

January 1950

The original front cover for this edition was not available.



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NEW VALVES. At 27/6: 931A. At 20/-: 832. At 15/-: 6J6, 866A. At 10/-: 717A. At 7/6: 5V4G, 6AG5, 6C4, 6F7, 6K7, 6L7GT, 6N7, 6V6M, 12K8, VR150/30, 9D6, Pen46, VR136, EF39, EF54, CV66 (Grounded Grid Triode). At 6/6: 3Q5Gt, 5V4G, 5Z4M, 6B8, 6G6G, 6K6, 6Q7GT, 6SJ7, 6SK7, 6SN7, 6V6GT, 6V6G, 6X5GT, 6Y6G, 807, 9001, 9002, 9003, EF36, EF50, EC52, AUS, RL37, VS70, VT60A, VU111. At 5/-: 2X2, 2C26A, 6AC7, 6K7G, 6SL7, 7V7, 12A6, 12C8, 12AH7, 12J5, 12SH7, 12SJ7, 12SK7, 12SL7, 12SG7, 12SR7, 28D7, 713A, 855, 956, 9006, P61, SP61, 8D2, At 4/-: 6SH7, HL2, PM2. At 2/9: 6H6, 7193, LD210, LP220, SP41. All guaranteed. Two or more valves post free, otherwise add 6d.

NEW AMERICAN HEADSETS, TYPE HS33. A most popular lightweight set, extremely sensitive, fitted with comfortable rubber ear cushions and leather-covered headband. Recommended for amateurs, hospitals, laboratories, etc., 7/6.

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whip AERIALS. Fish rod type. Consist of nine tapering sections each lft. long, with copper wire through centre which prevents accidental loss. Makes an excellent aerial. New, 3/6 each. Also Flexible Rubber Base Insulator for above, complete with plated terminal for lead in. New, 3/6.

NEW PERFORMANCE METERS, TYPE AP53874, Contain Parmeko Power Pack for 230 V, 50 c/s., Magic Eye Indicator Y63, 2 EF50, 1 RL16, 1 5Z4G, 1 EA50. Instrument type cabinet. In maker's cartons. 45/-.

NEW AMERICAN INDICATORS, TYPE ID-30/APS-2D. Fitted with latest type flat screen tube type 5FP7, focus control, electromagnetic deflection coils, screen, etc. In maker's cartons. Price 27/6. Slightly soiled but perfect, 17/6. AN/ARC-5 COMMAND RECEIVERS (SCR-274N). These famous 6-valve superhets are fitted with valves: 12K8, 3 12SK7, 12SR7, 12A6. Following models available; R26/ARC5 (BC454), 3-6 Mc/s., I.F. 1415 kc/s.; R27/ARC5 (BC455), 6-9 mc/s., I.F. 2830 kc/s. All brand new and perfect in maker's cartons, with circuits. 45/-.

MASTERADIO VIBRATOR POWER PACKS. 6 V. Output 250 V. 70 mA. Uses Mallory vibrator and OZ4 valve rectifier. Fully smoothed. Compact unit in steel case, brand new. 26/-.

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NEW TELEVISION TRANSFORMERS, FULLY GUARANTEED. E.H.T. Type TV2. Suitable for use with the VCR97 tube. Input 200–250 V. Outputs: 2,500 V. at 5 mA. 0-4-6-3 V. at 1 A. 4 V. at 2 A. Fully impregnated, and waxed. The finest quality obtainable. 53/6. Type CT1355. Specially manufactured for conversion of the Receiver R1355. Input 200–250 V. Outputs 250–0–250 V. at 80 mA. 5 V. at 2 A. 6-3 V. at 6 A. Fully shrouded, upright mounting. 32/6.

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Brief Specification:

Eleven valves (including Rectifier and Stabiliser), using the latest high efficiency all-glass valves. Double Superhet circuit with adjustable selectivity. Four switched bands, 32 Mc/s. to 480 Kc/s. Precision gear driven flywheel controlled tuning with mechanical bandspread and all the features of a modern Communications Receiver.

PRICE £49. 10. 0. Delivery commences February.

This receiver created a sensation on our stand at the recent Amateur Radio Exhibition, Royal Hotel, London.

G2ACC has had an opportunity of testing a pre-production model incorporating improved bandspread and the following unbiassed report is given:

"... The '750' proved even better than anticipated, and I can honestly say this is the best Communications Receiver I have yet tried (and these have been numerous). Selectivity and quality of reproduction are really excellent—the variable selectivity being a great asset to a double superhet. The signal to noise ratio is well above average. The tuning mechanism is beautifully smooth, and the bandspread greater than any other British receiver yet tested. Workmanship is even better than the usual Eddystone standard. Altogether a wonderful set."

A full report and technical specification will be sent upon request.

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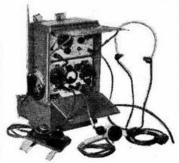
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American version of the No. 18 Set modified to U.S. Army requirements. Frequency coverage, 6-9 Mc/s., 33·3-50. metres. Complete equipment for " Phone " and C.W., comprising: Transmitter, with 1,000 kc/s. crystal, 5 valves, 1A5, 2/1299's, 2/ILDS's, etc.; Receiver, with 6 valves, 4/ILDS's, ILW6, IA5, etc.; Hand Driven Generator, supplying H.T. and L.T. plus 12 V. bias (when switches for WS18) with operator's seat, etc.; Aerial, 10 ft. rod

Rectifier for Supply Unit Canadian Army No. 43 Transmitter

This unit is a complete power unit for use with 110 V. A.C. 50 cycle input. The outputs are various. Components include: Transformers H.T. 2100-0-2100, tapped 500-0-500. L.T. 2-5 C.T. twice for 866's 450-0-450, 12 V. C.T. volts, 6.3 V. C.T. volts, 6.3 V., 5 V., Thermal starter 6-3 V. Chokes 2/15 H. 375 mA. 120 ohms, 15 H. 450 mA. 66 ohms., 20 H. 162 mA. 160 ohms, 2/15 H. 110 mA. 260 ohms. H.V. Condensers. Valves: 4/866A/866. 5Z3, I V. Starters, VR150/30, 6SJ7, 2/6A3. Regulator circuit. Dimensions: 30"x18"x12" with shock absorbing mounts. Weight, 420 lbs. In metal case, finished in drab olive crackle, with O.P. and I.P. Sockets, Switches.

Clydesdale's Price only. Carriage paid. £16 each.

Brand New, in maker's carton.

Remote Contractor No. 4

Relay (24 V.) with Ratchet drive mechanism, switch, etc., used for remote switching. Unit size: dia., 31", flange dia. 4", depth 21". Clydesdale's Price only. Post Paid.

> 2/8 each. 27/6 per doz.

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Control Box CCT-23155, equal to U.S. Army, BC-496-A

For Two Command Receivers, with dual tuning and volume controls, switches, inlet and outlet points, black crackle finish box. Dimensions: 61" x 4" x 11".

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type (II sections), range 5 miles R/T, 10 miles C.W., greater ranges can be obtained with a normal aerial. Plus, cables and Instruction Book. This equipment can also be used with dry batteries (not supplied) as a Portable Walkie-talkie. Power requirements: H.T. 162 V. 60 mA.: L.T. 3.0 V. 0.3 A. Dimensions: Set and battery container : 113" x 103" x 173". Clydesdale's price only. £14/10/-Carriage paid.



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carriage.

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Installation Kit for WS-No. 19 U.S.A. made by-R.C.A.

Complete kit comprises, Con. 12 pt. 12' 2" 12 W. cable with 12 W. Skt. each end, ditto 6' 8", Con. 4 pt. with 4' 1" 6-way cable and 6 W. Skt. one end, co-ax. con., 2 1/5 W. Jumper leads, 2/Satchels, 3 sets M.C. Mic/H'Phone Assy. Aerial Base, Beam/Ant. mtg. Control Unit No. 2 with O.P. leads, control Unit No. 1 with 6 W. lead. Junction Box No. 3 with O.P. leads, and 6 W. lead, mtg., etc., screws nuts, washers, plus installation and wiring diagrams. Clydesdale's Price only. 42/6 each. Carriage Paid,

Brand new

H.I58. Wireless Control Unit No. 2 (for WS-19)

Containing: 3-wafer 4-pole 2-way and 3wafer 3-pole 3-way, switches with pointer knobs, red pilot lamp holder, 4-way terminal board, 2/12-way plug receptacles, 2' 8" 5-way cable with 5-point plug. 53" x 4" x 23". Grey. Clydesdale's Price only. Post paid.

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H.159. Control Unit No. I (for WS-19) Containing: 2-wafer 3-pole 3-way, 3/4-way terminal boards cartridge fuse and holder, 1/12-way plug receptacle, 7' 6" 6-way braided screen rubber covered cable, with flying leads tagged. Two 2' 6" lengths of 5-way flex with 5-point plugs fitted. 3/6 Clydesdale's Price only. Post paid.

Brand New.

H.160. Junction Distn. No. 3 (for WS-19

Contains: 4/4-way terminal st., and press button. 2 2' 6" lengths of 5-way flex with 5-point plugs. 10' 9" 6-way braid screen rubber covered cable, with flying leads and tags. 3/6 Clydesdale's Price only. Post paid.

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H.156. Moving Coil Mic/Headphone Assv.

Comprising moving coil microphone (hand No. 7) with pair of M.C. Headphones and 3' lead with rubber 5-point socket. Imp. approx. 60 ohms. per insert. Clydesdale's Price only. Post paid. 42/6

H.157. Aerial Base (for WS-19)

This base is of re-inforced moulded rubber with a metal centre to which is fitted a 11" threaded bush with lock-nut, the centre of which retains a co-axial feed through with ceramic insulation. 6-2BA retaining heads are mounted into the rubber. Clydesdale's Price only. Post paid.

Brand New ..

H.175. Laboratory Resistor Assembly

330,000 ohms, resistors, 5 W. to withstand 5,000 V.-2" dia. Can mounted with ceramic ins. 10/6 Price. Post paid.

Brand New.

H.71. Valve retaining clamp, snap action. Price, post paid.

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Brand New. H.174. Strip Resistors 10 ohms. 35 watts-8" long, ?" wide. with fixing flange. Price, post 1/-

R.S.G.B. BULLETIN

OFFICIAL JOURNAL OF THE RADIO SOCIETY OF GREAT BRITAIN (INCORPORATED 1926)

Published on or about the 15th of each month.

Issued free to members

Editor: JOHN CLARRICOATS-G6CL

Editorial Office: NEW RUSKIN HOUSE,

LITTLE RUSSELL STREET, LONDON, W.C.I

Telephone: Holborn 7373

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Advertisement Manager: HORACE FREEMAN

Advertising Office: PARRS ADVERTISING

121 KINGSWAY, LONDON, W.C.2 Telephone: Holborn 2494

Forthcoming Events

REGION 1

Ashton-under-Lyne.—February 5, 3 p.m., New Jerusalem Schools. Bolton.—February 7, 8 p.m., Y.M.C.A. Burnley.—February 8, 7.30 p.m., Mechanics Institute, Manchester Road.

Bury.—February 9, 7.30 p.m., Atheneum, Market Street.

Darwen and Blackburn.—January 27, February 10, 7.30 p.m., Y.M.C.A., Limbrick, Blackburn.

Manchester.—February 6, 7.30 p.m., Reynolds Hall, College of Technology, Sackville Street.

Oldham.—Alternate Wednesdays, 7.30 p.m., Civic Centre, Clegg Street.

Rochdale,-February 5, 3 p.m., Drill Hall, Baron Street.

Barnsley.—January 27, February 10, 7.30 p.m., King George Hotel, Peel Street.

Bradford.—January 17, 31, February 14, 7.30 p.m., Cambridge House, 66 Little Horton Lane.

Catterick and Richmond.—Wednesdays, 7 p.m., Loos Lines, Catterick Camp.

Darlington.—Thursdays, 7.30 p.m., Club Room, British School Yard, Skinnergate.

Doncaster.—Wednesdays, 7.30 p.m., 73 Hexthorpe Road.

Newcastle-upon-Tyne.—January 22, 8 p.m., British Legion Rooms, 1 Jesmond Road.

Sheffield.—January 25, 8 p.m., Dog and Partridge Trippit Lane.

Sheffield.—January 25, 8 p.m., Dog and Partridge, Trippit Lane. February 8, 8 p.m., Albreda Works, Lydgate Lane. Spenborough.—January 18, February 1, 15, 7.30 p.m., Temperance

Spenborough.-Hall, Cleckheaton.

York.—January 18 (A.G.M.), February 1, 15, 7.30 p.m., Rechabite Building, Clifford Street.

REGION 3

Coventry.-January 20, 7.30 p.m., Priory High School, Wheatley

Birmingham (M.A.R.S.).—January 17, Imperial Hotel.
Birmingham (Slade R.S.).—January 6, 20, February 3, 17, 7.45 p.m.,
Parochial Hall, Broomfield Road, Erdington.
Birmingham (South).—February 5, 19, 10.30 a.m. Stirchley Institute
Stourbridge.—January 27, February 7, Corn Exchange, King
Edward's School.

REGION 4

Mansfield (M. & D.R.S.).-February 5, 3 p.m., Swan Hotel.

REGION 5

Cambridge.—January 20, 7,30 p.m., The Jolly Waterman. Chelmsford.—February 7, 7,30 p.m., 184 Moulsham Street.

REGION 7

London.—January 27, 6,30 p.m., Institution of Electrical Engineers, Savoy Place, Victoria Embankment, W.C.2. Tea at 5,30 p.m. Presidential Address by Mr. W. A. Scarr, M.A. (G2WS), followed by a lecture entitled "The Use of V.H.F. for Radio Telephone Services" (Mr. J. Neale, B.Sc. (Eng.), A.M.I.E.E., Post Office Engineering Dept.).

Barnes and Richmond.—February 14, 7,30 p.m., 22 Lowther Road, Barnes

Barnes.
Brentwood (B.R.S.).—January 20, February 3, 17, 8 p.m., Drill Hall, Ongar Road.
Croydon (Surrey R.C.C.).—February 14, 7.30 p.m., Blacksmith's Arms, South End, Croydon.
East London.—January 15, February 12, 2.30 p.m. for 3 p.m., Town Hall, Ilford.
Edgware (E. & D.R.S.).—Every Wednesday, St. Michael's School, Flower Lane, Mill Hill.
Enfield.—January 22, 3 p.m., George Spicer School, SouthburyRoad.



Finsbury Park.—January 24, 7.30 p.m., 164 Albion Road, Stoke Newington, N.16.
 Hoddesdon.—January 19, February 2, 16, 8 p.m., The Salisbury

Arms.

Arms.
Holloway (Grafton R.S.).—Mondays, Wednesdays and Fridays, 7,30 p.m., Grafton School, Eburne Road, N.7.
Ilford.—January 26, 8 p.m., G6HU. February 9, 8 p.m., G2BRH. Peckham.—February 6, 7,30 p.m., The Kentish Drover, Rye Lane. St. Albans.—February 8, 8 p.m., The Beehive, London Road. Slough.—January 19, February 16, 7,45 p.m.. The Labour Memorial Hall, Chandos Street.

Uxbridge.—February 3, 7,30 p.m., The Vine Inn, Uxbridge Road (opposite Hillingdon Church).

Welwyn.—February 7, 8 p.m., Council Offices.

Brighton.—Tuesdays, 7.30 p.m., Eagle Inn, Gloucester Road. Southampton—February 4, 7.30 p.m. 22 Anglesea Road, Shirley.

Bristol.—January 20, 7 p.m., Keen's Cafe, Park Row. Exeter.—February 2, 7.30 p.m., 98 Ladysmith Road. Plymouth.—January 21, 7 p.m., Tothill Community Centre, Tothill Park, Knighton Road, St. Judes. Torquay.—January 21, 7.30 p.m., Y.M.C.A., Castle Road.

Edinburgh.—January 19, February 2, 16, 7.30 p.m., Chamber of Commerce, 25 Charlotte Square.

Ayr.—January 21, 2.30 p.m., Royal Hotel, Prestwick. Dinner 4.45 p.m., theatre 6.20 p.m.
Falkirk (Clackmannan Group).—January 27, 7.30 p.m., Temperance Cafe, High Street.
Glasgow.—January 25, 7 p.m., 39 Elmbank Street.

Presidential Address

Mr. W. A. Scarr, M.A., G2WS, will deliver his Presidential Address at 6.30 p.m., Friday, January 27, 1950, at the Institution of Electrical Engineers, Victoria Embankment, London, W.C.2.

H. WHITAKER G3SJ

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CRYSTALS. 1,000 kc/s. Standards. By Bliley, Somerset, and Precision Instruments, in standard $\frac{3}{4}$ " pin spaced holders, 20/- each. 500 kc/s. ex-Air Ministry, British Marconi, etc., $\frac{3}{4}$ " holders, special offer, all fully guaranteed perfect, 6/- each. R.C.A. 100 kc/s. sub standard with base, 30/-.

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3.5 Mc/s. BANDS. 3,500 kc/s. to 3,800 kc/s. in BC610 fitting 2" pins, your spot frequency. 15/-.

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TOP BAND double. The following are still available from our special offer, frequency now available 850 to 863.5 kc/s. and 937.5 to 998 kc/s., both inclusive, your choice of frequency. 5/- each, 48/- doz. A complete range available from 2,000 kc/s. to 10,000 kc/s., any frequency. Quotations on receipt of enquiry.

VALVES. 866/866a, 10/6; 832, 16/-; 100th, 25/-; 304tl, 39/6; 5R4 GY, 4/-, 36/- doz. 1625, 4/-; 807, 5U4, 6/-, 60/6 doz. 6V6 G or metal, 6X5, 6AC7, 6K7, 6C5, 6J5, all at 5/- each, 48/- doz. 12SG7, 12SR7, 12C8, 4/-, 36/- doz. 80 at 7/6. 6L6 met, 12/6.

TU. 9b TU 7b TU 26 at 10/- each complete with outer cases.

TRANSFORMERS. 20,000 to clear, no time to classify, consist of input, output, driver, coupling, mike, etc., at 14/- per doz. There are no H.F. or high cycle material, this is a G3SJ straightforward offer, and a fine bargain.

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A.S.G.B

For the advancement of Amateur Radio

VOLUME XXV No. 7

IANUARY 1950



AIRCRAFT DISTRESS COMMUNICATIONS SERVICE CO-OPERATION BY RADIO AMATEURS

N this age of high-speed air travel, when the sky-scrapers of the New World and the deserts of Africa are but a few flying hours from London, and when an aircraft can make a forced landing miles off route within a few minutes of sending its last radio message, it is essential that the aeronautical distress telecommunication services shall operate at maximum efficiency.

A major problem facing the Air Ministry and the Ministry of Civil Aviation is that of ensuring that a distress signal from an aircraft for which they are responsible is intercepted and acted upon promptly.

The same problem, of course, confronts those responsible for the air services of other countries.

An aircraft if compelled to make a forced landing is expected to send out emergency calls, first on the route frequency, *i.e.* the frequency on which it has been working with a ground station, and later, if no replies are received, on one of the regular aircraft distress frequencies. The most widely-used distress frequencies are 6,500 kc/s. by day and 3,805 kc/s. by night.

It will be recalled that a few months ago the B.B.C. broadcast an appeal to radio amateurs to listen for signals from an aircraft posted as missing. Unfortunately, as neither the callsign nor the frequency

which the aircraft could be expected to use were announced, the appeal failed in its objective.

Shortly after this incident the Society wrote to the Air Ministry and suggested that a meeting be arranged to consider whether it would be possible for radio amateurs to co-operate officially when an aircraft is in distress. The Air Ministry accepted the suggestion and, at the subsequent meeting the Society's representatives stressed the point that throughout the 24 hours of every day, certain of the amateur bands are under constant observation. Consequently the chances of a distress call being intercepted on these bands—QRM notwithstanding—are probably greater than on any other band or spot frequency. With this in mind the suggestion was made that aircraft operators should be instructed, in the event of a forced landing, to use a frequency within one of the amateur communication bands, if earlier calls, made on a regular distress frequency, remain unanswered.

The Society is now able to announce that the proposals put forward at the meeting have been accepted by the Air Ministry with the result that in future when an aircraft has force-landed, the operator will, after all normal distress procedures have failed, call on a frequency within the band 7,000—

7,150 kc/s.

Any call so intercepted should be telephoned to the nearest police station and not to the Air Ministry

or an aerodrome.

When a transmitting amateur receives a distress call he should refrain from answering on the frequency of the aircraft. If an acknowledgment is sent it should be transmitted on a frequency slightly different from that used by the aircraft. Before making the call he should listen carefully to see whether any other station is transmitting an acknowledgment.

Under most circumstances an aircraft in distress will transmit a distress call and distress message in

the following form:-

Distress Call.

SOS SOS SOS V (Callsign of aircraft made 3 times)—20 seconds dash—(Callsign of aircraft made once).

Distress Message.

SOS SOS (Callsign of station answering made 3 times) V (Callsign of aircraft made 3

times).

The text of the message will contain as much information as circumstances permit and will normally include: (i) Position and Time; (ii) Type of Aircraft; (iii) Nature of Distress; (iv) Intention; followed by letter K.

On occasions it may not be possible for the aircraft to make any transmission after the distress call

or it may be necessary for the distress call and message to be combined in one transmission.

The Society is glad to give prominence to this important information, and is pleased to know that its suggestions regarding co-operation have been accepted by the Air Ministry and approved by the G.P.O.

A TABLE-TOP TRANSMITTER for the DX bands

This V.F.O.-controlled 75-watt transmitter for 14, 21 and 28 Mc/s. built into a 11 in. \times 7 in. \times 11½ in. cabinet will appeal to those amateurs who have only limited space at their disposal. Cost has been kept to a minimum by the choice of valves and components, many of which are readily available on the surplus market.

THERE must be many amateurs who, being short of either space or money, have decided that long-distance working is not for them, in the belief that such activities require bulky, high power equipment. This article may encourage those who live in cramped quarters to savour the thrills of working DX with compact equipment. It is not intended that the design of the transmitter to be described should be copied exactly—part for part, wire for wire—but rather that the information given should be used as a suggestion and guide as to what can be achieved from parts on hand. By substituting suitable values of inductance and capacity, other bands, such as 3.5 and 7 Mc/s., could be covered.

A. W. WATKINS*

There are certain points in the present design to which some may take exception, but nevertheless, in practice the transmitter, as described, gives excellent results, being a pleasure to control and operate. The set is small enough to be kept in any spare corner, and brought out on the kitchen table when required. Although originally designed for C.W. operation, it can be used for telephony transmissions with almost any standard system of modulation.

Construction

The construction of the original model was centred upon an ex-radar case complete with chassis and panel. Similar cabinets are available for as little as 2s. 6d., and will be easily recognised from the illustrations. All construction work can be done with the minimum of facilities and tools—the usual vice, hand tools and a small bench are all that are strictly necessary. As the panel and chassis were spot welded together, it was decided to superimpose an aluminium panel on top of the original, and to cover the chassis top with another aluminium sheet.

The first major task is the construction of the V.F.O. section, which is mounted inside a thick aluminium shield, measuring $7\frac{1}{2}$ in. long \times 5in. wide \times 4in. high, bolted directly to chassis and panel. This unit holds the tuning condenser, which originally formed part of the output tuning circuit of a TUSB unit. The associated drive was retained and used with a 4in. silver-plated dial as normally employed in conjunction with Muirhead drives. The coil is wound on a ceramic former which is mounted on stout metal brackets bolted directly to the chassis. Also mounted inside the shield are the padder and trimmer condensers, grid condenser and leak, and the fixed splitter condensers. The padder and trimmer condensers are on a rigid bracket near the top of the box, adjustment being made through two holes drilled in the lid. All wiring is done with heavy gauge wire



This rear view of the transmitter shows the general layout. All components for the Clapp oscillator with the exception of the cathode choke and resistance are housed in the screening box on the right. The plate condenser for the TTI1 buffer stage can be seen to the left of the valve and is controlled from the panel by means of an extension spindle.

and the leads for grid and cathode are brought out to two ceramic mounted terminals at the rear. The entire V.F.O. assembly should be extremely rigid, and both mechanically and electrically sound. Since the oscillator is an integral part of the transmitter, it is essential that adequate ventilation be provided by a liberal supply of louvres and holes to ensure good air circulation. The careful placement of valves and high-wattage resistors also plays an important role in reducing frequency drift.

The V.F.O.

An EL32 (VT52) tetrode valve was chosen for the oscillator stage, partly for convenience and partly because of its top-cap grid connection. The grid, screen and cathode circuit forms an orthodox Clapp oscillator with a fundamental frequency in the 7 Mc/s. band. The trimmer and padder condensers give plenty of scope as regards the final frequency coverage. The anode circuit is tuned either to 14 or 21 Mc/s. as required, the tuning condenser being a midget 100 µ, F. ceramic, covering both bands with the same coil. Despite the theoretically poor L/C ratio on 14 Mc/s., output on this band is approximately equal to that on 21 Mc/s.—due to the higher efficiency of the valve as a doubler—and there is plenty of drive on both bands for the TT11 (VT501) buffer/doubler. The anode tank coil and condenser are mounted underneath the chassis, permitting a short connection to the grid of the TT11, since in this case the grid pin is in the base of the valve.

The Buffer and P.A. Stages

As the anode of the TT11 comes out at the topcap, this allows another short connection to the tank circuit which is now located above the chassis. In this case, plug-in coils were used, as it was not

^{* 2} Cranleigh Gardens, Southall, Middlesex.

found possible to cover the three bands with one condenser under load conditions. The B.A./F.D. and P.A. stages follow normal practice, except, perhaps, for the operation of the 807's in parallel instead of the more common push-pull condition. Adequate screening of each stage ensures isolation. The only major difficulty encountered was that of eliminating parasitics from these stages, par-ticularly from the P.A. Grid stoppers and anode traps fitted to each of the 807's cured most of the trouble. The anode traps consist of seven turns of 16 S.W.G. enamelled wire wound around 100 ohm resistors. To remove the last trace of V.H.F. parasities, the screen-grid decoupling condensers were placed about four to five inches away from the valve holders, the connections between these condensers and their respective grids being made by means of co-axial cable, earthing the outer braiding at the end furthest from the valve-holders. The TT11 buffer stage was completely cured by the anode stopper R11, although care was necessary in the layout. Similar R.F. chokes in the grid and anode circuits of each stage should be avoided, otherwise L.F. parasitics may occur. Time spent in the removal of parasitics is well repaid by the resulting clean note, free from roughness, chirp and clicks. Should the note still tend to be chirpy, improve-

Should the note still tend to be chirpy, improvement can be made by experimenting with the value of the oscillator bias resistor R2. The suggested value of 1,000 ohms was found to be suitable for the EL32. Increasing the value reduces chirp considerably, but the drive tends to fall.

General

An ex-G.P.O. multi-contact switch is wired to make a two-pole three-way keying switch. This allows for switching on the V.F.O. only for netting purposes (B.A. and P.A. off), keying the V.F.O. for break-in working (B.A. and P.A. on), or, in the third position, keying the B.A. and P.A. simultaneously with the V.F.O. running all the time.

The controls are V.F.O. grid (main dial), V.F.O. plate, buffer plate, P.A. tank, and output loading link control, with the key jack, switch and output co-ax. socket on the bottom of the panel. The meter switch, which is a two-pole four-way rotary, is situated to the right of the meter. It enables a single 30 mA. F.S.D. meter to be used to measure the grid and anode currents of the buffer and P.A. stages. The values of the shunts for each circuit were found by experiment, the grid shunts being 1,000 ohms each and the anode shunts short lengths of resistance wire, obtained from an old wire wound potentiometer. The correct lengths were found by "cut and try" methods with the assistance of another meter. The grid positions read 0-30 mA., the buffer anode 0-120 mA., and the P.A. anode 0-300 mA. Almost any meter could be used, providing the shunts are cut to suit the requirements.

There is a small amount of pulling of the fundamental frequency on trimming the V.F.O. anode circuit, but this proves to be no great drawback as the drive to the B.A. is practically constant over 100 kc/s. of the 14 Mc/s. band with one setting

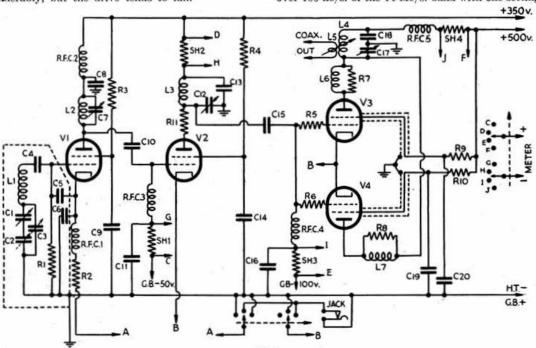


Fig. 1. Circuit diagram of the Table-top Transmitter.

| CI | 50 μμF, variable. | R5, R6 | 100 ohms I watt. |
|--|---------------------------------|------------|---|
| C2 | 50 μμF. trimmer airspaced. | R7, R8 | 22 ohms I watt. |
| C3 | 75 µµF, trimmer airspaced. | R9, R10 | |
| C4 | 100 µµF. ceramic. | RII | 25 ohms I watt. |
| C5, C6 | 750 µµF. ceramic. | SHI, 2, 3, | 4. See Text. |
| C7 | 100 µµF, midget variable. | VI | EL32 (VT52). |
| CIO | 100 µµF. ceramic. | V2 | TT11 (VT501). |
| C1 C2 C3 C4 C5, C6 C7 C10 C12 C15 C17 | 75 μμF, midget variable. | V3, V4 | 807 (CV1060). |
| C15 | 50 μμF. ceramic. | LI | 22 turns on 11 in. ceramic former, spaced to 12 in. |
| CI7 | 50 μμF, variable double-spaced. | L2 L3 | 9 turns on 1 in, former spaced to 2 in. |
| C8, C9, | C11, C13, C14 O1 µF. | L3 | 10 turns on 1 in. former spaced 11 in. (14 Mc/s.). |
| C16, C | 18, C19, C20 5 of pr. | | 4 turns on 11 in. former spaced to 1 in. (21 and 28 Mc/s.). |
| RI R2 | 100,000 ohms I watt. | L4 L5 | Output tank coils for 14, 21 and 28 Mc/s. |
| | 1,000 ohms I watt. | L5 | 2-turn swinging link coil. |
| R3, R4 | 30,000 ohms 2 watts. | L6, 7 | Parasitic Chokes. See Text. |
| | | | |

of the anode circuit. The TT11 operates as a buffer amplifier on 14 and 21 Mc/s., and as a doubler on 28 Mc/s. The 807's can be loaded to about 75 watts with 500 volts H.T.

Power Supplies

The power supply at G3CRK consists of a 500 V., 170 mA. pack, a 350 V., 120 mA. pack, and a 100 V. variable bias pack housed together in another ex-Government case, the output being brought out to 5-pin Belling-Lee sockets. The 500 V. pack supplies the P.A. while the 350 V. pack supplies both the V.F.O. and B.A. stages. Normally the 807's are biased to the full 100 volts available, and the TT11 to about 50 volts. The actual bias to the TT111 should be adjusted so that the 807's receive 6 mA. grid drive.

The total size of the transmitter is 11in. × 7in. (panel) × 11½in. deep, and the black crackle finish gives a commercial looking appearance. Most amateurs will find the bulk of the parts required in their "junk box"—actual expenditure on the



The transmitter is housed in a well-louvred case measuring 11 in. x 7 in. x 11½ in. The V.F.O. dial is inscribed 0-180° and can be conveniently calibrated by graph and abac.

original model amounted to no more than 10s., yet the first two contacts made were with a W7 and a W6, the latter giving an RST 589 report.

S-Meter Operation with Delayed A.V.C. Circuits

By E. B. GRIST, BRS4970 *

ANY amateurs will have discovered that the fitting of an effective S-Meter to their receiver is often complicated by the fact that some system of delayed A.V.C. using the conventional double-diode-triode (or pentode) circuit is employed. In such cases an S-meter connected in a bridge circuit or otherwise, in order to indicate a change of current through an A.V.C.-controlled valve, will not operate until the signal at the A.V.C. diode exceeds the delay bias voltage.

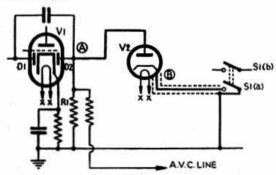


Fig. I.

Circuit for S-Meter operation with delayed A.V.C. circuits. The additional wiring required is indicated by the thicker lines.

The circuit shown in Fig. 1 has been found to overcome this handicap without the need to make sweeping changes to the A.V.C. circuit—an often undesirable and sometimes difficult procedure. It is intended to be used in conjunction with a conventional S-meter circuit fitted to one of the earlier valves. A Mullard EA50 (VR92) diode is mounted on stiff support wires and fixed, as shown in Fig. 2, directly across the valveholder of V1 which is the normal 2nd detector, audio amplifier and A.V.C.

stage. When the switch S1 (a) is closed and a small signal voltage applied to the A.V.C. diode D2, V2 will draw current through the common A.V.C. load resistance R1 so that the receiver will function with a simple undelayed A.V.C. action. With S1 (a) open no current can flow through V2 so that the original system of delayed A.V.C. operates as usual. For convenience the switch S1 (a) may be combined with the S-meter on-off switch, S1 (b) by means of a double-pole, single-throw switch.

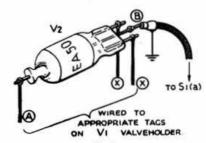


Fig. 2. Sketch showing method of wiring the extra diode into position.

With SI (a) open, the loading on D2, due to the connection of the additional EA50 diode, is negligible and there should be no adverse effect upon receiver performance. When SI (a) is closed there may be a slight drop in receiver sensitivity due to the passing of current by V2 with no signal applied. This minute current could be avoided by connecting the cathode of V2 to a point slightly positive to the chassis but the very small loss involved whilst taking S-meter readings of a signal, makes the extra complication hardly worthwhile.

Noise and Drift Cured

M. E. P. HARRIS, G3GFN, discovered that noise and drift on his S640 Receiver could be cured by removing the EF39 valve from the 2nd I.F. position and substituting for it the EF39 from the B.F.O. position. As no other EF39 was available an H63 was used for the B.F.O. and this was found to work perfectly.

The noise and drift, apparent only in the C.W. position, took place during the "transmit" period and was so bad that signals drifted outside the audible range.

Oakways, Domewood, Copthorne, Sussex.

SINGLE-SIDEBAND TRANSMISSION APPLIED TO AMATEUR TELEPHONY

PART II.—TRANSMITTING AND RECEIVING CIRCUITS

NDOUBTEDLY the biggest problem that confronts the radio amateur when designing a single-sideband transmission system is the filtering of the unwanted sideband following the modulation processes employed; it being impossible to design and construct filters having the efficiency of those used in commercial transmitters and to which a great deal of the success of the systems in use is due.

By N. G. HYDE*

For this reason the phase-balancing method of sideband elimination will probably offer most advantages, and a sideband generator employing this principle will be described here. Descriptions of transmitters using the sideband filter and phase rotation systems have recently appeared in QST (6) (7) (8) (9).

carrier source. The potentiometers VR1 and VR2 adjust the gain and balance of the G.G.T. stage, being adjusted so that about 10 V. R.F. appears across R5 and R6.

Since the cosine voltage (i.e. that obtained across the 90° R.F. phase shift circuit) will tend to be lower than the sine voltage across R2, it is necessary to provide a limiter before feeding these voltages to the balanced modulators. The IN34 crystal rectifiers (X1, X2) in the grid circuits of V2 provide this limiting action, ensuring that equal voltages are fed to the cathodes of each balanced modulator.

Thus the second twin triode V2 acts as a limiter and cathode follower, preventing unbalanced voltages from being fed to the balanced modulators, and matching the previous G.G.T. stage to the balanced modulators.

The twin triodes V3 and V4 are balanced modulators, with cathode input of the R.F. voltage. Coils L4, L5, L6 and L7 are similar and are wound with primary and secondary inductance of 50µH. and 25µH. respectively, the primaries being centre-tapped and the coils balanced primary-to-secondary. They should have a low self-capacity.

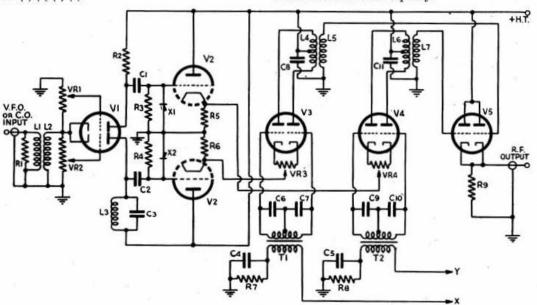


Fig. 6.
Single-Sideband Generator. Radio frequency Stages.

| RI | 100 ohms. | C1, 2, 6, 7, 8 | | T1 2 | Line-to-line transformers. |
|----------------|---------------------------------|----------------|-------------|-----------|-----------------------------------|
| R2, 3, 4 | 5.000 ohms. | 9, 10, 11 | 500 µµF. | T1, 2 | Each 20 turns 16 S.W.G. enam. |
| R5, 6, 7, 8, 9 | | C3 | (See text). | | 1 in. dia, 2 in. long interwound. |
| VRI, 2, 3, 4 | 500 ohms carbon potentiometers. | C4, 5 | 8/4F 450 V. | L3 | (See Text) |
| VI, 2, 3, 4, 5 | 6SN7. | X1, 2 | IN34. | L4, 5, 6, | 7 (See Text) |

Single-Sideband Generator (10)

Referring to Fig. 6 it will be seen that output from a V.F.O. or crystal oscillator having a frequency in the 14 Mc/s. band is fed into a grounded grid amplifier (V1), the out-of-phase voltages being developed in the output circuits (due to the parallel tuned circuit L3 C3) which should be of high Q and tuned to a frequency not less than 1.5 times that from the

* N. G. Hyde, Assoc.Brit.I.R.E., Earlston, Beacon Road, Crowborough, Sussex. V5 mixes the output from the balanced modulators, R.F. output being obtained across the cathode resistor (R9).

The A.F. amplifier (Fig. 7) consists of one half of V6 feeding the other half as a cathode follower, the output of which feeds a resistance-capacity bandpass filter, limiting the frequencies passed to approximately 130–3600 c/s. The purpose of this filter is to limit the frequency range applied to the A.F. phase shifter since the phase shift is not constant

over the entire speech band, distortion resulting if frequencies lower and higher than these are transmitted.

Operation of Phase Shift Circuit

The 90° audio phase shift is obtained from the two R.C. networks following each half of V8, these being designed to have a phase shift of $(180 + 45)^{\circ}$ and $(180 - 45)^{\circ}$ at a mean frequency within the speech range—in this case 700 c/s. This gives a total phase shift of 90° between the audio voltages applied to each balanced modulator, the phase difference being fairly constant over the range of speech frequencies passed by the audio filter. In the design shown, the circuit following the upper half of V8 has a phase shift of $(180 + 45)^{\circ}$, and the lower half that of $(180 - 45)^{\circ}$.

(1) The local oscillation can be equal to the (suppressed) carrier frequency and introduced into the receiver R.F. stages. In this case, a high stability V.F.O. such as that used in the BC221 frequency meter can be employed, the output being injected into one of the R.F. grid circuits through a loose coupling.

(2) The B.F.O. can be used to re-insert the carrier in the I.F. stages. In this case the B.F.O. is adjusted so that its frequency is the same as the I.F. Alternatively, an external oscillator may be used to inject

a voltage at the intermediate frequency.

(3) Although both the elementary systems of carrier re-insertion mentioned above are workable, they are, at the best, makeshift arrangements, and a system of balanced frequency conversion is recommended.

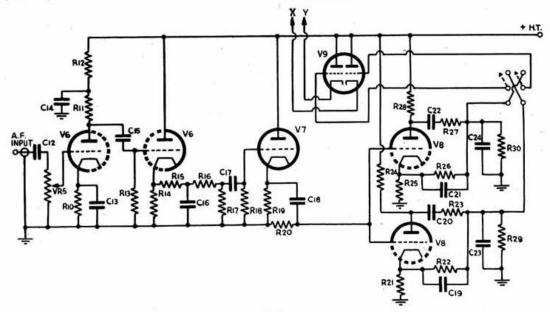


Fig. 7.

| Single-Sideband | generator. | Audio frequency | and phase shift stages. |
|-----------------|------------|-----------------|---|
| | | | A CONTRACT OF THE CONTRACT OF THE PROPERTY OF THE |

| R10, 14, 19 R11 R12, 15, 16, | 750 ohms. 50,000 ohms. | R22, 23, 27 R26 R29, 30 | 20,000 ohms \pm 1%. 120,000 ohms \pm 1%. 60,000 ohms \pm 1%. | C17 C19 C20 | -05 μμF. -00403 μμF -0242 μF | |
|------------------------------------|---------------------------|-------------------------------|--|-------------------|------------------------------------|-------|
| 17, 18 | 10,000 ohms. | VR5 | I Megohm potentiometer | C21 | ·000892 µF | ± 2% |
| 17, 18 R13 | 0.5 Megohm. | C12, 15 | IμF. | C22 | ·00535 µF | T 1/0 |
| R20 | I Megohm. | C13, 14, 18 | · IµF. | C23 | +00806 µF | |
| R21, 24, 25, | | C16 | .005 µµF. | C24 | ·001785 µF | |
| 28 | 2,000 ohms ± 5%. | 8787 | 1000 | 25437 | 27022509004 | |

Data on the design of a phase shift circuit similar to that used here will be found in reference (5).

A switch is incorporated in the output of the phase shifter to enable either the lower or upper sideband to be selected by reversing the phase of the A.F. voltage applied to the balanced modulator grids. Approximately 1 V. of A.F. should appear at this latter point.

The single-sideband output from V5 (Fig. 6) should be fed to linear or Class B amplifiers to raise the power to the desired level, the first stages preferably being operated as Class A, and the final under Class B conditions.

Reception of Single-Sideband Telephony

As explained in Part I, the demodulation of singlesideband telephony involves frequency conversion, rather than rectification, this being achieved by the introduction of a locally generated carrier having a high order of frequency stability.

Methods of re-inserting the carrier, which are applicable to amateur communication receivers are:

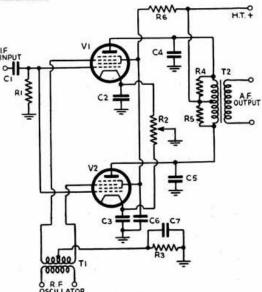
Balanced Frequency Convertor

The balanced frequency convertor replaces the normal diode second detector in a superhet receiver, and a typical circuit is shown in Fig. 8.

In this system, the local oscillator modulates the incoming signal from the last I.F. amplifier, generating upper and lower sidebands of frequency equal to the sum and difference of the intermediate (I.F.) and oscillator frequencies. The lower sideband is the required audio frequency.

The balanced convertor has the advantage that distortion, caused by partial rectification due to curvature of the valve characteristics, is minimised, since each valve produces exactly the same amount of distortion, and this cancels-out in the push-pull anode circuit. As the local oscillator voltage is fed to each grid in anti-phase, the resultant voltages, due to modulation, add up.

To adjust the convertor, the local oscillator is first switched off. A normal amplitude modulated D.S.B. transmission is then tuned in, the receiver gain being advanced so that the modulation "breaks through," and is heard at the output of the convertor or succeeding A.F. stages. The cathode bias potentiometer is then adjusted until audio output is at a minimum.



Although 6L7 valves are shown in the ciruit, it should be possible to make use of R.F. pentodes, the oscillator voltage being injected in anti-phase to the

suppressor grids.

This method of demodulation also has the advantage over the two previously discussed in that interference due to adjacent A.M. transmissions is minimised. With the simpler systems this can only be done by keeping the amplitude of the injected voltage large compared with that of the signal, which necessitates working with reduced R.F. or I.F. gain, under which conditions the receiver may not have adequate sensitivity. If the re-inserted carrier is not of the correct frequency, received speech will either be inverted, or high or low pitched. Adjustment of the local oscillator frequency is necessary until the speech sounds natural.

The only component used in the circuit that requires comment is T1, the transformer feeding the local carrier to the 6L7 injector grids. For this a 465 kc/s. discriminator transformer may be used.

While these articles deal very briefly with the technique of single-sideband working it is hoped that they may be a guide and will prove of some value to those who are new to this method of transmission.

References

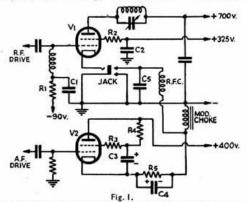
- (6) QST. January, 1948. "A Single-Sideband Transmitter for Amateur Operation." Nichols.
- (7) QST. May, 1948. "What about Single-Sideband?" Norgaard.
- (8) QST. June, 1948. "A new approach to Single-Sideband." Norgaard.
- (9) QST. November, 1948. "A simple Single-Sideband Transmitter." Villard.
- (10) Radio and Television News. December, 1948. "Single-Sideband Generators." Watkins.

Parallel Cathode Modulation

THE April, 1949, issue of Amateur Radio—the journal of the Wireless Institute of Australia—contains an interesting article on the comparatively little-known system of parallel cathode modulation. The author—Gordon N. Harley, VK4GH—stresses the value of this system to amateurs who wish to obtain good quality telephony without the use of an expensive modulator, although the efficiency is, of course, lower than what can be achieved with plate modulation. The simple cathode connection between modulator and P.A. should particularly appeal to amateurs who occasionally require to use a C.W. transmitter for telephony operation.

The parallel cathode system is yet another application of the familiar "cathode follower" circuit and eliminates the need for a matching transformer. Since the modulator has almost 100% degenerative feedback, distortion in this stage is greatly reduced. Audio output of the modulator should be approximately 10% of the power input to the P.A.

The practical circuit described by VK4GH is shown in Fig. 1 and uses two 807 tetrodes for an input of up to 60 watts. For greatest efficiency the P.A. stage should be operated near the maximum plate voltage permissible for normal Class C telegraphy and P.A. bias should be at least three times cut-off value. In order to avoid hum modulation of



VK4GH's circuit for parallel cathode modulation of an 807 P.A. Cl, C2 · 01 μ F. R1 25,000 ohms C3 8 μ F. R2, R3 100 ohms C4 25 μ F. R4 50,000 ohms C5 100 μ F. R5 Bias resistor (see text) VI, V2 807

the grid of the P.A., a well-smoothed power supply for the buffer or driver stages is desirable. Due to the degenerative feedback in the modulator, the audio input voltage to this stage must be higher than would otherwise be the case, but even so, only a comparatively simple speech amplifier should be required.

Other circuit values are conventional.

In operation some adjustment of the aerial coupling, which should be fairly tight, may prove necessary, although too heavy coupling will reduce efficiency. The modulation choke must be capable of carrying the combined plate and screen currents of the P.A. and modulator valves. In the circuit shown the modulator bias resistor (R5) and by-pass condenser (C4) were unnecessary as sufficient bias volts were developed across the modulation choke. However, to increase the bias, where necessary, an appropriate resistor and condenser could be inserted as shown.

Appreciations

THE General Secretary and Headquarters' Staff thank all members who sent them Christmas and New Year Greetings. Their tokens of remembrance were warmly appreciated.

POST OFFICE EQUIPMENT at the Amateur Radio Exhibition

By J. H. L. COHEN and E. F. MUNT

In addition to its licence and control work, with which amateurs are familiar, the Post Office Engineering Department is concerned with many radio installations of its own, ranging from large transmitting stations for overseas services, as at Rugby, to simple sets for linking small isolated communities with the main telephone network of the country. The stand at the R.S.G.B. Amateur Radio Exhibition held in London from November 23 to 26, 1949, was arranged to show some examples of the general radio work of the Department, besides providing an information service to help the amateur in his licensing and interference problems.

V.H.F. and S.H.F. Work

Several of the exhibits were concerned with the higher frequency part of the radio spectrum, exemplifying the increasing use of these frequencies for short-distance services. A simple two-way battery-operated V.H.F. equipment designed for communication to small communities on islands and in other isolated places was shown. The shore end is arranged to work into a normal telephone exchange. Economy in the use of the batteries in idle periods is obtained, at the expense of slight delay in calling, by having the receivers switched on only intermittently, for a brief period every half minute. In the calling condition the transmitter at the calling end is energised and this is, in due course detected by the receiver at the called end. The circuit is then completed automatically.

The extension of the B.B.C. television service to provincial centres necessitates the provision of high quality television links between the various centres and work is being carried out on both line and radio methods of relaying television. A demonstration 10,000 Mc/s. radio link employing frequency modulation was on show. Klystron oscillators are used in both the transmitter and the superheterodyne receiver of this equipment and the aerials at each end are of the shielded lens horn type.

Another effect of the spread of television is to focus attention on the problem of V.H.F. interference. It is becoming increasingly important that transmitters operating at lower frequencies should not radiate harmonics in the V.H.F. band, and at the exhibition a method of measuring the harmonic output of a transmitter was shown. The output of the transmitter was fed into a length of high-loss cable, to reduce the levels of the various frequency components to values suitable for measurement by means of a calibrated receiver.

Transmission Line Demonstration Set

A transmission line demonstration set made for use at the Central Training School of the Department aroused much interest.

The apparatus consists of a signal generator unit providing an R.F. output power of 50 watts at a frequency of 150 Mc/s. This output is fed into either a twin, open-wire transmission line, or into a coaxial transmission line, both lines being made up of low-power festoon lamps connected in series. The brilliance of the lamps indicates the current magnitude at any point, thus the current distribution along the line can be demonstrated under various conditions of impedance termination.

The signal generator (see Fig. 1) consists of a 12.5



Demonstration Transmission Line

Me/s. crystal-controlled oscillator and chain of frequency multipliers. Power supplies are derived from two-valve rectifier units providing 300 V. and 600 V. H.T., respectively. The 300 V. H.T. supplies the first three valves and the screens of the last two, while the 600 V. H.T. supplies the anodes of the last two valves of the signal generator.

Two-wire transmission line consists of two parallel legs of 6 V., 3 watt automobile traffic indicator lamps connected in series, each leg containing 39 lamps and being 140 cm. in length. The two legs are spaced so that the separation of the lamp filaments is 2.5 cm. (corresponding to the axial distance between the conductors of a typical two-wire line). The ends of the line are terminated in plug sockets for easy connection to the signal generator and line-terminating impedances. The lamps of each leg of the line are held in slotted insulating material to provide a rigid mechanical support. The construction of the coaxial transmission line is similar to the two-wire line, except that lamps supported in the insulating tube are surrounded by a slotted copper tube corresponding to the normal coaxial cable outer conductor. line length is 140 cm., and 39 lamps are used in the centre conductor. The calculated constants of both the coaxial and balanced lines are shown in Table 1.

The principal termination for the two-wire line consists of two carbon resistors each of 215 ohms resistance, connected in series, by a 2 · 5 V. 0 · 3 A. lamp acting as a current indicator. This resistance unit is



Fig. 1. Block schematic diagram of Signal Generator.

connected across a parallel tuned circuit, the whole being arranged to fit into sockets on the end of the balanced line. A second termination for the balanced line consists of a quarter-wave section with a characteristic impedance of 183 ohms which is used as a transformer to convert from the line impedance of 430 ohms to 78 ohms. This matching section can be terminated in either a 78 ohm resistor or a half-wave dipole resonant at 150 Mc/s. Similar terminations are available for the co-axial line, except that the matching transformer is a length of 75-ohm coaxial cable which feeds a 45-ohm load.

By connecting the two-wire line to the signal generator, it is possible to show that a standing-wave pattern is produced when the line is either open or short-circuited, the difference between these two conditions being a phase-shift of the pattern along the line. Furthermore, when the combined tuned circuit and resistance unit is connected across the line, mismatching the line reactively, produces standing waves, and the current through the load is less than in the matched condition. The two-wire line can also be matched down to the half-wave dipole by means of the quarter-wave matching section.

The length of the arms of the dipole can be varied in order to show the necessity for exact tuning to give it a purely resistive input impedance of 78 ohms. Similar demonstrations can be made with the coaxial line and its associated terminations.

Table 1. Electrical Constants of the Transmission Lines.

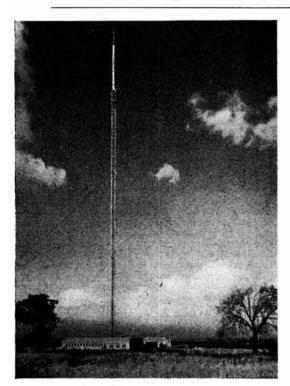
| Constant | Twin Line | Coaxial Line |
|---|---|--|
| Inductance per metre Capacity per metre Resistance per metre Phase constant Attenuation per metre Characteristic Impedance Wavelength on line Velocity of Propagation | 2·04 µH. 11·16 µµF. 314 ohms 4·51 rads/metre 3·24 db. 430 ohms 139 cm. 2·08 × 10 ⁸ metres/sec. | $\begin{array}{l} 0\cdot 77~\mu\mathrm{H.} \\ 50\cdot 23~\mu\mu\mathrm{F.} \\ 157~\mathrm{ohms} \\ 5\cdot 9~\mathrm{rads/metre} \\ 5\cdot 2~\mathrm{db.} \\ 125\cdot 3~\mathrm{ohms} \\ 106\cdot 5~\mathrm{cm.} \\ 1\cdot 597~\times 10^8 \\ \mathrm{metres/sec.} \end{array}$ |

Acknowledgment

The authors' thanks are due to the Engineer-in-Chief of the Post Office for permission to publish this article.

SUTTON COLDFIELD

The recent opening of the Sutton Coldfield transmitter—the most powerful of its kind in the world—has focussed attention on the latest advances in television transmission technique. Here, by kind permission of the B.B.C. and the General Electric Company Ltd., are brief technical details of the station and the microwave relay which together have restored to Britain its lead in the development of television.



THE new B.B.C. television transmitting station, officially opened on December 17, 1949, occupies a 24-acre site adjoining the main Birmingham-Lichfield road, some $2\frac{1}{2}$ miles north of Sutton Coldfield. The vision transmitter operates on a carrier frequency of 61.75 Mc/s. and its normal peak power output is 35 kilowatts with positive amplitude modulation.

The sound transmitter, which is amplitude modulated, operates on 58·25 Mc/s. and has a power of 12 kilowatts. The altitude of the station is 550 feet, which, with the 750-foot mast, brings the transmitting aerial to a height of 1,300 feet above sea level. The first-class service area of the station is expected to have a radius of about 50 miles.

The Mast

The mast has an all-up weight of 140 tons and is the tallest yet erected at any B.B.C. station. The base is located by a steel ball in a socket which forms a pivot to allow angular movement of the mast in high winds. Up to the 610-foot level the cross-section is triangular, each face being 9 feet across. Between 610 feet and 710 feet the cross-section is circular. The eight tiers of four slots in the surface of this part will form an aerial for possible V.H.F. sound broadcasting. Above the circular section is a short square-section topmast which supports the television aerial. Four sets of stays provide a high factor of safety even under the most severe conditions, including a possible coating of ice ½-inch thick simultaneously with a wind pressure approaching 60 lb./sq. ft. A lift inside the mast runs between the ground and the 610 foot level.

Vision Transmitter

The transmitter, which has an overall length of 38 feet, is the most powerful vision transmitter yet built anywhere in the world. Its peak output power of 35 kW. is more than double that of Alexandra Palace. The radio-frequency section comprises:

 Drive Unit consisting of a crystal oscillator and two stages of frequency multiplication.

 Low-power stages, consisting of a pentode stage, a push-pull tetrode stage, and a push-pull earthedgrid triode stage.

 Driver stage, consisting of two ACT26 triodes in a conventional class-C, push-pull, neutralised amplifier.

4. Final modulated output stage, consisting of two CAT21 triode valves in an earthed-grid, linear, wideband amplifier, with parallel-line circuit elements. This stage is grid-modulated, and its output coupled to the feeder through a balance-to-unbalance band-

pass circuit.

The valves in the R.F. stages are air-cooled except for the P.A. valves which are water-cooled. vestigial sideband filter is connected between the output of the vision transmitter and the aerial feeder in order to give the asymmetric sideband characteristic that is to be adopted for all future B.B.C. television stations operating between 41 and 68 Mc/s.

Sound Transmitter

The sound transmitter has an average carrier power of 12 kW.-4 times that of A.P.- and employs high-power class-B modulation. The drive unit is similar to that for the vision transmitter. The first three R.F. stages are push-pull amplifiers, and the output stage consists of a single BR128 valve in an earthed-grid coaxial-type circuit. This stage is anode modulated, and its output is coupled to a second concentric feeder leading to the aerial. All valves are air-cooled; elaborate air-blowers with thermostatically controlled motor-driven dampers being used for each transmitter.

Both transmitters are operated from a single control desk. Windows between the control-room and the transmitter hall afford the engineer on duty a clear view of the transmitters. In the centre of the desk is a waveform monitor, which can be switched to the output of each stage in the modulator and also to a pick-up probe in the output circuit of the modulated R.F. amplifier. Facing the control desk is a high-grade picture monitor, on which can be displayed the picture at the modulator input and output and also the picture as radiated.

Aerial

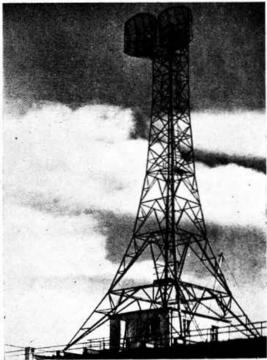
A single aerial array, which radiates the sound and vision signals, consists of eight vertical folded dipoles stacked in two groups, one a wavelength above the other. Each of the four dipoles in the two groups is mounted on one face of the topmast, the dipoles on opposite faces being approximately twofifths of a wavelength apart. The average gain of the aerial in a horizontal direction is 4 db. The dipoles are constructed of galvanised steel strip, 10 inches wide, and incorporate 71-kW. heaters to prevent ice

formation.

The 51-ohm concentric feeders have an outer diameter of 5 inches and incorporate an expansion joint every 150 feet to accommodate changes in length caused by temperature variations. Dry air is blown continuously through the feeders to prevent condensation. The two feeders terminate in a device known as a "diplexer" which combines the sound and vision signals. The vision-signal currents in the north, east, south, and west dipoles in both tiers are phased 0°, 90°, 180°, 270°. Similarly, the sound-signal currents are phased 0°, 270°, 180°, 90°. Com-pared with feeding all the dipoles in phase, this method not only increases the power gain of the aerial but also results in a more constant input impedance and permits the single aerial array to be used for sound and vision with the minimum of interaction.

The London-Birmingham Link

The London-Birmingham television radio-relay link has been designed, manufactured and installed by the G.E.C. to a specification set by the G.P.O. The London terminal is at Museum Telephone Exchange, Howland Street and the Birmingham terminal at Telephone House, Newhall Street. There are repeater stations at Harrow Weald,



London terminal tower on Museum Telephone Exchange, Howland Street, London.

Dunstable, Blackdown and Rowley Regis. present system uses two frequencies of transmission; 870 and 890 Mc/s. A station which receives on 870 Mc/s. transmits on 890 Mc/s. and vice versa. When complete, simultaneous two-way transmission of television signals will be possible; the additional frequencies of 917 and 937 Mc/s. being employed. These frequencies correspond to wavelengths around 33 cm.

The power transmitted from each station is of the order of ten watts, and the received power for freespace propagation over a 40 mile path is just over a microwatt. Thus the gain of a repeater station is 70 decibels or 10,000,000 to 1 in power. The 14-foot diameter paraboloid aerial arrays have a gain of 27.5 decibels over a half-wave dipole. Each transmitter consists of a master oscillator (DET24), first R.F. amplifier (DET24), second R.F. amplifier (ACT25) and a modulated or frequency-changer stage (ACT25). In addition, there is a DET24 frequency-shifter stage for the derivation of localoscillator power, together with its associated 20 Mc/s. crystal-controlled shift-frequency generator.

The receivers use silicon crystal frequency-changers, local oscillator power being fed from the transmitter via a filter consisting of two cavity resonators. The I.F. amplifier consists of two stages each using a pair of Osram E1714 low-noise triodes, followed by five stages each using a pair of Z77 pentodes, the output stage being a cathode follower employing a pair of Osram 1820 valves.

"Voice of America"

ROM 1915 to 1930 G.M.T. every Sunday, a Radio Amateurs' programme is transmitted from the United States on the following frequencies: 9690, 11,790, 15,250, 15,270, 17,780, 21,500 and 21,650 kc/s. The programme is relayed by the B.B.C. on 267 metres (1122 kc/s.) and on a number of short-wave channels, including one in the 7 Mc/s.

AUTOMATIC CHANGE-OVER

By FRANK W. JEFFERIES, B.A. (G3DJR)*

·HE need for some form of automatic changeover from receive to transmit positions, and vice versa, originally arose from the fact that G3DJR is installed in a school where the only power supply available is 220 V. D.C. mains. The final system, as evolved is, however, equally suitable for either A.C. or D.C. equipped stations. At G3DJR the problem of H.T. supply has been solved by using the mains, suitably filtered, for all valves except the power amplifier. H.T. and bias for this stage is obtained by means of a generator working from a 24 V. battery. Early in the history of the station, it was found that, in the presence of a sometimes considerable number of spectators, the operator was prone to overlook one of the various switching operations when changing over from receive to transmit. These operations consisted of: switching the aerial; muting the receiver; switching on the V.F.O. and transmitter; starting the generator. To simplify matters it was decided to provide a train of relays to carry out all these functions at the first touch on the key. At any lengthy pause in the keying, the station would revert automatically to receive conditions. To achieve this latter result it was realised that a delay system would have to be introduced in order to prevent the change-over from taking place during normal breaks in keying such as occur between letters and words.

A Simple Delay System

As the valve heaters were run in a series-parallel arrangement from the mains, determined by the 0.9 A. required by an 807, the addition of an extra 0.3 A. valve for any form of electronic delay was not considered practicable. Instead, the extremely simple delay circuit of Fig. 1A which relies upon the com-

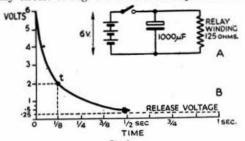


Fig. 1. Rough sketch of the discharge curve of a condenser. Voltage drops to about one third of its maximum value in t seconds where t=RC (Ohms and Farads).

paratively slow discharge of a large capacity condenser, was adopted. For this purpose the most sensitive relay available in the oddments box was chosen, and all but one pair of contacts removed. The D.C. resistance of its winding was 125 ohms, and it was found to release when the actuating current dropped below 2 mA., that is, when the voltage across the winding fell to approximately 0·25 V. A brief consideration of a roughly drawn exponential discharge curve (Fig. 1B) and of the time-constant formula:

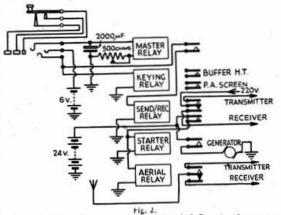
 $t=RC=125\times 1000\times 10^{-6}=\cdot 125$ sec. gave an indication that, with a capacity of some $1000~\mu\mathrm{F}$, and a supply of 6 V. (already in use for a keying relay) the master relay would still have 2 V. across it \$\frac{1}{2}\$th second after the supply circuit was broken, and would release a considerable time later. Avoiding further mathematics, practical tests with a number of 250 $\mu\mathrm{F}$, electrolytic 6V. working con-

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densers, showed that a release delay of about one second was obtained when the capacity was 2000µF. This delay was extended and made adjustable by the inclusion of a 500 ohm variable resistance in series with the relay winding.

The Relay Train

To operate the master relay, an additional pair of contacts was fitted on the key, as shown in Fig. 2, closing at the same moment as the normal keying contacts. (The need for these additional contacts



The relay train. For stations equipped with A.C. mains the starter relay would be omitted, and the aerial relay used would be of the same voltage as the rest of the train.

could probably be eliminated in most cases by using for this purpose one of the two sets of contacts on the keying relay, and keying only one stage of the transmitter—Editor.) The complete train of relays is also shown in Fig. 2. The keying and the send/receive relays have 25 ohm windings; obtained, as were the 250 µF. condensers and the 500 ohm wirewound variable resistance, from ex-A.M. Units B.R. Mk. 11. The aerial relay is also a modified ex-Service type, and is energised by the 24 V. battery used for the generator and its associated starter relay which has massive contacts to deal with the heavy initial current. As shown the battery is switched straight to the generator; this is permissible as NiFe cells are used.

As soon as the key is pressed to call or answer a station, the master relay closes. This in turn energises the send/receive relay, which, with one set of contacts switches the H.T. from receiver to transmitter, and, with its second set of contacts, closes the 24 V. circuit to the remaining two relays. At G3DJR it requires about three seconds for the generator to reach its correct running speed, after which the transmitter may be keyed normally. Should the key be held open for longer than the release delay time, the best value of which has been found to be about 1½ seconds, the master relay opens, and the station reverts to the receive position.

In practice, despite the slight delay, it is seldom that the distant station starts his reply before the home station is ready, while, if a similar system were employed without the added complication of starting and stopping a generator, the change-over period could be made even shorter and it would probably be possible to adjust the delay in order to listen for break-in operation between words. With telephony operation, the key is used as a press-to-talk switch, the delay condenser being switched out of circuit.

In the Workshop

By "DONEX"

There must be many members, both B.R.S. and licensed amateurs, who spend almost as much time in the "workshop" as they do in listening or on the air. For, despite the availability of commercially-built equipment, the fascination of home construction remains an integral part of Amateur Radio. All members, whether they have access to fully-equipped engineering workshops or are confined to a corner of the kitchen table, will therefore welcome this new series of articles, which are being contributed by an amateur of considerable experience, and which will cover the practical aspects of radio construction. Suggestions from members for future articles in this series will be appreciated.

T has long been considered a fundamental principle of Amateur Radio that every enthusiast should be capable of constructing the apparatus used in his or her station, even if, in practice, commercial equipment is employed. This should be especially true to-day, when there is comparatively little opportunity for the amateur to compete with the technical research carried out by large organisations. It is in the field of construction and practical design that the amateur still possesses one great advantage over his professional colleague: he is not constantly confronted with the necessity of cutting down the time spent on production in order to reduce labour costs. Despite recent progress there still remains almost unlimited opportunities in the development of amateur equipment: for example, full advantage is not yet being taken of the wide range of miniaturised components now available, perhaps because of the additional skill in construction which is required. So before the amateur can establish a tradition of craftsmanship-and that surely should be his aim-it is necessary for him to acquire a sound knowledge of the fundamental processes involved in the construction of radio equipment: the use and care of tools; the handling of metal; tapping; soldering; and the basic elements of sound workshop practice.

First Essentials

What is the first requirement for setting up and running a small workshop, or workbench? Unhesitatingly the answer is tidiness, or perhaps, more correctly, orderliness: to some a gift; to others a matter of sweat and tears. The less space available, the more important does this become. How frequently, in the amateur shack, is to be seen a drawer full of tools and a tangle of wire, with the entire stock of nuts, screws, and small odds and ends strewn at the bottom. Such a practice results in an enormous waste of time and energy, and renders the production of good work almost impossible. The first essential, then, is to cultivate a sense of orderliness, so that at all times you know exactly where to find the tool or part required.

If a permanent bench is available, erect at the back a vertical framework liberally sprinkled with spring clips (obtainable cheaply from the chain stores). The clips should carry all the most frequently used tools, such as files, screwdrivers, saws, etc., in an orderly and logical array which invites their immediate replacement after use. A flap of American cloth to draw over the tools from the back is a minor, but useful, refinement in the case of an outside shack.

If it is not possible to maintain a bench for your own exclusive use, then it will be necessary to press the kitchen table or some other convenient spot, into service. In this case it will prove well worthwhile to invest in a decent tool box. Suitable containers can often be obtained cheaply from surplus stores. The box selected should preferably contain a couple of trays in which tools can be conveniently.

stored, but, in their absence a little ingenuity should

be employed in arranging clips to hold tools in the lid or back of the box. If possible, one of the trays should be divided up to take the stock of screws, nuts, and all the other small parts which are such an invaluable part of the stock-in-trade of the constructor.

Tools

At this stage it may prove useful to provide a list of "essentials" for a small workshop, together with a list of "desirable" additions to be obtained if and when the exchequer permits:

| Essentials | Desirable |
|--|--|
| Engineer's vice, 3 in. | Engineer's vice, 4 in., swivel ling. |
| Lead or copper jaws, for above Screwdrivers: | mig. |
| 12 in., 9 in., 6 in. | Ratchet, 9 in. self-holding. Set of watchmaker's screw drivers. |
| Scriber, double ended. Dividers, 5 in. Steel rule, 12 in. Hand drill (up to ½ in.). Brace. | |
| Hacksaw (not less than 12 in.). Splitting saw, with blades. | Breast-drill to take ½ in. Carpenter's brace. |
| Files: 12 in. milling file. 10 in. half round. 8 in. rat tail, ‡ in. 6 in. 3-cornered. Taps: 2, 4, 6, BA with wrench. Dies: | Complete set of taps and dies in wooden case, 0, 2, 4, 6, 8, BA. |
| 2, 4, 6, BA, with stocks. Twist drills: $\frac{1}{2^{k}}$ in. to $\frac{1}{4}$ in. by $\frac{1}{2^{k}}$ in. Rose-bit (countersink) Scriber. | Set in stand ½ in. to ½ in. Expanding bit, to 1½ in. for wood. Die-punch for ½ in., 1½ in., 1½ in. |
| Tank cutter (to 3 in.) Soldering iron, 60 watts, pencil bit. Pliers: 6 in. parallel jaws. 6 in. long-nosed. 4 in. round nosed. Cutters: 6 in. side cutters. Tinman's snips: Not less than 9 in. Pipe grips: Not less than 9 in. Centre punches: Small. | 6 in. end cutters. |
| Medium Set spanners, 2, 4, 6, BA Box spanners, 2, 4, 6, BA | Set of "Spintite" box span- ners. Tweezers, |

Elaborate tools are seldom necessary in general radio construction, and should be avoided by the novice even if he has money to invest in them. For instance, an electric drill, though a spectacular possession, rarely—in the hands of a beginner-drills holes in the right places: besides being almost a lethal weapon. Similarly, elegant die-punches for

valveholder holes are expensive and generally require a separate die for each size of hole: a tank cutter, carefully and properly used, will provide a more than adequate substitute at about a quarter of the cost. On the other hand any attempt to save money on the basic tools may prove false economy. Do not waste money on, for example, cheap files or—more particularly—cheap twist drills. The annoyance of endeavouring to get on with a job involving frequent drilling with a twist drill which requires sharpening after every second hole (even if you do happen to know how to sharpen a twist drill) is enough to take the edge off the most ardent enthusiasm.

There is no really effective substitute for an electric soldering iron although in earlier days some beautiful work was done with a copper bit and resinflux. A small hand-grinder of some kind is also nearly indispensable, as it is almost impossible to sharpen broken twist drills, screwdrivers, etc.,

without one. Many of the small rotary converters now on the surplus market will run—at low efficiency—from A.C. mains and can be adapted to drive a two or three inch carborundum wheel quite effectively. Another useful accessory which will appeal to those members who have incurred severe domestic wrath by covering the carpet with splashes of solder, is a sheet-tin tray about 2 ft. by 1 ft. with a turned-up rim approximately 1 in. high. Almost any tinsmith would be willing to make one for a few shillings: as a peace-saver it will prove well worth the cost!

Readers who have encountered constructional difficulties which they feel might prove of general interest, or who have discovered some useful hints applicable to workshop practice, are cordially invited to write to "Donex," c/o Headquarters. All suggestions as to the type of information, hints or instruction which you would like to see included in this feature will be most carefully considered.

New E.M.I. Developments

CPEAKING at the eighteenth annual general meeting of Electric and Musical Industries, Ltd., the Chairman-Sir Alexander Aikman, C.I.E.disclosed that the company has recently developed the first successful method of supplying television relay services by wire to a number of homes from one central receiving station. At present the system is operating under an experimental licence but it is hoped later to obtain permission to develop the scheme on a commercial basis. He also announced that the company intend to market a new type of dictating machine for office and portable work. This equipment which will use the magnetic tape principle will enable anyone to record a spoken message on a paper disc which can then be folded and mailed in an ordinary envelope. Sir A. Aikman forecast that the next country to establish a television service would probably be Australia.

British T.V. Equipment in U.S.A.

A MONG the items of television equipment demonstrated by Pye Ltd., in Washington on November 21 last, was the multi-core television camera cable produced by British Insulated Callender's Cables Ltd. This single cable, with a diameter of less than \$\frac{2}{8}\$ in., has been designed to carry not only video signals, but all the control signals, power supplies and telephone circuits required for outside broadcasts. It is, therefore, the only link necessary between the camera and the control van, and enables almost unrestricted movement of the camera for distances up to 1,000 ft. It is hoped that the demonstration in Washington will pave the way to considerable export of British television equipment to the United States.

Amateur Radio in Germany

A FTER four years as organising secretary for Amateur Radio in the British Zone of Germany, Major R. G. Shears (G8KW, DL2KW, DL4KW) has now relinquished the post. Major Shears who is due to leave Germany shortly will take with him the good wishes of the many hundreds of amateurs with whom he has come into contact either as a result of this work or over the air. In future all enquiries relating to licences in the British Zone should be addressed to: Radio Section, Posts and Telecommunications, Bad Salzufien, B.A.O.R. 15.

Mr. E. G. Styles (DL2GU), P.W. and D.P. Branch, 120 H.Q. C.C.G. (B.E.), Brunswick is to continue his good work as QSL Manager. The latest list shows that 102 DL2 call-signs were in force at the beginning

of December.

More about the VCR517

R. G. P. ANDERSON, G2QY, has commented upon the suggestion made by BRS7553 and published in the December issue of the Bulletin regarding the use of the VCR517 for television. While agreeing that this tube provides a picture of more pleasing appearance than the rather violent green of the VCR97, Mr. Anderson (who has used the VCR517 for over twelve months) points out that it is rated for a maximum E.H.T. of 6 kV. as compared with a rating of 2.5 kV, for the VCR97. With a voltage of this order the persistence of the screen renders the tube useless for television. However, if it is operated at a figure of 2.5-3 kV., then there is no difficulty in obtaining a picture sufficiently bright for use with average room lighting but which shows only a slight trace of persistence even on rapidly-moving objects. For this reason, he considers, there is no real need to attempt to burn off the long afterglow screen.

The use of the tube with considerably less voltage than was intended by the designers will, of course, enlarge the spot diameter slightly but in practice the loss in definition as compared with a VCR97 is only apparent on close inspection.

Bellahouston Park

NEW B.B.C. station situated in Bellahouston Park\recently began radiating the Third Programme for Glasgow listeners. The station, which is on a 2½-acre site, has two transmitters, each capable of 2 kilowatts output power, and a T aerial supported by a pair of tubular masts, 126 feet high. By having duplicate transmitters, a more reliable service is ensured. The station replaces the one that was installed in Broadcasting House, Glasgow, as an emergency measure in 1940.

Hearing Aids

MR. E. WATKIN, BRS12312, 2 John Street, Ferryhill, Co. Durham, wishes to construct a hearing aid and would like to hear from any member who can give him advice in the matter. He plans to use a moving coil microphone, compensating for the low sensitivity by means of additional stages of amplification.

A Portable Transmitter & Receiver

N the article bearing the above title published last month, the box containing the set was described as an ex-Army Type 102 Tester. G3XT points out that the Type 102 Tester was an R.A.F. item.

Bright Ideas

A New Monthly Feature Conducted By L. M. GUNNELL (G8HB)*

THE success of this series of articles will depend largely upon the amount of co-operation received from readers. Although a number of bright ideas will no doubt be garnered from friends, and others suggested by contemporary magazines, the vast majority must come from members who have tips to offer which they feel to be worth passing on to the rest of the amateur fraternity. Elaborate notes will not be required, just the germ of the idea scribbled on a piece of paper, and sent along to the address given below will usually be sufficient.

What sort of ideas do we want? Well, practically anything that will be of help to improve the ease of operation, safety and general efficiency of amateur stations. Most of us these days have not too much money to spend on our hobby, and if the idea is a means of obtaining some financial saving, then so much the better. So, look over the rig, and see what you've got in it that you think is worth telling others about. Most amateurs, when confronted with a problem to which there is no answer to be found in any of the handbooks, usually manage to make do by means of a little ingenuity. It will be ideas of this nature which will enable this feature to succeed.

An 813 Valve Base

To start the ball rolling, here is an idea for making a base for an 813 valve from one of the *Eddystone* baseboard-mounting coil bases which were in wide use about 10 years ago, and a piece of perspex about 4 in. square. The idea is illustrated in Fig. 1 which is almost self explanatory.

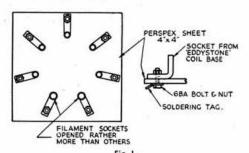


Fig. 1.

A Base for an 83 Valve.

The idea is of course applicable to other valves which use rather uncommon bases. Probably the easiest way to mount the base is to use four midget stand-off insulators. The sockets should be opened up slightly—those for the filament pins rather more than for the others.

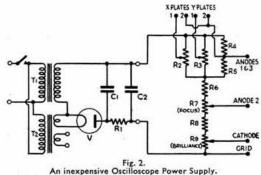
Although perspex is not a particularly good insulator on the higher frequencies the losses are not likely to prove serious; in any case it is usual to have rather more drive than is needed by the valve itself. The easiest way to mark out the perspex for drilling is to dab the pins with paint and then touch them on to the perspex. The spots of paint will indicate where the socket is to go. The perspex can then be marked through the hole in the horizontal part of the socket

An Oscilloscope Power Supply

It is generally agreed that one of the most useful pieces of equipment to have around the shack is an oscilloscope—preferably with a time base and

* 79, Pollards Oak Road, Limpsfield, Surrey.

amplifiers, but even without these it is invaluable for checking modulation and keying. The power supply can however be quite costly. Here then is an idea for providing a useful supply from the "junk box." The first requirement is a transformer with a couple of 4 volt windings, one for the C.R.T. and the other for the rectifier. The latter by the way can be almost any type of 4 volt valve connected as a diode. The A.F. transformer can be one of those old type audio transformers with a ratio of three or four to one. If the mains are fed into the primary a voltage of between 600 and 800 volts R.M.S. at about a milliampere will be available at the secondary. This



An inexpensive Oscilloscope Power Supply.

R1 200,000 ohms.
R2, 3, 9 100,000 ohms potentiometer.
R4, 5 100,000 ohms.
R6, 7 1 megohm.
C1, 2 $0\cdot1$ μ F 2,000 V. working.
T1 AF Transformer (3:1 approximately).
T2 Mains transformer with 2 x 4 V. windings.
V See text.

should provide something of the order of 1,000 volts D.C. which will be more than sufficient for a VCR97, VCR517 or any of the other small tubes that are available at very reasonable prices on the surplus market. If spare metal rectifiers are available these can be substituted for the valve, but usually two or three, wired in series will be needed, unless they are of the high voltage type. Incidentally, metal rectifiers are obtainable from the surplus market quite cheaply. The circuit, with resistance network—which is conventional in all respects—is given in Fig. 2.

Thermo-couple R.F. Ammeter

Here is an idea for using up a burnt-out R.F. ammeter. Such meters consist of a D.C. milliameter to which is connected a thermo-couple. These latter will not take much overload without burning out. When this happens all that has to be done is to remove the couple, and connect the leads from the moving coil to the external terminals. The method of doing this will vary for different meters, but the procedure is apparent as soon as the cover of the meter is removed. If the job is done in the shack, first spread a sheet of clean newspaper on the bench to reduce the possibility of iron filings getting into the works!

The full scale deflection of these movements, usually about 2.5 mA., can easily be determined in the usual way and the scale recalibrated accordingly.

It is hoped that the ideas described above will serve to show what is wanted. Let us hear from you soon.

IT'S TOPICAL

Amateur Radio to the Rescue

Some of those who chanced to listen on the 10 metre band during the morning of Boxing Day were rewarded with a story as thrilling as any that has winged its way through the ether.

The story chiefly concerns Jimmy, the operator of ZS9F who is working on a timber concession in the bush country of Bechuanaland Protectorate miles from civilisation. The only communication with the outside world is by means of secondary roads and jungle paths which at this time of the year are almost

impassable due to the rainy season.

On Christmas Eve, two natives, a man and a woman were attacked by a leopard and severely mauled. As no medical assistance was available on the site ZS9F transmitted an emergency call for assistance hoping that a U.K. or Northern Rhodesian station would reply. Jimmy's first efforts failed but on a later call he succeeded in contacting FSSK of Bordeaux, France. He, in turn was unable to attract the attention of anyone in VQ2 but he managed to pass the message to a station in Dakar, French West Africa. Conditions prevented the Dakar amateur contacting Northern Rhodesia but one of his calls was heard by Don Sleeper, WIONK of Fairhaven, Mass, who offered to try to raise a VQ2. His efforts finally proved successful and resulted in a message being passed through to Livingstone, N. Rhodesia, from whence an air ambulance was despatched to the scene of the accident. The aircraft arrived at 6.30 p.m. on Christmas Day and within a few minutes the unfortunate victims of the attack were on their way to hospital.

This is the second occasion that ZS9F has been instrumental in rendering first aid since he set up his station in the bush. Not long ago the European wife of the Manager of the timber concession was rushed to Livingstone hospital in an aircraft summoned to the

site by means of amateur radio.

ZS9F has asked that his best thanks be conveyed to F8SK, WIONK and all others who helped in the recent emergency. Incidentally he will shortly be operating portable from ZS7 with an input of 100 watts and will be on the look out for G contacts.

The Anonymous Letter

BECAUSE someone wrote anonymously to the London County Council saying a tenant was carrying on a business — forbidden in the tenancy conditions—in his prefab. Council house, an official called to "inspect" the house. His inspection revealed that the tenant was a radio amateur and that he was not running a repair business as the letter alleged. No action was taken.

The above incident was reported to the L.C.C. on December 20 last by the Chairman of the Housing Committee who was questioned by Mr. Neville Rayner about a "malicious allegation." Mr. Rayner, who is a member of the Opposition, asked "Is it the usual practice to authorise such inspection on no other basis than the receipt of an anonymous letter?"

The Chairman in his reply said: "The Management staff as a matter of routine carry out inspection from time to time in accordance with the tenancy conditions. Letters, anonymous and otherwise, are sometimes received and it is necessary in the interests of the Council, the tenants and housing applicants that enquiries should be made."

Members generally will feel grateful to the London Evening Standard for giving publicity to this latest example of bureaucratic interference with civil

liberties.

In most walks of life the anonymous letter goes into the wastepaper basket. It is time that the L.C.C. adopted the same practice.

Aerial Mast-Appeal to Minister

A nappeal by Mr. C. H. Young, G2AK, against a decision of the Birmingham City Corporation refusing him permission to erect a wooden lattice mast 39 ft. high in the garden of his house at Perry Barr was heard by Mr. E. Farricker, M.T.P.I. an Inspector appointed by the Minister of Town and Country Planning at the Council House, Birmingham on January 4th, 1950.

The solicitor for the Corporation stated that planning consent had been refused on the ground that the proposed erection would, in the view of the Planning Authority, prejudice certain amenities at present enjoyed by Mr. Young's neighbours. The Corporation recognised the value to the community of Amateur Radio and the importance of contribu-

tions made by amateurs in time of war.

Mr. Young presented his own case and in support called as a witness the General Secretary of the

R.S.G.B. (Mr. John Clarricosts).

Mr. V. M. Desmond, Immediate Past President
of the Society was present throughout the proceedings.

At the conclusion of the public hearing Mr.
Farricker inspected the site.

The result of the appeal—the first of its kind heard in the Midland—will not be known for some

time.

London Members' Luncheon Club

THE near approach of the Christmas season may have been responsible for the somewhat disappointing response to the notice published in the December issue under the above heading.

London members who were too pre-occupied to send a postcard to Headquarters prior to December 31st, 1949, are now given to the end of January to make up their minds whether or not they wish to support the proposal. Incidentally those who responded to the initial invitation wrote with

enthusiasm.

The proposal is that members who are in business in Central London might welcome an opportunity of meeting for lunch once a month. Preliminary enquiries at the Kingsley Hotel, Bloomsbury Way (opposite Headquarters) show that the management would provide lunch in a private room for approximately 5/- a head.

If inaugurated the club would aim at inviting a

guest speaker each month.

W.I.A. "Food for Britain" Parcels

THE response to the invitation published under the above heading in the December issue unlike the response to the announcement concerning the proposed London Members' Luncheon Club—was overwhelming, more than 700 postcards being received at Headquarters up to December 31st, 1949.

As the W.I.A. advised Headquarters that only a limited number of parcels could be supplied all the cards were placed in a box and shuffled. The details given on the first 150 cards extracted have

been forwarded to the Institute.

S.S.A. 25th Anniversary Celebrations

THE 25th Anniversary of the foundation of the Swedish National Society (Sveriges Sandare Amatörer) is to be celebrated in Stockholm next month.

In response to an invitation from the S.S.A. the Council has been pleased to appoint the General Secretary and Mr. W. H. Allen, M.B.E., G2UJ, to represent the R.S.G.B. at the celebrations.

THE MONTH ON THE AIR

By ARTHUR MILNE (G2MI)*

THERE is no mistaking the signs that the suncycle is now well on the turn. High noise-level and patchy conditions on 14 and 28 Mc/s. have combined with good conditions and much DX on 1·7, 3·5 and 7 Mc/s. to prove beyond doubt that the low frequency bands are once more coming into their own. It remains to be seen whether those who possess rotary beams for 14 Mc/s. and 28 Mc/s. will find themselves with "white elephants" on their hands during the next few years! Suffice it is to say that those who have a decent long wire available are finding it very useful just now.

Across the Pond on Jop Band

THE first transatlantic contact on 1.8 Mc/s. to be reported since before the war, took place on December 18, 1949. The stations concerned were G3PU, Weymouth, Dorset, and W4NNN, Falls Church, Virginia. As a result of a long series of tests, telegraphy contact was established at 0730 G.M.T. on a frequency of 1,810 kc/s. and held until 0805 G.M.T. The transmissions from W4NNN were received at RST459 while the American station reported G3PU's signals as RST339 through heavy Loran interference. Several American telephony stations were also audible at G3PU from 0500 G.M.T. onwards on the same day although readability was low owing to the high static level.

At the time of the contact W4NNN was operating with 200 watts input and using an SX28A receiver. The equipment at G3PU consisted of a 9 watt transmitter of pre-war vintage with a half-wave (265-foot) end-on aerial about 35 to 40 feet high running N.W./S.E. The receiver was a 13-valve superhet (modified CR100) capacity-coupled to the transmitting aerial.

Details of the release of the I-8 Mc/s. band to American amateurs were published in the March, 1949, issue of the BULLETIN.

It is interesting to recall that eleven years ago in January, 1939 (when presumably the sunspot cycle had reached a similar stage), a number of British stations succeeded in spanning the Atlantic on Top Band. They included: G2AO, 2CF, 2JK, 2MI, 2PL, 2PU, 2RC, 5QY, 5RI, 5RT, 5XH, 6BQ, 6GL, 6GM, 6MK and 6WY.

1.7 Mc/s.

Further authentic news of Transatlantic working on the top band comes from GD3UB via G4GJ. At 0500 G.M.T. on December 19th, 1949, GD3UB contacted VE1EA, both stations being on 1815 kc/s. First reports were RST 329 in both directions but by 0515 G.M.T. signals had improved to RST 559 and held there until 0530 G.M.T. The Canadian reported hearing other G stations but was unable to gain their attention. GD3UB is using a half-wave doublet with 10 watts. By the way it is useless to try for VE1 on 1900 kc/s. or W3 on 1800 kc/s. because of the QRM over there from Loran. Major Ken Ellis HZIKE calls G on 1995 kc/s. every Saturday from 0200 to 0300 G.M.T. No contacts

* 29 Kechill Gardens, Hayes, Bromley, Kent.

have yet been reported. A good guide to conditions on this band is provided by the American medium-wave broadcasting stations. BRS11317 reports WMGM (1050 kc/s.) at S7–8 on December 23rd.

3.5 Mc/s.

The DX worked on this band is almost too comprehensive to mention in detail. G2FVR reports excellent reception of DX 'phones as early as 2300 G.M.T. His best was KP4AZ, heard working W's "like shelling peas." G3FWI worked JA2MW at 0045 G.M.T. on December 18th getting 339 with 25 watts input. QTH was given as A.P.O. 503 c/o Postmaster San Francisco. JA2OW was also heard but was not worked. G5CR of Hayes, Kent, worked MD2GO and EK1AO. The former mentioned that he had had a cross-band 1·7-3·5 Mc/s. QSO with G5KT. G2MI also of Hayes, Kent has worked VO2W for his first transatlantic 'phone contact on this band. G6ZO, G6CJ and others report working W's galore, ZL, VK, etc. G2GZ with 25 watts is another who has worked around 80 with good results. W9AND is looking for British Isles contacts between 0600 and 0800 G.M.T. VP5BF is also active on the band.

Thought for the Month

When calling CQ do YOU send your call as often as you wish others would when THEY call CQ?

7 Mc/s.

Seven megs. is rapidly becoming once again the best and most reliable DX band. Old Timers remember with joy the early 1930's when the VK's rolled in every evening accompanied by signals from ZS, VQ, ZE, ZL and all the rest with W's at S9+after 11 p.m.

Here are a few choice items from G5CR's bag:— EA9BB, W5NTT, UJ8KAA, UA9KCC, YU1WEZ, ZL4KX and PY7WS.

It is time the authorities took action to get the Spanish Broadcasters out of our band between 7000 and 7150. There are also one or two Russian commercials who have long overstayed their welcome.

Notes and News

BRS18363 and others complain of the frightful emanations from certain Italian stations. Unless these fellows succeed in filling the whole band with a jumble of rude noises, they don't think they are getting out. Spanish stations are almost as bad and some of their signals are pre-1925 vintage! Real genuine old T1! Can nothing be done about it? BRS18363, now on his way to settle in Australia, reports CR9AG around 1300 G.M.T., and HP1DL at the L.F. end of 14 Mc/s. around 2100. On 28 Mc/s. XZ2FK is well received at 1500 G.M.T.

G3BGP confirms our remarks last month regarding the 1.7 Mc/s. Contest. He came on at 0630 G.M.T. and experienced the thrill of popularity normally reserved for such as ZD9AA on 14 Mc/s!

BRS18017 has logged the following nice items on 14 Mc/s.:—CNSED—Navy 214 Police P.O. New York, N.Y., OQ5BQ—14040—1800 G.M.T. HS1SS on 14100. Cards have arrived from AR8UN (QSL via A.P.O. 206-13, c/o Postmaster, N.Y. The

operator is W3ODG).

G3KZ who has worked YO3GK on 28 Mc/s. 'phone, says there are now about 25 licensed amateurs in Roumania. Cards have been coming in well. YO3RF recently worked by G2MI is the QSL Manager. ZS6BJ reports that ZS7C is the only amateur permanently resident in Swaziland. He hopes soon to be on 28 Mc/s. with a beam.

Who is DI2BC on 14000 approx. who clutters up that part of the band with endless tape transmissions, key clicks and wipe out? He appears to

work American amateurs from time to time.

Anyone working ZE2KQ may find G6VD at the key. Many will remember him as a hardy annual of the top-band contest. VQ8AK is now VE2AIO. G5NO, at present ZB1AB, says the pirate using his call should be treated with the contempt he deserves. W5PTG ex SU1HF sends greetings to old friends,



especially G6DH and Ken Ellis. New Year greetings also come from PY7BN (ex G3BXS).

KZ51P reports that cards from FM8AD are now being received via W4AZK.

Greece

Tony Childs of SV0AJ has explained the present position in Greece:—SV0AI and AL are expected to QRT soon, 'WB is a re-issued call, active on 28 'phone, 'WF is active on 28 and 14, 'phone and C.W. 'WH is mainly on 14 C.W. 'WL is on 28 and 14. 'WZ is portable mobile with 10 watts on 28 'phone. 'AK is cancelled but can be reached via GD3FOC. 'PY (held by an ex-PY amateur) is on 28 'phone. 'AJ himself expects to return to G in March.

Somalia

It is understood from MD4GC that the station recently heard signing MS4UU was a pirate. The licensed holder of this call has returned to Eritrea and is operating as MI3UU. The pirate was heard in QSO with W4GG at 2005, VK2ACX at 2020 and W2DS at 2032 G.M.T. on November 28th, 1949. Incidentally a large packet of QSL's has just arrived from MD4GC. The only licensed calls in Somalia are MD4GC. MD4TH, MS4A and MS4FM.

Contests Diary

B.E.R.U. Telegraphy Section

1700 G.M.T. January 14 to 1700 G.M.T. January 15 1700 G.M.T. January 28 to 1700 G.M.T. January 29

B.E.R.U. Telephony and Receiving Sections 1700 G.M.T. January 21 to 1700 G.M.T. January 22

A.R.R.L. DX Contest, Telegraphy Section 0001 G.M.T. February 11 to 2400 G.M.T. February 12 0001 G.M.T. March 11 to 2400 G.M.T. March 12

A.R.R.L. DX Contest. Telephony Section

0001 G.M.T. February 18 to 2400 G.M.T. February 19 0001 G.M.T. March 18 to 2400 G.M.T. March 19

Top Band (1.8 Mc/s.) Contest

2100 G.M.T. February 4 to 0800 G.M.T. February 5

Tripolitania

MD2B has left and is now in G. Cards await him at the Bureau. MT2DZ is Peter Keller well known as ZC6DZ (Box 260 Tripoli). MT2AB (Mrs. Dolores Mathienn, c/o Whellers Field) is the wife of MD2AC, both hail from the U.S.A. MD2AC is W4LQQ, MD2MD is W6CSF. Others active are MD2PJ S/Major Jones, Box 66. MD2BA J. W. Bull, Forces Broadcasting Unit and MT2PW Peter Wilson ex-second op of MT2BFC, MT2E is the QSL Manager for Tripoli.

Trucial Oman and Bahrain

During his stay in Oman MD4BAD worked 127 countries and 39 zones, making DXCC in 126 days which must nearly be a record. He also worked G6RB, KP4HU, W4BRB, VK5KO and HZ1KE on 3.5 Mc/s. All QSO's will be QSL'd. He is due back in G shortly. MP4BAO is at P.O. Box 333 Awali. Bahrain. QSL's can be sent via R.S.G.B. This is a separate country from Trucial Oman.

Tibe

Cards have just been received from AC4RF who is now at a place called Chiamdo in Eastern Tibet. AC3SQ should be active soon from Sikkim. AC4NC is in Lhasa with AC4YN. None of them know anything of AC5CS who claims to be in Bhutan.

This Means You

This feature—started by the late John Hunter G2ZQ in October, 1936—is compiled from information supplied by YOU. In loyalty to the R.S.G.B. your own Journal should have first claim on your support.

We have no complaint to make if you keep in touch with similar features in commercial magazines but we feel that it is up to every member also to support his Society. The "Month on the Air" feature will soon be expanded. More pages will call for more reports. Can we count on you to supply us with news of interest?

Personal Note

The writer and Mrs. Milne take this opportunity of thanking the many hundreds of members all over the World who kindly sent them cards of greeting at Christmas. If all were answered personally, the work of the Bureau would suffer in consequence. To all concerned they offer their warmest thanks and wish all members a very Happy New Year.

FLASH

In this year's A.R.R.L. Contest the 3-figure code group to be added to RST reports should consist of the power input on the band in use.



By W. H. ALLEN, M.B.E. (G2UJ)*

Two Metres

O results of the G6UH/ZS6GX sked—details of which were given last month-have come to our notice, neither have we received any reports concerning 6UH's signals—radiated at an angle of 70° from a 6-element Yagi-from stations in the U.K., with the exception of GW2ADZ, who listened but heard nothing. Several observations were made by G2UJ at Tunbridge Wells on 6UH's signals while he was calling the South African station, and some interesting points were noted. Naturally, the signals were considerably weaker than normal, but on December 9 so much echo was present as to make the Morse almost unreadable, the transmission resembling that from a station on the lower frequencies suffering from a bad attack of "round the world" echo. On the previous day a distinct hollowness was noticed, accompanied by rapid flutter-fading somewhat akin to "aircraft flutter' but unlikely to be due to that agency. The pro-nounced echo would seem to indicate reflection of the radiation from a considerable distance, and again we request anyone who heard G6UH during these tests to forward brief details of any peculiarities of reception noted at the time.

G5QA (Exeter) has good reason to believe that he heard OH2OK (Myllykyla, Finland) at 1930 G.M.T. on December 11. Signals were extremely weak, and written confirmation is awaited. The distance is in excess of 1,300 miles. (The report has now been confirmed, which means that the European record

has again been broken.—ED.)

A regular sked. is being run between G5QA and GW2ADZ, the former station operating on 145.62 Mc/s. with 70 watts to an 829B and a 4-element wide-spaced Yagi 32 ft. high. The receiver employed is a

4-stage c.c. converter into an HRO.

GW2ADZ (Llanymynech) found conditions generally poor during November and December, although his daily contact with G3EHY (Banwell, Som.) was not interrupted despite the distance of 100 miles. The best days were November 18–20, 23–24 and 29, and December 12 when contacts up to 150–200 miles were possible. 2ADZ's beam unfortunately suffered in the gales, and was reduced thereby to "4 over 4." He hopes to increase it to double this size as soon as possible.

Apropos the comment made last month regarding daytime activity we learn that G3EHY operates on 145·24 Mc/s. at 1430 G.M.T. daily with his beam pointing S.E. Transmissions last for 5 minutes, followed by a 5 to 10 minutes listening period. This sked will be continued daily until further notice irrespective of the results achieved. Two good openings have been reported by this station: November 15 from 2300 G.M.T. to just after midnight, and on November 30. On the latter occasion 10 stations were worked on 'phone, all at S9, including GW2ADZ, 2CIW (Brentwood), 3AHT (Shropshire), 5TP (Stoke Row, Oxon.), SSB (Lancs.) and SKZ

| V.H.F. A. | chievemen | its |
|---|---|--------------------------------------|
| 144 - 14 | 16 Mc/s. | |
| W4JFV—W0EMS G3BLP—G12FHN OH2OK heard by G5QA | Sept., 1949 Aug., 1949 Dec., 1949 | 830 miles 327 miles 1325 miles |
| 420 - 46 | 0 Mc/s. | |
| W6VIX/6—W6ZRN/6 GM2JT/P—GW6DP/P G3AHB/A~G3FZL/A | July, 1949 Aug., 1949 Aug., 1949 | 262 miles 130 miles 63 miles |
| 1215 - 13 | 00 Mc/s. | |
| W10FG/1—W1MZC/1 G6CW—G8DD/P | July, 1949 Nov., 1949 | 37 miles 4.5 miles |
| 2300 - 24 | 50 Mc/s. | |
| W6IFE/6—W6ET/6 G3CBN—G8IH/P G6CW/P heard by | Oct., 1947 Oct., 1948 | 150 miles 24.4 miles |

(London, W.). G3EHY'S rebuilt transmitter now runs at 120 watts to the 3E29 (829B) final which is modulated by a pair of TZ40's. Incidentally his views on the recent power increase make pleasant reading. He writes: "I would like to express my hearty appreciation of all that the Society has done in order to obtain for us this permission for the use of increased power on two metres, and I sincerely hope we shall be able to retain it after the trial period." Sentiments that will no doubt *be echoed by many V.H.F. operators.

Nov., 1948

45 miles

Seventy cm.

G8DD/P

The only 70 cm. activity report received this month comes from G2RD (Wallington, Sy.), who is using a 16-element beam consisting of 8 phased half-waves in four banks of two, backed by 8 reflectors. The receivers employed are an ASBs and an R. 1294. By the time these notes appear 2RD should be transmitting with crystal control using a CV53 in the final.

American Police V.H.F.

Our reference to American police transmissions on T.V. receivers has brought several letters from readers. G6AJ (Salthill, Nr. Chichester), who is ex-Y16HT and G2UH, mentions that there is an American police net on 42 Mc/s. almost zero-beat with the Paris T.V. sound channel. During the course of experiments with high-gain T.V. aerials, and employing a Hallicrafter S27 receiver, he has heard these transmissions (on F.M.) from about 1430 until 1800 G.M.T., at strengths up to 20 db. over S9, so it is not surprising that they are heard on T.V. receivers when the aerials are trained in approximately the correct direction, despite the 500 kc/s. difference in frequency.

BRS18329 (Stafford) reports hearing such trans-

missions between 37.5 and 44.5 Mc/s.—particularly during October-November and February-Marchfor the past two years, on an R54/APR4 receiver with a non-resonant aerial system. At times the signals have been S8 between 1330 to 1800 G.M.T. As would be expected, transmissions made at lower frequencies are more reliable than those at the high frequency end of the band.

Mr. H. C. Robinson (Co. Durham) obtains good results using an RF26 unit in front of an R.1155

receiver.

V.H.F.'s "Down Under"

We are indebted to VK4RC (Brisbane), for the following information reporting 50 Mc/s. activity in the Antipodes. When he wrote early in December, the band had been exceptionally lively for several weeks, with the ZL's coming over so well that one Brisbane amateur contacted 20 in a week. VK4RY (Brisbane) worked KH6PP on C.W., the latter having heard several VK4's but not effected contact. A ZL station is reported as having worked two KH6's, while several VK/W6 QSO's took place and two W6's were heard in CE3.

Another Use for T.V.?

Now that Sutton Coldfield is radiating regular signals it is put forward as a suggestion that much useful information on the propagation of frequencies in the 60 Mc/s. region might be obtained by systematic observation of these signals at different G6AJ, situated in the lee of the South Downs, 2 miles N.W. of Chichester, has been carrying out such tests on A.P. and Paris for the past four or five months, and on S.C. since that station commenced testing. He reports the following average results on signals from these three stations:

| Station | Sound | Vision | Distance |
|---------|----------------|----------------|-----------|
| A.P. | S9 plus 20 db. | S9 plus 10 db. | 60 miles |
| Paris | S5 | S6/7 | 180 miles |
| S.C. | S8 | S8 | 125 miles |

The beams employed are at 30 ft. and 27 ft. above ground-level for 45 and 60 Me/s. respectively.

Conditions on 100 Mc/s.

BRS4029 (Plymouth) sends details of a spell of good conditions experienced while operating mobile Police equipment on the 100 Mc/s. band between midnight on December 15 and 0600 G.M.T. the following morning. When the sky cleared after earlier rain, abnormal ranges were obtained, and no difficulty was experienced in making contact from known "dead spots" in the area; similar conditions continuing until dawn, when reception returned to normal.

We trust that the lack of activity reports this month is due to our readers' preoccupation with things other than the V.H.F.'s, and we look forward to a full post-bag before this feature closes for press on January 23. Meanwhile, a very happy New Year to all!

TA-12 Gen. Missing

Earlier this year Mr. P. C. Swain, BRS17270, "Vale Mount," Langham Road, Bowden, Cheshire, offered through these columns, to loan information on the TA-12 Aircraft Transmitter. The various books and papers went from hand to hand through several amateurs until they reached someone who has failed to pass them on. pass them on.

Mr. Swain appeals to that member to return the information

to him at once as many others wish to examine it.

R.S.G.B. Certificates

S announced in the April, 1949, issue of the Bulletin, the conditions governing the issue of R.S.G.B. proficiency certificates and awards have been recently revised. Although the new conditions came into effect on September 1, 1949, many claims based on the old rules are still received. Members are therefore reminded that a leaflet giving full details of the revised rules for W.B.E., H.B.E., B.E.R.T.A. and E.DX.C. is available free of charge from Headquarters on receipt of a stamped and addressed envelope.

Under the new rules, applications for B.E.R.T.A. (the British Empire Radio Transmission Award) must be accompanied by evidence of two-way communication with 50 Empire call areas (instead of 25 Dominion districts plus 15 Colonial areas): the H.B.E. (Heard the British Empire certificate) similarly requires 50 confirmations and is no longer issued to persons holding a transmitting licence: all claims must be accompanied by a list of the Claimants for the transmitting cards submitted. awards must still certify in writing that their licensed power was not exceeded in effecting the contacts upon which their claim is based. Confirmations relating to pre-war contacts are valid for all R.S.G.B. certificates.

Awards approved up to mid-December, 1949 include:

| Empire D | X Cert | ificate | | | 39 |
|-----------|-----------|---------|---------|------|----------|
| Empire D | X Cert | ificate | (teleph | ony) | 4 |
| B.E.R.T. | A | | | | 355 |
| H.B.E. | | | | | 139 |
| W.B.E. (8 | all class | ses) | | | 1618 |

S.A.R.L. DX Contest, 1949

ESULTS of the 1949 S.A.R.L. DX Contest, published in the November, 1949, issue of Radio ZS show that G8KG was placed first in the list of stations outside Southern Africa. His 84 contacts gave him 1,229 points, a lead of 19 points over his closest rival-W8BRA. Zonal winners include G8KG and GW5SL (42 contacts, 735 points). Fourteen logs were submitted by British Isles entrants. Leading South African station was ZS6CT (1018 contacts, 8361 points).

=Ten Minute Quiz:

A pot-pourri of questions for the radio amateur.

- 1. What does Nagaoka's Constant concern?
- 2. What is the Durchgriff or Penetration Factor of a radio valve?
- 3. What alphabet is commonly used in mathematical and electrical formulæ and how many letters in common usage does it contain?
- 4. What is the address of the R.S.G.B. QSL Bureau?
- 5. Name two amateur stations which should be operating from the Antarctic this winter? (Winter in Europe.)
- 6. What is a Getter?
- 7. At what rate (approximately) does the sun radiate energy?
- 8. Which is " odd man out " of the following callsign prefixes:? ZL4. VQ6. ZD4. VQ8. LU4. 9. What is a "G8PO"? VQ6.
- 10. What are the frequency limits of the 25 cm. amateur band?

Now turn to page 237 to discover if you have beaten the question-master.-H. E. B.

ONTESTS PAGE

Contest for Affiliated Societies

HE first contest open to Societies affiliated to the R.S.G.B. will be held during the week-end, March 4-5, 1950. In order that as many members as possible of the competing Societies shall participate

in the operating as well as in the organising side of the contest one of two eight-hour periods will be

devoted to telephony operation.

The 1950 contest, which should be regarded in the nature of an experiment, has been planned along simple lines. Operation will be restricted to the 3.5 Mc/s, band and there will be no overnight contest periods. The scoring system provides an incentive for inter-Society contacts but it is hoped that a large number of non-competing members will submit check logs. For this reason a Certificate of Merit will be awarded to the R.S.G.B. member forwarding the best check log. The leading Society will be recommended for the award of the Edgware Trophy.

It will be noted from the rules that each Society will assign to itself a two-figure group which must remain the same throughout the contest.

Suggestions for future Affiliated Society Contests will be welcomed by the Contests Committee.

Rules

The contest is open to all Societies in fully paid-up affiliation with the R.S.G.B.

with the R.S.G.B.

2. The contest will be in two sections: first, C.W. (A1), and second, A.M. Telephony (A3). The C.W. section will be held between 3 p.m. and 11 p.m. G.M.T. on Saturday, March 4, and the Telephony section between 3 p.m. and 11 p.m. G.M.T. on Sunday, March 5, 1950.

3. Operation will be on the 3-5 Mc/s. band, according to the provisions of the R.S.G.B. Band Plan as follows: C.W., 3,500 to 3,600 kc/s.; Telephony, 3,600 to 3,635 kc/s., and 3,685 to 3,800 kc/s.

3,800 kc/s.

3,800 kc/s.
4. In each section, only one transmitter—which may be either the Society transmitter or that of one of the members—and not more than two receivers may be used (i.e. different stations may be used for the two sections, if desired).
5. The input to the anode circuit of the valve or valves delivering power to the aerial, or to any previous stage, must not exceed 25 watts.
6. Five points will be scored for contact with another Affiliated

 Five points will be scored for contact with another Affiliated Society station, and one point for contact with any other British Isles station. The final score will be the sum of the scores for the two sections.

7. Only contacts with stations in the British Isles (Prefixes, GC, GD, GI, GM and GW) will be permitted to count for points.

points.

8. Competitors will call "CQ RSGB." An exchange of RST (or RS) reports and a self-assigned two-figure Society identification number will be required before five points for a contact may be claimed (e.g. RST 569 club 47).

9. Only one contact with a specific station will be permitted to count for points in each section of the contest.

10. Transmitter operators may be changed as often as is desired, provided the terms of the licence are observed.

11. Entries (preferably on foolscap or quarto paper) must be set out as shown below:

set out as shown below:

AFFILIATED SOCIETIES' CONTEST, MARCH 4/5, 1950 Name of Society Address(es) of Station(s) Transmitter Call Sign(s)...... Society Code No. Receiver(s) Aerial(s)

| + | | Call | | Report | | Sig- | |
|------|------|--------------------------|--------------------|--------------------|------------------------|------|-------------------|
| Date | Time | Sign of Stn Worked | Sent RST/ RS | Recd RST/ RS | Society Code No. | | Points Claimed |
| | | | | | T | otal | |

Declaration; I declare that the station(s) for which I was responsible was (were) operated strictly in accordance with the rules and spirit of the contest, and I agree that the ruling of the Council of the R.S.G.B. shall be final in all cases of dispute.

Signed .

Office

12. The entry form must be completed and signed by an Officer of the Affiliated Society, who will be held responsible for the conduct of the station(s).

13. The terms of the Transmitting Licence must be rigidly

14. Any station reported operating off-frequency, or causing interference with over-modulation or spurious emissions, may be disqualified.

15. Any station consistently receiving tone reports lower than T9 will be disqualified.

than T9 will be disqualified.

16. The Edneare Trophy will be awarded to the entrant with the highest total score. A Certificate of Merit will be awarded to the member of the R.S.G.B. submitting the best check log.

17. The decision of the Council of the R.S.G.B. will be final in all cases of dispute.

18. Entries must be postmarked not later than March 20, 1950, and addressed to the Hon. Secretary, R.S.G.B. Contests Committee, New Ruskin House, Little Russell Street, London, W.C.1.

W.C.1.

National Field Day 1950

"HE Contests Committee, after careful examination of the replies to the questionnaire recently circulated to Town Representatives, are recommending to Council the following proposals for the 1950 event:—

Power limit to remain at 5 watts.

The transmitting aerial for each station to comprise only one single-wire radiator not longer than one half-wavelength at the lowest frequency of operation and not higher than 45 feet. No multielement arrays to be permitted. A separate receiving aerial to be erected if desired.

A and B stations to operate as in the 1949 contest.

Only one receiver per station to be in operation at any given time.

The time of contact to be exchanged in addition to RST reports.

No alterations in the scoring system.

It is hoped that these details will allow advance plans to be drawn up by all participating Groups. Complete rules will be published shortly. As previously announced the 1950 event will be held during the weekend June 3-4.

Top Band Contest

HE first "Top Band" (1.8 Mc/s.) Contest of the 1950 programme will be held during the week-end of February 4-5, 1950.

The rules will be identical with those for the November, 1949, event as published on page 128 of the October, 1949, issue of the Bulletin, with the following exceptions :-

(a). The contest will run from 2100 G.M.T. on Saturday, February 4, to 0800 G.M.T. on Sunday,

February 5.

(b). The dates February 4-5, 1950, should be substituted for November 5-6, 1949, on the entry form.

(c). Entries must be addressed to the Hon. Secretary, R.S.G.B. Contests Committee, New Ruskin House, Little Russell Street, London, W.C.1. No entry will be accepted bearing a postmark later than Monday, February 13, 1950.

Entrants are advised to read the report of the November contest, published in the December, 1949, issue of the Bulletin. Difficulties were encountered in checking that event because some competitors used County instead of Region numbers, while others failed to complete their logs in accordance with the rules. Do not waste the patient efforts of an all-night sitting by a too hasty perusal of the rules! They are framed to give the maximum interest to the contest and also to aid the Contests Committee in its arduous task of checking.

HEADQUARTERS CALLING

COUNCIL, 1950

President:

WILLIAM A. SCARR, M.A., G2WS.

Executive Vice-President: F. Charman, B.E.M., G6C]. Hon. Treasurer: A. J. H. Watson, F.S.A.A., G2YD. Hon. Secretary: J. W. Mathews, G6LL. Hon. Editor: Arthur O. Milne, G2MI.

Immediate Past President: V. M. Desmond, G5VM.

Members: W. H. Allen, M.B.E., G2UJ, A. P. G. Amos, G3AGM, L. Cooper, G5LC, D. N. Corfield, D.L.C. (Hons.), A.M.I.E.E., G5CD, W. N. Craig, B.Sc., G6JJ, C. H. L. Edwards, A.M.I.E.E., G8TL, P. A. Thorogood, G4KD.

lohn Clarricoats. G6CL. General Secretary:

November Council Meeting

Resume of the Minutes of the Proceedings at the Meeting of the Council of the Inc. Radio Society of Great Britain, held at New Ruskin House, Little Russell Street, London, W.C.1 on Tuesday, November 15, 1949, at 7.30 p.m.

Present.—The President (Mr. V. M. Desmond, in the Chair), Messrs. W. H. Allen, A. P. G. Amos, I. D. Auchterlonie, F. Charman, D. N. Corfield, W. N. Craig, S. K. Lewer, J. W. Mathews, A. O. Milne, W. A. Scarr, P. A. Thorogood, A. J. H. Watson and John Clarricoats (General Secretary).

Membership.

Resolved

- (a) To elect 115 Corporate Members, 19 Associates and 2 Junior Associates.
- to grant Corporate Membership to 14 Associates who had applied for transfer.
- to grant Life Membership to Mr. E. W. Darling, BERS644. to pay the initial subscription of a blind person who had applied for election to Corporate Membership.

Application for Affiliation.

Resolved to grant affiliation forthwith to the South East London Technical College Radio Society, and to the Babcock & Wilcox Staff Association Radio Society, and to renew the affiliation of the South Shields Amateur Radio Club.

Increased Power on V.H.F. Bands,
It was reported that a copy of the announcement relating to
the use of increased power on the V.H.F. bands had been sent to
all Regional and County Representatives and to the Editors of
contemporary radio publications.

72 Mc/s.

It was reported that the Post Office is not yet in a position to make a decision in regard to the suggestion put forward earlier by the Society that a narrow band of frequencies around 72 Mc/s. should be made available to U.K. amateurs.

London Meetings.

The Hon, Secretary of the Sutton & Cheam Radio Society wrote on behalf of the R.S.G.B. members of his Society to enquire whether the Council would agree to commence the London (I.E.E.) meetings at 7 p.m. instead of at 6.30 p.m.

Resolved to inform the Society that the Council is unable to accord a to the request.

accede to the request.

In connection with this matter it was pointed out that as a very large majority of those who regularly attend the meetings are in business in Central London, it is unlikely that they would be willing to wait until 7 p.m. for meetings to commence. At the previous Council meeting a proposal to start lectures at 6 p.m. was rejected because it was felt that an earlier start would make it difficult for members who reside or work outside the Central London area to attend.

Geneva (Region I) Conference.

It was reported that MM, G. Barba (R.E.F.) and de Buren (U.K.S.A.) had addressed a circular letter to all European I.A.R.U. Societies requesting them to contribute towards the expenses which they incurred in attending the Geneva Con-

After a lengthy discussion it was agreed to inform R.E.F. that the R.S.G.B. is prepared, as an act of grace, to contribute approximately £40 towards the expenses incurred by MM. Barba and de Buren at Geneva. It was also agreed to draw the attention of R.E.F. to the irregular manner in which M. Barba had proceeded to Geneva emphasising that neither the R.S.G.B. nor any other Society in Region I (with the exception of R.E.F.) had been consulted and no prior agreement reached in regard to the sharing of expenses of expenses

It was pointed out during the discussion that the R.S.G.B.

shouldered the full financial burden of I.A.R.U. representation at the Atlantic City Conference, and made no demand on any other I.A.R.U. Society for assistance.

Inter-Services Phonetic Alphabet.

Letters were read from two members resident in Ipswich protesting against the decision of the Council to support a proposal put forward by the Wireless Institute of Australia (see Page 115 of the October issue of the R.S.G.B. BULLETIN) that the use of the Inter-Services Phonetic Alphabet should be made obligatory.

obligatory.

It was agreed to explain to the members concerned that although the Council has agreed to support the proposal it does not, at this stage, bind the R.S.6*B. in any way. If the proposal is carried by a majority of the I.A.R.U. Societies, and the result of the voting will not be known for about a year—the Council will will then have to decide what further steps, if any, are to be taken to implement it. It does not follow that the G.P.O. will agree to make the use of the Inter-Services Phonetic Alphabet compulsory, even if the Society asks for that to be done.

The Cash Account for the month ended October 31, 1949, and the Balance Sheet for the quarter ended September 30, 1949, were submitted by the Hon. Treasurer and adopted.

Convention.

Resolved unanimously on a motion from the Chair that the cordial thanks and hearty congratulations of the Council be extended to the Chairman and members of the Convention Working Committee for the efficient and highly satisfactory manner in which they carried out their duties prior to and during the Convention.

Resolved further that the best thanks of the Council be extended to Mr. F. Charman for the valuable assistance which he rendered to the Society during the Convention by delivering his aerials lecture on three occasions

The meeting terminated at 9.45 p.m.

REPRESENTATIVES

THE retiring President (Mr. V. M. Desmond) and Council wish to express their thanks to those members who acted as Regional, County, District, Town and Area Representatives during the years 1948-49.

The services which they rendered to the Society have been most warmly appreciated.

Radio Amateurs' Examination

For the information of Members desirous of taking the Radio Amateurs' Examination in May, 1950, we publish below a list of centres at which courses in preparation for the examination have been scheduled with the City and Guilds of London

Institute.

Abersychan Technical Institute, Monmouthshire.

Birmingham Central Technical College.

Blackpool Technical College and School of Art.

Bolton Municipal Technical College.

Burnbank, School of Engineering, Hamilton, Scotland.

Burnley, Municipal College.

Cardiff, Technical College.

Castlewood, Whitwood Mining and Technical College, Yorks.

Chiswick Polytechnic, London.

Derby Technical College.

Dunfermline, Lauder Technical School, Scotland.

Enfield Technical College.

Glamorgan Technical College.

Huddersfield Technical College.

Leek College of Further Education, Staffs.

Loughborough College.

Maidstone Technical College. Lougnborougn College.
Maidstone Technical College.
Northampton Polytechnic, London.
Norwich City College and Art School.
Norwood Technical College, London.
Portadown Technical School, N. Ireland.
Reading Technical College. Southampton, University College, Southport Technical College, S. E. London Technical College, Stroud & District Technical College, Glos. Wimbledon Technical College. Wycombe Technical Institute.

A.R.R.L. Handbook

Advice has been received from the A.R.R.L. that the 1950 edition of the Radio Amateurs' Handbook will be ready for distribution towards the end of January. As the demand will no doubt be great members are advised to place an order without delay. The price (18s. 6d.) remains unchanged.

A new Hints & Kinks (Vol. 4) has just appeared. The price

is 9s. 6d.

York Technical College

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SCR 522 TRANSMITTERS (part stripped). 7/6 each, postage and packing 2/6.

RCA SPEECH AMPLIFIERS, complete with 7 valves (4-6J7, 2-6L6, 1-5U4G). See last month's advertisement. Few only, now £15 only, plus 10/- packing and carriage.

HEAVY DUTY RCA MODULATION TRANSFORMERS Class B 805's to 2-813's. Few only, 50/-, carriage paid.

COMPLETE NOISE LIMITERS, wired on small sub-chassis with 6H6 valve. 10/- each, post free.

POWER TRANSFORMERS. 320/320 V. 130 mA. 6-3 V. 5 A. ct., 5 V. 3 A. Primary 200/220/250 V. 50 c. Drop through type with loose leads. Our price, 18/6, postage and packing 1/6.

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AR88 CABINETS, finished in black crackle. In strict rotation. £3 17s. 6d. each, carriage paid.

AR88 MATCHING SPEAKERS, 2.5 ohms. Black crackle case. £3 15s., carriage paid.

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THIS MONTH'S SPECIAL VALVE OFFER BRAND NEW AND BOXED 807's, in lots of 4, only £1 a lot.

MOVING COIL Hand Microphones, 3/11. TRANSFORMERS for M.C. Microphones 2/-. 300 OHM TWIN-RIBBON 7" RIBBED GLASS AERIAL INSULATORS, pair 3/6. FLEXIBLE COUPLERS FEEDER, per yd. 5d. for 4" shaft, each 1/-. HEADPHONES, H.R., pair 8/6. HEADPHONES, Brown's 'A' 100 ohms, pair 6/-.

Carriage paid on all orders over £1 except where stated. Please include small amount for orders under £1.

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magnet high flux-density Moving Coil Loudspeaker, Sockets for gramophone magnet high flux-density Moving Coil Loudspeaker, Sockets for gramophone pick-up and for low-impedance extension speaker. Tropicalised throughout. For use on A.C. mains 100–125 and 200–250 V. (adjustable) 40–100 cycles. Handsome cabinet in selected walnut and sycamore, 21 in. long by 14½ in. high by 10½ in. deep. Average consumpton 70 watts, approx.

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NNUAL GENERAL MEETING

Minutes of the Twenty-third Annual General Meeting of the Incorporated Radio Society of Great Britain, held at the Institution of Electrical Engineers, Savoy Place, Victoria Embankment, London, W.C.2, on Friday, December 16, 1949, at 6.30 p.m.

Present.—The President (Mr. V. M. Desmond, in the Chair.)
Messrs. W. A. Scarr (President-Elect), A. J. H. Watson (Hon.
Treasurer), J. W. Mathews (Honorary Secretary), A. O. Mine
(Honorary Editor), S. K. Lewer (Immediate Past President),
W. H. Allen, A. P. G. Amos, F. Charman, D. N. Corfield, W. N.
Craig, P. A. Thorogood (Members of the Council), John Clarricoats
(General Secretary), Miss May Gadsden (Assistant Secretary),
Mr. J. P. Hawker (Assistant to the General Secretary) and about
80 members. 80 members.

Notice Convening the Meeting

The General Secretary read the notice convening the meeting.

Minutes of the Twenty-Second Annual General Meeting

Mr. Leicester moved, Mr. Newton seconded, and it was Resolved that the Minutes of the Twenty-second Annual General Meeting as published in the February, 1949, issue of the R.S.G.B. BULLETIN be taken as read, confirmed and signed as a correct

Report of the Council

The President moved and it was Resolved that the Report of the Council for the period from October 1, 1948, to June 30, 1949, be approved and adopted.

Report of the Honorary Treasurer and Audited Accounts

In presenting the Audited Accounts, the Honorary Treasurer explained that although it had not yet been found necessary to ask the membership to consider a motion that subscription rates be increased, such a step may have to be taken if the size of the BULLETIN is increased materially. With more paper becoming available, due to the relaxation of controls, members would expect to receive larger issues but this would mean increased production costs. Speaking on the question of revenue to be obtained from advertising, Mr. Watson explained that if all paper is freed from control the present sellers' market will tend to disappear. This will lead to a demand for lower advertising rates which, unless accompanied by a reduction in printing charges, will result in production costs remaining at a high level.

Mr. Watson explained that due to the devaluation of the

charges, will result in production costs remaining at a high level.

Mr. Watson explained that due to the devaluation of the
Pound the revenue accruing from the sale of U.S. technical
publications is likely to fall considerably. As against this more
copies of R.S.G.B. publications may be sold during the current

financial year.

It had recently been suggested to the Council that the Society It had recently been suggested to the council that the Society should set up a legal department and that each member should contribute five or ten shillings per annum towards its cost, Mr. Watson pointed out that the present financial position of the Society is such that the Council would not hesitate to use its Reserves if it became necessary to engage in litigation in the interests of the membership.

interests of the membership.

Occasionally the Council is asked why the full Minutes of the proceedings at meetings of the Council are not published in the BULLETIN. Mr. Watson explained that it is sometimes necessary to treat certain matters as confidential at least for the time being. For example negotiations might be prejudiced by the premature publication of a Council decision.

Questions relating to BULLETIN Advertising (Mr. Newton), Interest, Repairs, Sundries, Rent, Rates and Salaries (Mr. Bennett), were dealt with by Mr. Watson.

Mr. Watson then moved, Mr. Manders seconded, and it was Resolved that the Report of the Honorary Treasurer, together with the Audited Accounts for the nine months ended June 30, 1949, as circulated among the members, be and are hereby approved and adopted.

approved and adopted.

Election of Council for the Year 1950

The President announced that the following Corporate Members had been duly elected to serve on the Council for the year 1950 :-

Officers

President: Mr. W. A. Scarr, M.A., G2WS Acting Vice-President: Mr. F. Charman, B.E.M., G6CJ Hon. Treasurer: Mr. A. J. H. Watson, F.S.A.A., G2YD Hon. Secretary: Mr. J. W. Mathews, G6LL Hon. Editor: Mr. A. O. Milne, G2MI

Members

| Mr. C. H. L. Edwards, A.M.I.E.E., G | STL | 1,768 | votes |
|--------------------------------------|-----|-------|-------|
| Mr. W. H. Allen, M.B.E., G2UJ | *** | 1,638 | |
| Mr. D. N. Corfield, A.M.I.E.E., G5CD | *** | 1,607 | ** |
| Mr. P. A. Thorogood, G4KD | *** | 1,282 | ** |
| Mr. A. P. G. Amos, G3AGM | *** | 1,244 | ** |
| Mr. W. N. Craig, B.Sc., G6JJ | *** | 1,118 | ** |
| Mr. T. Coomer CETC | | 1 011 | |

The President informed the meeting that although Mr. N. Joly, G3FNJ, had secured sixth place in the poll with 1,227 votes, he now found that owing to unforeseen circumstances he

could not accept office. Mr. Cooper had accordingly been elected to serve on the Council.

The President announced that the following Corporate

The President announced that the following Corporate Members had been unsuccessful in the Ballot:—
Mr. H. McConnell, GM2ACQ 993 votes
Mr. G. Webster, G5GK 980 ,,
Mr. A. J. Bayliss, G8PD ... 937 ,,
Mr. G. W. J. Haydon, G3BLP ... 937 ,,
Mr. J. J. Hollington, G4GA ... 702 ,,
Mr. R. C. Simmonds, G2ZI ... 661 ,,
The President thanked the unsuccessful candidates for allowing themselves, to be nominated congraphilated the successful

themselves to be nominated; congratulated the successful candidates on expressed his appreciations to the Scrutineers, Messrs. H. W. Evens, G6CH, P. C. Bond, G3BEG, T. Delvin, G2FLK, W. Crossland, G5CI, P. J. Naish, G3EIX, and J. V.

The President announced that 2,532 Ballot Forms had been accepted compared with 2,670 in 1948, 2,914 in 1947, and 3,286 in 1946. Fifteen forms had been rejected.

Re-appointment of Auditors

Mr. Watson moved, Mr. Simmonds seconded, and it was Resolved to confirm the appointment of Edward Moore & Sons as auditors for the year ended June 30, 1950, at a fee of seventyfive guineas.

Vote of Thanks to the I.E.E.

The President moved, and it was Resolved, that a cordial vote of thanks be recorded to the President and Council of the Institution of Electrical Engineers, for allowing the Society to continue to use the building for its meetings.

Other Business

Messrs. Newton, Walker, Cooper, Varney, Cole, W. H. Matthews, Winsford and Crossland were among others who asked questions when the meeting was thrown open for the consideration of other business.

consideration of other business.

Suggestions for providing a closer contact between members and local representatives were put forward and a plea made for the restoration, in the RULLETIX, of lists of new members. The relationship between the R.S.G.B. and its affiliated societies was discussed as were matters relating to television interference. Enquiries were made in regard to the statement published recently that the P.M.G. cannot authorise amateurs to make television transmissions in the 420-460 Me/s. band. An enquiry was also made concerning the possibility of a small band of frequencies around 72 Me/s. being released to amateurs. Other questions concerned the operation of the Headquarters station (GBIRS), Society participation in the South Bank Exhibition during the Festival of Britain, the layout of the BULLETIN and the QSL Bureau.

during the Festival of Britain, the layout of the Bulletin and the QSL Bureau.

Col. Eric Cole, until very recently, Chairman of the British Joint Communications Board, considered that steps should be taken to impress upon members as well as non-members that many of the facilities they now enjoy have been obtained only as the result of efforts made by the R.S.G.B. Mr. J. N. Walker supported Col. Cole and suggested that the Society should send an account of its activities to affiliated societies so that the information may be brought to the notice of non-members of the parent society. Mr. Walker emphasised that many affiliated societies are parochial in outlook and need guidance from the R.S.G.B. R.S.G.B.

Replies to the questions were given by the General Secretary and other officers

The meeting finally terminated at 7.55 p.m.

Presentation to Mr. V. M. Desmond

At the conclusion of the business meeting the President-Elect (Mr. W. A. Scarr, M.A.) presented to Mr. Desmond a leather brief case and fitted writing case as a token of esteem from Members of the Council and others (including senior members of Headquarters' staff) who had been closely associated with him during his Presidency. Mr. Desmoud thanked Mr. Scarr and his colleagues for their

Presentation of Trophies

The President then presented trophies, miniatures and awards

| the following members | 777 | | |
|-----------------------|-------|-----|---------------------------|
| Norman Keith Adams | Prize | *** | Mr. R. L. Varney, G5RV |
| Rotab | *** | *** | Mr. C. G. Allen, G8IG |
| Colonel Thomas | *** | *** | Mr. W. E. Russell, G5WP |
| Braaten | *** | *** | Col. E. S. Cole, G2EC |
| Victor Desmond | *** | | Mr. K. E. V. Willis, G8VR |
| Mitchell-Milling | *** | *** | Mr. R. G. W. Page, G5TP |
| B.E.R.U. Receiving | *** | *** | Mr. W. Ely, BRS1535 |
| N.F.D. Trophy | *** | | East Molesey Town Group |
| N.F.D. Miniature | *** | *** | Slough Group |

(Continued on Page 243)

HENRY'S

The following brand new and

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At minimum cost. An easy-to-build unit that can be used for R.F., I.F. and Audio signal tracing, without any switching or tuning. Highly sensitive, easy-to-build, responds to signals picked up from an ordinary receiving aerial. The circuit is that of a high-gain, 3-stage resistance-coupled audio frequency amplifier, with a 5-inch speaker in the Output of the Power Amplifier stage.

We shall be pleased to supply a complete kit for the construction of the above, right down to the last nut and bolt, for the low price of £3/18/6. Concise instructions and circuits are supplied. If preferred, circuit and instructions only can be supplied for 1/6, post free. All items may be purchased separately. This is a highly efficient instrument, and a MUST for every radio man.

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brand new and boxed.

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RECEIVER TYPE 25. The receiver portion of the T/R 1196. Covers 4·3—6·7 Mc/s., and makes an ideal basis for an all-wave receiver, as per "Practical Wireless," August issue. Complete with valves types EF36(2), EF39(2), EK32 and EBC33. Supplied complete with necessary conversion data for home use. 22/6. Chassis only, 8/6.

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IIC ET UBIQUE

Coventry R.S.G.B. Group

The recently formed R.S.G.B. Town Group has now obtained The recently formed R.S.G.B. Town Group has now obtained headquarters at Priory High School, Wheatley Street, where meetings will be held on the third Friday in each month (7.30 p.m.) under the Chairmanship of Mr. H. J. Chater (G2LU), Town Representative for Coventry. All members wishing to take part in the Group's activities should communicate with Mr. R. Palmer, G5PP, 22 Sherlock Road (Telephone: COV 60402). The annual subscription is 2/6.

Coventry Amateur Radio Society

Recent meetings were marked by the annual ration of Christmas Fare. On December 19, the XYL's and the junior operators were invited to the "Fourth Annual Bran Tub." Other activities have included a "Radio General Knowledge Quiz" arranged by G3FAB and a talk on the "R.S.G.B. Amateur Radio Exhibition" by G2FTK. Morse classes have been arranged for the winter months

Oublin Amateur Radio Convention

The annual convention and dinner, sponsored by the Irish Radio Transmitters Society, will be held at Jury's Hotel, Dame Street, Dublin, on Saturday, January 28, 1950. It will be preceeded by the A.G.M. Details may be obtained from the Hon. Secretary, Capt. A. C. Woods, EI3L, 17 Butterfield Crescent, Rathfarnham, Co. Dublin.

Eastbourne and District Radio Society

Good attendances continue to be recorded at the Society's meetings which are held on the first Friday in the month at the Friends Meeting House, Wish Road, Eastbourne (7.30 p.m.). Full details may be obtained from the Hon. Secretary, Mr. R. F. Nugent, Field House, Windmill Hill, Nr. Hailsham, Sussex.

Newbury and District Amateur Radio Society

This Society, which is comprised mainly of R.S.G.B. members, was formed last September. Since then a steady, though gradual increase in membership has been recorded. A warm invitation is extended to all R.S.G.B. members in the Newbury, Hungerford and Thatcham areas to attend the meetings, held on the last Thursday of each month at 7.30 p.m. in the lounge of "The Railway Hotel," I Greenham Road, Newbury. The Hon. Secretary, Mr. A. W. Grimsdale, G3CJU, 164 London Road, Newbury, will be pleased to answer any enquiries.

Stourbridge and District Amateur Radio Society

At the December meeting, Mr. A. A. Devey (G2AU) gave an informative talk on combating television interference. Meetings are held on the first Tuesday and third Friday in each month at King Edward's School, Stourbridge.

Thames Valley Amateur Radio Transmitters Society

The recent Annual Dinner, Cabaret and Dance held at the Carnarvon Hotel, Hampton Court, Middlesex was undoubtedly the finest in the long history of the Society. A contributory factor was that the occasion marked the celebration of the winning of N.F.D. by the East Molesey Group. Ninety-four people attended, including the General Secretary, Mr. John Clarricoats and Mrs. Clarricoats, the President of the Sutton and Cheam Radio Society, Mr. Stanley Vanstone, and his wife and daughter. One of the highlights of the evening was a draw to which many radio firms had contributed valuable prizes. Every lady received a present.

Torbay Amateur Radio Society

At the December meeting, the President, Mr. W. B. Sydenham, B.Sc., G5SY, warmly welcomed Mr. H. A. Bartlett, G5QA, the new Representative for Region 9. A talk on aerial arrays was contributed by G2BMZ. G3AVF demonstrated a new frequency



Herb. Bartlett, G5QA, of Exeter, the newly-elected Representative for Region 9, recently gave a complimentary dinner to a few of his colleagues to mark the completion of his two years' spell in office as Devonshire C.R. Those seated, reading from left to right, are: T. Smith, G3EFY (Exeter T.R.), G. Wheatcroft, BRS13968 (Devonshire C.R.), F. Saunders, 3MU, Herb. Bartlett, 5QA, E. Bright, 3JW, and F. Wadman, 2GK, of Torquay.

Whittington Radio Club

Meetings of the above Club are held in the Angel Inn Club Room, South Street, New Whittington, Chesterfield, each Wednesday evening at 7 p.m. The Hon, Secretary is Mr. W. Watson, 44 Handley Road, Chesterfield.

Amateur Radio Classes in South East London

Members will be welcomed at the elementary radio class and Amateur Radio lectures which are now held on Wednesday and Thursday evenings (7.45 p.m.) at the Childeric Road School, New Cross, London, S.E.14. Morse practice is also given. Mr. G. V. Haylock, G2DHV, who is the instructor, is also responsible for the Radio Amateurs' Examination first-year course at the S.E. London Technical College, S.E.2.

British Sound Recording Association

Meetings of the Association will be held at the Royal Society of Arts, John Adam Street, Adelphi, Strand, London, W.C.2, on the following dates:

the following dates:
January 27, 1950: G. F. Dutton, Ph.D., D.I.C., "Magnetic Tape, Its Properties and Measurement."
February 24: H. J. Leak, M.Britt. I.R.E., "High Quality Reproduction—How to Achieve It."
March 24: F. W. Alexander, Ph.D., A.M.I.E.E., "Microphones and Balance Technique."
April 21: A. R. Sugden and R. W. Lowden, "Practical Microgroove Recording and Reproduction."
All meetings will commence at 7 p.m. and most of the lectures will include demonstrations. The Hon. Secretary is Mr. R. W. Lowden, "Wayford," Napoleon Avenue, Farnborough, Hants.

"Television Receiver Radiation"

Apropos the article bearing the above title in the November issue, members are reminded that instruction is given at the Ilford Literary Institute on Monday evenings from 7.15 p.m. to 9.15 p.m., for those interested in constructing their own vision receiver. Particular attention is paid to the construction of stable oscillators, the correct alignment of R.F. stages and the layout of time-base circuits, etc.

The fee for the course of lectures is 5/- for Essex county students and 7/6 for out-county students. There are still a few vacances for interested members.

Proposed Visit to Norway and Sweden

For the benefit of members of the Society, Mr. H. Andrews, G5DV, 175 Moorland Road, Weston-super-Mare, is organising a visit to Oslo and Stockholm during the coming summer. Enquiries show that a two weeks trip to Stockholm including fares and bed and breakfast will cost approximately £25, and to Oslo 523. The party would travel by sea to Gottenburg. In-Oslo £23. The party would travel by sea to Gothenburg. In-terested members should write to Mr. Andrews for further details as soon as possible, because accommodation will be limited.

The Society's new Responsibility

"Amateur radio enthusiasts . . . have found two different callsigns coming from the same house in High Wycombe, Bucks. They came from Jack and Jean Salter, first husband and wife to whom the Radio Society of Great Britain have granted licences." —Evening Standard, December 2, 1949, Lunch Edition.

By the time the evening editions came out the R.S.G.B. had

lost its new job!

The callsigns of Mr. and Mrs. Salter are G3DOC and G3FSZ,

Ten Minute Quiz

Answers to the questions set on page 231.

- The calculation of the inductance of a coil. It depends on the ratio of coil length to diameter.
- The reciprocal of the amplification factor normally expressed as a percentage.
- 3. Greek-24 letters.
- 4. 29 Kechill Gardens, Hayes, Bromley, Kent (and not R.S.G.B. Headquarters).
- VK1FE and VK1VU, Heard Island (53 deg. South; 73 deg. East). On 14 and 28 Mc/s.
- The substance used in valve manufacture. which, when " burnt " inside a valve removes the last traces of gas in the valve.
- 7. At nearly half a billion billion kilowatts!
- 8. LU-Argentine-is not in the British Empire.
- "Reversible" uni-directional system. (See November, 1947, and August. 1949, issues of the Bulletin.)

10. 1,215 to 1,300 Mc/s.

If you didn't get No. 4 right why not make a note of it NOW?

CAN YOU -

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LABORATORY GEAR. Sullivan Marine Galvo, suspended LABORATORY GEAR. Sullivan Marine Galvo, suspended Moving Coil on solid base with adjusting feet, in lacquered brass case, £10. Sullivan Testing Keys, Reversing, £4. Weston Moving Coil Relay 380 ohms resistance to 50 mA., £3 10s. Sullivan Moving Coil Relay, £3. G.P.O. Polarised Relays in brass case with glass top, plat. contacts, 25/-. G.P.O. Sounders, 25/-. Pitkin Lab. Resistances 50 ohms 2 A. mounted Relays in brass case with glass top, plat. contacts, 25/-. G.P.O. Sounders, 25/-. Pitkin Lab. Resistances 50 ohms 2 A. mounted in polished wood base with glass front and heavy ebonite control knob, 40/-; few with damaged glass, 25/-. Avo All-wave Oscillator, 95 kc/s. to 40 Mc/s., in 6 ranges, brand new, £20. Bridge Megger, 500 V. with decade Resistance Box 9999, in wood cases, £25. 250 V. 20 megs., £20. RESISTANCES. Variable wire wound lab. type, laminated brush gear, 1-2 ohms 15 A., 7/6; 6 ohms 6 A., 15/-; 300 ohms ½ A., 15/-; 290 ohms -45 A., 15/-. Isenthal Geared Resistances, 60 ohms 2.8 A., 25/-. TRANSFORMERS. Foster 50 ohms 2 A. double wound, 15/-. B.T.H. 200/230/250 V. to 75 V. 6 A. and 2 V. 20 A., 45/-. Auto Booster Transformers 900 W. size 200/250 V. in 10 V. steps, useful in power cuts, £5. Auto Transformers 220 V. 50 c.S. input 53 V. 15 A., 0-30, 0-60 V. 1 A. and 6 V. 5 A., £5.

MOTORS. A.C. 50 cycle single phase ½ h.p. 230 V., 1,425 r.p.m., £5 l0s. ½ h.p., 230 V., capacitor start, 1,425 r.p.m., new, £9 10s. Reconditioned A.C. Motors, 230 V., 50 cycles single phase G.E.C. ½ h.p., 1,425 r.p.m., £4 10s. Crompton Parkinson, £4 10s. A.C. 50 cycles 3-phase motors, ½ h.p., 1,425 r.p.m., 230 V., £7 10s.

D.C. DYNAMOS. 12 V. 10 A., C.A.V. 1,400 r.p.m., £2. 24 V. 100 A. 4,000/6,000 revs., £5 10s. 30 V. 5 A. 1,500 revs., 35/-. Carriage on any Dynamos, 5/-. LIGHTING PLANTS. A.C. and D.C. Plants, well-known makes, sizes from 500 W. to 3 kW. Prices from £22 10s. to £60. Write for special list "T.R."

ROTARY SWITCHES. 10 A. D.P. on-off on porcelain base with bakeliet cover and knobs, 3/6.

to 500. Write for special list. "T.R." ROTARY SWITCHES. 10 A. D.P. on-off on porcelain base with bakelite cover and knob, 3/6. IRONCLAD SWITCHEGAR. We have a large stock of Ironclad Fuses and Switch Fuses by leading Makers, 15-30 and 60 A. Write for special leaflet "T.R."

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Frequency Calibrated Tuning Dial. Micrometer control. 8 Ranges. Crystal check. 1,000 kc/s. Crystal. Trans/Receiver/ C.W. switch. Output control. On/off switch. Output attenuator. Indicator light. Telephone socket.

Accuracy 1%. Operation from 2 V. L.T. and 60 V. H.T. Air Force grey enamelled cabinet with flap lid enclosing full set of calibration charts and instructions.

Rarrery compartment. Measurements, Battery compartment. Measurements, length 12", width 103", depth 11", weight 30 lbs.

Frequency Ranges: I, 100-220 kc/s.; 2, 200-400 kc/s.; 3, 400-800 kc/s.; 4, ·8-1·667 Mc/s.; 5, 1·667-3 Mc/s.; 6, 3-6 Mc/s.; 7, 5-10 Mc/s.; 8, 10-20 Mc/s. Thirty only. In guaranteed brand new condition. £5/19/6, carriage paid.

MODULATOR UNITS. Type 64

Brand new. Six valves (2 VUI33, I VT60A, 2 VR91, I CU73, ICU85). Has mains filter, 3 relays and numerous useful parts. Offered at less than valve value. 39/6, carriage paid.

VALVES

All brand new. All 6/- each. 6F6, 6SQ7, 6SF7, 6SN7, 6J5, 6V6, 6SG7, 6N7, 6AC7, 6F7, 688, 6D6. At 4/- each. 6F8, 6SA7, 6AC7, 6SL7, 6K7, 6SK7, 6SJ7. Post 6d. each, 3 or more post paid.

H.R.O. RECEIVERS

Fine condition. Nine valves. Five only on offer. No power pack, 3 coils with each.

We hope to have extra coils available by the time this advertisement appears. Guaranteed perfect. Outstanding value, £22/10/- each, carriage paid.

Three only. H.R.O. 6 V. power packs, 60/- each, post paid.

FEDERAL BC1147A

Thirteen valves, built-in L.S. Absolutely brand new. 1.5-30 Mc/s. in 4 bands. 110 V. A.C. input. One only. £25, carriage paid.

CAR RADIO RECEIVERS

12 V., complete with L.S. Medium wave. Amazing performance. £5/10/-, carriage paid.

BC624A (part of SCR522)

Brand new with 10 valves, 19/6, carriage and packing 3/6. (A SNIP!)

PAMPHONIC 10" M.C. **SPEAKERS**

In large maroon cellulose cabinet. Brand new in sealed cartons. Less than half price. 55/-, carriage paid.

RI426 8 Valve Receivers

(Equivalent to R1355) as specified for Inexpensive Television." Brand new in original wooden crates.

63/- plus 5/- carriage.

21d. stamped addressed envelope must accompany all enquiries.

NEW LIST NOW READY

R26/ARC5 (same as BC454B)

3-6 Mc/s. Complete with valves, tuning knob and 28 V. dynamotor. Brand new, in sealed cartons, 59/6, carriage paid.

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In new condition, 22/6, carriage paid.

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Type R1142A. Motorised; 1/13th h.p. motor; 28 V. 5 A. Detachable pulley, elaborate reduction gearing; instantaneous positive stop; works well on only 12 V. Ideal for rotary beams. As illustrated. Brand new, in sealed cartons, 30/- each, postage 1/4.

BC455B, MODIFIED

28-41 Mc/s., 6 valves, 50/-, postage 1/3.

RI355, RI426 and RF26 Units IN STOCK.

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Letters to the Editor

Speech Clipping Systems

DEAR SIR,—I have read with the greatest of interest Mr. Whalley's excellent article "Clipper-Filter Systems" published in the November, 1049, issue. He rightly points out that his notes give a somewhat pessimistic picture. Speech subjected to the clipping necessary to give waveforms similar to that shown in Fig. 1A would be completely unintelligible! His figures for adjacent channel interference are definitely exagerated, and the way in which he arrives at an 8 value for the unwanted sideband at 10 kc/s. is misleading. He assumes that the unwanted sideband, before applying the filter, is of the same amplitude as the carrier. If the carrier was being modulated 100% by a sine-wave tone of frequency 10 kc/s., the level of each sideband would be 6 db. below that of the carrier. It does not seem likely that there would be sufficient energy at a modulation frequency of 10 kc/s., even with a large amount of clipping, to give 100% modulation. If we assume that the amount of unwanted 10 kc/s. component is one quarter of that required to give 100% modulation (which seems reasonable), the level of each sideband would be 12 db. lower still, a total of 18 db. below the carrier level.

A filter giving 60 db. loss at 10 kc/s. would then reduce the capilitude to 6 db. appears 5 cere in better works to \$1. with the capilitude to 6 db. appears 5 cere in better works to \$1. with the capilitude to 6 db. appears 5 cere in better works to \$1. with the capilitude to 6 db. appears 5 cere in better works to \$1. with the capilitude to 6 db. appears 5 cere in better works to \$1. with the capilitude to \$1. with the capilitude to \$1. with the capilitude to \$1. when \$1. with the capilitude to \$1.

A filter giving 60 db. loss at 10 kc/s. would then reduce the amplitude to 6 db. above 8 zero; in other words to 81—using the same example as that given in Mr. Whalley's article. This seems to be much nearer to a practical case. The constant-k type of filter recommended by Mr. Whalley would certainly be effective filter recommended by Mr. Whalley would certainly be effective at 10 ke/s., but its performance leaves something to be desired at lower frequencies. At 5 ke/s., for instance, the attenuation would only be about 30 db., and since the unwanted energy at 5 ke/s. is likely to be greater than at 10 ke/s., more attenuation at this frequency is desirable. It would be possible to use a third filter section, but it would be cheaper to use two m-derived sections, it is perfectly feasible to make an m-derived section with the frequency of maximum loss three times the cut-off frequency, and this section, besides giving at least 40 db. loss at 10 ke/s. (depending on coil Q, etc.), actually has a superior performance than the constant-k section up to at least six times cut-off. An m-derived section with frequency of maximum loss at 5 ke/s. would give a much sharper discrimination against frequencies m-derived section with frequency of maximum loss at 5 ke/s, would give a much sharper discrimination against frequencies between 3·3 and 5 ke/s, and a combination of these two sections should give 50 db. loss at 5 ke/s, and 70 db. at 10 ke/s. The loss at a frequency between 5 and 10 ke/s, will drop slightly but is not likely to be less than 40 db., which is about the same as that of the two constant-k sections. of the two constant-k sections.

of the two constants sections. A point which might cause trouble when the filter is used after the modulator is that the input impedance of the π sections rises considerably at the cut-off frequency, being much higher than at say, half the cut-off frequency. This may lead to difficulties if the modulator valves are pentodes owing to the very light loading

at this frequency.

at this frequency.

In my opinion, the most economical and effective type of clipper is the self-clipping modulator. Little if any information about this seems to have found its way into the British amateur radio press, which is a pity. One of its advantages is the saving in components, and the possibility of using smaller modulator valves than customary. There is little point in designing a distortionless modulator stage capable of providing, say,1,000 volts peak output if one is going to introduce perhaps 30% distortion and limit the peak output voltage to 800 volts by clipping.

Yours sincerely,

ALAN G. DUNN (G3PL.)

79, Hayton Grove, Hull, Yorks.

Simple Equipment

DEAR SIR,—I was very interested in your leading article in the December issue regarding simple equipment, and the

DEAR SIR,—I was very interested in your leading article in the December issue regarding simple equipment, and the description of the transceiver constructed by Mr. Mine. I am in complete agreement with your views regarding simple apparatus, as I feel that we may be losing a lot of support and many prospective members by the present-day conventional use of the elaborate receiver, usually bought complete. It also seems to me that the local societies and—if you will forgive me saying so—you yourselves are paying too much attention to the transmitting side of Amateur Radio; in addition there seems to be a plethora of articles on V.H.F. to the almost entire seems to be a plethora of articles on V.H.F. to the almost entire seems to be a plethora of articles on V.H.F. to the almost entire seems to be a plethora of articles on V.H.F. to the almost entire seems to be a plethora of articles on V.H.F. to the almost entire seems to be a plethora of articles on V.H.F. to the almost entire seems to be a plethora of articles on V.H.F. to the almost entire seems to be a plethora of articles on V.H.F. to the almost entire seems to be a plethora of articles on V.H.F. to the almost entire seems to be a plethora of articles on V.H.F. to the almost entire seems to be a plethora of articles on V.H.F. to the almost entire seems to be a plethora of articles on V.H.F. to the almost entire seems to be a plethora of articles on V.H.F. to the almost entire seems to be a plethora of articles on V.H.F. to the almost entire seems to be a plethora of articles on V.H.F. to the almost entire seems to be a plethora of articles on V.H.F. to the almost entire seems to be a plethora of articles on V.H.F. to the almost entire seems to be a plethora of articles on V.H.F. to the almost entire seems to be a plethora of articles on V.H.F. to the almost entire seems to be a plethora of articles on V.H.F. to the almost entire seems to be a plethora of articles on V.H.F. to the almost entire seems to be a plethora of articles on V.H.F. to the almost entire

Yours faithfully, C. H. PERKINS (BRS11291).

Obligatory use of Inter-services Alphabet

DEAR SIR,—Having been asked what we thought of the Council's agreement to support the W.I.A. proposal to make the use of the Inter Services Phonetic Alphabet obligatory, we had to admit that we had not seen it. We found it eventually tucked away in four lines on a page which devoted \(\frac{1}{2}\) of its available space to "Nominations for the Council 1950." This extremely important announcement has therefore probably been missed by others who like ourselves have little time for the tibits of personal gossip which these small paragraphs often contain.

The announcement is of vital importance to amateurs, not because we should not say G8 Wild Indians but G8 William Item (many amateurs do use this alphabet anyway) but that the general body of amateurs has not been consulted on this matter and that the Council have pledged the Society members to support a resolution to compel themselves to do something. It is agreed there are at present no penalties mentioned for failure to

support a resolution to compel themselves to do something. It is agreed there are at present no penalties mentioned for failure to observe the rules. Amateurs who do not speak English (or Australian!) are likely to experience much difficulty. Fancy Waltzes from Vienna by Johann "Jig" Strauss.

It seems absurd to talk of enforcement, especially when the people you intend to force are the source of your income, and obligation is polite enforcement. The regimentation of life in general is making itself felt in other ways but to encroach upon the Amateur World is going some. Is this the forerunner of an Amateur Empire complete with Emperor and lots of rules and regulations (Amateur K.R. and A.C.I.'s)? That is not so absurd as it sounds. There will be plenty of candidates for the crown. Seriously we suggest that all members should consider this move by the Council very carefully. This obligatory business could be the thin end of the wedge and certainly four lines is very thin.

Yours faithfully,

P. M. CARMENT (G50W), C. R. THOMPSON (G8WI), C. HUBBARD (G50X), J. N. Cook (BRS9360), G. HOWARD WILLIAMS (G3BI).

Officers' Mess, R.A.F. Medmenham, Marlow, Bucks.

Officers' Mess, R.A.F. Medmenham, Marlow, Bucks.

Attention DX'ers QLM !

DEAR SIR,—Frankly it leaves me bewildered to listen to the idiotic behaviour of so many operators on the DX bands these

We all know what happens when a "new one" shows up—how rapidly everyone piles up on top of his frequency and how soon (particularly if the DX is a poor or inexperienced operator) a state of affairs is reached where no-one has a real contact at all.

Not even RST's can be exchanged.

The more enlightened DX operators sometimes resort to the skilful use of QLM or QML and the result is a joy to listen to—or

is it?
To quote a few examples although to many (yes I assure you many) this information will be a revelation.

- TA3AA calls CQ on 14020 and signs QLM—several dozen eager beavers start calling him smack on 14020 and two or three call him between 14001 and 14005—result is Jules has a 100 percent. QSO with one of the two or three.
- 2. W3EKK/VK9 calls CQ on 14018 and signs QLM—a few hundred W6's call him on his own frequency and a G5 who called on 14003 kc/s. beats them all to it despite their kilowatts and multi-element rotary beams.
- 3. AC4RF, VQ3HGE, etc., MIC, TA3GVU, VP2GJ, CP1AT, TA3SO, QQ5QF, ZD9AA and ZD8B, are others who make or have made consistently good use of QML, QLM or other self explanatory indications such as "10 high." or "low side," etc. It pays dividends to listen and not go calling even before the DX station signs.
- 4. FP8AA calls CQ on 7050 kc/s, and signs QLM—about 500 W1, W2, W3 and W4's, etc., all come back at him between 7048 and 7052 (sounds very like bagpipes playing!) but he answers a G4 who had called on 7002 kc/s.—moral "It pays to listen and to know your Q-code."

 As a matter of fact it might well have been impossible for us G's to work this "rare one" had it not been for the widespread ignorance of the "rats" in the "race."

ignorance of the "rats" in the "race."

5. A G6 calls CQ DX on 3520 in the early morning and signs QLM several times—he then carefully tunes from 3500 upwards but not a single reply is heard till he reaches 3520 where several are calling or just signing—he picks a W3 a kilocycle or so low and starts a QSO—the W3 does not come back next over, but a W4 and a W1 both do, saying "Pse. rpt. QSO? QRM hr." None of them can read the G6 because they are all QRM-ing him by calling on top. The G6 then calls QRZ and signs QLM about 6 times and this time W2QHH as clear as a bell and only running 14 watts answers on 3501—they have a 100 per cent. QSO. The moral?—well need I repeat? watts answers on 3501—voral?—well need I repeat ?
Good hunting chaps but please listen—it pays!

J. M. KIRK (G6ZO).

P.S.—If you still don't know what QLM and QML mean, then give up chasing DX and QSY to V.H.F. By so doing you will be doing us all a greatly appreciated service because at least we shall be able to hear the DX when it comes back!

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Changes of address will, as hitherto, be notified to Regional Representatives by means of a monthly circular.

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R. T. Symons, Hesdin, Mount Ambrose, Redruth, Cornwall.
A. Hodds, Colaridae Villa, Lime Street, Nether 18541 18542 Cornwall.

18543 A. Hobbs, Coleridge Villa, Lime Street, Nether 18544

18545 18546

A. A. Hobbs, Coleridge Villa, Line Street, Nether Stowey, Somerset. R. R. POULTER, 17 Harnham Road, Salisbury, Wilts. H. B. Nield, Newcot, Chichester Drive (W.), Saltdean, Brighton, Sussex. J. E. Holt, 19 Northdale Rd., Bakersfields, Nottingham. E. E. T. Shield, 2 Reid's Avenue, Stevenson, Ayrshire. J. Dockerty, Holmleigh, Horsefair, Boroughbridge, Vorks 18548 Yorks.

G. JONES, 126 Woodlands Street, Smethwick, Staffs. 18549 18550

B. H. Body, 19 Monk Road, Bristol 7. W. W. P. Ashton, The Stables, Plasmawr Road, Fairwater, Cardiff. 18551

water, Cardill.
L. C. Richards, Longdowns, Nr. Penryn, Cornwall.
J. Ashford, Flat 3, 57 Alum Chine Road, Bournemouth.
G. W. Nichols, 19 Park Rd., Sutton Coldfield, Warwicks,
DR. S. A. MacLean, 43 Royal Hospital School, Holbrook,
Suffolk. 18552 18553 18554 18555

18556 A. Clark, 193 Oundle Road, Woodston, Peterborough,

Northants. 18557 18558

18559 18560

NOTHARIS.
A. W. G. WEAVER, 20 Ivy Road, Birmingham 30.
D. W. SMITH, 96 Empress Road, Liverpool 7.
J. G. A. LAMB, 12 Greenhead Road, Huddersfield, Yorks.
W. F. Edgar, 9 West St., Scotter, Gainsborough, Lincs.
D. E. Hobbs, 21 Paisley Road, Renfrew, Scotland.
W. H. C. Paish, 12 Spring Gardens, Stow-on-the-Wold, 18561 18562

A. Franklin, 6 Waterpark Road, Salford 7, Lanes. J. R. Watts, 23 Welney Place, Wadsley Bridge, Sheffield 6, Yorks. S. D. Morrison, c/o Montgomery, 341 Hardgate, 18563 18564

18565 Aberdeen.

Aberdeen.
18566 L. KNOTT, 37 Dudley Road, Brighton 6, Sussex.
18567 A. H. TURNER, 67 Ashley Road, Altrincham, Ches.
18568 D. F. NEALE, 53 Swanage Road, Birmingham 10.
18569 A. B. ROBERTS, 56 Davenport Street, Bolton, Lanes.
18570 D. G. HOLMES, 11 Cromwell Road, London, N.3.
18571 J. E. WILSON, 66A Bloom St., Edgeley, Stockport, Ches.

* Transferred from Associate Grade.

Associates and Junior Associates

W. E. HARRIS, 29 Moorside Rd., Heaton Moor, Stockport, Ches. R. N. R. Fraser, Abbey Hill Hotel, Winchester, Hants. N. D. Ainsworth, 3 Moss Terrace, Cross Lane, Dean Row, Wilmslow, Ches.

R. W. WILKINSON, M.B., Ch.B., The Royal Infirmary, Bradford Yorks.

F. ELY, 7 Broom Mount, Belle Isle, Leeds 10, Yorks. W. A. WHITWORTH, St. John's College, Kintbury, Newbury,

WESTMORELAND, 29 School Rd., Langold, Nr. Worksop, Notts.

D. L. BAKER, 54 Compton Road, London, N.21, P. KNIGHT, c/o Cable & Wireless, Ltd., 44 Northam Rd., Penang, Malaya.

K. SMITH, 82 Granville Road, London, E.17. M. Foy, 69 High Street, Cemaes Bay, Anglesey, N. Wales. R. SWINNEY, 19 Dene Drive, Prior Park, Tweedmouth, Berwickon-Tweed.
A. M. SANDEMAN, 2 Westchiffe Avenue, Westchiff-on-Sea, Essex.
M. M. MACKAY, 108 Raleigh Street, Nottingham.
A. R. McWalter, Wemyss Bay Hotel, Wemyss Bay, Renfrew-

shire.

shire.

P. T. Ryans, 12 Plevira Road, Hampton, Middx.

D. J. Linsey, 39 Russell Lane, London, N.20.

J. J. Porisse, Oaklands, Greenfield, Nr. Oldham, Lanes.

S. Mann, 15 Eastfields Road, London, W.3.

D. Spalding, 220 Woolwich Road, London, S.E.7.

T. A. Marks, 13 Kenbury St., London, S.E.5.

R. Miles, Slaughterford, Nr. Chippenham, Wilts.

F. E. ILISEEY, 21 East Grove, Choriton-on-Mersey, Manchester 13.

13.
O. W. ROBERTS, 21 Alderley Tcc., Holyhead, Anglesey, N. Wales, E. C. DAY, 110 Vicarage Farm Rd., Heston, Hounslow, Middx, H. S. Parker, High Street, Thornham, Kings Lynn, Norfolk.

(Errors in this list should be notified to Headquarters promptly.

Annual General Meeting—Continued from Page 235.

A miniature of the Worlley Talbot Trophy was presented to the first holder, Mr. J. W. Mathews, G6LL, it having been ascertained that this was omitted when the trophy was awarded to him in

B.E.R.U. Senior ... Mr. G. F. Cole, VK2DI
B.E.R.U. Junior ... Mr. A. E. Seymour, ZB1Q
Arthur Müne ... Mr. L. Hardie, GM2FHH tt to receive their awards;— Mr. G. F. Cole, VK2DI Mr. A. E. Seymour, ZBIQ Mr. L. Hardle, GM2FHH Mr. T. F. Herdson, G6ZN Mr. P. G. Tandy, G2DU Mr. J. Spragg, G3APY Mr. E. J. Greenwood, G4OS 1930 Committee Somerset Arthur Watts Miniature ...

LETTER OF THE MONTH

WORTHY of reproduction is the following letter, addressed to the Editor of the Worthing Gazette and published in that paper on December 28, 1949:—

Sir,—Television reception in this district is particularly prone to interference and with the rise in the number of viewers we are finding that an increasing amount of this interference is being attributed to radio amateurs. We would like to draw your attention

to the following facts.

A considerable number of people are interested in radio as a hobby but only a few of these become true radio amateurs, those whose main interest is transmitting on the short and ultra short There are about 18 of these amateurs in the Worthing

waves. There are about 18 of these amateurs in the Worthing district at present.

Their hobby is, perhaps, the most closely regulated of any. They are only allowed to operate under a licence granted by the G.P.O., for which they have to prove their proficiency both in technical matters and as operators. Their stations are periodically inspected by the G.P.O. to ensure proficiency, they are restricted as to the power of their transmitters (considerably less than in most parts of the world) and they are confined to certain parts of the short waves, which are vigilantly monitored.

Departure from any of these rules, which would include interference with any other radio service such as shipping, aircraft control, police radio, Press messages as well as broadcasting, will swiftly bring action by the G.P.O., and persistent offenders are liable to lose their licences. It is a punishable offence to transmit without a licence.

without a licence.

The radio amateur is a reasonable person who enjoys his (or her) hobby but who realises that very many people equally enjoy the pleasure and entertainment derived from broadcasting and television, and he does not wish to deprive them of their enjoyment. Therefore he takes precautions to ensure that the minimum amount of interference is caused by his transmitter, but it is unfortunately true, due to technical reasons, that some interference

amportanticely true, due to electrical reasons, that some interperence may be picked up which is due to his activities.

There are also many other things which will interfere, even ordinary broadcast receivers, and in order to trace the exact source of any trouble the best course to take is to complain to the G.P.O. Their trained engineers will find if it is an amateur which is the substitute of the best to the complain to the G.P.O. Their trained engineers will find if it is an amateur who is the culprit, and if so, he will be only too willing to co-operate with the engineers and the listener in finding a cure for the benefit

R. B. FORGE, Honorary Secretary.
For and on behalf of the Committee,
Worthing and District Amateur Radio Club.
2 The Plantation, Worthing, Sussex.

Seasons

Greetings

Make 1950 a good year for DX and pleasant operating with a Radiocraft Transmitter

OUR TYPE 45 P is a self-contained 25 W. C.W. rig that packs a punch out of all proportion to its size. Built-in power supply 350 V. 130 mA. and L.T. 0/150 mA. meter fitted, switched to read either CO or PA anode current. Harmonic oscillator affords greater flexibility with crystal control. Size 11" × 6" high.

Full details of this and our other transmitters contained in

Type 45P, £13 18s. 6d. Type 45, £7 16s. Type 44, £7. Type 44 KIT, £4 19s. Type 45 KIT, £5 15s.

NEW TELCON 300 ohm Feeder (circular type), at 1/3 per yard. Telcon 80 ohm Twin Feeder, 400 watts rating, at 9d. per yard.

Please add postage to above items when ordering.

FOR OUR FRIENDS in El-land.

We have pleasure in announcing that Messrs. Corry of Letterkenny, Main St., Letterkenny, Co. Donegal, are our Sole Agents for Eire and have facilities for rapid supply of Radiocraft Equipment.

Send stamp for new Lists TR4 and M/9.

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AMATEUR requires 500 kc/s. crystals reground to 2135 kc/s. and 2012 kc/s. Replies stating price to: PARK, c/o Matheson, Fishmarket, Aberdeen. [46]

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BATTERY chargers 2-6-12 V. 1 A., in neat steel case with ammeter, for 200/250 V. A.C. mains. Exceptional value, 42s. 6d.—THAMES VALLEY PRODUCTS, 28 Camden Avenue, Feltham, Middx.

BENDIX RA1B Receiver 150 kc/s.—15 Mc/s., Power Pack, 10 in. speaker, grey crackle case. Very fine communication equipment, £12.—Box 34, PARRS, 121 Kingsway, London, W.C.2. [34]

ROUND to satisfy. BULLETINS bound 6s. 6d. volume, post free.

BOUND to satisfy. BULLETINS bound 6s. 6d. volume, post free.

H. W. ROBINSON (G2BBT), 35 Forty Acres Road, Canter-

NEW boxed IT4s, IS5s, 4s. 6d. each. 80 ohm screened twin, 8d. per yard.—LIVERMORE, 256 Grove Green Road, Leytonstone, London, E.11. [44]

Sd. per yard.—Liverburg, 250 Grove Green Road, Leytonstone, London, E.11.

NEW valves.—803, 338.; 807, 108.; 808, 815, 358.; 813, 428.; 814, 408.; 866,866a, 178. 6d.; 6L6, 8s. 6d.; 6K8, 6SG7, 7s. 6d.; IT4, 6B7, 6J7, 6SC7, 6s.; 6J5, 0Z4, 4s. 6d.; and many others. Cash or C.O.D.—P. & B. SUPPLY CENTRE LTD., 56 Draycott Place, London, S.W.3.

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QSL's and log books (P.M.G. approved); samples free; state whether G or B.R.S.—Atkinson Bros., Printers Elland. [809]

QSL cards to your own design at reasonable prices. Just send rough sketch and colour scheme.—G6CB, 7 Caxton Road, Wimbledon, S.W.19.

QSL's Logs. Minerva wish all clients a Happy 1950. Our New Year Resolution is to produce even better cards. Samples.—Minerva Radio Publicity, Elm Park, Romford, Essex. [70]

PECEPTION SET R208 (modified), 10–60 Mc/s., A.C. mains power unit, £7 or offer. Wanted, metal cabinet for R.107.—Box 59, Parrs, 121 Kingsway, London, W.C.2. [59]

RME 69, 11 valve single signal superhet 9-550 metres, no gaps, R and Db meter-Crystal. BFO-NL, a beautiful job, nearest £25. Also Hambander mint condition, 1-6-33 Mc/s., what offers? Wanted CR100 case.—CPL. NUTTALL, Sigs. 3 Group, R.A.F., Mildenhall, Suffolk.

R. 107, £10. R103 1/16 Mc/s., 6 V. Spare valves. Vibrator, £12 10s. Buyer collects.—NOLAN, 78A Bedfont Lane, £12 10s. Buyer collects.—NOLAN, 78A Bedfont Lane, £12 10s. Buyer collects.—NOLAN, 78A Bedfont Lane, £12 10s. Collects.—NOLAN, 78A Bedfont Lane, £27 10s.; 2 in. Transmitter magslips, 7s. 6d.; assorted new resistors, 50, 5s. 6d., 100, 10s., carriage extra, C.W.O.—R. T. & I. SERVICE, £24 Grove Green Road, London, E.11. Ley 4986. [65 SALE.—H.R.O. noise limiter, 8 coils spares power pack, 100-1000 crystal microphone and stand, £25 lot.—HOLLAND, 42 Selwyn Road, New Malden, Surrey.

SALE.—Taylor 70A as new, £7 or nearest. 25L6GT, 3D6, 6 K6GT, 6s. cach. 6L6G, 6SN7, 5U4G, 7s. 6d. cach, all new.—O'NELL, Crewfordsburn, Co. Down.

SALE.—3 band exciter 6V6's plus S07 P.A.; Taylormeter 90A, just overhauled by makers; 2 absorption frequency meters, Labgear, two Q.C.C. 7 Mc/s. Crystals; all other gear, including H.V. transformer thrown in, £14.—G3BMO, "Greywell," Tollerton Lane, Tollerton, Notts.

TRANSMITTER, rack and panel. Commercially built speech amplifier and modulator. Woden UM3, 1150 V, and 500 V. supplies. Audio oscillator 6V6/6L6/807-T240 provision for P.-P. P.A. £50, or consider good receiver and cash.—G2DT, 8 Blinco Grove, Cambridge, Telephone S7024.

UNUSED 6AG5 valves with base and screen, 6s., ditto 6J6, 86x 6d. Bandspread H.R.O. coils wanted, also Senior Manual, —Box 50, PARRS, F21 Kingsway, London, W.C.2.

[50] VALLANCE'S require to purchase Eddystone S640 receivers new or secondhand. Also B2 equipment, transmitters and receivers, complete sets, preferably unused. Best prices paid by return of post.—VALLANCE & DAVISON LDD., 144 Briggate, Leeds, 1.

WANTED.—Antenna Unit and Text Book for R.C.A. Transmitter No.ET.4332/36, or M.1 Series. Good price g return of post.—Vallance & Davison Lieb., 134 Blogs [62]
Leeds, 1.
WANTED.—Antenna Unit and Text Book for R.C.A. Transmitter No.ET.4332/36, or M.1 Series. Good price given.—
Box 51, Parrs, 121 Kingsway, London, W.C.2. [51]
WANTED.—AR88,D Handbook.—Write: 693 Leeds and Bradford Road, Bramley, Leeds.
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WANTED.—AR88D's. SX 28's. Cash or part exchange.
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WANTED.—Communications Receiver AR88D or similar type, good performance 30 Mc/s. essential, slight repairs not objectionable.—Full details, frequencies, etc., and price to: P. M. Nicolson, 55 Bellwood Street, Glasgow, S.1. [33]
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