modulator driver. With the voltages indicated, and correct matching to the 807 grids, the 6L6 can be driven to give an output of 6 watts, which will be ample to obtain up to 100 watts from the 807's.

Construction of Speech Amplifier

Photographs of the speech amplifier and modulator were not deemed necessary as readers will no doubt prefer to build these units to their own specifications.

The speech amplifier used by the writer was built on the chassis of an ex-Admiralty "Performance Meter," an item which is often advertised in the columns of this *Magazine*, and a description of its conversion will no doubt be of interest.

When converted, the unit forms a completely self-contained speech amplifier, and the magic-eye on the panel lends itself as a most useful form of speech level indicator.

The layout of the chassis can easily be adapted for speech amplifier use, although a 350-0-350 volt transformer and two $8\mu\text{F}$ smoothing condensers will need to be substituted for the small power supply already incorporated. All valve holders and components were stripped from the chassis, and from the metal box which is fitted to its underside. The panel components were also removed, with the exception of the 4-pin mains input connector and the magic-eye assembly.

Work on the speech amplifier can commence by building the 6J7 and 6J5 stages into the metal screening box. Incidentally, the complete screening of the first two amplifier stages is to be recommended whatever form of construction is adopted, and although the components are a tight fit in the "performance meter" screening box, the trouble involved is well worth it to ensure freedom from feedback later on.

The microphone input jack is fitted to the panel side of the screening box, a suitable fixing hole being already there.

The usual precautions in wiring up the speech amplifier should be taken. Heater wiring should be put in first, the wires being pressed flat into the corners of the chassis.

The 6J7 is preferable to the 6SJ7 as the first valve, as the use of the single-ended valve incurs the risk of bringing the grid in close proximity to the heater wiring, and in a high gain amplifier this can give rise to hum. The lead to the top cap of the 6J7 must be shielded and a metal shielding cap placed over the top grid.

Carbon Microphone Input

A carbon microphone can be used in place of a crystal mike, without an input transformer if the circuit of Fig. 2 is substituted.

The circuit through the carbon mike is completed across the series resistor R20, the value of which is not at all critical. The audio voltage developed across this resistor is then passed *via* C12 to the grid of the 6J7. Varying the value of R20 and the amount of voltage applied, different levels of output can be obtained. Optimum results are possible with high values of R20 so that only a small current flows through the microphone. This circuit is capable of giving excellent speech quality, and the usual hiss of the carbon microphone is much reduced.

If R20, C12, and a three-volt battery are enclosed in a small earthed metal box, the carbon mike matching circuit can be a separate unit from the speech amplifier, thus enabling different types of microphone to be tried out.

Speech Level Indicator

It was decided to make use of the magic-eye on the panel of the "performance meter" as a speech level indicator.

Audio voltage is taken from the 6L6 grid to the grid of a double-diode triode, the diodes of which are connected together. The amplified audio is then rectified by the diodes, the exciting voltage for the magic-eye assembly being developed across a 1 megohm variable resistor R13, which forms a sensitivity control.

Thus, on speaking into the microphone the magic-eye will close to an extent dependent upon the distance of the speaker from the microphone, the setting of R13, and the setting of the audio gain control R6.

In practice, after speech amplifier and modulator are connected to the transmitter, the sensitivity control is set so that when 100 per cent. modulation is taking place, the magic-eye just closes.

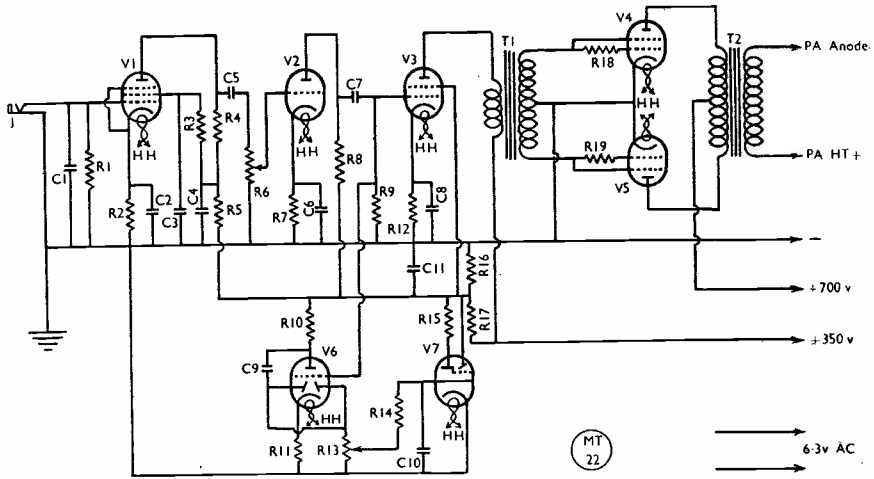


Fig. 1. Circuit diagram of speech amplifier, modulator and speech level indicator. All values are given in the table.

Whilst this device is in no sense a depth of modulation indicator, it does serve as an indicator of the level of speech input, and has been found extremely useful in practice. It indicates, for instance, how much background noise is getting on to the carrier, and shows readily whether the operator is speaking the correct distance from the microphone.

Modulator Construction

There is a little to say regarding construction of the 807 modulator. In the writer's set-up, speech amplifier and modulator are separate units, the 807 driver transformer being placed on the modulator chassis, and a short length of screened cable connects the output of the 6L6 with the driver transformer primary. With this arrangement the speech amplifier can be placed on the operating desk with all controls at one's finger tips, and no noticeable distortion results even when the length of interconnecting cable is 10 feet. Another advantage is that the chances of RF feedback are minimised when the speech amplifier is placed at a distance from the RF stages.

A driver transformer having a *step-up* ratio is required for the modulator, the correct ratio being easily calculated if the optimum load for the driver valve or valves is known, the required turns ratio being the square root of the ratio of driver load impedance to the grid impedance of the 807's. A Class-A 6L6 is at present used

Table of Values

Inexpensive 100-watt Modulator

- R1 = 5 megohms
- R2, R7 = 1,500 ohms, 1 watt
- R3 = 1 megohm
- R4, R9, R10 = 250,000 ohms, 1/2 watt
- R5, R8 = 50,000 ohms, 1/2 watt
- R6, R13 = 1 megohm volume control
- R11 = 2,000 ohms, 1 watt
- R12 = 220 ohms, 1 watt
- R14 = 3 megohms
- R15 = 2 megohms
- R16 = 20,000 ohms, 10 watt
- R17 = 3,500 ohms, 5 watt
- R18, R19 = 20,000 ohms, 1 watt
- R20 = 500 ohms, 1 watt (see text)
- C1 = 50 μF
- C2, C6 = 10 μF, 25 volt working
- C3, C10, C12 = 1 μF
- C4, C11 = 8 μF, 400 volt working
- C5, C7, C9 = 0.1 μF
- C8 = 25 μF, 50 volt working
- V1 = 6J7
- V2 = 6J5
- V3 = 6L6
- V4, V5 = 807
- V6 = 6Q7
- V7 = Y61
- T1 = Class B driver transformer (see text)
- T2 = Woden modulation transformer, Type UM3
- J = Open circuit microphone jack.

in the writer's speech amplifier, with cathode bias, 300 volts on the plate and 250 volts on the screen, requiring a load of 4,500 ohms to realise the full output of 6.5 watts. This latter figure is taken from the published characteristics, and does not, of course, take into account transformer

Twenty-Metre DX Forecast

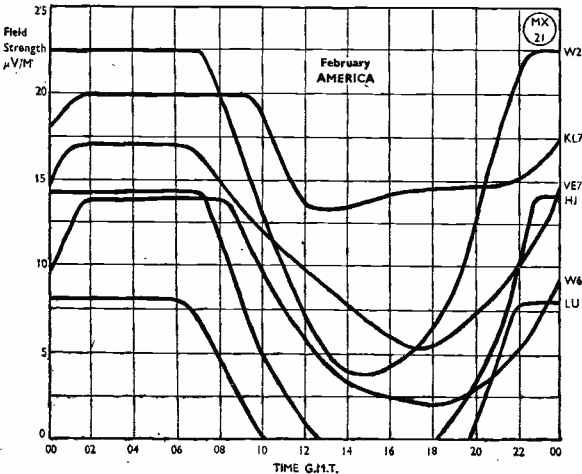
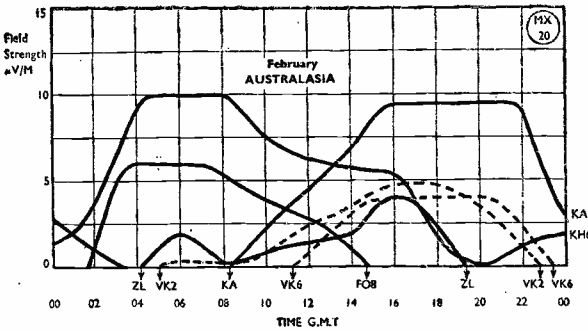
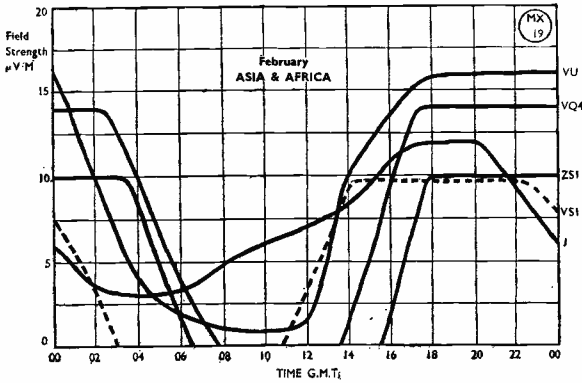
Predictions for February

By I. D. McDERMID,
A.R.T.C. (GM3ANV)

THE graphs for this month show the commencement of the decline in general conditions which prevail throughout the summer months. Although nearly all curves remain at the same peak field intensity at their maxima (and, indeed, many show a slight increase) their minima are at a decidedly lower level than they were last month; in other words, the slopes of the curves are steeper.

The duration of maximum intensity of the American curves starts to decrease, particularly with respect to the more Northernly areas, although the actual time of minimum intensity will be seen to remain the same. As it so happens, the Australian curves are bunched together this month, presenting a somewhat confused family of curves. The main feature of this group is the expansion of the VK2 and ZL curves, together with the recurrence once more of the morning periods of activity. VK6 is the only area which shows any decrease in maximum field strength, and for once this is less than that of VK2. The African and Asiatic group of curves show little alteration, with the exception of the loss of the morning peak for J, and the flattened minimum for the VU curve, with its rather irregular recovery afterwards.

Broken lines have been used for some of the curves, to avoid confusion in identity.



New Amateur Procedure Code

Proposing the "AT" System

by W. OLIVER (G3XT)

(Our contributor has devised a simple three-letter code system giving wider and more flexible meanings than the existing Q Code, which was primarily designed for commercial working. The main justification for the suggested AT Code is its greater suitability for amateur operation than the present Q abbreviations. The AT system is a self-evident code, easy to learn, which can itself be abbreviated to a single-letter procedure. We see much to commend G3XT's suggestion. Readers are asked to let us know, on a postcard, their views on its adoption as standard amateur procedure.—Ed.)

THIS new code, a series of twenty-six abbreviations drafted for the proposed use of amateur transmitters, is very simple to learn, easy to remember, and quick on the key.

Unlike the existing signal codes, which were designed for professional wireless operators, the "AT Code" has been planned expressly for the amateur, and should meet every need of the average contact between two amateur stations.

If this new code could be adopted by all amateurs in the British Isles, it would immediately help to bring matters on the overcrowded "local" bands to some sort of reasonable order, as it enables the maximum amount of information to be exchanged with a minimum of signalling, and therefore a minimum of interference.

If properly used and given a fair trial, the advantages of the code would be so obvious that its use would commend itself to operators in other countries and it might easily spread throughout the world (in the same way that the RST reporting code has done).

The existing "Q" code could be gradually superseded by this new code for amateur purposes, as the abbreviation "ATC?" ("Can you use the AT Code?") sent as a preliminary when first contacting a new station, would indicate immediately whether the other operator knew the AT code or not, and would, therefore, eliminate the possibility of confusion.

Structure of the Code

It will be seen that the new code comprises a different abbreviation for each letter of the alphabet—and it is as easy to learn as the ABC itself! Any operator of average capabilities could memorise the entire code in a few minutes; it is so very easy to deduce the meanings from the abbreviations, as the third (significant)

letter is in every case directly linked with the meaning—e.g., ATF for fading, ATI for input, ATR for receiver, and so on.

Under good working conditions, and in cases where two competent operators are thoroughly familiar with the code, an even greater saving of time and interference can be achieved by prefixing the message with the indication "Short ATC" and thereafter omitting the first two letters of each abbreviation, and sending the significant letter only, thus:—

"G6ABC de G3XT SHORT ATC G U 569 A near Saxmundham Suffolk T CO I 5 watts R Ov2 O Windom 38 ft. high P Q W fine and sunny N BT N IMI G6ABC de G3XT K"

The translation of this message would be:—

"To G6ABC from G3XT. Message in shortened AT Code. Greetings (good morning, good afternoon, etc.). Your signals are RST 569. My location is near Saxmundham in Suffolk. My transmitter is a single-valve crystal oscillator with an input of 5 watts, my receiver is a detector followed by two LF stages, and my aerial is a Windom 38 feet high. I am getting your signals 100 per cent. solid copy, so please send faster. The weather here is fine and sunny. I have nothing further here for you. Have you anything further for me? To G6ABC from G3XT. Please transmit."

A possible objection to the proposed new code is that the abbreviations each begin with a letter which starts with a dot. (For the existing codes, letters beginning with a dash, such as Q and Z, have been chosen purposely because they are more emphatic and easier to hear.) There is a simple and effective answer which should silence this objection! The most vital and urgent of all radio code abbreviations, the SOS, commences with dots (...). Surely what is good enough for a signal on which lives depend in an emergency is good enough for the comparatively trivial purpose of amateur transmission!

In actual practice, of course, messages

The "AT" Amateur Code

Code abbreviation	Memorising Aid	Meaning
ATA	"A for Address"	My location is . . . What is yours?
ATB	"B for Stand By"	Please wait. I will call you at. . . Shall I wait?
ATC	"C for Code"	I can use the AT Code. Can you?
ATD	"D for Direct"	Please send your card direct. My address is. . .
ATE	"E for Experiment"	I wish to carry out a test. Please report on it. Are you ready to listen for it?
ATF	"F for Fading"	Your signals are fading. Are mine?
ATG	"G for Greetings"	Good morning/afternoon/evening/night/day/kind regards.
ATH	"H for High"	I am about to search the band from the HF end.
ATI	"I for Input"	My input is . . . watts. What is yours?
ATJ	"J for Jamming"	I am experiencing interference on your signals. Are my signals being interfered with?
ATK	"K for Kilocycles"	My frequency is . . . kilocycles. What is your frequency?
ATL	"L for Low"	I am about to search the band from the LF end.
ATM	"M for Mine"	I am going to listen on or around my frequency.
ATN	"N for Nil"	Nil further here. Have you anything further for me?
ATO	"O for Outdoor wire"	My aerial is . . .
ATP	"P for Perfect"	I got perfect copy of your signals, 100 per cent. solid.
ATQ	"Q for Quicker"	Please send faster.
ATR	"R for Receiver"	My receiver is . . .
ATS	"S for Slower"	Please send slower.
ATT	"T for Transmitter"	My transmitter is . . .
ATU	"U for Ur signals"	Your signals are RST . . . How are you getting me?
ATV	"V for Vics"	Please send a series of V's.
ATW	"W for Weather"	The weather here is . . . What is it like there?
ATX	"X for X's"	Atmospherics are interfering with reception here.
ATY	"Y for You"	You are being called by . . . Who is calling me? Please repeat your call-sign.
ATZ	"Z for Zero"	Your readability or strength here is now down to zero. I can no longer receive you. Will contact you again some other time.

need not be as terse and bald as the example quoted above. It would be a pity indeed to "commercialise" amateur procedure to this extent ; but having put over the essential information in this brief and

businesslike way, one can always add the friendly trimmings—the "OM, 73's, hpe cul's" and what not.

Flexibility

Moreover, the code is flexible enough to be expanded into fuller meanings than those shown in the list. For instance, if one is transmitting on a 66-ft. end-fed

The "AT" Code

Meanings in order in which they would be used in a message.

- ATC Can you use the AT Code?
- ATG Greetings.
- ATU Your signals are RST . . . ATF Fading. ATJ Interference. ATK Atmospherics. ATP 100 per cent solid copy.
- ATA My location . . .
- ATI My transmitter is . . . ATR My receiver is . . . ATI My input is . . . ATK My frequency is . . . ATO My aerial is . . .
- ATW The weather here is . . .
- ATE I wish to carry out a test. ATV Please send V's
- ATB Please wait
- ATD Please send your card direct to . . .
- ATQ Please send faster
- ATS Please send slower.
- ATN Nil further here for you.
- ATH I am about to search the band from the HF end.
- ATL I am about to search the band from the LF end.
- ATM I am going to listen on or around my frequency.
- ATY You are being called by . . .
- ATZ Your signals are zero here, I can no longer receive you.

aerial and one wishes to change over to a Window and get a report on it, the necessary details and request can be conveyed, thus :—

"Hr ATO 66-ft. end-fed BT ATE Window"

—a beautifully brief way of explaining that one is using the 66-ft. end-fed aerial at present, but that one also has a Window aerial available and if the other operator can spare time to listen to a test and report on it, will he please indicate that he is ready to stand by and co-operate?

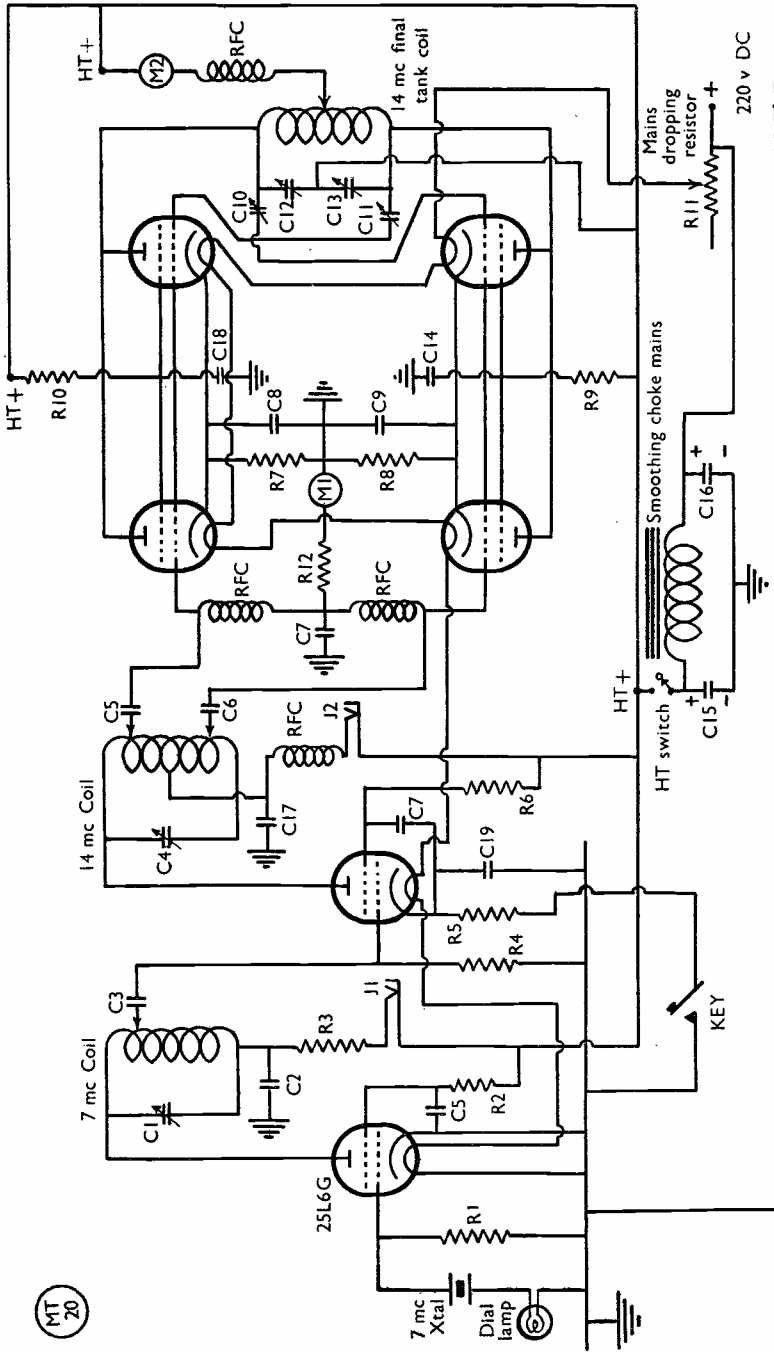
The facts that the use of this new code would undoubtedly help to reduce interference, eliminate superfluous signalling, and facilitate really useful experimental work, are strong points in its favour which might lead to its being viewed in a favourable light by all concerned.

G9BF AGAIN

We regret to have to inform readers that it is not at all unlikely that this unworthy creature may very shortly creep back into these pages. He is a too-near relation of that other oddity, Arabackle Oblifork ; of course, A.O. now signs SPIV on all amateur bands.

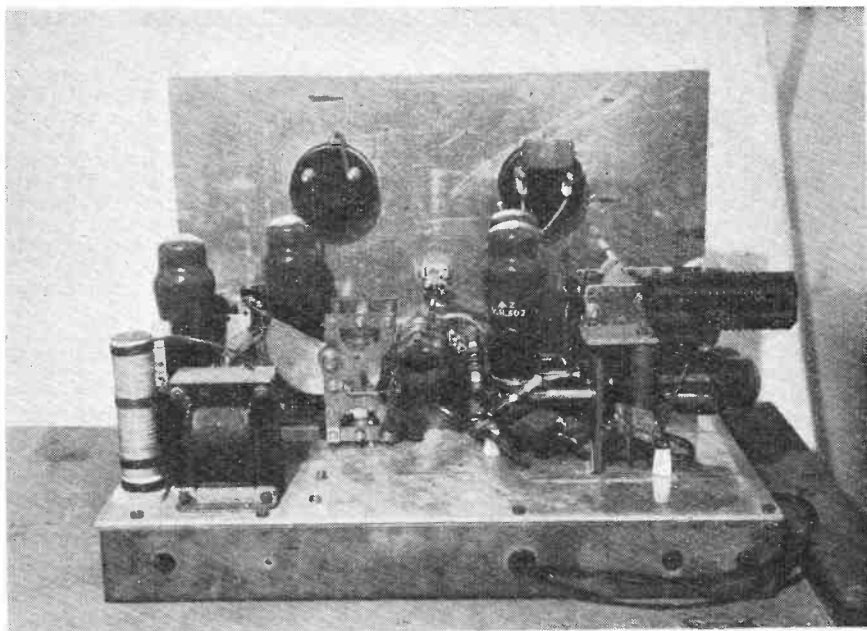
BRITISH PERMITS FOR D2's

In order to assist D2's to obtain a British permit on their return to this country, special arrangements have been made with both the GPO and City & Guilds of London Institute enabling candidates to qualify while still serving in our Forces stationed in Germany.



MT
20

Circuit of the transmitter complete. Valves are 25L6G (performance equivalent to the 6L6) with four in push-pull parallel in the P.A. Meter M1 should be 0-10 mA and M2 0-200 mA. Jack J1 reads plate current to the CO, and J2 the doubler plate.



50 Watts with DC Mains

Transmitter Design for 220 Volts HT

By A. G. CHAMBERS, A.M.Brit.I.R.E.
(G5NO/ZBIAB)

Lieut.-Comdr., R.N.

A NEWCOMER to Amateur Radio came to me one day, saying that he was all ready to get his ticket. Would I help him design a transmitter? Of course, I said I would—until he gave me his problem. He was on 220v. DC! What was worse, he could not afford a rotary converter, and he was not going to be content with 10 or 15 watts! He wanted 50—he would! (He was a great friend of mine, otherwise I would

have told him that it was no good coming to me for information.)

I thought the problem over for several days, then my friend produced an idea for a DC mains transmitter using a single 25L6. Well, someone had, at any rate, come up against the same problem, but he was evidently happy with 15 or so watts. This set me thinking—what we wanted was something that produced watts by using lots of current with low

(While DC mains are an undoubted handicap to the amateur transmitter, they do have at least one advantage—there is no need to worry about the milliamps! This design reflects a popular tendency of some years ago, when DC mains were more general and AC/DC rotary converters expensive and difficult to obtain.—Ed.)

Table of Values

50-Watt DC Mains Transmitter

C1, C12, C13	= .0002 μ F	
C2, C4, C8, C9, C14,	C17, C18	= .001 μ F
C3, C5, C6	= .0005 μ F	
C7	= .002 μ F	
C1, C11	= Neutralising (see text)	
C15	= 10 μ F	
C16	= 20 μ F	

C19	= .01 μ F
R1	= 50,000 ohms
R2	= 2,500 ohms
R3	= 1,000 ohms
R4, R6, R9, R10	= 15,000 ohms
R5	= 200 ohms
R7, R8	= 150 ohms
R11	= 300 ohms
R12	= 5,600 ohms
Valves	= 25L6G
RFC	= Standard S/W RF chokes

voltage. Why not use a number of 25L6's in push-pull parallel?

The first version, built up on a bread-board, used a 7 mc tritet consisting of two 25L6's in parallel driving four 25L6's in push-pull parallel on 14 mc. This had two snags: (a) Lack of drive, and (b) Inability to neutralise due to the long leads connecting up the four valves in the final. This was soon scrapped.

Circuit Arrangement

The next design proved more fruitful. A straight 25L6 CO on 7 mc, a 25L6 doubler and four 25L6's in push-pull parallel.

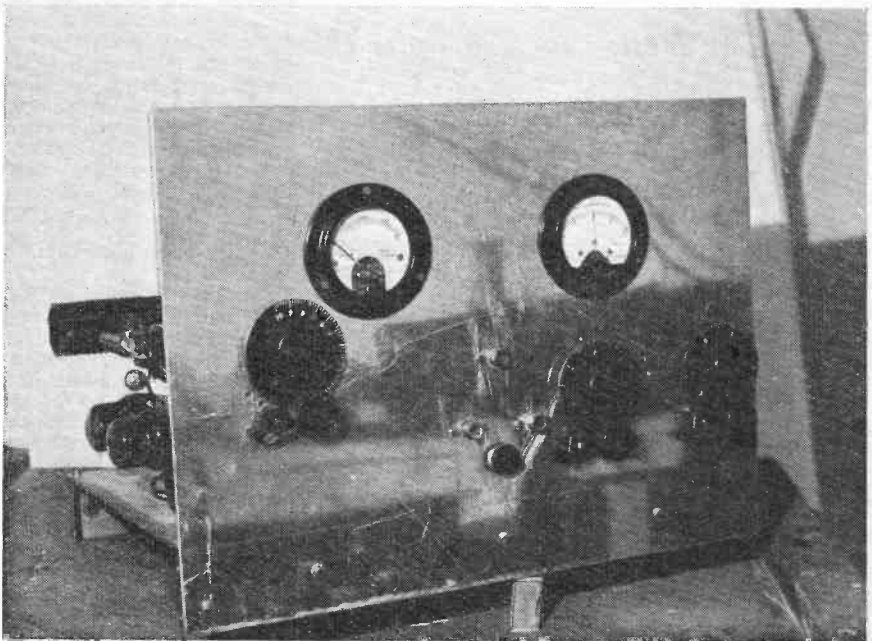
Here everything went well until we came to the construction of the final. How to connect up 4 valves in P/P parallel and keep the leads short. After several arguments, and lots of patience, the arrangement shown in the accompanying photograph was agreed upon. It will be noticed that by placing two valves horizontal and two vertical, very short leads can be obtained. Neutralisation was the next problem; several values ranging from 22 μF upwards were tried without success. Final neutralisation was then accom-

plished by twisting two lengths of insulated 16 SWG together, 2 in. in length. This system was very accurate, exact neutralisation being achieved by giving the two wires an extra twist with a pair of pliers and then snipping off the ends. The wires can just be seen in the rear view photograph of the final, between the pair of vertically mounted 25L6's and the twin-gang tank tuning condenser. Great care must be taken to see that the neutralising adjustment is complete.

CO Plate		Doubler Plate		Final PA Plate	
<i>On Tune</i>	<i>Off Tune</i>	<i>On Tune</i>	<i>Off Tune</i>	<i>On Tune</i>	<i>Off Tune</i>
20 mA	50 mA	40 mA	80 mA	30 mA	185mA

Due to the low-voltage, high-current system of obtaining RF power, this transmitter can be constructed throughout with receiving components. For the 14 mc final tank an old BC dual-gang .0002 μF per section condenser was pressed into use.

Coil Date	Turns	Wire	Dia.	Length
CO ..	18	16 SWG	1½-in.	1½-in.
Doubler ..	10	16 SWG	1½-in.	2-in.
Final ..	10	16 SWG	1½-in.	2-in.



Front view of ZB1AB's 50-watt 14 mc transmitter, using four 25L6G's in parallel push-pull, with 220 volts HT from the DC mains.

More About Curing TVI

Further Results with the "Kingston By-Pass"

by E. A. KNIGHT (G3BNZ/G2LP)

(As his notes in the January issue on one possible solution of the television interference problem seemed so promising and have already aroused considerable interest, we asked G3BNZ for the further information given below. Several readers have drawn attention to the disregard of the velocity factor in the stated length for the coax "drain". It may be that even better results would be obtained by making it 60-70 per cent. of the 61½-in. dimension originally given, measuring this from the TV receiver aerial input terminals. The earth lead must be short and direct. The general idea is in any case perfectly sound.—Ed.)

FURTHER to last month's notes on Television Interference, some further details on this "QRM-drain."

The "Kingston By-Pass" has been fitted to two television sets to date—one in our own QTH and the other to that of our complaining friend, who is situated 150 yards away. His set is a Murphy Type VII4; our own receiver is a very much modified Baird Type T5c.

It can now be said that our neighbour is completely satisfied with his set, no longer receiving any trace of G2LP on sound or vision. The type of interference was in the form of a complicated pattern superimposed on the picture and varying in intensity and shape when the G2LP transmitter was modulated. The sound channel, receiving Alexandra Palace at R9 *plus*, took in G2LP comparatively at R5. Most upsetting results occurred on occasions when the modulation from G2LP triggered the synchronising circuit and the picture skipped a few frames. This did not always happen because the TVI varied in intensity from day to day, presumably due to slight differences in the tuning of the Tx affecting in turn the modulation envelope.

The transmitter is most bothersome to TV when operating on 80 metres, and less trouble on the other bands; those tried have been 14 and 28 mc. This is also the case with both receivers.

The aerial of the remote receiver is the element-*plus*-reflector type, and erected so as to pick up minimum noise from the streams of traffic on the main road. This setting, incidentally, leaves the aerial directed at G2LP!

The transmitter at G2LP is CO-Buffer-PA, using an 813 run at 150 watts input and plate-screen modulation. The aerial is 128 ft. long; the radiation pattern on 80 metres does not seem to be broadside at all, but mainly end-fire—not measured,

but taken from reports gathered over some six months. This pattern is further borne out by the fact that almost all the BCI complaints came from this one direction, in the midst of which resides our television friend. His aerial height is 40/45 ft.

Possible Complications

The TVI drain dimensions may depend on the length of feeder at the receiver end. One can imagine different TVI effects to be possible where the TV feeder bears a definite relation in multiples of quarter-waves as compared with the interfering frequency. The harmonic content is worth checking, particularly if a tritet circuit is employed. This type of oscillator seems to delight in joining the vision programme at the slightest provocation, an instance being the sixth harmonic from 7 mc.

Home TVI

The results of the trap when fitted to the TV receiver in the house are encouraging, but not a complete cure. Reduction is some 70 per cent., but the interference is only slight in any case, although the receiving aerial is but a few feet away from the Tx wire. The TV aerial is actually directed towards the G2LP aerial, with two reflectors behind, but seems to pick up radiation direct from the exciter of the transmitter, the harmonics of which are not materially amplified by the final when switched separately.

It is hoped this article will set readers on the way to reducing, if not eliminating, TVI and that those who try the "Kingston By-Pass" will send reports to the *Magazine* giving as much relevant data as possible. If the idea seems sufficiently successful, the trap (or drain, depending on the way one looks at it!) could be embodied in commercial aerial systems and sold as part of the aerial accessories. Its salient features are no adjusting, low cost, simplicity, and a possible all-band cure.

DX COMMENTARY

ON CALLS HEARD, WORKED & QSL'd

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

This month has brought in the largest mail yet; and everyone has something useful to say—a very healthy sign. Controversies rage, chief among them, of course, being “Local-phone *versus* CW DX,” closely followed by “C6HH—Is he in Zone 23 in spite of what everyone says?” For the moment, we discreetly dodge them both. While admitting that the big ones are larger than the small ones, we commit ourselves no further!

DX on all bands has been good during December and January; and at the time of writing it looks rather as though late January and early February might be even better. The activity on 3.5 and 7 mc at suitable times is most gratifying and interesting, but *still* no one seems to be putting the HF end of 14 mc to any useful purpose. Between 14350 and 14400 there seems to be a kind of vacuum, used neither by 'phone nor CW, and it doesn't make sense.

Hot-Under-Collar Section

Last month's comments on The Great QSL Racket made a very few people very hot, but, in general, only brought forth opinion of the kind that was in agreement. So this time we will fish deeper and deal with The Great Country-Chasing Racket. (Yes, you're perfectly free to say that it's our own fault for encouraging it. Go ahead—we still have Free Speech in this country!)

We know that Amateur Radio needs a competitive side to stimulate certain kinds of interest; we know that chalking up a nice score of countries and Zones worked does give one the measure of DX achievement; but is it very clever? It is patently harder to put a signal into Brazil than into the Cape Verde Islands; but just listen if a CR4 comes on the air. The PY's are completely neglected, and everyone—Good Chaps, Fierce Fellows, Spivs, Lids and All—descends on the single representative of a group of islands. Thus, the man with most countries to his score is not *necessarily* the one who has the most efficient gear, or even the one who operates it best; he might be the chap who has (a) most time to spend; (b) most patience; or (c) most aggressive-

ness and least scruple. So Country-chasing produces a mystic number which an amateur may tag on to his callsign, but tells us nothing about him as an individual operator. If we *must* be competitive, surely we can evolve something which tells us of what a station and an operator are capable? Mind you, we are talking only of the self-confessed DX-hunter; because those who are *not* keen on DX will not bother to work it anyway, and don't want to be competitive. And why should they?

For those who are keen, we have often wondered if something like this would be amusing: Pick any day you like; set yourself an operating limit of eight hours; then go ahead and work all the countries you can on as many bands as possible. Note that this will not involve you in chasing rare countries—you won't have time to work all the easy ones that are within reach! Then tot up your score like this: Total equals Number of Countries worked on each band (meaning that a W on 28 mc and a W on 14 mc and a W on 7 mc would count as three); subtract one point for every fruitless call made; subtract one for every watt input over fifty. What's the answer?

If you don't agree with all this (and you probably won't), let's hear what *you* think is a fair and interesting test of the DX possibilities of any given station-and-operator combination.

WAZ and All That

By way of underlining the above, some of the most prominent figures in the WAZ List have asked to be removed. They include the two former top-scorers, G6ZO and G2PL, both of whom say that it is time someone else had a look in. Further, they add that several people with very high scores (including at least one of 200) have never put in a claim, and that for this reason they don't like sitting on the top of the list and knowing that it is not really representative of the “top score” situation. We of course know this, and agree, but there can be no

question that the WAZ list has brought out some very interesting data and much useful information for the DX fraternity.

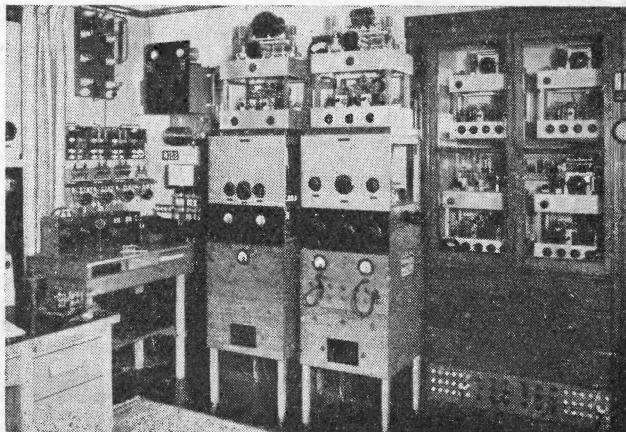
Well, from next month onwards the WAZ list will in any case look entirely different, because the order of merit will be decided by the 1948 scores. This is a good thing, because the purpose of the list is to give an indication of current activity, not past successes. A number of readers sent in their 1948 scores this month, but we didn't propose to start them until the March issue, because the first fifteen days of the year were not enough to go by.

1948 Marathon

Please read these simple rules, and then we should have no misunderstandings as to the composition of the WAZ list: (1) Send your claim on a *post-card* (a QSL will do!) with the four sets of figures—(a) 1948 Zones; (b) 1948 Countries; (c) Post-war Zones; (d) Post-war countries. For the 1948 figures please give date, time and station worked. (2) For the 1948 score, only stations worked *during the previous two months* will be allowed to count. This will prevent anyone holding back until the end of the year and suddenly adding thirty or forty countries! So make your claim regularly, month by month, and see what progress you make by comparison with the others. As we have decided upon no minimum starting figure, there is room for everyone in the present list. If it grows *too* big we shall have to fix a bottom limit. And those who want to claim "Phone Only" as against "Phone and CW" are still entitled to do so.

DX on 3-5 mc

Several of the early-rising types have been discovering the fascination of this band and doing very well. G8JR (Epping) has worked all W Districts except the 7th, *plus* VE and NY4; he had 130 W/VE contacts between October 1 and December 22 last year, using an 807 with 50 watts. G8JI (Birmingham) reports a rather similar state of affairs, but no W6. G6ZO (Totteridge) has worked VE8NB, ZL1HM, 1CI, 4GA, KP4KD, CM2SW, NY4CM, OX3MG, VE1, 3 and 8 and all W's except 7. Quite a few have heard South



W1BB, Winthrop, Mass., first licensed in 1917, runs this impressive station. He is on all bands and, with the exception of the receivers, all the equipment is entirely home-built. The transmitters on view are for 160, 80, 40, 20, 10, 6 and 2 metres, each being self-contained!

ZONES WORKED LISTING

Station	Zones	Countries
'Phone and CW		
G5DQ	40	160
G2AJ	40	157
G8KP	40	156
G5YV	40	154
G6QB	40	152
G3AAM	40	126
G5CI	40	121
G2WW	39	148
D2KW	39	147
G6BQ	39	146
G3DO	39	145
G3FJ	39	139
ON4JW	39	136
G5RV	39	136
G8IL	39	135
G2VD	39	132
G2FSR	39	130
GW3AX	39	123
G3AAK	39	122
G4CP	39	121
G6PJ	39	76
SV1RX	38	126
G3QD	38	119
MD1D	38	117
G8IP	38	105
G5MR	38	102
G3BI	38	75
G2AKQ	37	125
G3AAE	37	103
MD5AK	36	118
G3BQ	36	103
GW4CX	36	92
GM2AAT	36	75
G8VR	35	100
G2AVP	35	89
G3BDQ	35	81
G8KU	34	96
G6XX	34	89
G2BXP	34	84
GM6MS	33	90
GM3AVA	33	85
G8VG	33	78
G3BFC	33	77
G6BB	32	81
G3AGN	32	74
G5WC	31	80
G3ACC	30	83
G2VV	30	76
G5GK (7 mc only)	30	69
'Phone only		
G2AJ	37	121
G3DO	37	116
G6BW	36	119
G6WX	36	109
G5YV	36	108
G3FJ	35	115
GM2UU	35	113
GM3AVA	30	60

Americans, and at least one London station is suspected of having collected a WAC on 3.5 mc. Peak time, 0500-0730; bed-lovers need not apply. Some nice work goes on among the QRP stations, too. G3CSE (Hull), during his first two months on the air, used 10 watts on the band and worked some fifteen countries, including 159 G stations. G3ALC (Oakham) worked twelve countries with an input of 4 to 6 watts from two 120-volt batteries. He says he only mentions this in case it should interest the boys who use 150 watts for cross-town contacts!

7 mc DX

The Faithful Followers of Forty have also been keeping their ends up lately. G2PL (Wallington) worked ZS1M for his first ZS ever on 7 mc. G5GK (Burnley) has placed himself on the WAZ list with a score of 30, all on 7 mc; among his latest DX on the band are ZD6, ZB1, ZS1, KL7, KM6, KP4, UJ8—and he needs only five States for WAS. G2BAB (London, N.4) sends in a spectacular list including KM6, CP5, VE6, ZE1, VQ3, VP5, CM, HS, VR2, ZK1 and MD7 (yes, we *did* say on 7 mc!). The rig? Oh, just the usual 807 with 50 watts and a W3EDP aerial. But 'BAB says that without the local 'phone nattering he would probably have been able to work some real DX.

G8OJ (Manchester) bagged plenty of VE's and W's plus ZS1Y and ZS1EB, FA, VO2, UH8 and ZC6, and he heard KP4EX and UA9KOB. GC3GS (Jersey) would like to see the band divided into 7000-7075 for CW only and the rest for 'phone only. ('GS, in spite of being out at work all day, has had 7,000 'phone QSO's on the band.) He recommends the procedure, when in QSO with someone on 7 mc, of passing the transmission over and listening for any further calls on the way; this brings in some of the QRP people who would not otherwise have a chance.

Those who continue to burble about 7 mc as a band for local 'phone working should, by now, be getting their ideas up to date and realising that although it may be ideal for that purpose during daylight hours, it is also an ideal DX band from about 2100 onwards. Just what will happen to it when the "squeeze" takes place and we only have 100 kc exclusive is very difficult to say.

General DX News

G2AKQ (Ringwood) has picked up his 37th Zone with the help of VQ8AZ, who has been very busy putting Zone 39 on the



G4KV/MD5AA has the gear in his tent and besides many G's, has worked 43C in 26Z. The Tx is a CO/PA 6L6-807, and the receiver a modified R.1155.

map recently. 'AKQ has also been on 'phone for the first time and collected 24 countries in the first week. G6BQ (Gravesend) has added two new ones with HP1A and MD7DA. We worked the latter station recently and found that he was "ex-XU8DI/SU1DA/G8DK/D2DA/ZC6DA/MD5DA"! Just keep in touch with him, boys, and you'll soon be WAZ. His full QTH appears in the list.

Talking of WAZ, GM2UU (Stranraer) tells us of a KH6 who has achieved it on 'phone. His method with the elusive Siberians was to work them on CW and then ask for a 'phone contact. Among the new ones at GM2UU were HP1A, HH1HB and VP2KS (St. Kitts).

G3AGQ (ex-D2GQ) is now settled in a caravan at Benson, and is building a QRP rig to fill some of the surplus space! G2DY (Enfield) tells us that VE8NB, on Resolution Island, has only one inwards mail a year (in December). Wonder how the local postman copes with his year's stack of QSL's?

G2PL (Wallington) and others have received their Zone 23 cards from C8YR at last, so there will be some real WAZ's now. C6HH continues to send us nice letters with stamps and photographs, and tells us that he is a student. He is always on the look out for G QSO's on 14 mc.

Readers' Problems

G3ACC (Dulwich), you will remember, had trouble controlling her cooking while working DX, and appealed for help. The XYL of G4OY (Sheffield) writes to say that her OM's rig has so much RF round it that a pan of potatoes could easily be cooked over the final tank while working a snappy piece of DX! G2DDM (Romiley) suggests the installation of a rubber tube from gas stove to shack so that G3ACC can blow like mad and hold the pressure back when she hears some DX calling her.

Our own little problem of the tree, the aerial and the rubber ball has also brought forth some frivolous comment. Several readers suggest using a counterweight at one end; we tried this long ago, but found that if it was heavy enough to pull the aerial tight, its inertia was so great that it wouldn't bob up and down quickly enough to keep pace with the swaying trees. But we're fixed all right now, thank you, since elastic braces have come back on the market.

German Call Signs

Several stations using the "DA" prefix have appeared on the air. DA1AD told G8IP (Hampton) that German Nationals were licensed from January 1. DA2UY and some DA7's have also been heard.

We have been officially informed that German nationals are not being licensed!

G8IP tells us that FQ3AT turned up in the Cameroons, signing FQ3AT/FE, and that the Eritrea stations who were expected to sign MD3 have cropped up as MI6's. We have heard MI6AB and MI6ZJ, so we guessed that had happened. G8IL (Salisbury), who is an all-time WAZ, now has 39/135 post-war, and has been collecting sundry nice ones on 7 mc. He, like many others, praises VQ8AZ for his very prompt QSL, which turned up in six days.

Last month G2PL mentioned UA3BD/UP2; this month G6FU (Surbiton) brings in UA3BD/UC2, worked some time back. (Perhaps he travels in QSL's or surplus gear.) 'FU worked OX3ME on 3-5 mc, using 50 watts; he has a 25-foot counterpoise round the kitchen, which his XYL says is fine for drying the washing when it's energised.

G3DAH (Herne Bay) tells us that VQ2DH is on 28360 end looking for G's every day—QTH in box. Also VP2GB on Grenada is now on 28180, and VP2KC on St. Kitts is somewhere near—both looking out for G's.

G3DO (Birmingham) made a flying start in 1948 with 20Z and 37C on 'phone by January 14! Watch him for the Marathon next month. G3AAE (Bournemouth) reports an astonishing conversation between two W7's: "Say, Ed, when will those G7's break in again? Do you remember how they used to come in in the early mornings? Now you never hear anything but those darn G6's!" And the reply: "Yep, and me only wanting Rutland for W.A.E.C. Gee, when will those G7's show up?" When, indeed! 'AAE has made his century at last, having worked SP3TX, who told him he was the first SP to get a post-war licence.



Am receiving you through strong local QRM. .

Piracy Again

G3APK (Harrow) is getting QSL's confirming contacts with a station using his call on 7 mc CW and announcing his QTH as Redcar. Will the gentleman please find himself a G7 call, quickly? G2XB (Sevenoaks) finds his call is being pirated by someone on 7 and 14 mc 'phone. And G6QB (Bexhill) heard himself working a ZC6 on 28 mc recently; the tone was T9 and the operating excellent—so if the unknown humorist

DX QTH'S

AR8BC	Selim Chaeb, Rue Abdel Kader, Beirut, Lebanon.
CR7AY CR7BB	Box 812, Lourenco Marques, Mozambique.
CR7VAL	Aeradio, Quelimane, Mozambique
FT4AB	10 Boulevard Didon, Carthage, Tunis.
FT4AC	Henri Devaux, La Marsa, Tunis.
HK3FF	Box 584, Bogota, Colombia.
HZ2TG	c/o WØZRA, 805 South Lake, Sioux Falls, S. Dakota.
KV4AD	Box 171, Christianstad, St. Croix, Virgin Is.
KZ5ES	Box 658, Howard Field, Panama Canal Zone.
KZ5NB	US Naval Station, Balboa, Panama Canal Zone.
MD1H	Cyrenaica Signals Sqdn., Benghazi, MELF 6.
MDII	LAC J. O. Brown, RAF El Adem, MEF 7.
MD1J	Sgt. A. Spillett, RAF El Adem, MEF 7.
MDSNB	L/Cpl N. B. Wright, No. 1 Sqn., 3 GHQ, Signal Regt., Fayid, MELF.
MD7DA	Maj. D. MacDonnell, R. Sigs., Cyprus Signal Sqn., MELF 3.
OX3BC	c/o Arctic Weather Bureau, Washington, D.C.
OX3GE	APO 859, c/o PM, New York City.
VQ2DH	Box 93, Livingstone, Northern Rhodesia.
VQ8AY	Ed. Goldsmith, Phoenix, Mauritius.
VQ8AZ	P/O R. J. A. Small, R.N., 15 The Camp, Phoenix, Mauritius.
YA3B	Box 5, Kabul, Afghanistan.
ZD1BD	Capt. S. B. Duke, Royal Sigs., Sierra Leone and Gambia Signals Sqn., Freetown, Sierra Leone.
ZD4AT	Capt. E. J. Devaney, RASC, School of Infantry and Education, Teshi, Accra, Gold Coast.
ZS3G	Box 513, Windhoek, South-West Africa.
ZS4P	J. D. Leask, Tosing, Quthing, Basutoland.

will also QSL for him, everything will be clean and tidy.

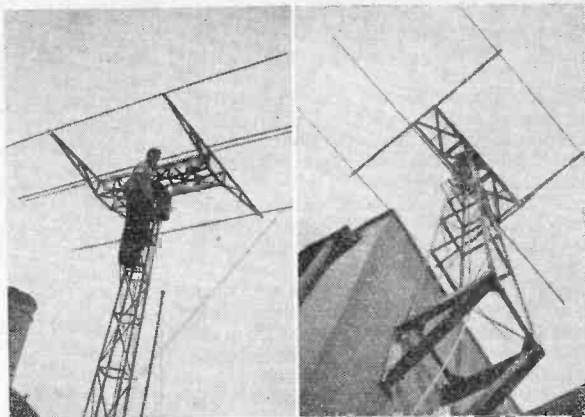
G6BB (Streatham) is now QRO with his pair of 807's, and finished off 1947 with a one-day WAC. Then his first two QSO's in 1948 were new countries—UA1KEC and SV1RX. G3SB (Minehead) collected VP5HN, CX4CZ, VR5DP and ZD4AI—a nice assortment considering that he only had time for 20 contacts during the whole month.

G2AJ (Hendon) has had a card from C8KY for a 'phone QSO and now has 134 countries confirmed. He amused himself by raising ZS1AX with 5 watts, and finds that he has now worked W2 on five bands. (Can anyone claim six?) G4CP (Dudley) is now up to 39Z and 121C, having added ZD3D, VP9E, KP6AA and VS9ET. Regarding the Marathon, he says he'll have to develop a chill (see last month)!

Talking of chills, G5RV (Chelmsford) says he has been convalescing and therefore has had an unfair advantage. He has found 28 mc superb and has worked CR9, KG6, VP6, KP4, KV4, VP2, PZ, ZL, HZ, XE and HC—all on 'phone. This he attributes to his new 3-element beam with folded dipole as driven element.

GM6MS (Glasgow) is still keen on DX after 21 years on the air, and recently worked ELSA and KV4AD, the latter being the only station on the island of St. Croix, Virgin Is. G3BNE (Hampstead) is another who has worked SP3TX and hopes he is all right. 'BNE has also collected ZD4AM, MD5DH (QTH wanted), KL7UM and VK6GA. And he found that UA1PA, when he worked him, was at a temporary QTH at Amderma, in Zone 17.

G2VV (Hampton) has strong things to say about 'phones at the LF ends, but also comments on the frightful operating of a few CW stations, and wonders how they got their tickets.



G8ML, Cheltenham, has a fine home-built 3-element close-spaced beam assembly for 28 mc. The tower is of steel and the aerial cradle of wood, with the electrical rotary mechanism at the top of the tower. That's G8ML, "up the pole" as he puts it, to fix the 80-ohm feeder. Note that the base of the tower is carried on the side of the house.

Arabackle's Corner

Our demented friend Arabackle Oblifork, who recently came on the air with the call SPIV, tells us that he has heard, "on the highest authority," that a new publication called the "Radio Amateur Handle-Book" contains the Christian names of all the amateurs in the world. Frankly, we don't believe him.

G2WW (Penzance) received a QSI from M1A, San Marino, but is naturally very sad at having to drop back to 39 Zones, C6HH having been his mainstay for Zone 23. GM3AVA (Stirlingshire) puts in the fine total of 33Z and 85C with a 15-watt rig; he also makes the 'Phone list with 30Z and 60C.

G2BVN (Romford) tells us that the QTH published last month for VU2AU is now incorrect; actually it belongs to someone else who does not want direct QSL's, so we will not enlarge upon it.

News from Overseas

ZD4AT (Accra), whose full QTH is in the list, is ex-G2FYG. G3CDR has been on the air from VS6AC, and hopes to be active as a VS6 himself before long. G2FDF now signs YI2FDF and hopes to be operating from Kuwait shortly. G2AVP/MD2 will be on from MD5 in the near future, and tells us that TINS will probably be signing MD2G by now. SV1RX (Athens) sends his WAZ score and

adds that SVØAC is demobbed and returning home, where he will crop up as G3BRQ. SV1RX is making arrangements to work on 7 mc.

Mr. E. Hayter Simmonds (ex-G8QH) is now resident in France. He sends his 73 to all old friends and would like to hear from them at Villa Melisande, Quartier Massolin, Roquebrune - Cap - Martin, Alpes-Maritimes. ZD4AM (Tafo) sends some Calls Heard and QTH's, and says he will QSL all contacts when he comes home on leave in February.

MD1D (El Adem) collected some nice DX over the Arctic path, including VE4, 5 and 6, ZK1AE, KH6CT and OX3RG. Other DX worked was UL7BS, HE1, VQ4, ZD4 and all the routine stuff. MD1D then tried 7 mc, and worked W7 and VK within the first three hours!

EI8Q (Co. Cork) uses 10 watts on 14 mc and has rolled in 21 countries so far. He has a full-wave Zepp, a 300-foot long wire and a 400-foot long wire—no rhombics as yet! EI2S (Cork) tries to sort out the German muddle, and quotes D3's, D5's and DA1's. He also queries the call YU7KX, but we think he is genuinely in Jugo-Slavia, and he certainly works lots of DX on 3.5 mc. EI2S also queries Trieste as a separate country. The answer is Yes!

Shorts

G3BDQ (St. Leonards) only gets home for brief holidays, but during the first twelve days of January worked 14Z and 27C. G2HKU (Sheerness) has a "moan" about powerful D4 stations who wipe out whole sections of the band with their BC610's, not to mention the effect of tuning-up and letting their bugs loose. Speaking as a 25-watter, 'HKU doesn't like it, we gather! G2PL (Wallington) has claimed his DXCC Certificates with 160 confirmed on 'Phone and CW, and 113 for 'Phone Only.

G3BQ (Staines) sends some nice QTH's and bursts into the WAZ list. G6ZO (Totteridge) says a bogus AC4YN came on a few weeks back and gave the boys a scramble; but he didn't fade out when he should, and he called everyone "dr ob," and then he was heard later signing AC4CC—so he could hardly be more fishy!

This month's deadline is first post on February 14, so please get down to it and send in those claims: four columns on a post-card, please, and keep the letters for the news. Good Hunting, and keep to the right end of the bands! 73 and BCNU.

G CALLS HEARD OVERSEAS

7 mc

GW3ALX aboard S.S. City of Derby in Bandar Shapur, Iran.

G3AUR (55), 3BMC (45), 3CDU (45), 3CVG (45), 5DQ (56), 6TQ (35), 8GC (55). (1730-1830 GMT December 11; Rx-Marconi CR300/2; RS in brackets.)

G3CDR in H.M.S. London, Singapore.

G2DPP (34), G3BHE (44), G3BLG (44), G5GK (56). (January 14, 1948)

G3CDR, Pacific; 10.15 North, 110.08 East.

G2EC (35), 3GMY? (33), 4KS (33), 6HC (34), 6ZO? (33), GM4MQ (34). (9.30 to 11 p.m. GMT, January 8 1948).

14 mc

GW3ALX aboard S.S. City of Derby in Kuwait, Persian Gulf.

G2AS (57), 2FSR (58), 2LC (56), 2TT (56), 3AAE (56), 3AUZ (57) 3AWP (57), 3BHE (57), 3BMM (56), 3BRW (57), 3CJY (56), 3CN (58), 3CNU (45), 3CRF (57), 3SR (44) 3SJ (58), 3TK (59), 4JZ (57), 5BZ (57), 8BR (58), 8DT (55), 8LO (56). (1755-1900 GMT December 9; Rx-Marconi CR300/2; RS in brackets.)

ZD4AM, West African Cacao Research Institute, Tafo, Gold Coast Colony.

CW: D2IU (56), EI4Q (55), 9F (55), 9N (56), G2AKQ (58), 2BAB (55), 2BQC (58?), 2CLL (58), 2DLJ (57), 2DLO (56), 2DPD (57), 2DU (56), 2FDC (56), 2FRL (45), 2HFC (56), 2HLF (45), 2LU (57), 2NM (57), 2NP (56), 2UT (57), 3AAE (56), 3AET (44), 3AJF (58),

3AJP (45), 3ATM (45), 3AUZ (57), 3BEK (56), 3BNP (45), 3BQR (56), 3BUU (56), 3BVJ (56), 3CDG (58), 3CG (55), 3CMN (45), 3CN (57), 3CNW (57), 3COA (56), 3CPB (44), 3CQC (55), 3CYE (57), 3GX (57), 3IV (45), 3LL (55), 3PR (57), 3QV (57), 3SR (57), 4GI (57), 5BZ (58), 5CG (57), 5FF (56), 5HZ (56), 5JU (57) 5LI (57), 5ND (56), 5PP (45), 5RM (57), 5WA (57), 5WR (56) 5XW (56), 5YV (57), 6BQ (57), 6GN (57), 6IC (58), 6KS (56), 6QB (56), 6WB (55), 8AX (57) 8BR (55), 8DT (56), 8GG (56), 8IW (45), 8JM (56), 8KG (55), 8KV (58), 8LO (57), 8QY (58) 8TK (56), 8UD (57), 8VR (55), GD2F/A (46), 3BBS (55), G15UR (57), 5UW (57), 6TK (45), 8GK (58), GM5BA (56), 6MD (57), 8CH (55), GW2CRF (55), 3AAA (57), 3BAZ (56), 3ZV (58), 8UH (56). (Heard or worked, December 1-31. RS in brackets, T9 unless otherwise stated. Receiver: R.107.)

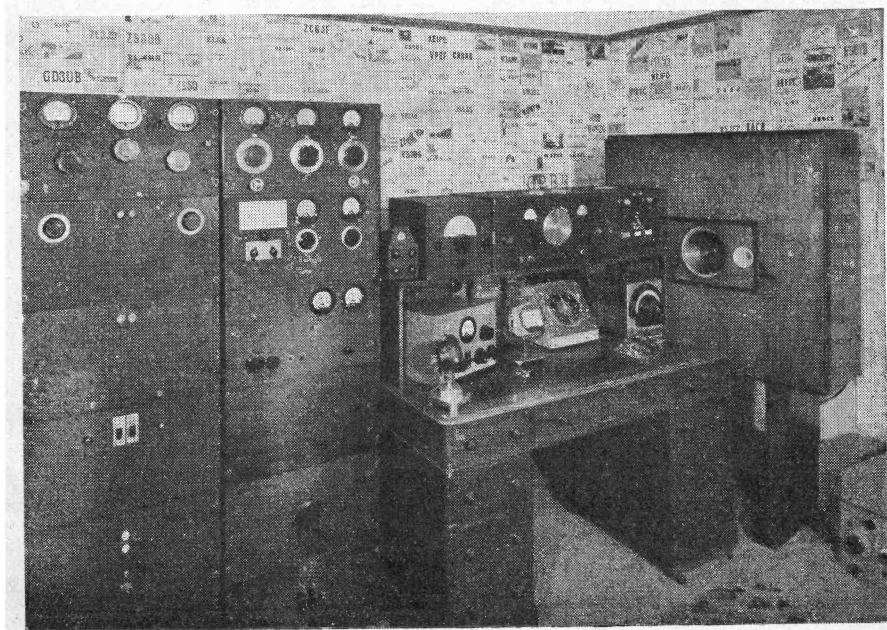
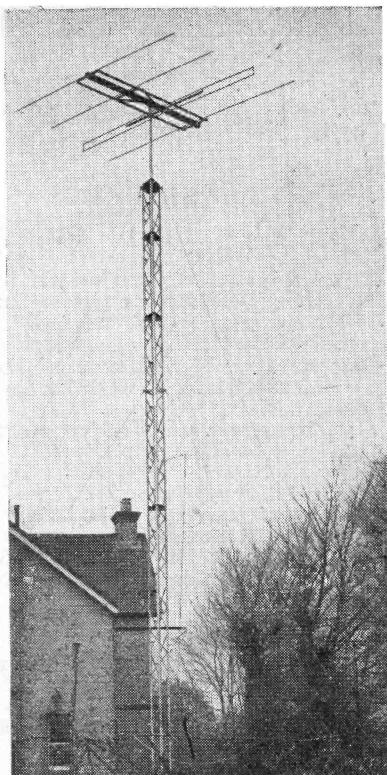
Mention the Magazine when writing to Advertisers—
It Helps You, Helps Them and Helps Us

The other man's station G2BB

This is the station of G2BB—D. P. L. May, Roza, Reading Road, Yately, nr. Camberley, Surrey—who is active on all bands 1.7 to 58 mc, though his main interest is 10 metres, on which band some 100 countries have been worked on 'phone alone. His is a very fine example of the modern amateur station.

The Tx is six-stage, CC on the DX bands and VFO drive on the LF from a Type 145 unit; the RF line is 6J5-6L6-807-807-P/P 807-P/P HK54. The speech amplifier-modulator, providing for fading up of several different types of microphone, consists of 6K7-6J5-6K7-6J5-P/P EL32-P/P 807, with two AVC side-chains using P/P 6SN7-6/6H6. The latter are separate AVC control systems, one in the head amplifier and one in the modulator, together giving about 50 dB of compression and so arranged that over-modulation is impossible. Electronic keying is used, variable from 5-50 w.p.m.

The 10-metre rotary beam in the photograph is 51 ft. high; it is rotated through a 48-ft. length of 2½-in. dural tube, driven by a 1/10th h.p. 24-volt DC motor with reversible press-button control and geared to turn the beam at about 3 r.p.m. Direction indicators are fitted at the operating position.



FIVE METRES

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

AFTER the excitement of the past few months, December and January have brought a lull. This was not unexpected and provides a welcome breather before the expected recurrence of high MUF and attendant DX during February and March.

One cannot be sure whether conditions will be quite so good as in October and November. Expert opinion seems to be that last autumn saw the peak of the sun-spot cycle, but there can be no certainty about this and it remains to be seen whether or not the 10s. fee paid to the G.P.O. for the new 6-metre permits will be money well spent.

Six Metres

Further reports for November come from OK1AW and ex-D3KNN. The former reports signals from W1, 5 and 8 heard in OK on November 22, and W1, 2, 5 and 8 on the 23rd.

Transmissions from W1, 2, 5, 8 and 9 were also heard in Hamburg on November 22 and 23, and W2BQK was received on November 27. A W3 was heard by OK1AW calling CQ on January 11 at 1100 GMT, on 'phone. The complete call could not be logged, due to fading. A Russian telephony station was coming in strongly near 50 mc at about the same time.

Signals up to 46 mc have also been audible in G during the past month, including a Russian 'phone (harmonic?) on 45.8 mc which has interfered with the TV morning test transmissions on more than one occasion; American police cars on 42 mc have also been coming in.

News from the Antipodes comes via VK2NO. On December 20, VK2NO and VK2OC worked cross-band with ZL4BN, and the following day the band was wide open from 0800 to 2145 local time, two-way contacts being made with all ZL districts. This looks like spor-E to us (possibly multi-hop), especially as VK2NO says VK3, 5 and 7 were coming in at same time. The distance VK2/ZL is 1,500 miles. So far no VK6's have been heard, which is all they want for WAS on six.

Looking back once more to November, G5BY is keen to obtain information from

50 mc DX Lull—

Individual Reports—

GDX Conditions Poor—

Discussing 144 mc

any DX station calling near the LF end of the 50 mc band between 1000 and 1030 GMT on November 16 and 17. There is just a possibility that it was a VK, but although both VK2ADT and VK2NO were active around that time on November 17 there is some slight discrepancy in the exact frequency and also insufficient evidence to tie these up with G5BY's reception. So any further information would be very welcome. The MUF was well up at the time, and VK reception was therefore quite possible.

Before leaving 6 metres for this month, one more request—WØZJB, Vince Dawson of CQ, would appreciate any reports on his 50 mc signals. The WØ's have not been too much in the DX picture, so if any of you heard him, please let us know and we will pass it on.

Five-Metre Conditions

With the onset of the stormy weather in the second half of December, GDX conditions deteriorated considerably, and little has been heard from distances over 60 miles or so. This in turn has resulted in a decrease in activity, which only ended when the contest began on January 17. The poor tropospheric conditions appear to have existed all over the country and the few newcomers to the band have had a very disappointing first impression. In spite of this falling off in both conditions and activity, correspondence shows that interest is still fully maintained. Coincident with this lack of GDX it is interesting to record that on the South Coast the Alexandra Palace TV has been a very consistent signal, with little or no

SIX-METRE PERMITS

These are now a general issue on application to the Engineer-in-Chief's Office, Radio Branch, W5/5, Brent Buildings, North Circular Road, Cricklewood, London, N.W.2. The applicant must state that he requires the permit for technical investigation on the 50 mc band, and forward a fee of 10s. with the application. Licences issued will be valid to April 30, 1948, only.

fading 70 miles from the transmitter. This is presumably due to the lack of abnormal refraction in the troposphere.

Northern Stations

We are glad to have reports from GM and GI once again. GM3OL (Dumfries) tells us that GM2DI (Wishaw) and GM3BDA (Airdrie) are active, while GM3BEB (Coupar), GM3BCD and GM5FT (Selkirk) are possible newcomers in the near future. We should be very pleased to have reports from any of these and hope that this increase in activity in GM will produce some more G/GM contacts when the GDX weather arrives in the spring and summer. GM3OL is also hoping to contact GI6VU (Belfast) shortly and we understand schedules are to be arranged.

GI6VU has been working GI3ALT on both CW and 'phone and claims that this is the first 2-way 5-metre 'phone contact in GI. He is using an 807 as final in the Tx, plate and screen modulated, and has a 3-element c.s. rotary for aerial. On the Rx side the RF end of an S36 is employed, feeding into an Eddystone 504. A number of SWL's are also active in GI. Both GI6VU and GI3ALT are on most nights around 2200 GMT, and the former says he always signs on CW. Good man!

In northern G, the following are active on the band: G2BOI, G3CYY, G4LX and G4QA (all in Newcastle-upon-Tyne) and G2BDQ (Stocksfield, Northumberland). So far only local contacts have materialised but some GDX is their stated ambition; listener reports will be very welcome from distances over 50 miles and can be sent for any of the stations mentioned c/o G4LX, 16a Pilgrim Street, Newcastle-upon-Tyne, 1.

Coming South

G3COJ (Hull), reporting poor results during the Christmas vacation, says he will be QRT until March 13. He called CQ 120 times and achieved two contacts, one of them crossband, since when he has decided superior results are obtained by calling stations on the land-line and then completing the QSO on 5 metres! (Better luck next time, OM; there are plenty of southern stations looking for you!)

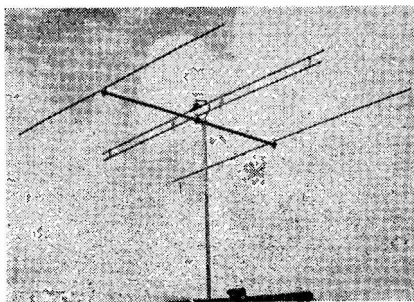
G2ADZ (Oswestry) reports as usual, but like most of us, has not been hearing much. When the Oswestry signals persisted in the South of England in the autumn months, long after all other northern and midland DX had disappeared we wondered, in common with many

others, if the path from Shropshire to the South would remain open throughout the winter. Various theories regarding the reflecting properties of the mountains behind G2ADZ and G4LU were advanced, but the experience of the last few weeks has shown this circuit to have succumbed to the weather like all the rest. We do at least know that lack of activity has not been the cause in this case as G2ADZ has been on almost every evening (including Christmas Day!) and from our own observations there has always been some late evening activity at the S.E. end of the path. The only days he has worked real GDX have been December 21 and 22 and January 8.

Regarding failure of DX stations to search the HF end of the band, G2ADZ makes the point that it is only natural to start the search where the DX stations are most likely to be, i.e., the LF end, and if a careful search is made for weak signals, it takes a long time to reach 59.2 mc and by then the calling station has probably signed! He says there is still plenty of room at the LF end and suggests that 58.8 to 59.2 is almost void of signals and the ideal place for stations looking for GDX. We still feel, however, that alternate QHL and QLH calls would help considerably, but at the same time it does take quite a time to search the whole band properly, especially under QSB conditions.

Eastwards

From the Midlands there is complete silence, not one report having reached us, though G6YU (Coventry) hopes to be back on shortly. Over in the east the Cambridge and Essex stations have continued active, and G2KG (Chelmsford) comments on the strength of the Cambridge stations at his QTH—G3CUA, G3BK and



An Eddystone 3-element rotary, cut for 50 mc, as used by GSJU, Birmingham.

G5IG come in like locals on 'phone or CW. He has also managed to contact G3ZK, G2ADZ and G5MR, and "the usual locals at 60 to 70 miles," as he puts it. G2CIW (Brentwood) has also helped to keep Essex on the 5-metre map. He has been hearing G6FO (N. Bucks) well, but cannot raise him.

South

G5LQ (Chiswick) has added another county, namely Cambridge, but having found the band quiet has been busy on his equipment. The DET19 power doubler has been converted to a DET19 push-pull PA with a noticeable improvement in reports received. A Type 27 RF unit is now ready on the Rx side and no doubt the Contest will have been a good test for it.

In Wiltshire, G4AP (Swindon) has been on regularly and has improved his county score. He bemoans the lack of early evening activity. Preparations for 144 mc are in hand and an R1147B is being modified. Information on this is promised in due course. G3YH (Bristol) has worked only G4AP, but is regularly active.

A new 5-metre station will be appearing in Devonshire, as G8WL, late of Kenilworth, has moved to Bigbury-on-Sea, South Devon, about six miles west of G5BY. His new location is 250 feet a.s.l. and clear in all directions except north. The gear is: Rx; EF54 RF, 6C4 mixer/osc, output on 8 mc into AR88. Tx, VFO (3.5 mc)-6A6-RK34-829. The aerial will be a c.s. 3-element Yagi with folded dipole feed.

On the south coast G2DBF (Bournemouth) hopes to be back on 58 mc shortly and is uncertain whether his QTH is in Hants or Dorset, being almost on the border. (If the latter you'll have a queue waiting for you, OM!) His Tx has 807 final and the Rx is an S27. SWL Towgood, also of Bournemouth, has found conditions poor recently, but promises support for the Contest. He has heard G3AAK/A, G3CWW and G6JK for new stations and says G3CFR, one of his

locals, is likely to be active on 59.92 mc very soon.

G3CWW (Hendon), about 100 yards from G2AJ, is a welcome newcomer to the band and is using 25 watts to a HK24G. The Rx is an S27 and the aerial the usual 3-element. G6JK (High Wycombe) has been testing NBFM 'phone. His Tx is 25 watts to an 815 and his aerial a dipole in the loft.

Channel Islands

GC2RS (Guernsey) writes to inform us that he is not active on 5 metres at present, so the signals heard last month remain a mystery. We understand, however, that there is a taxi-calling service run on VHF in the Island!

Power

Several correspondents have written questioning the power employed by certain 5-metre stations. Naturally, we only have the other man's word for it and the use of valves with a permissible dissipation greatly exceeding 25 watts is always a little suspicious! But we would like to make the point that in most cases the stations radiating strong signals also receive good signals from others and this does seem to indicate that the aerial system, combined with location, are the main factors in producing outstanding results. Our own experience on the band has shown that the aerial matters far more than anything else. The change in signal strength from a certain station in the South of England, when the beam was moved recently from the attic and put on a high mast outdoors, was about 3S points. This is typical of many cases, so we would deprecate charges of the use of excessive power, based solely on high signal strength. While on the subject of power we were very glad to QSO G3HT (Edgware) a few weeks ago, when he was using only a few watts to a pipe oscillator circuit. The distance is around 70 miles. The note was near T9, and as good as many CC stations.

FIVE-METRE CALLS HEARD

G2ADZ, Lloft Wen, Ardmilan Lane, Oswestry, Salop.

Worked: G2ATK, 2NH, 2XC, 4AP, 5MA, 5US, 6VX, 6ZQ. (December 21-January 11.)

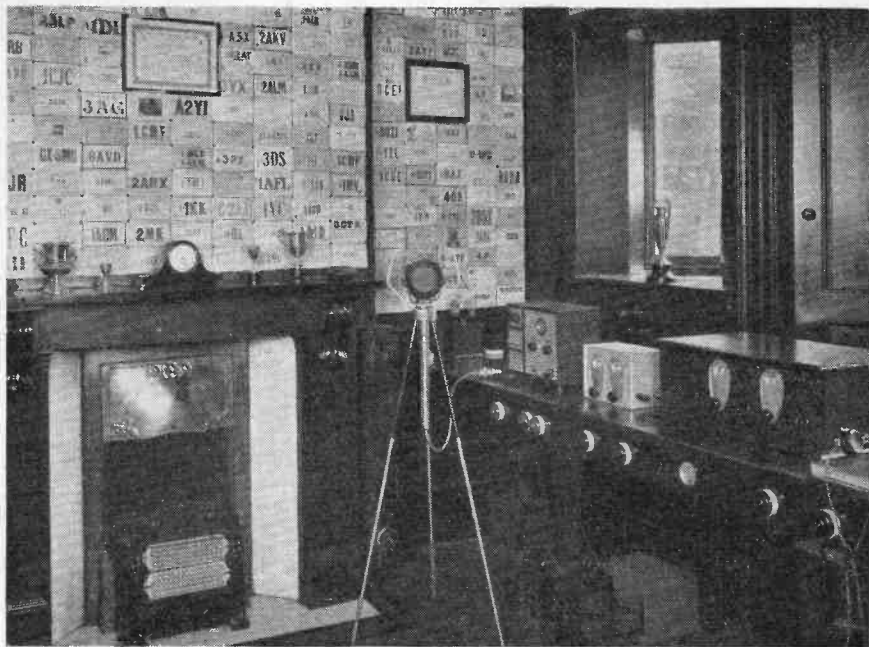
P. J. Towgood, 6 Guildhill Road, Southbourne, Bournemouth, Hants. 'Phone: G2AJ, 2CWL, 2FKZ,

2MV, 2NH, 2YL, 4JO, 5MA, 6VX 6XM.

CW: G2ADZ, 2AJ, 2BMZ, 2CIW, 2CUA, 2CWL, 2KG, 2NH, 2NM, 2XC, 3BXE, 3CWW, 4AP, 4NT/A, 5MA, 5PY, 5US, 6FO, 6'K, 6XM 8RS. (December 17-January 17, on 1-v-2.)

G2XC, 34 London Road, Widley, Portsmouth.

G2AJ, 2CIW, 2CWL, 2FBU, 2KF, 2KG, 2MR, 2MV, 2NH, 2NM, 2WS, 2YL, 3AAK/A, 3BLP, 3BXE, 3CWW, 3VB, 4AP, 4IG, 4JV, 4NT/A, 5AS, 5HN, 5LQ, 5MA, 5MR, 5PY, 5RD, 5US, 6FO, 6FU, 6KB, 6OH, 6UH, 6VX, 6XM, 8SM, 8TS. (First 4 days of Contest.)



General view of the operating position, GSBY at Croydon, 1930. The cup in the window is the 1929 ARRL award for the world's best amateur station.

"5 Band" Dinner

A dinner for 5-metre band enthusiasts only is being organised at the "Falstaff," 70 Fleet Street (opposite the *Daily Telegraph*) on Saturday, February 21. Time 17.30 for 18.00; finish at 21.30. The inclusive cost will be 11s. 6d. and there is good service and a bar. Guests are only allowed if they can stand sustained and continuous 5-metre talk, and must be ladies. Accommodation is limited, so early application for tickets is necessary. Write P. Thorogood, G4KD, 35 Gibbs Green, Edgware, Middlesex. This is a private party in the nature of a five-metre "get together," open to all active on the band.

Help, Please

GSDP (3, Borrowdale Road, Bebington, Wirral, Cheshire), would like information on the RAF TR5043, which he wishes to convert for 60 or 144 mc working. Can anyone assist him?

The Five-Metre Contest

We are writing this on the fourth day of

the Contest. A full review together with the results will appear next month, but a few comments on conditions and activity in the South may be of interest to those further North. GDX has been conspicuous by its absence and anything beyond Zone D a rarity. However, activity around London seemed to be very good; all the regulars and a few others were there. One London station worked 45 different stations on the second day, and at least eleven different counties were represented. At one time the QRM at the LF end became severe, but it was noticed that several stations found the going hard and moved to the less congested areas in mid-band. On the Monday evening conditions showed signs of an improvement, but nothing really outstanding materialised, although we did manage one Zone E contact. One can only hope that the DX will have shown up at some time before the Contest closed to add a little excitement and a few thrills. We are looking forward to analysing the results and comparing conditions in different localities.

**FIVE METRES
COUNTIES WORKED LIST
Starting Figures, 14**

Worked	Stations .
30	G3BXE (100)
29	G5BY
28	G2MR, G5MQ, G6LK (225)
27	G2ADZ, G2XC (215), G5BD, G5MA (218), G6XM (138)
26	G2NH (170), G4LU, G5BM, G5PY (161), G6VX, G8UZ
25	G2AJ, G3BLP, G8SM
24	G2RI, G6MN/A
23	G2CIW, G3MY, G3PZ, G4IG (163) G6OH (129)
22	G2ATK, G6YU
21	G3IS, G4AP
20	G2YL, G3ABA, G5IG, G5JU, G6KB
19	G2NM
18	G5RP
17	G2KF, G6CW, G6LX, G8QM/A
16	G3AAK, G8KZ
15	G4AJ, G8KL, G5LQ (102)

Note : Figures in brackets after call are totals of different stations worked : starting figure 100.

Please be sure to get your entries in, irrespective of the score made, by February 4, certain ; a great deal of work is involved in the preparation of a detailed survey and analysis tables, and we want to cover it all in the March issue. And please note, in particular, Rule 9—the form in which results should be set out.

144 mc Survey

We have had numerous requests for some ideas on the 144 mc band, hence the following brief survey.

Although there is no present indication of any early release of the 144—146 mc allocation, many VHF stations are known to be giving serious thought to the design of equipment for the band and a few are ready for operation.

On the transmitter side, the general idea appears to be to start with an 8 mc crystal and reach 144 mc by a multiplication of 18. This entails two treblers and a doubler, although not necessarily in that order. It is interesting to note that with an 8 mc fundamental, no harmonics of the oscillator frequency fall in the present

television band. $9\text{ mc} \times 16$ is also a possibility as well as $6\text{ mc} \times 24$. With these last two methods at least one multiplier should be a quadrupler if the stages are not to become too numerous. The Mullard QVO4-7's can be used effectively as tri-tet quadruplers, and are also good as ordinary doublers and treblers at quite low HT voltage. Twin-triodes, the two sections being used as separate stages, also effect a saving in space, while the twin beam-tetrodes (815, 829B, QVO4-20) make useful and efficient push-pull treblers. Our own rig will probably be QVO4-7 CO, trebler (tri-tet), another QVO4-7 doubler, 815 push-pull trebler, and 829B (or 832) as PA. From present experience, it is thought that 150v on the first stage and 300 on the second and third will suffice for sufficient drive to the final. Thought must also be given to the final tank, where a linear type of circuit will probably give greater efficiency and not be too cumbersome. Those preferring coils to lines might be advised to consider the use of circuits whereby the valve capacity is placed in series with the tuning condenser (sometimes incorrectly called series tuning). This enables a larger sized coil to be employed, quite an important matter at these frequencies when one is down to a single turn or so.

Experience on the present 5-metre band has shown that the receiver is frequently the most difficult thing to get working efficiently and there have been innumerable instances (including ourselves in the early days !) of stations failing to hear GDX and blaming the location. Yes, it's an old story, and no doubt it will recur on 144 ; it does seem to us that the receiver is going to be the most difficult aspect of this new band. Having advocated crystal control on the Tx side, there is hardly need to stress our hope that the "super-regen" will not make its appearance as anybody's receiver. This obnoxious and barbaric receiving system has no place in modern Amateur Radio practice. With stabilised transmissions, selective super-hets are possible and we think desirable. At this point it might be as well to draw attention to the fact that Service and amateur requirements on the selectivity question often differ considerably, so that ex-Service equipment may not always be the ideal amateur apparatus. We have in mind the numerous ex-RAF receivers which for various reasons had to be broadly tuned both for air and ground use. Hence, the IF pass-bands are very wide. Use of such a receiver in, say, the London area, will result in complaints of

QRM, particularly if LF-end-of-band working should unfortunately become the vogue once again. The VHF convertor working into a communication Rx on 5 or 10 mc will provide the necessary selectivity, and is likely to be the choice of many. The actual circuit for the convertor will leave much scope for individual ideas. The grounded-grid triode, and the low noise EF54's and 6AK5's, should show their superiority over other valve types to a much more marked degree than on 60 mc.

Aerial Polarisation

Unlike the Tx and Rx, where the construction becomes more complicated with increasing frequency, the aerial system, in general, offers far more possibilities due to the decreasing wavelength, and multi-element beams look like being the order of the day. A point requiring careful consideration is, of course, the polarisation to be used. Ideally, stations should be equipped—at least initially—for both horizontal and vertical polarisation, as it is a matter of some doubt as to which will produce the greatest signal strength. It is not improbable that the better polarisation at short distances may be the worse for longer distances. Much depends on ground conductivity, and there is also liable to be a difference between country and urban areas due to reflections in the latter. So we think it best not to take any definite line about polarisation until some practical experience has been obtained. One hopes that we shall not find everyone working horizontal (or vertical) without at least some tests on the other mode. It is going to be a tricky point, but we feel certain the keen operator will equip himself for both methods.

Regarding the results likely to be achieved, signals up to horizon distances will probably be as good as, and possibly better than, 5-metre signals, due mainly to the superior aerials from the view both of possible design and effective height compared with wavelength. This latter lowers the angle of maximum radiation. Beyond the horizon the diffraction zone should show a marked drop in signal strength, so that the maximum range (excluding ducting conditions) will probably be less than for 58 mc. GDX conditions (up to 200 miles) are likely to be less frequent than for 5 metres, as much of this is due to reflection at air-mass bound-

aries. But when ducting does occur, 2-metre signals are likely to exceed 5-metre results both in range and signal strength.

We shall be very glad to have your opinions on the new band, and this column is of course open for the discussion of problems affecting what will assuredly be fascinating new territory for amateur activity.

420 mc

Suggestions for the next higher frequency band which has been promised us will also be very welcome. G5MQ (Liverpool) has an American APQ9 which uses a pair of 368's in a long-lines plate-and-grid oscillator and covers the 420 mc band. It provides 10 watts of RF and he is now hoping to crystal control it as a tripler from the 144 mc rig.

New SWL VHF Section

We should like to draw the attention of our SWL's to the introduction of a special feature covering VHF topics only in the *Short Wave Listener*, commencing with the issue dated March and due out on February 19. It is hoped by this means to encourage SWL's to give the VHF bands some attention and to provide a medium for them to discuss their particular problems, as distinct from those of the transmitting amateur. We would particularly ask our present SWL correspondents to give this new column their support. Lists of calls heard will be specially valuable in encouraging others SWL's new to VHF activity to try their luck and skill on these bands. At the same time, lists of GDX heard are, we know, valued by the transmitters, so such lists will still be acceptable for the *Short Wave Magazine*. Naturally, there will be the closest liaison between the two columns and any reports of major importance will be covered in both. We must also take this opportunity of thanking our SWL's for their support for "Five Metres."

Conclusion

Closing date for next month (March) is first post February 14. And do get those Contest entries in by the 4th, as they must be cleared in good time. Write E. J. Williams (G2XC) c/o *Short Wave Magazine*, 49 Victoria Street, London, S.W.1. 73 and Good Luck.

The Short Wave Magazine covers all current Amateur Radio activity

The Hambander

New Radiovision Amateur-Band

Receiver—*Magazine Test Report*

THIS is the first post-war British communications-type receiver in the low-priced category to be offered the amateur. The set has been designed to give adequate performance for the operator who (a) wishes to purchase a receiver suitable for all amateur bands, and (b) does not want to pay a high price for a set incorporating all the refinements considered desirable in a strictly amateur-band receiver.

The "Hambander" has no RF stage and crystal selectivity circuits, nor is it fitted with electrical band-spread. But what it has got is a reasonably effective noise limiter of the simple diode type, an

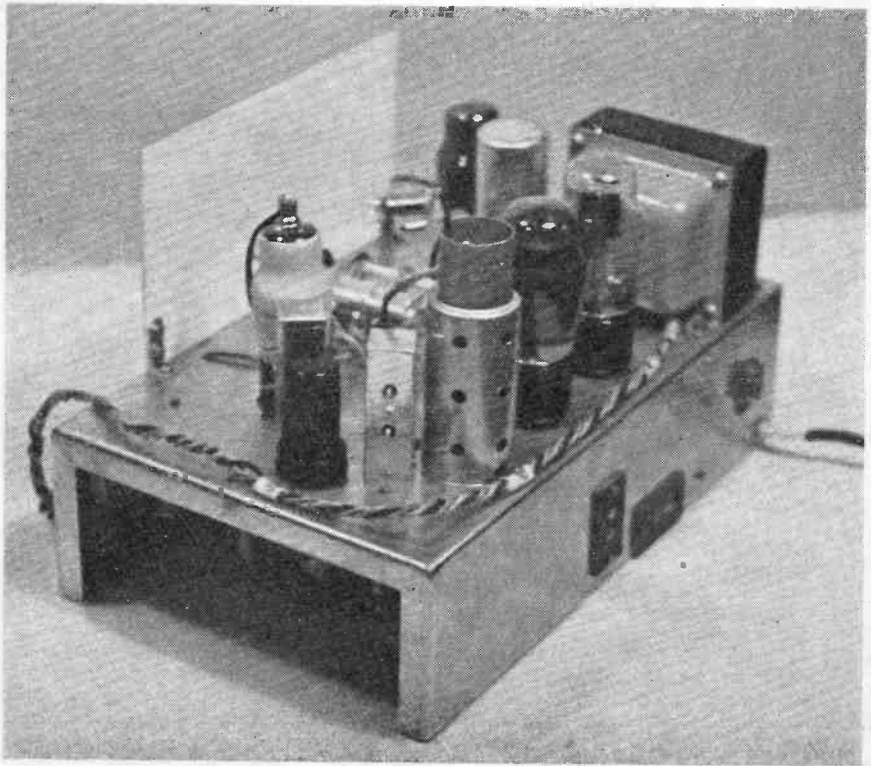
"aerial compensator control" for peaking the input circuit, and an IF stage which can be made regenerative by advancing the RF gain control to the verge of IF oscillation.

This latter feature permits of sharpening the selectivity curve and increasing the gain without seriously affecting the signal/noise ratio, and is particularly useful on weak signals.

General Design

The valve line is FC-IF-Det/AVC/Audio-Output-BFO-Rectifier-Noise Limiter, using octal-base valves with an X61M for the frequency changer and a CGI-C diode noise limiter.

Frequency range is 1.7-32 mc continuous, in five switched bands, using iron-cored coils, with mechanical band-spread which is effective throughout the whole of the tuning range. Range 1 gives the 28 mc band at the HF end of the scale and 21 mc at the LF end; Range 2 brings



The Radiovision "Hambander" communications receiver chassis.

in the 14 mc band at the LF end ; Range 3, 7 mc at the LF end ; Range 4, 3.5 mc across the middle, and Range 5 1.7 mc at the LF end.

The tuning mechanism is a single-speed control driving the main pointer across an illuminated dial calibrated in megacycles ; integral with this is a smaller dial divided 0-100. The spread of the bands as obtained on the small dial is approximately : 1.7 mc, 700 divisions or seven times round the band-spread dial ; 3.5 mc, 600 divisions ; 7 mc, 220 divisions ; 14 mc, 140 divisions ; 21 mc, 100 divisions ; 28 mc, 200 divisions. The slow-motion ratio is good enough to allow close tuning on the higher frequency bands and the movement is smooth and positive.

General appearance of the receiver is very pleasing—it is fitted in a ventilated black crackle finished steel cabinet, 14½ ins. wide by 8½ ins. deep by 8½ ins. high, with chrome carrying handles. The internal construction, on a solid chassis, is sound and accessible ; the primary of the mains transformer is provided with adjustable taps for the usual line voltages and the rear sub-panel also carries the aerial-earth and speaker connecting points.

The front-panel controls are main tuning, RF gain, audio gain, BFO on-off, BFO pitch, wave-change, aerial trim, noise limiter on-off, and send-receive switch. A headphone jack is also fitted, and the speaker output is arranged for a 2-3 ohm speech coil.

Performance

The "Hambander" is an adequate performer throughout its tuning range and will, in general, find any signal

audible on almost any other type of receiver. Like all specialised receivers, it takes a little time to "learn the controls" in order to make the set give of its best. In particular, the IF regeneration and BFO pitch control, if used carefully together, will enable the wanted signal to be picked out and held through interference.

Lack of an RF stage is undeniably a disadvantage and second-channel effects are inevitable when the input stage is a frequency-changer only. This can of course be eliminated by the use of a pre-selector and, indeed, the "Hambander" in combination with the Radiovision regenerative pre-selector will make a very effective receiving installation, comparing well with designs using one or two tuned RF stages.

The only serious criticism we have to make is that on our model the BFO injection is too fierce and (the old one) that the main pointer should be knife-edge rather than a round wire. The calibration accuracy of the receiver is good and the dial readings can always be repeated for a given frequency. The stability from send-to-receive is such as to require only the slightest touch on the tuning when changing over.

On present-day prices, the "Hambander" at £22-10s. net represents very good value for money and it can be recommended with confidence to the amateur requiring a general-coverage communications-type receiver. It will undoubtedly sell in large quantities and will become the standard by which all lower-priced receivers are judged.

TVI IN AMERICA

The W's are beginning to get restive about TVI, but a close study of the available material in our American contemporaries suggests (a) that not having a regular daily programme period, they have hardly come to grips yet with the practical aspects of the problem ; and (b) they are much further from a solution than we are. The menace of TVI is, however, fully appreciated over there.

THE CALL BOOK

We still receive enquiries as to how and where the Call Book can be obtained, and whether we can accept orders for it. The Radio Amateur Call Book is an American publication, which can be ordered in this country through Dale International Publications, Ltd.

DIRECT SUBSCRIPTION LIST

We can still accept subscription orders for the *Short Wave Magazine*, to commence with the next (March) number. The cost is 20s. for twelve issues, post paid. A direct subscription not only ensures despatch of a copy to you by post on the day of publication, but at the new cover price of the *Magazine* shows a saving in the cost of buying it over the year. Write the Circulation Manager, *Short Wave Magazine, Ltd.*, 49 Victoria Street, London, S.W.1.

When renewing your subscription, for which a slip will be found in your copy when it becomes due, it is only necessary to complete and return the renewal notice with your remittance.

British Old-Timers' Club

Second Membership List

Last month we published the first list of thirty-four Members of the British Old-Timers' Club. Since then we are glad to report that a further thirty-four have come forward with their credentials. They are listed herewith, in order of their "radio age":

J. E. Catt (G5PS), 1904; W. K. Alford (G2DX), TXK in 1912; F. H. Haynes (G2DY), 1911; J. W. Hopley (G2VU), 1912; J. F. Fish (G4MH), 1913; T. S. G. Seaward, A.M.I.E.E. (G4KD), 1913; M. Eskdale (G2SU), pre-1914; G. Marcuse (G2NMM), 1919; J. V. Rushton (G2JZ), 1920; W. G. H. Brown (G5BK), 1921; A. G. Wood (G5RZ), 1923; W. L. Palmer, C.B.E. (G2BD), 1924; M. Samuel (G4FX), 5HS in 1924; V. H. Penfold (G3JZ), 5PN in 1924; H. D. Cullen (G5KH), 6AH in 1924; H. J. Pollard (G5PO), 1924; W. H. Lloyd (G5TV), 1924; C. Keith Murray (G6DY), 1924; H. L. O'Heffernan (G5BY), 1925; G. A. Massey (G6YQ), 1925; J. Hanson (G6YU), 1925; T. P. Allen (G16YW), 1925; G. Sykes (G2JC), 1926; B. C. Christian (G5XD), 1926; E. Rayner (G6IO), 1926; T. Woodcock (G6OO), 1926; W. H. Martin (G15HV), 1927; K. C. Lay (G5LY), 1927; J. V. Parsons (G5QP), 1927; G. Hume (G5UX), 1927; S. Kember (G6KM), 1927; A. H. Mason (G6MMS), 1927; L. Parfitt (G6PF), 1927; A. Forsyth (G6FO), 1928.

Several queries have been brought up about the "rules" for membership. We

did not intend this to be in any way a formal affair, and therefore have not drawn up a Constitution and By-Laws, or even a Set of Rules, but we have sifted matters out and arrived at *one* simple rule: If you held a full transmitting licence at any date before 20 years ago, and if you *still hold one now*, you are eligible for membership provided that one of them was a "G" licence.

The latter qualification makes it possible for present-day "G's" who started overseas, and for Old-Timer G's who are now overseas, to become members of this British club.

Several queries have also arisen about when the first "licences" were actually granted. Some of the oldest members have pointed out that they held a "permit to transmit, pending the issue of a formal licence" for some long time before their official ticket arrived. We do not intend to quibble about this, either! If you had that, then we shall call you a licensed transmitter from that time.

All discussions about who was first on the air, and when, will be reserved for that day when we can all meet in person.

Membership now numbers 68; further claims awaited, and simply send a card with your call and the date on which you were first allowed to transmit. Shall we hit the century next month?—L.H.T.

MORE ROOM FOR MORE STATIONS

The current issue of *QST* devotes a good deal of space to discussions on the SSSC ("single sideband suppressed carrier") method of telephony transmission. Though this is very new to amateur practice, the system has been in use commercially for many years—and, indeed, is a British development.

The great advantages of SSSC are a reduction, by about half, of the bandwidth required in comparison with an amplitude modulated signal, and a considerable improvement in what might be called "apparent selectivity," since at the receiving end the system works by the selection of the wanted signal only.

Briefly, the usual carrier is completely suppressed and only one sideband is radiated by the transmitter. The receiver "puts back" the carrier by means of a local oscillator (which can be the BFO)

tuned exactly to the wanted signal. This local oscillator must be at least as stable as the incoming signal and be capable of accurate tuning, in terms of cycles. The result is the elimination of heterodyne whistles and the reduction to a meaningless burble of all other signals round the same frequency—unless one unwanted signal happens to be *exactly* in tune with the wanted transmission, a thing which in practice hardly ever happens, though it may seem to on some receivers.

As *QST* rightly suggests, SSSC appears to be full of promise for the future and its wholesale adoption for telephony working sounds like a possible solution to our main problems—interference and congestion. On the receiver side, the new Synchronyne system could be modified for this application, though any standard receiver can be used, with either its BFO or an LO to provide the carrier, as outlined above.

Here and There

Zone Callsigns—Germany

We are authoritatively informed that the D callsign allocation is as below :

D2AA-D2ZZ : G's in British Zone

D4AAA-D4ZZZ : W's in American Zone

D5AA-D5ZZ : F's in French Zone

It is known that some Soviet amateurs are operating from their Zone, but it is impossible to penetrate the veil of Russian official secrecy in these matters.

Zone Map

The third reprint is now available, at 3s. 9d. from Amateur Radio supply houses, or direct from us post free. This is a two-colour wall-mounting great circle map of the world, centred on London, showing the DX Zones, the callsign prefixes in each Zone, actual beam alignments and rough distances for all parts of the world from the U.K., with world-time referred to GMT.

In preparation is a more elaborate version of the same Map in five colours, printed on heavy linen-backed paper with the prefix lists amended to date, and priced at 6s. 0d., post free direct from us. The size of both Maps is the same—21-ins. by 35-ins. overall. Trade enquiries are invited for quantities of the full-colour production. Write the Circulation Manager, The Short Wave Magazine, Ltd., 49, Victoria Street, London, S.W.1.

Television Interference

One of the best methods of preventing, or at least minimising, TVI is to avoid when possible a 14 mc stage in the transmitter. For 28 mc working, it can be done by trebling from a 9.5 mc fundamental (either crystal or VFO) and doubling again for 58 mc. This eliminates any strong beats round the vision frequency, as it has been found that it is the third harmonic of a 14 mc RF stage which can cause a great deal of the trouble. This bodes ill for our new 21 mc band, the second harmonics of which will fall right in the present TV channel.

Old-Timer Note

More about that OT photograph appearing on p. 672 of the last issue—We

are informed by G2LP that it shows some members of the Wireless & Experimental Association, revived in 1919 after the first Great War. This formation was itself the child of the Amateur Wireless Alliance, dating back to 1913 and one of the earliest radio clubs in the country, of which G2LP was founder and ex-chairman. He invites correspondence (A. W. Knight, 132 Elgar Avenue, Tolworth, Surbiton, Surrey) from these pioneers with a view to forming a "Grandparents' Unit" within our present B.O.T.C. . . . well, well !

Crystal Exchange

Here are the current offerings ; all negotiations should be conducted direct.

G2BIM, Carlton, Longpark Hill, Maidencombe, Torquay, Devon.

Has 7100 kc QCC type, holdered. Wants 7005-7025 kc crystal in holder.

G2UA, 18 Brinsley Road, Wealdstone, Middx.

Has 7328 kc (multiplying to 58,624 kc) QCC P5, holdered. Wants good vertically mounted crystal 7010-7040 kc.

G3BEX, 112 Southwick Street, Southwick, Sussex.

Has 7155 kc crystal, holdered. Wants 1810 kc or near.

G3BGH, #75 Harrogate Road, Leeds, Yorks.

Has 7106 kc crystal in holder. Wants 7050 kc or near.

G3BPP, 10 West Terrace, North Ormesby, Middlesbrough, Yorks.

Has 100 and 1000 kc crystals in holders. Wants 7002-7060 kc in holders.

GM6MS, 390 Kings Park Avenue, Rutherglen, Glasgow.

Has 7040 and 7210 kc crystals. Wants frequencies 7000-7008 and 7020-7035 kc.

SWL, 47 Grang Road, Fenham, Newcastle-on-Tyne.

Has 7025 and two 500 kc crystals. Wants 3501 kc or near, QCC P5 type.

Data Dept.

G6PJ, 124 Nicholson Road, Sheffield, 8, would be grateful for information on the R.1147B. No good suggesting the A.P. & F.S., as they are out of stock of the manuals on this receiver. Can any reader assist him ?

NEW QTH's

This space is available for the publication of the addresses of all holders of new callsigns, or changes of address of transmitters already licensed. All addresses published here are automatically included in the quarterly issue of the Call Book in preparation. QTH's are inserted as they are received, up to the limit of the space allowance. Please write clearly and address on a separate slip to QTH Section.

- | | | | |
|--------|--|--------------------------|--|
| EI2S | D. O'Hare, Iveagh, Wilton, Cork. | G3CPO | S. Willis, 26 Lower Honey Hill Road, Kingswood, Bristol. |
| G2ASN | C. E. Watkins, 4 Parkhurst Road, Weston-super-Mare, Som. | G3CUK | R. A. Gibbs, 18 Gloucester Grove, Burnt Oak, Edgware, Middx. |
| GM2CAS | J. Douglas, 223 Abbotswell Road, Bridge of Den, Aberdeen. | G3CWL | G. R. Haynes, 89 Ask Road, Sutton, Surrey. |
| G2FSC | E. H. Percy, 5 Buckland Road, Parkstone, Dorset. | GM3CYG | W. Kerr, 31 Queens Road, Sanquhar, Dumfriesshire. |
| G2FST | T. Almond, 180 Foxdenton Lane, Chadderton, Oldham. | G3CYR | J. Williams, 5 Mauretania Road, Liverpool 4. |
| GW2HAQ | H. A. Wilson, 5 Fronbant, Gerlan, Bethesda, Nr. Bangor, North Wales. | G3CYV | R. W. Ward, 16 School Lane, Pinner, Middx. |
| G2HDU | C. W. Cragg, 48 High Street, Oakham, Rutland. | G3CYX | P. F. Lambert, 9 Earlshall Road, Eltham, London, S.E.9. |
| G2HGI | W. J. Paterson, 14 Sixth Avenue, Chelmsford, Essex. | G3CYY | I. Paul, 6 Broadway West, Gosforth, Newcastle-on-Tyne. |
| G3ACA | J. H. Taylor, 25 Castle Terrace, Berwick-on-Tweed. | G3CZS | A. W. S. Whatley, 172 Humber Road, Stoke, Coventry. |
| G3AKZ | R. T. Glynn, Oberon, Kayte Lane, Nr. Cheltenham, Glos. | G3DKR | K. Roberts, 2 Chestnut Close, Southgate, London, N.14. |
| G3AQB | W. Stephenson Jr., 17 Belgrave Crescent, Blyth, Northumberland. | G3DLY | G. Orrell, 15 Hacking Street, Darwen, Lancs. |
| G3ASV | G. J. Pope, The Bush Inn, Horsham Road, Dorking, Surrey. | G4KI | T. S. G. Seaward, A.M.I.E.E., 11 Station Road, Norton, Stockton-on-Tees, Co. Durham. |
| G3BEE | E. G. Dennis, 32 Grosvenor Road, Ilford, Essex. | G4QX | J. E. Taylor, 12 Beverley Street, Burnley, Lancs. |
| G3BGH | F. Stapleton, 375 Harrogate Road, Moortown, Leeds. | G5SZ | G. Clarke, 85 Balmoral Road, Watford, Herts. |
| G3BHK | L. Mitchell, 965 Oxford Road, Tilehurst-on-Thames, Reading, Berks. | CHANGE OF ADDRESS | |
| G3BIC | E. J. Lawrence, 37 Onibury Road, Handsworth, Birmingham 21. | G2DBF | J. F. Squires, M.B.E., 5 Ashridge Avenue, Northbourne, Bournemouth, Hants. |
| GM3BQO | A. C. Grainger, 132 Comiston Road, Edinburgh 10. | G3AGD | A. L. Drakeford, 300 Holloway Road, London, N.19. |
| G3BRL | R. Caws, 34 Greystoke Lodge, Hanger Lane, Ealing, London, W.5. | G3AGQ | R. Eldridge, Chez Nous, Beggars Bush Hill, Benson, Oxon. |
| GW3BUT | C. G. Barry, Marbury, 6 Prospect Drive, Llandaff, Cardiff. | G3AZZ | B. W. Blakemore, 117 Gloucester Road, Bridgwater, Som. |
| G3BVT | J. Entwistle, 18 Hilton Street, Darwen, Lancs. | G3BNE | G. W. Alderman, 116 Haverstock Hill, London, N.W.3. |
| G3BYO | J. A. Bointon, 52 Prospect Park, Scarborough, Yorks. | G3CFC | 40 Breckon Hill Road, Middlesbrough, Yorks. |
| G3CDJ | R. R. Adams, 121 Bellingham Road, Catford, London, S.E.6. | G4HG | G. A. Jessup, 8 Sycamore Crescent, Maidstone, Kent. |
| G3CHM | G. Buckland, 7 Kestrel Road, Eastleigh, Hants. | GW8BW | F. Hamer, 7 Neath Road Bungalows, Rhigos, Aberdare. |
| G3CIA | Liverpool University Contingent Senior Training Cdrps, 56 Bedford Street North, Liverpool 7. | G8FI | H. Hargreaves, 15 Earnsdale Road, Darwen, Lancs. |
| G3CIL | LAC M. A. Holley, 21 Married Quarters, RAF North Coates, Grimsby, Lincs. | G8LO | H. F. Burtoft, 175 Lake Road, Portsmouth, Hants. |
| GW3CKB | Amateur Radio Society, No. 32 MU, RAF St. Athan, Glamorgan, South Wales. | CORRECTIONS | |
| GW3CKD | G. J. Rothery, 41 Albany Road, Roath Park, Cardiff. | G3BCM | D. Deacon, 17 Lonsdale Road, South Norwood, London, S.E.25. |
| G3CLK | K. J. Vickery (ex-VS2BA, VS1AE), 6 St. Pauls Wood Hill, Chislehurst, Kent. | G3CQU | K. G. Raffield, 119 Tollers Lane, Old Coulsdon, Surrey. |
| G3CPP | J. Smith, Harpford, Brook Street, Wallheath, Staffs. | G3UZ | F. G. Sadler, 368 The Guinness Trust, Stamford Hill, London, N.16. |

THE MONTH WITH THE CLUBS

FROM REPORTS

The excitement of the Contest having died down, we are once again able to present a good selection of the more usual type of report from the Clubs. Annual General Meetings have been very much in fashion, and 1948 programmes—some of them quite ambitious—have already been arranged in most cases.

Perhaps this is a propitious moment for your Club Secretary to appeal to all Scribes and Secretaries to keep reports as brief and concise as possible. The space we can allocate to the Clubs is very definitely limited, and this means that a long, wordy report has to be condensed to the same length as the compact ones. Hence the rather curious state of affairs that those Secretaries whose reports are a model of brevity often find more in print about the Club than those whose writing always has to be boiled down!

Brevity, please—every line full of meat, and it will all appear. And another point is this: Many Secretaries continue to write and ask how they can get their reports published, and *when* they have to send them in. The answer is—just *send them!* And every month, in this space, you are given the deadline for the following month's reports.

For next month it is first post on February 14; please be sure of getting them in by then, or they will not appear. Address to The Club Secretary, *Short Wave Magazine*, 49 Victoria Street, London, S.W.1—and Be Brief!

Surrey Radio Contact Club.—At the January meeting G2ANR gave a talk on Frequency Modulation, pointing out the disadvantages as well as the advantages. Next meeting is on February 10, Blacksmiths Arms at 7.30 p.m.

Worcester & District Amateur Radio Club.—This club's A.G.M., held on New Year's Day, was well supported. Meetings continue on the first Thursday of each month, 7 p.m. at the Victoria Institute, Worcester. At the last meeting G3NL demonstrated his QRP rig for 1.7 mc, and made a contact with an input of 0.6 watts. At the next (February 5) G3CPG will start a series of talks on the syllabus of the Radio Amateurs' Examination.

Radio Society of Harrow.—At the A.G.M., held in January, the new committee was elected and the previous year's work reviewed and described as highly successful. Future meetings include a talk on

Negative Feedback by a member of the BBC staff. The Morse class now runs in two sections—advanced and elementary. Meetings are held on alternate Tuesdays.

Torbay Amateur Radio Society.—Meetings continue to be well attended and membership steadily increases. Recent gatherings have included talks on Five- and Six-metre work, five members now being active on the former band. This club now boasts seventeen licensed amateurs in its membership, and meets at the YMCA, Torquay 7.30 p.m. on the third Saturday of the month.

North West Ireland Amateur Radio Society.—The report on 1947 activities was most satisfactory and an active programme is being arranged for the coming year. The club now meets every Saturday at 7.45 p.m. at the ATC Headquarters, Pump Street, Londonderry.

Birmingham & District Short Wave Society.—At the January 5 meeting the subscription rates were revised and fixed at 15s. per annum. An O-V-1 receiver, built round a 1LN5 and a 1C5 was demonstrated to members. On January 19, by contrast, two superhets were in operation for DX listeners.

Medway Amateur Receiving & Transmitting Society.—The MARTS held their A.G.M., on January 5 and reviewed a successful year, in spite of the considerable difficulties prevailing. Membership has increased and the financial condition is sound. The retiring President, G6NU, was re-elected, and G5FN is still Secretary for the ensuing year, during which a Radio Exhibition is to be held in the Medway Towns.

Edgware & District Radio Society.—The A.G.M. was held on January 7, and the Annual Dinner on the 17th, followed by a visit to a show. For the forthcoming season, all members except one of the original committee remain in office. On March 17 a Film Show is being held.

Stourbridge & District Amateur Radio Society.—The January meeting, which took place on the 6th, was well attended to hear a talk by G3DO. Meetings are held on the first Tuesday of the month, at King Edward School, Stourbridge—full particulars from the Hon Sec., whose QTH is in the panel.

Wirral Amateur Radio Society.—This club's "Top Band Net" recently received a rude shock when G6VS used an American steel wire recorder and played back the other station's transmission! We gather that inquests and *post-mortems* are still taking place. Later, this recorder was demonstrated at a meeting. February meetings are on the 4th and 18th—YMCA, Whetstone Lane, Birkenhead.

Yeovil Amateur Radio Club.—Yeovil now makes a comeback after a long absence from these pages. Headquarters have been obtained at the Technical Institute, where meetings are held every Wednesday, and the club transmitter G3CMH will soon be on the air. A varied programme is being arranged, including a Field Day in which other Clubs will be asked to co-operate.

Basingstoke & District Amateur Radio Society.—This Club is proposing to run a complete course in Radio for members—the goal is, of course, the Radio Amateur Examination. Meetings will be held at the Assembly Rooms, Potters Lane, twice monthly—dates to be announced later. Meanwhile, all details from the secretary—see panel.

Barnet Radio Group.—Next meeting will be at the Bunny's Restaurant, Station Rd., New Barnet, at 7.30 on February 14. Attendance at meetings is steadily increasing, some members coming from quite long distances. The programme includes a Junk Sale, a "rag-chew" and "Question Time." Non-members will be welcome.

HI-Q Club, Giffnock.—GM2KP and 3AKK are carrying out FM experiments on 28 mc in preparation for 144 mc tests. The 58 mc band, however, has not been occupied for a month or so. At Hogmanay the club members foregathered on 28 mc for a "First-foot" ceremony over the air; this started just after midnight and continued until 4 a.m., with fourteen stations remaining perfectly coherent! GM2FZT gives slow Morse transmissions on 29160 kc every evening at 2230.

Coventry Amateur Radio Society.—G3DJO recently exhibited his transmitter, built in the States from "odd items ferreted out of a shack." Members have debated the motion "That increasing use of microwaves will open vast new fields for Amateur Radio" and an interesting scheme is being evolved to give "scholarships" for junior members at the local Technical College so that they may study for the licence examination.

Bovingdon Airport Club (Amateur Radio Section).—This club made a flying start in December with its first meeting attended by 23 members. It is now being opened

CORNWALL
Readers living in mid-Cornwall who are interested in forming a Short Wave Club are asked to make themselves known to A. Thomson, G3BLY, at 14 North Street, Fowey.

to members residing in Chesham, Hemel Hempstead and Berkhamsted. A Club Room has been allocated and a licence is being applied for. Meetings are held every Wednesday at 7 p.m., and an interesting innovation in January was "Radio Museum—Bring your Oldest Components"; a prize was awarded for the exhibit of greatest interest and antiquity.

Worthing Radio Group.—At the January meeting G2UJ presented the NFD Trophy and then gave a talk on Transmitter Design. It is hoped that the club will be able to operate a portable throughout the coming summer. Next meeting, February 5 at Olivers Cafe, 7.30 p.m., will consist of a Film Show.

Scarborough Short Wave Society.—They have now resumed activities, having been closed down since 1939. It meets every Monday at Chess-

This list contains the names and addresses of the Secretaries of the Clubs whose reports appear herewith. They will be pleased to give all information and assistance to prospective members.

- BARNET.** R. Walker, G6QI, 7 Potters Lane, New Barnet, Herts.
BASINGSTOKE. L. S. Adams, 16 Bramblis Drive, Basingstoke, Hants.
BIRMINGHAM. N. Shirley, 14 Manor Road, Stechford, Birmingham 9.
BOVINGDON. J. D. Lord, Police Station, Bovingdon, Hemel Hempstead.
BURY (G3BRS). R. H. McVey, 46 Holcombe Avenue, Elton, Bury, Lancs.
COVENTRY. J. W. Swinnerton, G2YS, 118 Moor Street, Coventry.
EDGWARE (G3ASR). R. H. Newland, G3VW, 3 Albany Court, Montrose Avenue, Edgware, Middx.
FARNBOROUGH. W. C. Alcock, G2CAT, 36 Netley Street, Farnborough, Hants.
GIFFNOCK (HI-Q). J. D. Gillies, GM2FZT, 3 Berridale Avenue, Glasgow, S.4.
HARROW. N. J. Hanscomb, G3APK, 80 Manor Road, Kenton, Middx.
MEDWAY. S. A. Howell, G5FN, 39 The Broadway, Gillingham, Kent.
NORTH WEST IRELAND (G13CFH). D. R. J. Adair, G13BVB, Cosy Lodge, Culmore Road, Londonderry.
READING. L. A. Hensford, B.E.M. (G2BHS), 30 Boston Avenue, Reading, Berks.
SCARBOROUGH. P. B. Briscoombe, G8KU, 31 St. Johns Avenue, Scarborough, Yorks.
SLADE. C. N. Smart, 110 Woolmore Road, Erdington, Birmingham 23.
STOURBRIDGE. W. A. Higgins, G8GF, 35 John Street, Brierley Hill, Staffs.
SURREY. L. C. Blanchard, 122 St. Andrews Road, Coulsdon, Surrey.
TORBAY. K. J. Grimes, G3AVF, 3 Clarendon Park, Tor Vale, Torquay.
WIRRAL. B. O'Brien, G2AMV, 26 Coombe Road, Irby, Heswall, Cheshire.
WORCESTER. J. Morris Casey, G8JC, c/o Brookhill Farm, Ladywood, Droitwich, Worcs.
WORTHING. G. W. Morton, 42 Southfarm Road, Worthing, Sussex.
YEOVIL (G3CMH). K. R. Gilbert, 48 Chilton Grove, Mudford Road, Yeovil, Som.



The Reading General Meeting, with, in the foreground, an impressive array of competition equipment built by members.

ington Hotel, The Crescent, Scarborough, at 7.30 p.m., and a full programme has already been arranged. See panel for Secretary's QTH.

Bury & District Radio Society.—We are notified by this Club of a change of secretary; the new secretary's name, and address is listed herewith, in the panel.

Slade Radio Society.—February meetings will be on the 6th (lecture on RF Heating, with a demonstration) and the 20th (an Amplifier Demonstration). Both meetings at 8 p.m., Parochial Hall,

Broomfield Road, Slade Road, Erdington.

R.A.E. & Farnborough District Amateur Radio Society.—This club, now celebrating its anniversary with a healthy organisation of 50 members, has grown from a very small start fostered by a few members of the R.A.E. The 1948 programme includes visits to Government Departments, exhibitions, lectures and demonstrations. Meetings are held on alternate Mondays at 7.30, but Morse classes are being started at 6.30, at which time members are also free to meet informally before the lecture begins.

Reading & District Amateur Radio Society.—The December mid-month meeting gave members an interesting new subject for experiment, when the Synchronyne was demonstrated; members were amazed by its simplicity, high selectivity and capabilities as a quality receiver. VHF reception technique has been dealt with by G8RS, including GG RF amplifiers and aerial matching devices. Other lectures have covered the application of the oscilloscope to Amateur Radio. Reading meets on the second and last Saturday of each month, at 6.30 p.m., in Palmer Hall, West Street.

SLIGHT ERROR CREP' IN

It is hardly worth mentioning, but that "Rs" in the table of values on p. 657 of G6QB's article ("High Power Driver Unit," January, 1948) should—yes, you've guessed it—read R2. No matter how much care we take . . . and so on.

AMATEUR INFLUENCE

The National Company of New Malden, Mass., one of America's leading Amateur Radio supply manufacturers, has on its staff no less than 52 holders of W call signs.

THE SHORT WAVE LISTENER

In the *Short Wave Listener*, our companion monthly, published on the third Thursday (next issue dated March, out on February 19), we are running a series of articles designed to interest the SWL in amateur transmission. With the March issue, we are starting a small VHF section to cover the needs of SWL's wishing to commence operations on our higher-frequency bands.

The direct subscription rate to the *Short Wave Listener* is 16s. for twelve issues; it can be ordered through our office.

PREMIER RADIO

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OUR NEW LIST IS NOW AVAILABLE. All enquiries must be accompanied by a 2½d. stamp.

ALL-WAVE SUPERHET KIT. A Kit of Parts to build a 6-valve (plus rectifier) receiver, covering 16-50 metres. Medium and Long-wave bands. Valve line-up 6K5, 6K7, 6Q7, 6J7, two 25A6 in pushpull. Metal rectifiers are incorporated for H.T. supply. Output impedance is for 3 and 15 ohms. The latest Wearite Coil Pack incorporating Iron Dust Coils is used, making construction and alignment extremely simple. A pick-up position on the wavechange switch and pickup terminals is provided. A complete kit including valves but without speaker or cabinet. Chassis size 14 × 6 in. Overall height, 9 in. Price £11/16/3.

Suitable loudspeakers are the GOODMANS 10 in 6-watt. P.M. at 47/6 or for superlative reproduction, the Goodmans 12 in. P.M. at £6/15/-.

MIDGET RADIO KIT. Build your own midget radio. A complete set of parts including valves, loudspeaker and instructions. In fact, everything except cabinet necessary to build 4-valve Medium and Long Wave T.R.F. radio operating on 200-250 v. mains A/C or D/C. Valve line-up 6K7, 6J7, 25A6, 25Y5. Wavelengths covered 200-557 and 700-2,000. Size 10 × 6 × 6 in. Completely drilled chassis. Price, including tax, £8 0s. 11d.

SUPERHET MIDGET RADIO KIT. A complete kit of parts for a 5-valve superhet. Covers 16-50 and 200-557 metres, AC/DC 200-250 v. Size, 10 × 6 × 6 in. Completely drilled chassis. Price, including tax, £9.

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SPECIAL OFFERS. 807 (Ceramic base) Tubes. 15/- each.

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TEST UNIT TYPE 73, consists of a special purpose oscilloscope that requires only rewiring and the addition of a few condensers and resistors to convert into a standard oscilloscope, input 230 v. 50 c/s. A 3½ in. C.R. tube and 1 SU220A,

1 EB34, 1 5Z4, 3 SP41, 2 EA50, are included. Controls are "Brightness", "Velocity", "X Shift," "Y Shift", Focus Amplifier "in/out", "Calibrate", "on/off Tx". Price £8/8s. Carriage and packing 20/-.

ROTARY TRANSFORMERS, input 12 v., output 180 v., 30 m/a., 4 v., 2-3 a., with 19 volts input, output is 50 per cent. higher. May be used on D.C. mains as L.T. charger. With small conversion could operate as D.C. Motor. Original cost over £5. Employ powerful ring magnet. Price 10/- each.

OSCILLOGRAPH POWER UNITS. Input 230 v. 50 c. include transformer, metal rectifiers, voltage doubling and smoothing condensers. Type 409, output 900 v. 25/- . Type 410, output 1,800 v. 35/-.

H.T. ELIMINATOR AND TRICKLE CHARGER KIT. Consists of a complete kit of parts to construct an H.T. Eliminator with an output of 120 v. at 20 m/a and provision for Trickle Charging a 2 v. Accumulator. Two Metal Rectifiers are employed. With circuit, 35/-.

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SIGNAL GENERATOR TYPE 33 consists of a battery driven generator, with two separate units for approx. 1 metre and 5 metre operation. Includes two CV6 (VR135) "horned" triodes and one diode. A large quantity of U.H.F. Tuning Gear. Contained in a teak case size 18 × 8 × 8 in. Price 30/-.

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PREMIER COIL PACK consists of a wired and aligned Coil Pack of the most Modern Type incorporating such features as Permeability Tuned I.F. Transformers with Litz windings on Polystyrene formers (7KC Bandwidth) Air Dielectric Trimmers, Litz wound medium wave coils, Tuned R/F stage, covers 13-40, 40-120, 200-557 metres. Dimensions of Pack, 6 in. × 4½ in. × 2½ in. Pair I.F. Transformers, 3-Gang Condenser, Slow-motion Drive and Dial are supplied loose. Complete Circuit is supplied. Price complete £3/17/6.



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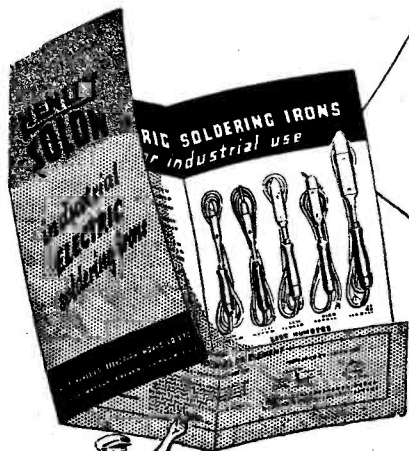
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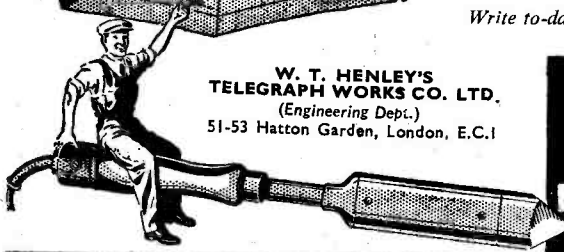


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25/50 watt C.W. De-Luxe Transmitter.

Power Input. 25-50 watts C.W.

Freq. Range. Plug in coils for 160, 80, 40, 20 and 10 metre bands. Complete with link output.

Valves. 6L6 Crystal controlled tri-tet oscillator. 807 Power amplifier. 83 rectifier for power supply.

Controls. P.A. H.T. switch, Osc. tuning control, PA tuning control. Jack for keying in CO.

Metering. First grade moving coil milliammeter is switched to read osc. or PA anode current.

Power Supply. Complete on same chassis as RF unit. The transmitter is supplied either in black crackle steel cabinet or with rack type panel as preferred. The chassis is finished in an attractive grey cellulose and all components and insulation are of the highest quality.

Delivery. 2 to 3 weeks from receipt of order.

Price. £27/10/- complete with crystal and coils for one band. Extra coils 30/- per band.

PLEASE NOTE. It is advisable when ordering to state for which band or bands the transmitter is required.

Miniature 10-15 watt phone C.W. transmitter for 160, 80, 40. Price less power pack but with crystal and coils for one band, £17/10/-.

Further details supplied on request.

SHORT WAVE (HULL) RADIO

30/32 Prince's Avenue,

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Telephone 7168



Q.C.C. TYPE P5 QUARTZ CRYSTAL UNIT

This unit uses the well-known Q.C.C. Power type crystal, which is undoubtedly the most rugged and active crystal cut available for amateur use. The crystal is mounted in our type U dust proof holder, with standard $\frac{3}{8}$ in. pin spacing, as illustrated above.

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Available with fundamental frequencies in the 1.7, 3.5 and 7 Mc. bands for fundamental operation or frequency multiplying to any higher frequency band.

An official certificate of calibration is sent with each P5 unit, giving the frequency under stated operating conditions to an accuracy of 0.025%.

PRICES: Ground to your specified frequency in the above bands ... £1/17/6

Or ground to a frequency not specified by you but taken from our stock ... £1/12/6

Please note that all the leading dealers in amateur equipment now carry stocks of the P5 crystal unit.

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Lyons Radio

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4035 Kcs.	4080 Kcs.	4280 Kcs.	4397.5 Kcs.
4490 "	4495 "	4535 "	4735 "
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19" × 10½"	13/6 each	9/6 each
19" × 8¾"	12/6 each	8/6 each
19" × 7"	10/3 each	7/6 each
19" × 5¼"	8/3 each	6/6 each
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The above are available from stock and are ideal panels if you are contemplating building that new transmitter.

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Capacity	Working Voltage	Size	Price
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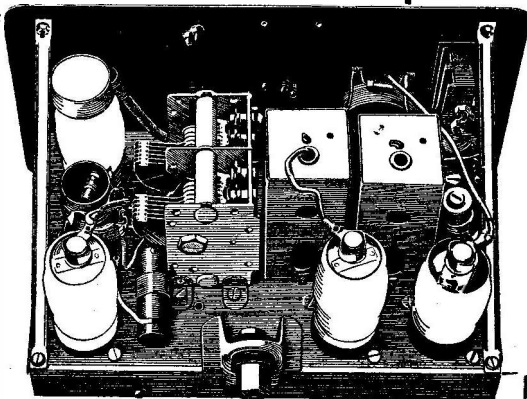
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Designed by a leading Radio Designer, this circuit includes all the latest refinements. EVERYTHING PROVIDED. Cadmium-plated chassis, ready drilled, 16 valves, power supply, 8" speaker, ECR60 white tube 6" screen, 78-page construction manual and two foolscap diagrams. Valves used: 4-EF50, 4-6SH7, EB34, EF36, 6V6GT, 2-EA50, 6J5, U17, 5U4G.

32

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For use with any Radio having 6.3v valves. Just plugs into the pick-up sockets of your set. Three EF50 valves, silver-plated brass chassis.

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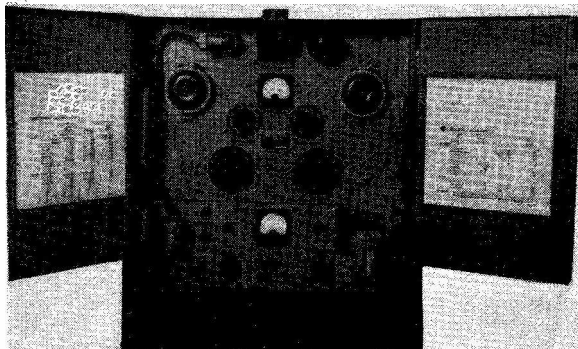
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Five R.F. stages, 12 tuned circuits, 12 valves. Aligned and Air Tested.

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Transmitter Receiver TR3510 Brand New

Completely portable. Steel case with hinged doors, size 17 x 17 x 13 finished grey. 12 Volt rotary converter (which runs well on the mains as a series motor). 15 Valves.

2 VR54 (EB34)
6 VR56 (EF36)
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1 VR135 (DET19)
2 VR92 (EA50)

2 0.5 Mas 2½-in. square meters
2 Muirhead illuminated slow motion vernier dials.

Various fuses, switches, con. condensers, tag boards, etc. etc.

trols, wirewound potentiometers and a host of components, resistors, condensers, tag boards, etc. etc. Weight 65 lbs.

Both receiver and transmitter tune from calibration charts over 160-220 Mcs. with a good overlap at each end. Switch positions are:—Tune Rx; Tune Tx; Set Osc; Set P.R.F.; Operate.

Both receiver and transmitter units are separate little units easily removable. The Tx unit is in a solid brass-plated box size 5 x 4½ x 4½ with variable link coupling output.

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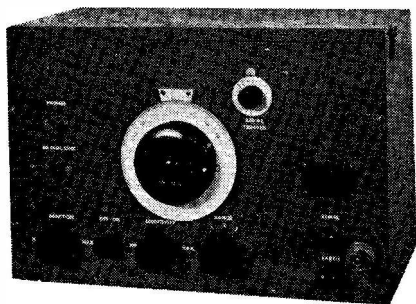
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Brand new ex-RAF R-1224 battery receivers. 3 wavebands, 1 mc to 9 mcs (33-300 m) 5 valve superhet. Valves 2/VP/23's, FC2A, HL2, PM2A all included. RF stage, IF, 470 kcs. Muirhead Dials. Two output jacks. Air Ministry grey cabinet. Requires 120v HT and 2v LT to operate. The performance of these sets is an eye opener. Packed complete with valves in massive crate. Size of set, 15 in. long, 10 in. high, 9 in. deep. Amazing value, £7/10s. Carr. paid. Pass. train. No C.O.D. or H.P.

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807'S. English, 15/- American, £1 each PT15, 15/- CV18 (RK34, DET19), 10/- CV6 (DET20), VR136 (EF54), VR137 (EC54), VR91 (EF50), 5/- each. Best offer secures, R.C.A. 813, 829B, 832, 815. All new. Also two 0-1 A m/c Thermo Couple RF Meters.—G20O, A. Hoile, Well Street, Loose, Maidstone. Phone 83579.

MARCONI CR.100. 11-valve Receiver. 60 kc to 30 mc in six bands. Mains operated. Perfect condition. £25 or nearest.—76 London Road, Deal.

EDDYSTONE Communications Receiver 1.5-30 mc. RF, 2 IF, BFO, Xtal. Bandsread, etc., with matched separate energised speaker, £18/10/-—40 Calton Road, Gloucester.

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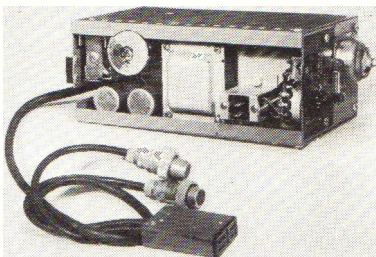
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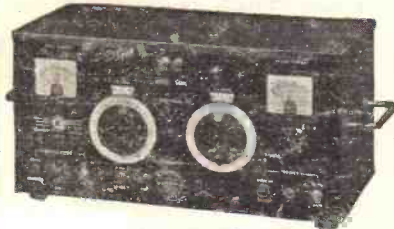
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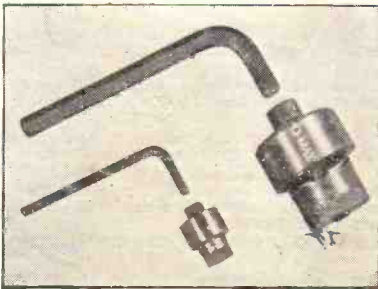


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