

October 1949

The original front cover for this edition was not available.



H. WHITAKER G3SJ

10 YORKSHIRE STREET, BURNLEY.

Phone: 4924

HALLICRAFTERS BC610 (HT4). Complete with speech amplifier and exiter units for four bands, all valves and auto trans., as new £150. Carriage paid Great Britain (three only).

HALLICRAFTERS 669b. A complete station including receiver, for 160 and 80, pair of 807's modulated by a pair of 6L6's complete with power supply, £50.

EXCITER UNITS for BC610, any band including 21 Mc/s., 25/- each.

BC221's frequency meters. Brand new, unused without a blemish, £15. A few new, but very slightly soiled from £9.

CRYSTALS. The following range by Bliley, R.C.A., Stand, etc. All are FT4 American 1/2" pin fitting with the exception of the 3.5 Mc/s. band, which are 3" BC610 fitting. 7,000/7,300 kc/s., your choice of frequency, 12/6; 6,000/6,083 kc/s., 8,000/8,200 kc/s., your choice of frequency, 15/-; 3,500/3,800 kc/s., your choice of frequency, 15/-.

CRYSTALS. Special offer for top band.

A complete range by Western Electric Co.; totally enclosed in FT4 1/2" spaced holders, with plated electrodes, and prolific harmonic generators. All are for doubling into Top Band. Range 875 kc/s. to 998 kc/s. in I kc/s. steps. Over 5,000 to clear at 5/- each, 48/- per dozen.

To commercial users of crystals we can quote almost any frequency in or out of the Amateur bands from our comprehensive stocks exceeding 20,000. Two special offers detailed below represent unrepeatable bargains, and are made as the result of an extremely fine purchase.

TU UNITS. Approximately 7,000 to clear, all brand new and immaculate condition, TU7, TU9, TU8b. 10/- each, carriage paid.

VALVES. 100 TH in sealed Eimac cartons, 25/- each. 5R4GY, R.C.A., 950/0/950 at 190 mA., standard octal base, 4/- each, 36/- dozen. All Thermador transformers as previous advertisements are still available, and all R.C.A. lines, including 2,000/0/2,000 at 800 mA., 90/-.



Brand New in maker's carton. Ex U.S.A.S.C.

Master Oscillator, type MI-19467-A.

A "ready-made" V.F.O. Unit, ranges 2-10 Mc/s., 807 and spare (2 valves), grid current meter—E.C.O. circuit, variable inductances, calibrated micrometer controls, etc., in metal case 12" x 10" x 6", with Instruction Books. Clydésdale price only, 79/6 each. Carriage paid.

New, Ex R.A.F.

Battery Amplifier, A1368.

A 2-valve, 2-stage amplifier, for inter-com. and transmitter mod., pre-amp. with valves, VR35 (QP22B), VR21 (PM2HL), transformers, etc. Complete (less batteries) in black metal case, 7" x 41" x 41". Improved version of A1134, H.T. 120 V., G.B. 6 V., Clydesdale's price only, 11/6 each.

CLYDESDALE

Bargains in Ex-Service Radio and Electronic Equipment

Ex U.S. R28/ARC5 Mobile U.H.F. Navy. Receiver.

For 144 Mc/s. operation, frequency 100–150 Mc/s.
A 10-valve superhet, complete with 4/717A's, 2/12SH7's, 2/12SL7's, 12SK7, 12A6, 24 volt motor tuning, etc. (less dynamotor and crystals). In metal case 13½" x 7" x 4½", for 24 V. operation. Clydesdale's price only, 37/6 each. Carriage paid.

Bridge Megger. Surplus Adm. stock. Test set, 100 megs. at 1,000 V. Made by Evershed & Vignoles, Ltd. Comprising megger and decade resistance box complete. Clydesdale's price only, £35. Carr. paid.

Wee Megger.

Test set, 20 megs. at 250 V. Conversion data to 500 V. supplied. Made by Evershed & Vignoles, Ltd. Clydesdale's price only, £5 19s. 6d. Post paid.

Ex U.S.A.S.C. Brand New, in maker's carton Crystal Multiplier, type MI-19468.

Ranges 2: 6-7 Mc/s., 807 and spare (2 valves). Grid current meter, variable condenser, calibrated micrometer control, etc., in metal case, 13" x 10" x 6", with Instruction Books.

Clydesdale's price only, 39/6 each. Carriage paid.

SUPPLY 2 BRIDGE STREET E CO.LTD. GLASGOW - C.5

Send now for List of new lines. Please print Name and Address. Phone: SOUTH 2706/9 BRANCHES IN SCOTLAND, ENGLAND AND NORTHERN IRELAND.

Still Available.

Unit of SCR-522-BC-624 Receiver Chassis Unit of SCR-522—BC-624 Receiver Chassis with 11 valves, etc., plus Free Gift of BC-625 Transmitter Chassis (partly stripped by B.O.T.) at 37/6. Carriage paid. R1481, Rack mtg. V.H.F., 10 valve R.T. Receiver at £4 19s. 6d. Carriage paid. A.C. Mains, Rack mtg. Power Unit type 3, at £3. 19s. 6d. Carriage paid. Special price for both R1481 and P.U. is £8. 8s. 0d. Carriage paid.



Pump

Brand New, in maker's original packing.
137J/2725, made by G.M.C./Delco (U.S.A.).
24 V. D.C., 11·2 A., 6,600 r.p.m., ½ h.p.
motor, with two vacuum and pressure
pumps, whole assembly 12" x 7½" x 7",
shock mounted, on board 14½" x 6½" x ½".
Accessories include 10 nozzles, 3 with rubber tubes and Schwien vacuum regulating valve.

Clydesdale's price only, 50/- each. Carriage paid. Also 1371/3749 as above, but one pump only, 8 nozzles, I with rubber tube, and

Schwien valve. Clydesdale's price only, 40/-each. Carriage paid.



U.S.A. SIGNAL GENERATOR



U.S.A. SIGNAL GENERATOR TYPE 1-72-J * **BRAND NEW**

Special offer of U.S.A. Signal Generator, Type 1-72-J.
This portable Meter has a range of 100 kc/s. to 32 Mc/s, with 400 cycle modulation. R.F. output voltage is maximum over 30,000 microvolts in all bands excepting 10/20 Mc/s. band where maximum output is 10,000 microvolts. It operates from 110/125 V. 50/60 cycle A.C., and with Auto Transformer can be plugged in for immediate use. A shielded Output Lead and Spare Fuse is included. Weight 22 lbs. Size 15"x 7" x 9½". Finished in green crackle with metal front case cover to prevent damage. Brand new, complete with Instruction Book. (Suitable transformer advertised next column.)

STOCK PURCHASE OF MAINS TRANSFORMERS *
A total output purchase from a manufacturer enables us to offer you the following cut prices in BRAND NEW AND GUARANTEED Transformers. These are Not Government surplus.

Input A.C. Mains 50/60 cycles, tapped 210, 220, 230 V. Both sub-chassis mounting and semi-shrouded.

Output: 250-0-250 V. 60 mA., 5 V. 2 A., 6·3 V. 3 A. Output: 350-0-350 V. 1001mA., 5 V. 2 A., 6·3 V. 4 A. 15/- each 20/- each These Transformers are definitely the best value offered in the Home Trade.

COMPACT CONTROL UNIT, TYPE 108 *

This excellent unit contains some very nice spares including two meters, one 5 mA. and the other 20 or 40 V., both moving coil 22. flush mounting. In addition there are two switches, and two potentiometers, the whole encased in grey metal container with a three-pin 5 A. standard mains plug attached to each. The unit has a perforated metal back to cool the nichrome resistor incorporated internally.

WORTH 25/-. OUR PRICE 10/- NEW

FILAMENT TRANSFORMER

Large 500 watt type with standard 200/230 V. 50/60 cycles A.C. Mains input. Output, 4-0-4 V. and 6-3-0-6-3 V. with 3 sets of 4-0-4 and 3 sets 6-3-0-63 V. Brand new, but Only 15/- each

GRAND CABLE OFFER!

Nine strands .012 tinned copper rubbercovered semi-flat cab tyre type. List price 11d, per yard. Our Price: 12 yards for 3/6 or 100 yards for 25/- roll.

FAST AND SLOW MOTION TUNING DIAL, 4" dia. Dial marked 0-100 engraved black on white with transparent pointer. Dial marked 0-100 engraved black and vernier reduction 100 to I ratio. Complete with spindle. Brand new in cartons with wooden former. Worth 25/-, only 4/- each!! former.

AUTO TRANSFORMERS

Auto Transformers, genuine 100 watt, 230 V. A.C. to 115 V. A.C. Fully shrouded and compact, size 3" x 3" x 3\frac{1}{2}". Great bargain, only 14\frac{1}{2}- each.

L.F. CHOKES

6 H. 60 mA. open type ... 3/- each 4/6 H. 250 mA. Fully Shrouded 5/- each 3/4 H. 150 mA. Fully Shrouded 15 H. 100 mA. Fully Shrouded U.S.A. 7/6 each

ALL BRAND NEW

BRAND NEW ELECTROLYTIC

T.C.C. 8 x 8 x 8 µF., 400 V. working with high ripple section for rectifier. Four for 10/6. Buy four for the value of one. Size 41" x 41".

ERPO

I-GT-GEORGE S

NºS / & 45 TRAMS PASS THE DOOR

Select GOVT, SURPLUS Bargains

INDICATOR UNIT TYPE 157

These units are fitted with the now well-known cathode ray tube, type VCR97, as used in many television designs, 16-VR65's, 2-VR54's, 2-VR92's, H.V. condensers, resistors, wire wound pots, crystal unit, switches, Muirhead slow motion drive, etc. The whole is built on a metal chassis and fits into a case 18" x 81" x 111". Condition practically as new. Price 63-17-6 (Carriage 7/6).

UNIT TYPE 50

A chassis containing numerous components including the following; 5 stand-off insulators, 5 split stator condensers, extension spindles, 6 international octal valve holders, over 25 resistors and over 15 mica condensers, tag boards and R.F. chokes. Price 4/6 each (Postage 1/6), or 3 for 14/- (Carriage free).

RECEIVER TYPE R3084A

Easily converted into a first rate 2 metre receiver (see July, 1948, R.S.G.B. BULLETIN) or television receiver. Valves fitted are: 7-EF50's, 2-VR136's, I-VR137, I-VR92. Price £3 (Carriage 7/6).

AERIAL SWITCHING RELAY TYPE 78

This unit can be operated either manually or from 24 V. and will switch two separate feeders simultaneously. Price 10/- (Post free).

CRYSTALS

Brand new American plug-in type, size I 1" x 1" x 1" thick, 1" pin spacing, 24 different frequencies between 4,035 kc/s. and 5,955 kc/s. Price 11/6 each or 3 for 33/- (Postage free).

LYONS RADIO

3 Goldhawk Road, Shepherds Bush, LONDON, W.12 Telephone: SHEpherds Bush 1729.

SOUND-POWERED TELEPHONES

Admiralty Pattern 12501, Mark X*** self-energising Telephone Sets, unused. No batteries required. Ideal for house-to-shack or any other two-way work, no matter how long the line. Can be used as desk type, or mounted on wall, or worn on chest leaving both hands free, for field or roof work.

Do not miss these, they are really good; NOT a kit of oddments to piece together, but ready-to-use Telephone Sets, ruggedly made by T.M.C. Whilst stocks last, only 17/- for two sets, post paid. Complete with diagrams and instructions for bell circuits.

WIRELESS SUPPLIES UNLIMITED

264-266, Old Christchurch Road **BOURNEMOUTH, Hants**

Some special lines

Some EDDYSTONE items

of outstanding merit:

SEMI-AUTO MORSE KEY NO. 689 Streamlined in appearance and action £3.17.6

DIE-CAST ALUMINIUM CHASSIS

Combines	rigidity with easy	drilling.	
No. 727.	12" × 9" × 3"		18/6
No. 643.	81" × 53" × 23"	80 929	8/6

METAL CABINETS

Finished	ripple - black	with hinged	lids.
No. 644.	$10\frac{1}{2}'' \times 7'' \times$	6" deep	19/6
No. 609.	16¾" × 8" ×	8¾" deep	45/-

METALWORK

For 2 metre Converter and Transmitter. Simplifies constructions and obviates the hard work. All holes drilled and specified screens supplied.

No. 761.	Converter metalwork	 25/-
.No. 759.	Transmitter metalwork	 25/-

EDDYSTONE "2 METRE GUIDE"

Gives constructional details of converter and transmitter ...

(Telephone: GERrard 2089)

WEBB'S RADIO, 14 SOHO ST., LONDON, W.I (Shop hours: 9 a.m.—5.30 p.m. Sats. 9 a.m.—1 p.m.)

from Webb's general stock: CERAMIC FORMERS

$3\frac{1}{4}$ " × 2" dia. Threa		2 tur	ns, 9 turns	per	
inch					9d.
POLYSTYRENE F Midget type. Height	t ₹", d	ia. 32	". With adj		
able dust-core				10.0	6d.
WEBB'S "465" I.	F. TI	RAN	SFORMER	RS	
A highly efficient tra a reasonable price.	ansfor	mer	with "Q"	of	140 at
Price each 6/-			Per pair		11/9
WEBB'S STILL H	AVE	NE	W VALVE	S:	
Outstanding VHF Tr	riode		8012		18/6
Hots-up your RX			717A		7/6
Best for VHF			832		25/-
Small VHF Triode			7193		3/6
Triode 500 Mc/s. an	d up		15E		21/-
V.H.F. Diode			9006		4/6
V.H.F. R.F. Amplific					4/6
A gem from EIMAC			100TH		35/-
Still more power			250TH		45/-
			872A		25/-
THE OLD WAR-H	ORSI	Ε!	807		

WEBB'S guarantee of satisfaction covers all our stock, including the above valves.

Outstanding Offers to R.S.G.B. Members

40 VALVE RADAR RECEIVERS



Type R-31 APS-2E. A magnificent instrument. Absolutely brand new and unused in original manufacturer's packing cases. Fitted two Cathode Ray Tubes. One type 5FP7 5" diameter Magnetic deflection and one 2API 2" electrostatic. Valves fitted comprise 8 6L6G, 13 6SN7, 1 2X2, 2 6H6, 2 6XS, 8 6AC7, 3 YR105, etc. Has Blower motor cooling fan, 3 panel meters and a fabulous quantity of components. Input 115 V 400 c. Size 26" × 19" × 12" housed in a fine block careful exist. fabulous quantity of components. Input 115 V 400 26" × 19" × 12" housed in a fine black crackle case.

Original cost approx. £150 each. A few only available and offered subject to being unsold at 16 gns. each. Carriage 10/- extra. subject to being unsold at 16 gns. each. Carriage 10/- extra. A few used models, good condition, £7.10/- Carriage 10/-.

COMMUNICATION RECEIVERS. We can usually offer AR88, HRO, 1155, R107, 1155, SX27, etc. Inquiries invited.

CANADIAN No. 58 MARK I TRANSRECEIVER. 33-50 m. Brand new and complete with Headphones and Microphones. 12 gns.

Vibrator pack, complete with accumulators for this. 3 gns.

R1132. II-VALVE RECEIVER, 100-126 Mc/s. Complete with valves. Aluminium grey cabinet, 19" × 11" × 10". New condition. £4.

ABKI. II-VALVE RECEIVERS. 6 of 6SH7, 2 of 6H6, 2 of 7193. Motor generator with reduction gear, 3 relays, heavy duty resistors, etc. New condition. 20/-. Carriage 5/-.

BC966A. 13-VALVE RECEIVERS. Complete with valves, motor generator relays, etc. Has 7 of 6SH7, 3 of 6H6, 3 of 7193, 12" × 12" × 8". As new. 30/-. Carriage 5/-.

POWER PACKS. Type P.P.51. Black crackle cabinet, size 20" × 8" × 5". Input 115v 400-2,600 c/s. Output 730v-380 mA, 935v-3-7 mA, 370v-130 mA, 6-3v-2 A. Fitted four SRG. (similar U50) Rectifying Valves. Power Transformer makes fine multi-ratio 200 watt Modulation Transformer. Oil Filled 1,000v 4 µF. Condensers. Heavy Duty Chockes, etc. In original wooden unopened crates. (State name of nearest Railway Station). Brand new 25. Carriage 5. per of nearest Railway Station). Brand new. 35/-. Carriage 5/- per

AERIAL UNITS

Size 16" × 8" × 8". Black Crackle Cabinet Aerial Loading variometer, 3-pole 5-way Ceramic Switch. 4 porcelain lead-through insulators. Precision slow motion dial. 3 6,000 V. 80 $\mu\mu$ f. block condensers. Brand new, 10/- each. Carriage 2/6.



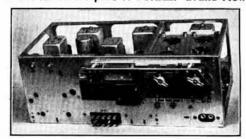
AIRCRAFT ANTENNA MOTORS. 28 V. 5 A., AIRCRAFT ANTENNA MOTORS. 28 V. 5 A., ½ h.p., instantaneous immovable stop, elaborate reduction gearing, 6" detachable pulley, total weight only 5 lbs. will turn a 10 metre beam easily on only 12 V. input, baseplate measures only 5½" x 4", four fixing holes ready. American GEC manufacture. Just what you have been looking for. Brand new in original sealed cartons. Amazing value. 39/6. Carriage 1/-.

VCR97 CATHODE RAY TUBES. Short persistence 6", ideal for Television. 37/6. Carriage 2/6. Bases to suit 4/-. Post 6d.

1355 RECEIVERS. 11 Valves. Brand new and unused. 63/-. Part packing and carriage, 5/-.

1426 RECEIVERS. 8 V. Brand new and unused, 63/-. Part packing and carriage, 5/-.

2 METRE ENTHUSIASTS !!! BC624 Receivers part of SCR522. Brand New.



Easily converted to cover 2 metre band. 10 valves. 9003 1st R.F. 9003 Mixer, 12AH7 Crystal Osc., 9002 Harmonic Gen., 9003 Harmonic Amp., 12SG7 1st 1.F., 12SG7 2nd 1.F., 12SG7 3rd 1.F., 12C8 2nd Det., A.V.C. 1st audio, 12J5 2nd audio, 1.F. 12 Mc/s. Power required 300 V. at 60 mA. and 12 V. 1-7 A. Drastically reduced. Outstanding value. Few only. 19/6. Carriage 1/4.

CRYSTAL MULTIPLIERS. Type MI 19468. Complete with two 807 valves, 2 to 3·1 Mc/s., 4·5 to 6·67 Mc/s. Brand new with instruction book. 45/-. Carriage 5/-.

28V. DYNAMOTORS. Output 250v. 60 mA. Ideal for BC453/4/5 sets, or simple conversion to A.C. motor. 7/6.

DYNAMOTOR AND FILTER UNIT. Type CRV-21562. Input 28v. at $1\cdot 2$ amps., output 220v. D.C. 70 mA. Fully filtered. Black crackle case, $6''\times 6''\times 4\frac{1}{2}''$. 12/6. Brand new.

ANTENNA RELAY UNITS, BC442A. Brand new, 5" × 4" × 3½", Western Electric changeover Relay. 2" R.F. Meter, scaled 1–10 a., with separate thermo-couple. 12/6. Post 9d.

HEADPHONES. Low resistance DLR No. 1, with jack plug. Brand new. Two pairs post free. 3/6. Postage 6d.

LOUD SPEAKERS. First-class makes, 5" with Transformer 13/6, 8" 18/9, 10" 22/6. Post paid.

HEADPHONE IMPEDANCE ADAPTORS. High to low impedance, 2/-. Post paid.

JACK BOXES. BC1366, 2-pole 5-way switch, rheostat, two jacks, aluminium case, $3\frac{1}{4} \times 4\frac{1}{8} \times 2\frac{1}{4}$. New. Sealed cartons. 3/6. Post paid.

EF50 VALVE HOLDERS. Brand new, First grade, Doz. 3/-. Post paid.

2 µF. CONDENSERS. 500v. working. Doz. 4/-. Post paid. MAINS RADIO Interference Suppressors, 10/-. Post 1/-. DUAL RANGE COIL UNITS for BC AR299/429. 201-398 kc/s., 4150-7700 kc/s. Brand new in cartons. 2/6 each. Post 9d. SUPER SENSITIVE Midget Relays, DP., 200 ohms.

TRANSMITTER TUNING UNITS TUSB. 22/6. Carriage paid. TU6B and TU8B, good condition. 12/6. Carriage paid.

VALVES. All new. Special offer. 1215, 6H6, 7193, 4D1. All 2/- each. 65L7, 12C8, 12K8, 12SK7, 12SR7. All 4/- each. 6K7, 6F7, 6AC7, 6B8, 6SJ7, 6D6. All 6/- each. 807, 6K8, 6F8, 5U4G. All 8/- each. 3 valves, post free, otherwise add 4d. postage.

"Inexpensive Television," 1/6. Post free. D.X. Operating Manual, 2/6.

SATISFACTION GUARANTEED ON ALL THESE

Delivery per return

Britain's Leading Radio Mail Order House 55 COUNTY RD., WALTON, LIVERPOOL, 4

Established 1935

Post 6d.

Telephone: Aintree 1445

STAFF CALL SIGNS G3DLV, G3DGL

Managing Director: Mr. H. Panagakis.

R.S.G.B. BULLETIN

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Published on or about the 15th of each month.

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Forthcoming Events

REGION 1

Oldham (O.R.S.),-Alternate Wednesdays, 7.30 p.m., Civic Centre, Clegg Street.

REGION 2

Barnsley.-October 28, November 11, 7.30 p.m., King George

Barnsley.—October 28, November 1, 7,30 p.m., Cambridge House, Bradford.—October 18, November 1, 7,30 p.m., Cambridge House, 66, Little Horton Lane.

Devlington.—Thursdays, 7,30 p.m., British School Yard,

Skinnergate.

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

Harrogate.—Wednesdays, 7.30 p.m., rear of 31 Park Parade.

Huddersfield.—November 2, 7.30 p.m., Plough Hotel, Westgate.

Hull.—October 26, 7.30 p.m., Ye Olde White Hart, Silver Street.

Newcastle.—October 24, 8 p.m., British Legion Rooms, 1 Jesmond Road.

Pontefract.—Thursdays, 7.30 p.m., Travellers' Rest, Purston. Sheffield.—October 19, October 26, 8 p.m., Dog and Partridge, Trippet Lane. November 9, 8 p.m., Albreda Works, Lydgate

South Shields, Thursdays, 7.30 p.m., Trinity House, Laygate. Spenborough, October 26, 7.30 p.m., Temperance Hall, Cleckheaton.

York .-- Wednesdays, 8 p.m., 29 Victor Street.

REGION 3

South Birmingham.—October 16, November 6, 10.30 a.m., Stirchley

Stourbridge,-October 21, 8 p.m., Corn Exchange Vaults.

REGION 4

Mansfield (M. & D.R.S.).—October 16, November 13, 3 p.m., at Swan Hotel.

REGION 5

Chelmsford.—November 1, 7.30 p.m., 184 Moulsham Street. Southend.—October 20, 7.45 p.m., G5VQ, 168 Westbourne Grove, Westcliff.

High Wycombe.-October 24, 7.30 p.m., G3BZM, 7 The Quadrant, Totteridge.

REGION 7

London Meeting.—October 28, 6.30 p.m., Institution of Electrical Engineers, Savoy Place, Victoria Embankment. Tea 5.30 p.m. Lecture, "Design and Applications of the Cathode Ray Oscillograph," by Mr. O. H. Davie, A.M.I.E.E. (A. C. Cossor Ltd.).

Barnes and Putney.—November 8, 7.30 p.m., 28 Nassau Road, Barnes, S.W.13. Croydon (Surrey R.C.C.).—November 8, 7.30 p.m., The Black-

smith's Arms.

Edgware (E. & D.R.S.).—October 19, 26, November 2, 9, St.

Michael's School, Flower Lane, Mill Hill.

Enfield.—October 16, 3 p.m., George Spicer School, Southbury Road

Road.
Finsbury Park.—October 18, 7.30 p.m., 164 Albion Road, N.16.
Hayes.—November 7, 7.30 p.m., The Vine, Uxbridge Road.
Hoddesdon.—October 20, 8 p.m., The Salisbury Arms.
Holloway (Grafton R.S.).—Mondays, Wednesdays and Fridays,
7.30 p.m., Grafton School, Eburne Road, N.7.
Ilford.—October 23, 2.30 p.m., Lambourne Room, Ilford Town



Peckham.-November 7, 7.30 p.m., The Kentish Drover, Rye Lane.

Southgate,-November 4, 7.30 p.m., Merryhills Hotel, Nr. Oakwood Station.

Slough.—November 20, 7.45 p.m., Labour Memorial Hall, Chandos Street.

St. Albans,—November 9, 8 p.m., The Beehive, London Road. Welwyn,—November 1, 8 p.m., The Council Offices.

REGION 8

Brighton.—Tuesdays, 7.30 p.m., Eagle Inn, Gloucester Road. Southampton.—November 5, 7.30 p.m., 22 Anglesea Road, Shirley.

Bristol.—October 21, 7 p.m., Keen's Cafe, Park Row.
Exeter.—November 4, 7 p.m., Y.M.C.A., 41 St. David's Hill.
Plymouth.—October 15, 7 p.m., Tothill Community Centre.
November 19, Tothill Park, Knighton Road, St. Judes.
Torquay.—October 15, November 19, 7.30 p.m., Y.M.C.A., Castle Road.

REGION 11

October Meeting cancelled. Next meeting November 27,

REGION 13

Edinburgh.—October 17, 31, 7.30 p.m., Chamber of Commerce, 25 Charlotte Square.

REGION 14

Glasgow,-October 26, 7 p.m., 39 Elmbank Crescent.

NATIONAL CONVENTION & EXHIBITION

CORN EXCHANGE AND BELLE VUE, MANCHESTER

OCTOBER 21st — 23rd, 1949

For full programme see September issue

EDISWAN

MAZDA

TELEVISION TIME BASE VALVES

(4 V. Range)

RATING	Thyratron T 41	Frame Output Pen 45	Line Output- Pen 46	RATING	Thyratron T 41	Frame Output Pen 45	Line Output Pen 46
Heater Voltage (volts)	4.0	4.0	4.0	Max. Peak Anode Current	500 mA	_	_
Heater Current (amps)	1.5	1,75	1.75	Voltage Drop (at 150 mA)	40	-	-
Max. Anode Voltage (volts)	400	250	350	Max Peak—Peak Scan Output Voltage (volts)	120	-	_
Max. Anode Dissipation (watts)	-	10	20	BASE	Mazda Octal	Mazda Octal	Mazda Octal
Max. Screen Voltage (volts)	-	250	240				
Max.ScreenDissipation(watts)		2.5	3.4	DIMENSIONS	-	-	
	20			Max. Overall Length (mm)	90	110	129
Control Ratio	20			Max. Diameter (mm)	32	45	54
Max. Peak Anode Voltage (volts)	_	-	3,000	LIST PRICE	10/6	10/6	15/-

THE EDISON SWAN ELECTRIC CO. LTD., 155 Charing Cross Road, London, W.C.2

KA. 170

A SURE WAY TO ACHIEVE SUCCESS !

The sure and quick way to pass the Code test for an Amateur Transmitting Licence is to take advantage of the World famous Candler System of MORSE CODE TRAINING. There are also Candler Courses for those desiring to attain the higher speeds required in the Code tests for all other P.M.G. certificates.

The following extracts from letters sent us by Candler students, give definite proof of the excellence of the Candler method of training.

STUDENTS OF THE JUNIOR COURSE SAY:

Ref. No. 5529. "I could not read a word of Morse Code before I started your Junior Code course. . . . I took the G.P.O. test for an Amateur Transmitting Licence and passed very comfortably. I sent a faultless eighteen words per minute without effort and received at fourteen words per minute with no errors; my numerals were also on the right side, sending twelve and receiving fourteen in the allotted one and a half minutes. I am now full of confidence as a result of this success and delighted with the progress I have made. . . . I have done all my practising alone. I feel I have really achieved something and would like to thank you for a very fine course." P.L.P.

Ref. No. 6408. "I was really amazed at the results which I secured from Lesson one and two." L. G.

Ref. No. 5848. "May I add that I have passed my G.P.O. Test for the Amateur Licence after only three months learning under your instructions. I passed the Test quite easily receiving solid at 15 w.p.m., sending without error at 18 w.p.m."

Ref. No. 2709. "I would like to say how pleased I am with the course; I can send a comfortable 16 w.p.m., and receive 12 to 14 w.p.m. (After completing only first five lessons) which I think you will agree is fairly good as I was a beginner at the start of the course."

Ref. No. 3048. "I am pleased to report excellent progress, and many Hams have said with what ease they can copy my sending."

S. T. L.

Ref. No. 2245. "I am glad to announce that I recently passed the P.M.G. Special Exam., and as you will see on my report, my speeds are now far ahead of the speeds needed in the examination. I therefore walked through the telegraphy part."

A. R. L.

STUDENTS OF THE ADVANCED COURSE SAY:

Ref. No. 3116. "I have now completed the Lessons I to 5 with excellent results." J. E. M.

Ref. No. 6160. "Many thanks for your letter regarding my son. I will pass your letter on to him, and ask him to reply to you. He told me quite definitely that he had derived great help from your course. You will be pleased to know that he was successful in passing his First Class P.M.G. He had to leave home at short notice to take up a position under Marconi Co., and is now at sea."

I. R. S.

Ref. No. 3207. "I can now read 5 words behind, can take commercial stations at 35 w.p.m. and send code at 35 w.p.m. without tiring. I have passed the G.P.O. Morse Test. I have made numerous contacts with all Counties in England and all over Europe, U.S.A. and Canada and all the Stations have given me good reports on my sending with no repeats. When I passed my Morse Test, the G.P.O. Telegraph (op.) who passed me out gave me an excellent report. I will be pleased to recommend your Course to all interested in Morse training. You can hear me on 7048-5 kc/s. any evening. Wishing you all success.

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R.S.G.B

For the advancement of Amateur Radio

VOLUME XXV No 4.

OCTOBER 1949



TWENTY-FIVE YEARS AGO

CTOBER 19, 1949, marks the 25th anniversary of the first two-way contact on amateur frequencies between Great Britain and New Zealand, the participating operators being Cecil Goyder, G2SZ, of Mill Hill, London, and Frank Bell, Z4AA, of Dunedin, New Zealand. This historic event is being marked in the Dominion by a special documentary broadcast "Calling CQ" to be presented on that day by the New Zealand National Broadcasting Service. Messages of greeting and goodwill from the President of the R.S.G.B. and other well-known British radio amateurs have been sent to New Zealand, and will be incorporated in the broadcast.

On October 28 the Otago district of N.Z.A.R.T. will hold a commemoration dinner at which recordings of these messages will be reproduced. Similar messages have been sent to the R.S.G.B., including recordings of the voices of the three New Zealand amateurs most closely connected with the 1924 achievements.

In these days when communication with the Antipodes is a commonplace, it is only right that we should recall just how epoch-making was the feat accomplished by those early pioneers.

The historic contacts between Goyder, G2SZ, Partridge, G2KF, Simmonds, G2OD, and Marcuse, G2NM, in England, and Bell, Z4AA, Slade, Z4AG, and Shiel, Z4AK in Dunedin, not only established a new distance record, they exploded all the preconceived notions of those who for so long had maintained that it could not be done. They blazed the trail for Short-wave Broadcasting, the Overseas Telephone Service and many other new developments. They revolutionised government communication policies throughout the world, spelling "finis" to the high powered, long-wave transmitter and started the great scramble for frequencies in the short-wave spectrum.

In those days there was no BULLETIN and so we must turn to the October 22, 1924, issue of Wireless World for the full story. "Amateurs Girdle the World," says the leading article, with the rather unkind aside, "American Papers Please Copy"! With the secrets of skip distance still unravelled, there was much good-natured fun poked at our American confrères, some surprise being expressed that the transatlantic stations were unable to hear what was going on although they were roughly half-way between the two countries!

Here are the recorded facts:—on October 16, 1924, the late Mr. Simmonds, G2OD, heard Z4AG calling U5MI in the United States at 0600 G.M.T. on 80 metres. G2OD called Z4AG but as the wavelength in use was 95 metres, contact was not established. On October 17, no New Zealand signals were heard in England, although frequent calls were made. A cable from Mr. Frank Bell, Z4AA, however, reported that Mr. Simmonds' transmissions had been strongly received in New Zealand on that day.

On October 19, G2SZ established the first contact with Z4AA, who shortly afterwards contacted Mr. Partridge, G2KF. On the same day Mr. Gerald Marcuse, G2NM made contact with Z4AG and Z4AK and on October 20, G2OD contacted Z4AA. It is of particular interest to note that G2OD was using one of the first superheterodyne receivers and that Z4AA's input was only about 100 watts. Of these seven pioneers six are still with us; five of them—Cecil Goyder is the exception—active amateurs whose call-signs are familiar to all.

Radio amateurs the world over salute those who pioneered the great art and science of Radio Communication. Long may they continued to enjoy good health and vigour in the pursuit of the world's finest hobby—Amateur Radio.

A. O. M.

AN ALL-BAND CRYSTAL CALIBRATOR

100 kc/s. Check-Points up to 150 Mc/s.

MENTION was made in the February, 1949 issue of the BULLETIN of a crystal calibrator which had been designed by M. D. Mason, G6VX, and with the aid of which the harmonics of a 500 kc/s. crystal could be used for frequency checking on the two metre band. The usefulness of such a device was at once apparent to V.H.F. workers, and it was but natural that a number of requests for details should be received of such a circuit. Tests have been carried out by the author with a view to obtaining somewhat closer spacing of the calibration points, and Fig. 1 shows a circuit with which strong signals, spaced at 100 kc/s. intervals, are audible on any receiver of moderate sensitivity in the range 144–146 Mc/s.

W. H. Allen,* M.B.E.

The basis of the instrument is the well-known arrangement of a 1 Mc/s. crystal oscillator locking a 100 kc/s. multi-vibrator, and without further complication a useful output can be obtained on all frequencies up to approximately 70 Mc/s. At higher frequencies the 1 Mc/s., and particularly the intermediate 100 kc/s., points become too weak for easy identification, and it is with the object of increasing the strength of the higher harmonics that the valve V4 is added. This valve, together with the few components associated with it, is all that is required to extend the range of a normal crystal calibrator or frequency meter well into the V.H.F. region.

The attachment of this harmonic amplifier stage to existing calibrators or frequency meters may be made without disturbing their normal performance in any way, and the modest voltage and current requirements should be well within the capabilities of their power supplies.

* W. H. Allen, M.B.E., (G2UJ), 32 Earls Road, Tunbridge Wells, Kent.

Locked Multi-Vibrator

For the benefit of those readers who wish to build the complete equipment and who are unfamiliar with the use of a locked multi-vibrator in frequency measurement, a description of the circuit follows.

V1 in Fig. 1 is a crystal oscillator with a 1 Mc/s. crystal between grid and anode, the Pierce circuit having been chosen for its simplicity and the absence of a tuned circuit at crystal frequency. V2 and V3 are two triodes (or more conveniently a double triode) arranged to oscillate at a frequency dependant upon the resistance and capacity constants in their grids and anodes. Such a circuit on its own oscillates readily and produces an output wave-form remarkable alike for its richness in harmonics and for its poor frequency stability. The abundant harmonics are what we require, and the lack of stability is fortunately easy to overcome by injecting a small locking voltage from another oscillator. C8 supplies this voltage from the anode of V1, and if the R and C values in the multi-vibrator circuit are correctly chosen the latter will be forced to oscillate at a frequency dependant upon but lower than that of the injected frequency. In the case under discussion the 10th harmonic of the multi-vibrator is synchronised with the fundamental of the 1 Mc/s. oscillator with the result that, thanks to the strong harmonic content of the multi-vibrator output, signals may be received every 100 kc/s. as referred to in an earlier paragraph.

We now come to V4, which has for its object the boosting of the higher order harmonics from the 1 Me/s. oscillator and the multi-vibrator. This is achieved by operating V4 with a high grid bias, produced partly across the cathode resistor R12 by the passage through it of the anode and screen currents and partly by the rectified R.F. voltage present at its grid. Operation under these conditions results in considerable distortion of the waveform at the anode, and the production of strong harmonics. The inclusion of L2, roughly resonant in the 145 Mc/s. region, ensures that these harmonics receive preference, with the result that in the required range

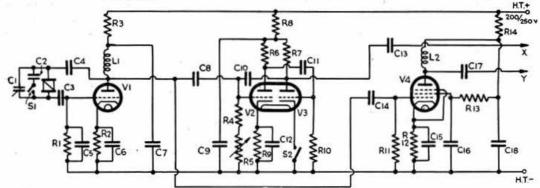


Fig. 1.

Circuit diagram of frequency standard employing a 1 Mc/s. crystal, and giving harmonics at 100 kc/s. intervals up to 150 Mc/s. A switch—not shown—may be inserted in the cathode lead of VI for controlling the crystal oscillator, or this may be accomplished by a main

			H.T. switch on t	he power p	ack.		
CI	30 µµF. Philips trimmer.	C13, 17	15 μμF. ceramic.	V2, 3	6SN7GT	R8	15,000 ohms.
C2	Ceramic. See text.		-002 μF, mica.	V4	EF50 or EF54.	RII	250,000 ohms.
C1 C2 C3	300 uuF, mica,	LI	Broadcast type R.F.C.	RI	150,000 ohms.	R13, 14	2,000 ohms.
C4	·001 uF, mica.	L2	2 turns 18 S.W.G.	R2. 9	1,000 ohms.	A DESCRIPTION	All + watt.
C5. 10	11, 14, 15 100 µµF, mica.		4 in, diam, spaced 1 in.	R3, 12	25,000 ohms.	×	Output for I Mc/s. and
C6, 12		SI	See text.	R4	30,000 ohms.		100 kc/s. harmonics.
C7, 9	·5 µF. paper.	52	S.P.S.T. switch.	R5	50,000 ohms Pot'meter.	Y	Output for harmonics
C8	2 µµF. ceramic.	VI	9002	R6, 7, 10			in the 144 Mc/s band.

a signal appears every 100 kc/s. with a frequency stability and accuracy determined by the 1 Mc/s.

crystal.

The point in the circuit from which V4 is fed may appear somewhat illogical at first sight, but by experiment it was found that this arrangement gave the best balance between the strengths of the 1 Mc/s. and 100 kc/s. harmonics. On the author's receiver these are of the order of S8 and S6 respectively.

Choice of Valves

V1 may be any small triode, or a pentode strapped as a triode by connecting the screen and suppressor grids to the anode. In the original model a 9002 was employed, but the substitution of a Mullard EF50 gave similar results. Other suitable valves are the American types 6C5 and 6J5, or their equivalents in the British range. V2 and V3 can be the two sections of a double triode—the 6SN7GT common in American surplus equipment is very suitable—or two triodes of the 6C5 or 6J5 type. Either the Mullard EF50 or EF54 perform equally well in the V4 position.

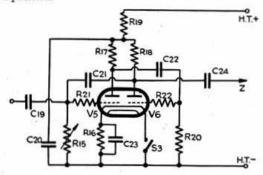


Fig. 2.

Circuit of multi-vibrator for producing calibration points at 10 kc/s. intervals on frequencies up to the order of 70 Mc/s. This stage may be added to those shown in Fig. 1 by connecting C19 to point "X."

C19	3 μμF, ceramic.	R15	50,000 ohms pot'meter.
C20	· 5 µF. paper.	R16	1,000 ohms.
C21, 22 C23		R17, 18	15,000 ohms.
C24	I μF. paper. 15 μμF. ceramic.	R19	10,000 ohms.
S3	S.P.S.T. switch.	R20	50,000 ohms.
Z	Output for I Mc/s	R21, 22	50 ohms.
	100 kc/s, and 10 kc/s.	The same of the sa	All & watt.
	harmonics.	V5. 6	6SN7GT

Constructional Details

In contrast to much of the apparatus described at the present time, the exact layout of the valves and components is not critical, and provided they are placed so that reasonably short leads are possible, no difficulty should be experienced in getting the instrument to perform satisfactorily. The condenser C5, from the grid of V1 to earth, is critical as to its quality more than its exact value, and a good mica or ceramic component is advisable. The resistors R4, 5, 6, 7, and 10 and condensers C10 and 11, form the R.C. network upon which the frequency of oscillation of the multi-vibrator depends, and while not extremely critical, their actual values should be close to those given. R5 is the control which determines upon which harmonic of the multi-vibrator locking will take place, and for its adjustment reference should be made to a later paragraph. S2 turns the multi-vibrator on and off, and is useful for determining which signals are harmonics of the crystal and which come from the multi-vibrator. In some commercial versions of similar frequency measuring gear, the output is taken via a cathode follower valve which serves to isolate the multi-vibrator from variations in the output load, and at the same time provides an output of low impedance.

For those who would like to add this refinement, a suitable circuit is given in Fig. 3, but it is not essential, and satisfactory results may be obtained by taking the output from the point marked "X" in Fig. 1 to a short rod aerial, or for the higher frequencies (say over 50 Mc/s.), by a short lead direct to the receiver aerial terminal.

Two metre output is taken from the point "Y" direct to the input of the receiver. An alternative to the condenser, Cl7, would be a turn or two of wire attached to the end of a length of feeder cable and coupled to L2, the far end of the feeder being connected to the receiver input terminals.

Frequency Measurement to the nearest 10 kc/s.

On the very high frequency bands calibration points to the nearest 100 kc/s. will in most cases be sufficient, as closer measurement may be made by interpolating on the receiver dial, but on the lower frequencies the ability to measure to a higher degree of accuracy is often a distinct advantage. It is for this reason that details of an additional valve stage are given in Fig. 2. This is another multi-vibrator, operating this time on 10 kc/s., which may be locked on its 10th harmonic (100 kc/s.) to the output of V2, V3, and will provide check points 10 kc/s. apart, and of an accuracy equal to that of the crystal, throughout the range normally covered by the 100 kc/s. multi-vibrator V2, V3.

V2, V3.

No attempt has been made to produce 10 kc/s.

marker points in the two metre band, as in a receiver possessing normal bandspread it would be extremely difficult to separate them from one another, and as explained above, frequency measurement to this degree of accuracy is practically never required on the V.H.F. bands.

Operation

The crystal oscillator stage should be switched on alone, and either the fundamental or one of its harmonics located on a receiver. Should oscillation not be obtained, an unsuitable value or type of condenser at C5 should be suspected, and others tried. adjacent harmonics should be located on the receiver, and their dial readings accurately noted. Now switch on V2 and V3 by means of S2, and search carefully between the two points just obtained. A number of pips" should be heard, and if R5 is rotated these will change their frequency in a jerky manner, interspersed with an untunable rushing noise. Count between the two crystal harmonics, and if it is other than 9 adjust the potentiometer R5 until this condition is satisfied. Now tune the receiver to one of these "pips," or 100 kc/s. marker points, and slowly move R5 first one way and then the other until the multi-vibrator jumps out of lock. R5 should be left set midway between these two points, which will be only a few degrees apart, and should not require further adjustment. It is advisable, therefore,

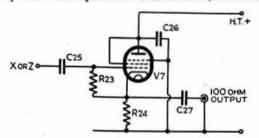


Fig. 3.

Circuit of cathode follower stage for the frequency standard, giving output at approximately 100 ohms impedance.

C25 10 $\mu\mu$ F. ceramic. V7 EF50. C26, 27 ·01 μ F. mica. R23 500,000 ohms. to locate this control in such a position that it

cannot be turned accidently.

If the reader has decided to incorporate the second multi-vibrator stage, it should now be set up in a similar manner to the first, but in this case two adjacent 100 kc/s. points should be located on the receiver dial, and R15 adjusted so that 9 "pips" appear between them. R15 should then be centred and left alone.

All multi-vibrator "pips" should be of similar tone-quality to that of the crystal harmonics, and they should appear, correctly locked, immediately their respective multi-vibrator is switched on. It should be noted that the 10 kc/s. multi-vibrator will not lock unless the 100 kc/s. stage is working, and should the unit be operated in this manner a harsh rushing noise will be heard all over the receiver tuning

No adjustments are required for V4, but tests should be made to determine the best method of coupling into the receiver so as to provide a signal of

reasonable intensity.

With all these harmonics present it is sometimes difficult to tell whether a signal emanates from the crystal calibrator, or is a normal signal being picked up on the receiver, and S1 has been provided to make rapid identification possible. This switch, which may conveniently be in the form of a "tapper" made up from metal strip with an insulated knob, or a key switch so designed that it is impossible for it to remain in the "make" position, places C2 in parallel with the crystal, and thus lowers its frequency slightly. This change in frequency is carried right through the chain of multi-vibrators, and results in all the harmonics shifting slightly lower in frequency, and the problem of deciding upon the source of a signal is thus solved in a convincing manner. The capacity of C2 should be no larger than is required to satisfy this condition. and a capacity of a few micro-micro-farads is quite

Checking the Crystal Frequency

The transmissions from station WWV of the American National Bureau of Standards can be received in this country at almost any time of the

day or night on one or more of the frequencies employed, which are at the present time 2 5, 5, 10, 15, 20, 25, 30 and 35 Mc/s. The frequencies of all transmissions are held accurate to better than one part in 50,000,000. One of these transmissions having been located on the receiver, the crystal oscillator should be switched on alone, and if its frequency is not exactly I Mc/s., a beat note will be heard with WWV. Should this be the case, adjustment of condenser C1 should enable zero beat to be achieved without difficulty provided that the natural frequency of the crystal in that particular valve circuit is slightly higher than 1

Construction

No mention has so far been made in regard to the actual construction of this unit, and it is not proposed to do more than indicate a general design, for the very good reason that exact duplication of the original model is not necessary in order to obtain satisfactory results. Readers may, therefore, exercise their own ideas as to the form the instrument should take to make the best use of existing chassis and

The power pack may be incorporated on the same chassis, or form a separate unit, and the few controls, namely the tapper switch for C2, the switches S2 and S3 (if the 10 kc/s. multi-vibrator is included), and a main H.T. switch to put the crystal oscillator on and off, together with terminals or sockets for the outputs X, Y and Z, are all that are required on the front panel. The two potentiometers for adjusting the multi-vibrators and the small condenser C1 may be mounted out of the way on the chassis.

A convenient arrangement, and one which takes up the minimum of space on the operating table, is to build the whole calibrator on a chassis say 12 in. by 3½ or 4 in., mounting the panel on the narrow side, so that it will stand alongside the receiver

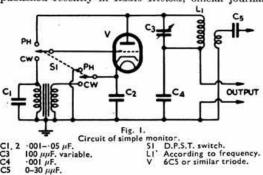
with which it is to be used.

The time taken in constructing this instrument will be well spent, and the convenience of having an accurate standard of frequency available on all bands without the complication of tuning will be appreciated long after the modest cost has been forgotten.

Simple C.W./'Phone Monitor

HE use of an audio oscillator for the monitoring of telegraphy transmissions has become very popular, especially among amateurs using semi-automatic ("bug") keys with which it is almost essential to be able to listen to outgoing signals. Unless, however, the audio oscillator is actuated in some way by the output of the transmitter no indication is given in case of transmitter break-down. Several circuits have therefore been developed in which the H.T. for the audio oscillator is derived from rectification of a small portion of the R.F. output of the transmitter.

An extremely simple design along these lines was published recently in Radio Rivista, official journal



of the Associazione Radiotecnica Italiana. device, shown in Fig. 1, provides a useful monitor for both C.W. and telephony transmissions. On speech, the valve, which can be almost any type of small triode, acts as a simple half-wave rectifier with grid and anode strapped together. When required for telegraphy, an audio intervalve transformer is switched into the cathode and grid circuits and the valve acts both as a rectifier and audio oscillator. L1, C3 are tuned to the frequency in use and the monitor is coupled to the transmitter through C5. The loss in R.F. energy from the transmitter should prove negligible. The output from the monitor can be taken either direct to headphones or fed into the audio stages of the receiver. If audio oscillation cannot be obtained at first, the connections to one side of the L.F. transformer should be reversed. The note of the monitor may be varied by changing the values of C1 and C2.

Bevan Swift Memorial Fund

HE Council has decided that the above Fund shall remain open until after Convention. To date a total of £136 17s. 0d. has been subscribed. Members who wish to be associated with this Fund are invited to forward donations to the General

Secretary as early as possible.

It is anticipated that the monies received will be invested and the interest used to provide a premium for an annual Bevan Swift Lecture.

SIMPLE BREAK-IN SYSTEMS

ESPITE the general recognition among amateurs of the many advantages of telegraphy break-in operation, the number of stations equipped for such working remains comparatively small. Break-in permits far more pleasant and effective communication than is possible with normal send/receive change-When combined with variable freover working. quency control it can practically eliminate the delays caused by interference on an overcrowded band. It would appear, however, that the majority of amateurs still believe that true break-in working, which includes the ability to "listen through" outgoing signals, requires elaborate keying devices in order to overcome the chirp so often associated with keyed oscillators and to reduce clicks and thumps in the receiver. The purpose of this article is to review the methods by which the average low and medium power amateur station can be converted to effective break-in operation with the minimum of effort and without the use of expensive high-speed relays.

J. P. HAWKER

General Conditions

Although the basic requirements for successful break-in operation have already been covered in previous Bulletin articles, particularly "Practical Break-in Operation" by W. H. Allen, M.B.E. (G2UJ), published in the July, 1946 issue, it is felt that a brief recapitulation may prove of value, especially to newer members. In addition, a comprehensive bibliography is given at the end of this article.

While almost any modern communications receiver will permit break-in operation when the frequencies of the two stations are fairly widely separated, the amateur usually wishes to contact stations working close to his own frequency. When the separation is of the order of a few kilocycles, special arrangements must be made to prevent the receiver from being "blocked" by local pick-up, and to minimise thumps when the transmitter is keyed.

The usual methods of overcoming "blocking" are:
(a) keying the oscillator: (b) complete screening of
the oscillator and coupling to the subsequent stage
which is keyed; (c) primary keying; or (d) physical
separation of the transmitter and receiver (normal
commercial practice but seldom possible in an amateur
station unless a selsyn-controlled V.F.O. is used).

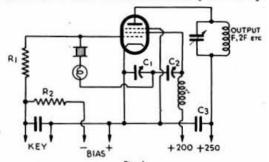
Receiver thumps can be reduced by (a) desensitising the receiver when the transmitter is keyed; (b) limiting the audio output of the receiver; or (c) a combination of both methods.

Oscillator Keving

There is little doubt that the simplest arrangement for low power break-in operation is to key the oscillator stage. Unfortunately keyed oscillators, both with crystal and variable frequency control, are prone to chirpiness which may be caused either by sluggishness of the oscillator or by frequency variation due to the sudden change in applied voltages. But with a little care, chirp can be greatly reduced.

In the case of crystal oscillators, the crystal itself, should be carefully chosen, and kept as clean as possible. Some crystals, though satisfactory for normal purposes, can never be made to follow rapid keying and should be discarded for break-in operation. If the crystal holder is not completely dust-proof, the crystal should be washed occasionally. For this

purpose, a little warm, soapy water is to be preferred to the more popular carbon tetrachloride solution which can cause damage. Stray capacity across the crystal should be kept low by the use of short leads and the choice of a valve with a relatively low grid-cathode capacity. Mutual conductance of the valve, on the other hand, should be moderately high. The 6AG7 and similar types are suitable. Perhaps the most important point to remember is to load the oscillator stage as lightly as possible. A heavily loaded tank circuit will almost inevitably cause chirp.



Regenerative crystal oscillator-multiplier with grid-block keying R1 47,000 ohms. C1 100 $\mu\mu$ F. trimmer. C2 100 $\mu\mu$ F. trimmer. C3 \cdot 002 μ F.

A little regenerative feed-back will also help to reduce the time-lag before the valve goes into oscillation. This is particularly the case with well-screened tetrode and pentode oscillator valves. The simplest method is to increase the capacity between grid and anode by means of a short length of insulated wire twisted round the grid and anode pins on the valve holder. When regenerative feed-back is employed, a 60 mA. pilot bulb should always be connected in series with the crystal to avoid damage caused by excessive crystal currents. Unless a power-type crystal is used, this bulb should never be permitted to show more than a glimmer of light.

Two suitable crystal oscillator circuits employing regenerative feed-back are shown in Figs. 1 and 2. The circuit of Fig. 1 also incorporates grid-block keying which has long been a favourite system for break-in operation. When the key is open, sufficient additional fixed bias is applied to the grid to block the valve and prevent oscillation. On closing the key this fixed bias is short-circuited through a high value resistance (R2) and the valve oscillates normally. This form of keying can be used with almost any type of oscillator and possesses the advantage that the

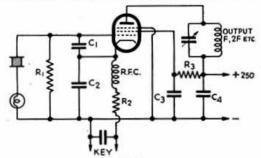


Fig. 2.

Alternative circuit of crystal oscillator-multiplier, suitable for cathode, screen-grid or grid-block keying.

RI 47,000 ohms.

CI 15 μμF.

47,000 ohms. 500 ohms. 47,000 ohms. C1 15 μμF. C2 50 μμF. C3 ·002 μF. •002 μF.

key breaks only the small grid current. Cathode or screen keying, however, will usually prove quite satisfactory if a source of fixed bias is not readily available. The oscillator circuits shown in Figs. 1 and 2 are useful for other than break-in purposes since they provide output on either the fundamental or harmonics of the crystal frequency without undue crystal current, merely by variation of the anode coil and condenser.

Most well-designed V.F.O.'s operating on low fundamental frequencies may be keyed in the oscillator stage without difficulty providing that the screen(s) and anode(s) are fed from a stabilised power supply and that bypass and keying-filter component values are correctly chosen. Several cases of bad "tailing" with screen-keyed E.C.O.'s have been cured simply by reducing the screen bypass capacity. Similarly the time-lag introduced by filter condensers connected across the key tends to become appreciable with the small screen currents involved and this capacity should be kept as low as possible. Actual values will depend upon the current flowing, but values within the range ·01μF, to ·001μF, will usually pror a suitable.

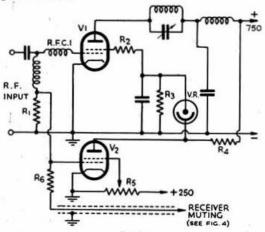


Fig. 3. Simple keying circuit for tetrode or pentode amplifier stages.

1 10,000 ohms. R6 250,000 ohms.

2 47 ohms (parasitic suppressor). RFCI Parasitic suppressor.

3 250,000 ohms. VI 807.

47,000 ohms (high wattage).

or similar type. 50,000 ohms potentiometer. VR150/30.

Key Clicks

Although straight C.O. or V.F.O. keying is effective for low power transmission, several difficulties arise when the power exceeds about 20 watts. Even when all audible chirp has apparently been eliminated, there usually remains a slight degree of frequency shift as the valve goes in and out of oscillation. This shift is sometimes of such short duration that it can be detected only by means of an oscilloscope. But these spurious oscillations, though brief, can be the cause of highly undesirable characteristics in the radiated signal. When amplified in the later stages of the transmitter, they often emerge as a particularly virulent form of "key clicks" which no adjustment of the key filter constants can hope to cure. Such signals spread badly, not only in the immediate neighbourhood of the transmitter, but also at medium and long distances.

The cleaning-up of keyed oscillator signals has for long occupied the attention of break-in adherents and several successful systems have been evolved for removing the troublesome clicks. The majority depend upon the principle of "ganged" keying of the oscillator with a later amplifier stage in such a way as to ensure that the oscillator is switched on a

fraction of a second before, and switched off a fraction of a second after, the amplifier stage. If this can be done, the spurious oscillations will be "chopped off" before they reach the aerial.

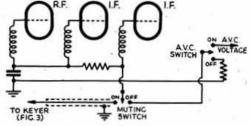
Perhaps the simplest method of achieving this result is by the use of a standard G.P.O. "double current" Morse key. These keys, which can occasionally be purchased cheaply as "junk," possess two sets of independently adjustable contacts. If the pair of contacts arranged to key the oscillator is set slightly closer together than the other pair—which control the amplifier—then the conditions described above will be fulfilled. Similar results can also be obtained by the use of multi-contact relays, though high-speed types are usually essential to avoid "clipped" keying. The use of slugged relays for this purpose is described in "Practical Break-in Opera-

Simple Keying Circuit

A simple but extremely useful keying circuit for break-in operation is shown in Fig. 3. This circuit enables a tetrode or pentode amplifier stage to be self-biased without the "noise radiation" which usually occurs when no fixed bias is used, and at the same time it helps to reduce clicks. The action of this keyer, which was devised by Mack Seybold, W2RYI (CQ, May, 1948), is to remove completely the screen voltage from the amplifier during periods when no excitation is applied to the stage. Fig. 2 shows the device incorporated into an orthodox single 807 P.A. capable of up to 75 watts input, but it could be applied, equally well, to push-pull stages providing that the total screen current is not excessive.

It will be seen from the circuit that when no excitation is applied to the stage, the "ballast valve" (V2) will pass a current depending largely upon the setting of the screen potentiometer (R5). The voltage at the anode of V2 will drop due to the action of R4. If this voltage falls below the minimum strike value of the voltage regulator tube, ionisation will collapse and there will then be no voltage applied to the screen of the 807. Current flowing in this valve will drop practically to zero. When an R.F. input is applied to the stage, however, a voltage will be developed across the grid bias resistor (R1). This bias voltage (but no R.F. voltage) will be applied to the grid of the ballast valve and stops or reduces the current flowing in this valve. The voltage across the regulator tube will then rise and the tube ionises. When this occurs a screen potential is applied to the 807 allowing the stage to operate normally.

The value of the voltage dropping resistor R4 will depend upon the screen voltage and the screen current of VI as well as the type of voltage regulator used. When calculating the value of R4, the voltage drop across the regulator tube (equal to the operating voltage of the tube), must be taken into consideration. With a VR150/30 and the values given, there will be approximately 300 V. on the screen of the 807 for a screen current of 6 mA. The reduction in key clicks



Skeleton circuit of automatic receiver muting system. When the transmitter is keyed additional bias is applied to the grids of all valves affected by the A.V.C. line.

brought about by this type of keying circuit is due to the slight delay in the ionisation and "collapse" of the voltage regulator tube.

Receiver Muting

As previously explained, it is essential to employ some form of receiver muting device in order to eliminate thumps when the transmitter is keyed. In addition, with high power operation, the aerial input to the receiver may have to be removed or shortcircuited during transmission periods so as to prevent the aerial coupling coil in the receiver from being burnt out by excessive R.F. pick-up. For inputs below 150 watts, however, this should not be necessary providing that the transmitting and receiving aerials are kept reasonably well separated. All that is required, in these cases, is to find some method of reducing the gain of the early stages of the receiver and, at the same time, to limit the audio output in order to flatten-out any remaining thumps. screen keyer shown in Fig. 3 can be made to perform the first of these functions very simply, by running a screened lead from the bias resistor (R1) of the power amplifier stage to the A.V.C. line of the receiver through a high value resistor (R6) as shown in Figs. 3 and 4. The value of R6 should be roughly equivalent to that of the normal resistor between the A.V.C. line

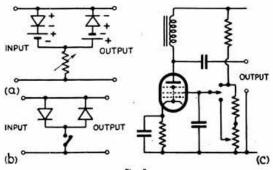


Fig. 5 Three simple output limiting circuits. (a) Uses crystal diodes (b) suitable for W6 and similar rectifiers, (c) "saturation" contro added to output stage.

and earth when the A.V.C. is switched "off." With this arrangement an additional bias is applied to the R.F. and I.F. stages of the receiver when the transmitter is keyed, in exactly the same way as already described for the ballast valve (V2 of Fig. 3). The only alteration necessary in the receiver is the breaking of the A.V.C. line at the A.V.C. switch and the fitting of a second change-over switch permitting the receiver to be operated normally when break-in is not

required.

The next step is to limit the audio output of the receiver to a value slightly above that of normal incoming signals. Fig. 5 shows three simple methods of doing this. Two of these circuits (a) and (b) also have the advantage of requiring no modification to the receiver. In (a) a pair of crystal diodes such as the 1N35 combination (or two 1N34's) are connected "back to back," i.e. with reversed polarity, across the 'phones output of the receiver in series with two fixed potentials of about 1.5 V., and a variable 1,000 ohm resistance. When the audio output exceeds 1.5 V., the rectifiers will begin to pass current and thus effectively by-pass the audio peaks above the fixed "clipping voltage." On weak signals the performance of the receiver remains unaffected but the device helps to remove thumps and-incidentally-Ignition and similar noises. The variable resistance determines the degree of clipping and can usually be dispensed with if this feature is not required. Fig. 5 (b) shows a further modification of the same system. With many types of rectifiers—including the popular Westector

W6—the relatively low efficiency of rectification at low input voltages makes it possible to connect them directly across the receiver output without using the fixed limiting potentials described above, since the "forward resistance" of the rectifiers will prevent serious leakage of audio except on loud signals and on the thumps. Another simple but effective method of removing high audio peaks is shown in Fig. 5 (c). In this arrangement, the output valve of the receiver is run under "saturated" conditions by reducing the screen voltage of the tetrode or pentode output stage to a figure considerably lower than the normal operating voltage. A potentiometer connected so as to allow the screen volts to be varied between approximately zero and 50 V., provides an adjustable degree of clipping. The effectiveness of this system is due to the fact that the saturated valve readily overloads, with the result that wide grid-swings produce little change in output. In practice, a combination of the circuits (b) and (c) has been found to eliminate completely all keying thumps from an 80-watt transmitter placed only a few feet from a home-constructed receiver remarkable neither for selectivity nor screening. Keying the transmitter produces only a gentle "deadening" of the receiver which fully recovers its sensitivity between letters and words thus permitting true break-in even on comparatively weak signals.

In the course of a single article it is not possible to cover certain important aspects of break-in operation such as aerial switching, primary keying, etc. Sufficient practical information has, perhaps, been given to encourage more amateurs to experiment with this type of working. Finally, may we suggest that where new and ingenious systems are tried and found effective, a short description should be prepared and forwarded to the BULLETIN for the benefit of other

members.

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and electronic keying systems.)
"A Quiet BK-IN System."
(Automatic receiver muting.) QST, February, 1947, p. 33. Clean-Cut Break-In Keying." QST, March, 1947, p. 27.

(Lagless primary keying.)

"A gadgetless BK-IN System." QST, September, 1948, p. 57.
(Muting of receiver through A.V.C. line.)
"Clickless Keying Using V.R. Tubes." CQ, May, 1948, p. 37.
(Screen keying of 813 and 829B power amplifiers by V.R. tubes.)

Wireless World Diary, 1950

The 80 page reference section of this diary, now in its 32nd year of publication, contains information, mostly technical, of the kind that every wireless man needs, but can seldom memorise. In addition there are general reference pages giving a summary of existing regulations affecting the wireless user (including a page on the new Wireless Telegraphy Act), addresses of radio organisa-

Compiled by the technical staff of Wireless World, the section includes a large selection of useful formulæ, abacs for easy includes a large selection of useful formulæ, abacs for easy graphical estimation of such things as coil windings and circuit constants, lists of unit abbreviations, definitions and classifications, with a number of miscellaneous circuit diagrams. In addition to general revision of the reference pages, the valve base tables have been entirely revised, and connections for over 500 valves are now given in more convenient form.

Data for television and extra-short-wave aerials has been revised to meet the projected new B.B.C. services. The price is 38, 44d, including purchase tax.

3s. 41d. including purchase tax.

Instant-Heating Soldering Iron

By J. GILBERT, G2DDG*

OR many years the radio amateur has dreamed of a quick heating soldering iron, ready for use in a few seconds but cold except when actually required. A system which has been developed to meet this need consists of passing a very heavy current at low voltage through the bit itself. Irons of this type are commercially available but no doubt many amateurs will prefer to construct their own.

The main requirement is a step-down transformer giving a high current output. In practice a current of approximately 100 amperes was found suitable providing the "bit" is made of No. 12 S.W.G. bare copper wire. With 100 amperes passing, the melting point of standard 3-core solder can be reached in 4 seconds. With this current, only about 0.5 voltes needed, giving 50 watts dissipation in the

using Magnetic & Electrical Alloy Co. "Silcor 101" "T and U" laminations. A stack lin. thick was accommodated in the bobbin. These particular bobbins and laminations happened to be available, but any other types will be suitable privided they are about the same size. Care must be taken to see that the winding window is large enough, and that the core cross-sectional area is not substantially less than I square inch.

The primary winding for a 230 volts A.C. supply was wound with 1,150 turns of No. 32 S.W.G. silk covered enamel wire and the ends brought out to flex leads. The secondary winding consisted of 2³/₄ turns of ³/₁₆ in. copper rod. The rod was bought hard drawn, and to assist handling, it was brought to red heat in a gas ring and allowed to cool slowly.

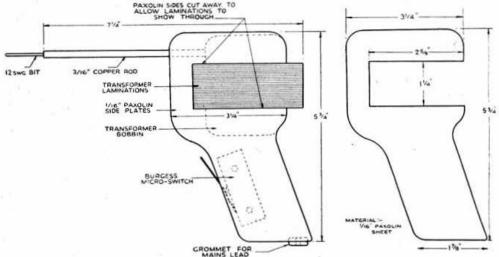


Fig. 1.
Side elevation of quick heating soldering iron showing general layout. bit—sufficient for wiring and general constructional work. As it is not easy to carry so high a current over long leads, the transformer is made part of the iron, thereby reducing the length of wiring to a minimum.

Lavout

Fig. 1 shows the general lay-out. The side plates are constructed from 16 in. bakelised fabric sheet, with a strip of 1/32 in. material 141 in. × 1/4 in. fitted round the edge to enclose the windings, switch, etc. The dimensions of the side plates and details of the general construction are given in Fig. 2. is fitted to the ends of the high current winding which is extended from the bobbin through the case. If the holes are drilled in the end of the bobbins slightly off centre, it is possible to tap the side to take a 6BA clamping screw. Bits may be changed in a few seconds and at negligible cost. Their life is longer than would be thought at first sight, as they are, of course, only heated for the actual soldering time. In the design described the "trigger" switch used was a Burgess "Micro Switch" obtained from ex-W.D. equipment. Such a switch is convenient to fix and in use it has proved very satisfactory.

The transformer was wound on a paxolin former

Fig. 2.

Dimensions of the pistol grip side plates cut from ½ in. paxolin sheet. The primary winding was covered with 3 or 4 layers of stiff paper and coated with shellac, after which the copper rod secondary was lapped with shellac and cotton tape and carefully bent round the primary in a single layer. Both ends should appear at one side of the bobbin as shown in Fig. 1. The two ends pass through a ½in. paxolin block about ½in. apart which is secured between the side plates. A 4in. length was left protruding and the ends were drilled (Continued on page 115).

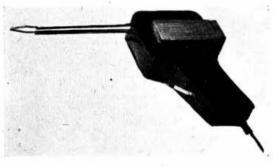


Fig. 3. The finished Iron.

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CARBON MICROPHONES

By G. D. BREWER, (G4LI)*

Carbon microphones have been relegated to the junk box in many amateur stations. But are they really obsolescent? In this short article G4LJ suggests that they still possess advantages other than the one which appeals to most amateurs—economy.

HE average amateur, to-day, when planning his telephony equipment, is inclined to dismiss from serious consideration the use of a carbon microphone. To do this is to ignore completely the progress in design that has taken place in the last 15 or 20 years. Unfortunately the tradition of the old solid-back carbon buttons with their squeaky, thin quality persists in the minds of many amateurs. Admittedly such buttons are still readily available, but there are also plenty of good-quality transversecurrent types now on the market. Correctly employed these microphones can give results as good as, or better than, many of the popular crystal types, which so many amateurs purchase—and then proceed to waste. For it is little use employing the best lowlevel output microphone with its almost perfect flatresponse curve, in conjunction with a long line of high-gain speech amplifier stages, unless each stage is most carefully designed. Too often a normal amplifier will introduce distortion, high background noise, mains hum and endless trouble from R.F.

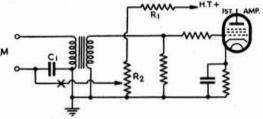


Fig. 1.

Simple method of energising a carbon microphone in order to eliminate the need for a separate battery.

CI 50 µF. 50 V. working classroolytic condenser. R2 2,000 ohms potentiometer I watt.

feedback. In addition, many amateurs deliberately restrict high frequency response in order to reduce sidebands and increase the average level of modulation.

The communication of normal speech requires an audio range of approximately 200 to 3,000 cycles for good crisp quality. Such a range has the added advantage of being comparatively unresponsive to 50 and 100 c/s, mains hum. With this audio range in mind the better type of transverse current instrument is ideally suited.

High Output

A good quality carbon microphone, together with its associated transformer, will deliver to the grid of the first amplifier a voltage considerably in excess of that delivered by the average crystal or moving coil microphone. Hence for a given audio output, there is much less need of primary amplification with consequent reduction in hum, noise and R.F. pick-up. The carbon microphone also possesses the valuable asset of allowing a long low-impedance cable of up to 20 or 30 feet to be used without the difficulty of eliminating R.F. pick-up which would almost certainly cause trouble with a similar length of highimpedance cable.

It is sometimes stated that carbon microphones are undesirable because of the necessity of employing an energising battery and because of the carbon hiss effect. Modern practice dispenses with the need for a

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separate battery by the use of the circuit shown in Fig. 1. The potentiometer (R2) is an important feature of this circuit since it enables the microphone current to be varied at will. If the manufacturer's recommendations are followed, or by experiment, it will usually be found that there is an approximate value of microphone current which will reduce the hiss effect to negligible proportions. A milliammeter connected at the point X in the lead between Cl and R2 will enable a check to be made of this figure for future adjustment. If, for the sake of simplicity, an energising battery is used then a "push to talk switch should be fitted in the interests of economy.

Finally a useful tip to overcome "case resonance" with some of the older types of carbon microphones is to fill the space between the case and the insert with

soft modelling clay.

Third R.S.G.B. Amateur Radio Exhibition

HE Third R.S.G.B. Amateur Radio Exhibition will be held at the Royal Hotel, Woburn Place, London, W.C.1, from Wednesday, November 23 to Saturday, November 26, 1949, and admission will again be by catalogue. Members will receive a copy of the catalogue with the November issue of the Bulletin whilst non-members will be able to purchase a copy in advance from Headquarters price 1s. 3d., post free) or obtain one at the door (price 1s.).

Those who wish to arrange for parties of nonmembers to visit the Exhibition may purchase small quantities of the catalogue from Headquarters at a

special price.

The Exhibition will be opened at 2.30 p.m. on November 23 by Lord Sandhurst, O.B.E. On that day and on the next three days the Exhibition will remain open until 9 p.m. On November 24, 25 and 26 it will open at 11 a.m.

Members who visit the Exhibition are requested to sign the Visitors' Book on the Society's stand, and

to leave one of their QSL cards for display.

Those who intend to stay at the Royal Hotel are advised to make an early reservation to avoid disappointment.

U.S. Technical Publications

'HE Society much regrets that in consequence of the devaluation of the Pound Sterling it has become necessary to revise its prices for all U.S. technical publications.

A list of revised prices follows :-A.R.R.L. QST Subscription (1 year) £1 16s. 0d. A.R.R.L. Handbook 18s. 6d. A.R.R.L. Antenna Handbook 11s. 0d. Editors & Engineers Ltd.

Radio Handbook ... £1 5s. 0d. Conversion Manuals 18s. 6d. . . Radio Antenna Manual ... 7s. 0d. Radio Amateur Newcomer 8s. 0d.

Radio Magazines CQ (1 year) Audio Engineering (1 year) £1 9s. 0d. . .

£1 9s. 0d. * * T.V.I.—Its Causes and Cures 4s. 6d. Radio News

£1 16s. 0d. Subscription (1 year)

CONSIDERATIONS AFFECTING THE ACCURACY OF MEASUREMENTS

ROM a laboratory point of view three main considerations affect the accuracy of measurements. These are:—

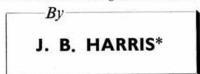
(1) The effect of the measuring instrument itself upon the circuit.

(2) The accuracy of the instrument (i.e. its cali-

bration).

(3) The "operator" or personal error.

Further errors can be due to incorrect presentation of results, forming a theory from incomplete data, etc., but they affect the final result as opposed to the errors in the actual making of the measurement.



Failure to take into consideration the effect of the measuring instrument is the most common cause of error particularly in R.F. circuits. Consider a simple and frequently occurring case: the bias on a valve under working conditions is to be found. One way—the easiest—is to connect a voltmeter between the grid and cathode. The meter may give a reading but it will not be correct, because the meter is a conducting path for the input signal.

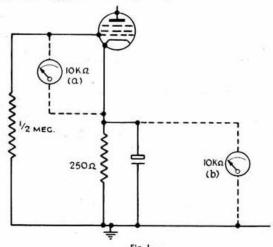


Fig. 1.

Shows a meter when connected incorrectly will give a misleading reading.

This point will be made clear from a consideration of Fig. 1, in which typical circuit values are shown. The meter resistance is taken as 10,000 ohms. In the first position (a) the method is equivalent to introducing a 10,000 ohms resistor between grid and cathode. However, in (b) the meter resistance of 10,000 ohms is in parallel with the cathode bias resistor (250 ohms) and the discrepancy is, therefore, slight. Even this arrangement is open to some objection; the best method is to bias the valve from a separate and accurately known source without changing the anode current.

Measuring Instruments

The accuracy of measuring instruments may seem to be outside the control of the operator, but a little consideration will show that this is not altogether so. In the case of simple indicators—voltmeters and ammeters—provided they are of reliable manufacture and have been handled with the care that precision instruments deserve, it is true that there is little to be done beyond checking them; if possible against a B.S. sub-standard. With more complicated devices, however, such as valve voltmeters and frequency measuring instruments, numerous other considerations apply. The valve voltmeter needs no description, but its limitations may not be so familiar to all readers. The majority of valve voltmeters require setting to zero for each range and quite often the zero point will drift over a period of time. This means that frequent checks should be made of the zero setting. Calibration, too, does not hold good over long periods and, if it can be so arranged, it is preferable to use this type of instrument as an "indicator" rather than for the taking of actual measurements.

Signal generators, unless they are first-class laboratory instruments such as the General Radio 603A, or the Marconi Instruments Ltd. T.F. 144G, are best considered as "R.F. Oscillators" and checked against a crystal sub-standard before use.

Audio Source

The provision of an audio source is often looked upon as the easiest of the problems confronting one when fitting up a laboratory. In point of fact the cost of a commercial B.F.O. of first-class quality is as much, or more, than the cost of a signal generator. A very useful source of audio, however, is the range of frequency records made by H.M.V., Decca, etc. The output is small but the distortion and frequency are both known. This, of course, means that the turntable must be running at the correct speed (normally 78 r.p.m.) for the particular record. A calibrated pick-up must also be used. It is obviously useless to try to measure the distortion in an amplifier, or network, if the audio source is responsible for large unknown amounts of distortion. The design and construction of a B.F.O. is a difficult task and the final testing and calibration calls for more gear than is usually available. The best system, from the amateur construction point of view, is undoubtedly the Resistance Capacity Oscillator, as it can be designed to give a very useful output, low distortion and negligible phase-shift.

All instruments employing valves should be switched on for a sufficiently long period before use to avoid drift, etc. This period will vary from 15 minutes to several hours.

Use of Standards

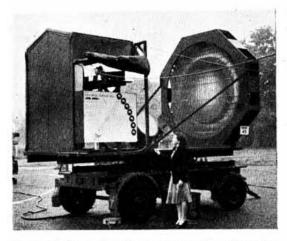
When making measurements, a "standard" should always be chosen which is not likely to have lost accuracy. A standard resistor, inductor or capacitator is to be preferred to a meter of any description. A comparison of the two methods in a typical case will illustrate this point. The gain of an A.F. amplifier is to be measured. One method would be to feed a signal to the input and measure the output on an output meter. The gain (db) can then be calculated. This means that the operator is depending upon (a) the accuracy of the valve volt-

(Continued on page 122)

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"DEBELLAMUS SUPERBOS"

THE ARMY RADAR RESEARCH ESTABLISHMENT



A centimetric lens aerial used to demonstrate wide angle scanning.

THE recent exhibition at the Radar Research and Development Establishment was the first occasion on which visitors have been permitted to see something of the work being carried on at this world-famous research establishment, which, since 1942, has been located at Malvern, Worcs. The R.R.D.E. under the direction of the Ministry of Supply, is responsible for the development of all forms of Army radar equipment including early warning devices, gun-laying control for A.A., coastal and field artillery, proximity fuses, searchlight control and research into the application of radar technique in connection with all new weapons. Some of the equipment shown was concerned with ballistic measurements of projectiles and rockets.

While security considerations necessarily prevent a full disclosure of our latest radar devices, the exhibition provided an excellent opportunity to judge the rapid progress which has been made since the discovery of the cavity magnetron—by British scientists—revolutionised radar technique. The display of a captured Giant Wurtzberg radar, which required three railway trucks to transport it, and which when erected was visible for miles, served to show how much the Germans were handicapped by their inability to operate their equipment in the microwave spectrum until they later made an exact copy of a magnetron removed from a captured Allied aircraft. The knowledge that a prototype of this equipment, which was capable of reasonably accurate results (comparable to our own GL3B) was demonstrated to Hitler in February, 1939, should serve as a reminder of the manner in which scientists of various nations can proceed independently along similar lines of research.

Automatic Gun-Laying

Demonstrations of automatic target-following radar—surely one of the most remarkable combinations of electronic and mechanical devices ever produced—showed how the modern A.A. battery is supplied with accurate and continuous information to ensure that the maximum possible number of shells arrive close enough to the target to enable the proximity fuse to complete the work of destruction. Interesting developments in the field of early warning apparatus include new forms of large scale presentation of the echoes reflected from a particular region.

Two such systems were shown: a lamp display method and a projection screen both of which permit the plotting of aircraft movements to be followed by a relatively large number of observers. A pulsed-light system for searchlights has been developed for making investigations of the higher atmosphere from which the light beams are reflected more efficiently than radio waves.

From an amateur viewpoint perhaps the most interesting exhibits were those concerned with the production of R.F. energy at microwavelengths, the development of ever-narrower pencil beams and the specialised equipment for the adjustment and testing of radar apparatus. Of particular interest was a 20 kW. 3,200 Mc/s. (S-band) crystal-controlled transmitter using a 6 Mc/s. crystal. Pulsing is introduced at the 200 Me/s. level to increase peak output. Several forms of "lens" aerials were shown in which optical principles are applied to centimetric waves. Under certain circumstances, the velocity of radio waves passing through parallel conducting plates will be increased (the exact opposite to the effect of glass on light waves) so that by suitably shaping the plates a radio "lens" can be constructed. Although the lens aerials appear to be more bulky than the more orthodox parabolic mirror reflectors they possess a number of advantages. Dielectric aerials which can be made to fit into the ends of waveguides are also an important development for use where aerodynamic considerations are of importance, such as in the case of projectiles travelling at supersonic speeds. interesting item of demonstration equipment consisted of the display of the polar diagrams of scaleddown aerials on the screen of a cathode ray tube.

Many of the experiments carried out on new radar equipment require the sorting out of masses of recorded data. A mobile 3-channel G.P.O. punchedtape recorder was shown which is capable of dealing almost instantaneously with experimental data which would otherwise take a team of experts many weeks to tabulate. Some idea of the complexity of this instrument may be gathered from the fact that it contains over 1,900 valves! The many electromechanical devices employed in modern radar are a subject unto themselves: many types of magslips, Selsyns and servo-mechanisms were shown. demonstration was given of the recently-developed magnetic fluid clutch which may have applications far beyond the field of radar. The accuracy of modern systems of telerotation would gladden the hearts of rotary beam adherents, though it may be a long time before the latest devices are obtainable on the surplus market!

Rocket Research

Rocket research has led to the development of new systems for the determination of speed, spin, direction, etc., of projectiles. Velocity measurements can now be made by means of the Doppler effect applied to radio waves. It is a well-known fact that waves reflected from a moving object appear to a stationary observer to undergo a change of frequency. In the radar system the difference in frequency, when compared against a calibrated source of audio frequency, can be made to give a direct indication of velocity. For position-finding a tiny microwave transmitter is contained in the body of the rocket or projectile. Special batteries have been developed for this work including a number of types capable of giving a relatively large discharge current for a short period of time.

J. P. H.



New British 70 cm. Records

DURING the recent R.S.G.B. Tests on this band (August 21 last) G3AHB/A, located on the roof of the E.M.I. Building, Hayes, Middlesex, worked G3FZL/A (Hastings) at a distance of 63 miles, with signal strengths of S7 and S8 respectively. This contact was too late by just 9 days to qualify for the Desmond Trophies, but was, never-

theless, a very fine achievement.

Further information is now available regarding the 95 miles two-way contact between G2JT/P, assisted by G6DP, on Ill Crag, near Scafell Pike, in the Lake District, at a height of 3,000 ft., and GW4OS/P on Hope Mountain, 988 ft. above sea level, recorded briefly last month. The apparatus, which was of the simplest—an essential requirement when it has to be carried up mountains—consisted of a 6J6 transmitter modulated by a 6C4 with an input of 4 watts from a hand generator and a single 955 super-regenerative receiver. Aerials available included a 90° corner reflector and a curtain of 8 half-waves plus reflectors.

Signals were, neverthless, S7 to 9.

Encouraged by this achievement further expeditions were organised, and tests carried out on August 27 between G2JT/P on Skiddaw and GW6DP/P on Snowdon at a distance of 120 miles. Weather conditions were very bad at the Snowdon end with a dense mist which saturated the apparatus, and nothing was heard of 2JT or of any other station. The path was theoretically possible, but the signals would have had to pass very low over the hills at the Lakes end. On September 10, however, contact was established between GW6DP/P (Snowdon, 3,560 ft.) and G2JT/P (Fairfield, 2,868 ft.) over a distance of 109 miles, signals being 85/6 in each direction. This was a magnificent effort made under very bad weather conditions—dense mist on Snowdon and driving rain at Fairfield. At both sites the apparatus was operated while covered with a film of

The transmitter-receiver at 6DP consisted of a 6J6 oscillator and 6C4 modulator with an input of 4 watts derived from a hand generator, while at 2JT, 7 watts, also from a hand generator, powered a twin 6J6 oscillator and 6J6 modulator. The receiver was the aforementioned single valve 955 super-

regenerative circuit.

A further test, under perfect weather conditions, was made next day with GW6DP/P still on Snowdon, and G2JT/P on Skiddaw, but again no signals were heard in either direction. The reason for this failure is thought to lie in the fact that the waves would tend to "drag" while passing over the Lakeland hills. It is hoped to carry out further tests before the end of the summer in an endeavour to prove or disprove this theory.

Two Metre News

GW2ADZ (Llanymynech), finds his new beam— 4 over 4 over 4—not only an advantage from the point of view of additional gain, but by virtue of its fairly broad horizontal pattern he can hear, and

. W. H. Allen, M.B.E., 32 Earls Road, Tunbridge Wells, Kent.

is heard by, more stations who are off the direct line of shoot, thereby obtaining an increased number of contacts. For a station so situated that nearly all contacts are semi-DX a beam of this type certainly is worth while, a fact that is being appreciated more and more by operators on the 70 cm. band where the population is, at the present time, rather sparse and scattered. Referring to G6DH's

W. H. Allen,* G2UJ

article on Solar Noise in the September issue, 'ADZ reports hearing a good example on September 11 at 1045 B.S.T., but no noteworthy results followed. He appeals for more activity on Sunday mornings, as conditions have been noted to be quite good at such times, although becoming poorer later in the day. Charged rain, producing noise of sufficient intensity to drown even S9 signals, is of frequent occurrence at his new QTH. This effect was not unusual on the 5 metre band, but we do not recollect it being mentioned previously as a serious difficulty on 2 metres.

Recent contacts at GW2ADZ include one with G2CPL (Lowestoft) at 210 miles, while a report of reception has been received from G5MR (Hythe)

at a slightly greater distance.

Referring to a report in the August issue on the results obtained by G2FJD (Cambridge) with a giant



CENTURY MAKER!

It was from this site—3,560 feet above sea level—on Carnedd Ugain in Snowdonia, North Wales, that GW6DP/P exchanged signals on 70 cm. with G2IT/P, 109 miles away. This QSO—made on September 10, 1949—broke the previous U.K. record of 95 miles. The photograph shows Mr. F. P. Johnson operating the 4 watt transceiver at GW6DP/P. The holder of the call is Mr. D. W. Palin.

stacked array, G2KG (Chelmsford) sends details of his own experiences for the same period (July 3 to 11) when a beam of similar gain and characteristics was in use. This aerial was erected at a height of 65 ft. above ground, and therefore not quite so lofty as in the former case, but the results were somewhat better, as the undermentioned figures show

50-100 miles, 28 stations worked, average report S8 · 2.

100-150 miles, 13 stations worked, average report S8.0.

150-200 miles, 12 stations worked, average report S7 - 7.

Among the 65 stations contacted in the period, six were in Holland and two in Belgium.

G2KG points out that it is a common fallacy that continental stations almost invariably confine their two metre activity to the low frequency end of the band. Speaking as one who has no less than 14 PA's, 3 ON's and 2 F's to his credit, he has found the majority between 145 and 145 5 Mc/s. Incidentally, G2UJ heard PA0IK/IR/ABC (Kootwyk) on September 27 at 2215 G.M.T., and his frequency was approximately 145 · 4 Mc/s.

Scientific Observations—Tropospherical Group

G2KG, who is the manager of the above Group, gives the welcome assurance that the results obtained from the operation of long-term skeds, on the 2 metre band are being correlated and will be made available to interested scientific bodies. Particular mention is made of the good work done by G2CPL, FZR, NH, 3VM, 4RA and others in this connection. More operators willing to carry out observations would be most welcome, and those interested are invited to get in touch with G2KG. We take this opportunity of offering space on this page each month for recording the activities of this Group.

New European Two Metre Record

With reference to the remarks published in the September issue regarding 2 metre activity in Sweden and Finland we understand that OH2OK and SM5MN (Linkoping) effected 2-way contact over a distance of 370 miles at 1930 G.M.T. on September 6. Conditions were exceptionally good, and signal strengths were S8 in Sweden and S5/9 in Finland. OH2OK's signals were S5 in Stockholm at the time but increased to S9 later in the evening.

Our informant, SM5VL, whose address is Härads-domärevägen 13, Enskede 2, would like to get in touch with an amateur station in the Berlin area with a view to attempting an even longer haul. He asks us to mention that the time of his sked. with G2XS (King's Lynn), is at 2000 G.M.T. and not 2200 as previously stated.

From G5KJ we learn that DL4XS (Wiesbaden) is active with 250 watts on $144\cdot 13~{\rm Mc/s}$. He employs 3,750 kc/s. as a link frequency for possible hook-ups. By the time this appears the first G-DL4 contact may have matured as conditions were improving as the month ended.

Under the heading "New G-DX Record on Two" in the September issue the distance between Belfast and Selsdon was given as 240 miles. This was an unfortunate error, and should have read 330 miles.

The closing date for reports for inclusion in the November Bulletin is October 22, 1949.

Universal Phonetic Alphabet

The Council has agreed to support a proposal put forward by W.I.A. (Australia) to the I.A.R.U. Societies that the use of the Inter-Services (Able, Baker, Charlie) Alphabet shall be made obligatory.

NOMINATIONS FOR COUNCIL 1950

In accordance with the Articles of Association the following Corporate Members have been nominated to serve on the 1950 Council:

OFFICERS.

President: Mr. W. A. Scarr, M.A., G2WS. Vice-President: Mr. F. Charman, Executive 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. W. H. Allen, M.B.E., G2UJ.

Mr. A. P. G. Amos, G3AGM. *Mr. A. J. Bayliss, B.Sc., G8PD.

Mr. D. N. Corfield, D.L.C. (Hons.), A.M.I.E.E., G5CD.

Mr. W. N. Craig, B.Sc., G6JJ.

*Mr. R. C. Simmonds, G2ZI. Mr. P. A. Thorogood, G4KD.

* New Nominations as per Article 43

Not later than October 31 next, any ten Corporate Members (but not more than ten) may nominate any other duly qualified Member, by delivering their nomination in writing to the Secretary, Inc. Radio Society of Great Britain, New Ruskin House, Little Russell Street, London, W.C.1, together with the written consent of such Member to accept office if elected, but each such nominator shall be debarred from nominating any other Member for this election.

Instant-Heating Soldering Iron-

Continued from page 110.

to take the No. 12 S.W.G. wire bit. The bit illustrated in Fig. 3-the point of which is thinned slightly with a file to increase the heating at the tip -is a useful shape.

Side plates were fitted to the transformer to form the pistol grip and to enclose the transformer windings. Paxolin spacers between the side plates hold the body and grip firm and allow the thin paxolin sheet to be fitted round the edges with countersunk screws.

The switch is positioned so that it can conveniently be operated by the first finger, when the grip is held normally. The switch used by the author had two holes through the body by which it was fastened to the side plates. A rubber grommet is fixed in the butt of the handle to bring out a flex mains lead.

Although ideal for radio construction, this type of iron has the disadvantage that large pieces of metal cannot be heated before the bit becomes damaged by oxidization or burning out. Given good treatment, however, such an iron will serve the amateur for many years with no maintenance cost, low electricity bills, and with no charred table tops or burnt carpets to incur the wrath of the XYL!

New Books

New Books

A new series of educational booklets under the general title of

"Electrons" is being produced by The Edison Swan Electric
Company, Ltd., 155 Charing Cross Road, London, W.C.2. The
first two booklets "Electrons in Diodes" (16 p.p.) and "Electrons in Triodes" (32 p.p.) are now available. Later titles will be
devoted to more complicated types of valves including screened
grids, pentodes, beam tetrodes, frequency changers and multiple
diodes. These excellently produced and informative booklets
explain in a simple manner, with the aid of clear two-colour
graphs, the history and working principles of radio valves
Copies are available free to education authorities, radio societies
and other bona fide bodies. and other bona fide bodies.

THE R.S.G.B. 420 Me/s. TESTS



This view of G3APY/P, Alport Height (1,100 ft.), near Ambergate, Derbyshire, shows three of the aerial systems used during the 420 Mc/s. tests: a 5-element Yag; a "double quad" and a corner reflector. G3APY is at key while G8UZ keeps a wary eye on the photographer—G2AMD.

THE R.S.G.B. 420 Mc/s. Tests which took place on August 21, 1949, marked a decisive step forward in the development of amateur U.H.F. communication in this country. No less than 37 stations were successful in establishing two-way communication while many of the distances covered were considerably in excess of previous British records for the band. The widespread activity enabled, for the first time, simultaneous checks to be made on propagation conditions, effect of locations and performance of equipment.

For some participants the day represented the culmination of months of patient work on the band; for others it was a question of breaking new ground with several reporting their "first ever" contacts on 420 Me/s. Reflected in the 30 meticulously compiled logs received at Headquarters—22 of them official entries—are to be found the thrill of unexpected successes, a few disappointments and that general determination to improve on past results which has always been a guiding principle of Amateur Radio.

Records

The accompanying table of outstanding two-way contacts shows that all U.K. amateur records for the band were broken during the day. Almost as soon as the Tests began at 11.00 B.S.T. 50-mile contacts were being recorded by a number of stations. Then at 13.00 B.S.T. G5BM/P and G3APY/P succeeded in pushing up the record to 85 miles. But even this feat remained unchallenged for only 1½ hours because at 14.30 B.S.T. the 95-mile gap between Hope Mountain, Flintshire, and Scafell Pike in the Lake District was bridged by GW4OS/P and G2JT/P; incidentally the first G/GW contact on the band. While this distance was unbeaten at the end of the day, a 63-mile contact at 20.10 B.S.T. between G3FZL/A and G3AHB/A established a new record for stations operating at fixed locations.

Equipment

In the belief that future activities on the band should be guided by the experience gained as a result of the Tests, brief details of some of the equipment have been tabulated.

The Tests emphasised the problem which faces all 420 Mc/s. enthusiasts. Should every effort be made to build crystal stabilised transmitters and efficient narrow-band superhet receivers, or should the band be regarded as ideal for experiments with simple equipment? The present position closely resembles that of the 58 Mc/s. band before the war—except, perhaps, for the more efficient aerial arrays. During the Tests, the majority of operators used self-excited transmitters and broad-band receivers; those with more advanced equipment were in some instances at a decided disadvantage due to the extremely broad transmissions radiated by most of the other participants. It is significant to note that no Al (pure C.W.) contacts were reported. history shows that on both 58 and 144 Mc/s. stabilised equipment was necessary before full advantage could be taken of tropospheric propagation. There is every reason to suppose that "ducting" effects extend far into the micro-wave region even—as suggested by "mirages"—into the frequencies of light. On the other hand with a band 40 Mc/s. wide there should be plenty of room for experiments of a simpler nature provided that the broad signals do not interfere with the stabilised transmissions. For these reasons a number of the entrants stressed the urgent need for the establishment of a recognised frequency allocation, which need not be more than

Arthur Watts Trophy

AFTER examining the Logs of the 420 Mc/s. Tests, the Contests Committee have recommended to Council that the award of the Arthur Watts Trophy should be made to Mr. J. Spragg, G3APY, of Kirkby-in-Ashfield, Notts.

2 to 3 Mc/s. wide, for the exclusive use of stabilised transmitters.

Many stations were equipped with more than one aerial system and some interesting tests were carried out. For example, G3APY/P erected six different arrays: (1) corner reflector with 60 degrees angle; (2) "double quad"; (3) 5-element Yagi; (4) 3 × 5-element Yagi; (5) 16-element stacked, 300 ohms feed, and (6) 16-element stacked, 72 ohms feed. In almost every case the 5-element Yagi gave the loudest signals. During the 85-mile contact with G5BM/P the results were as follows: (1) S4/5, (2) S6, (3) S8, (4) S5 and (6) S5. No details of the relative coverage of these systems are available and it may well be that for this band an array giving lower signal strengths but with wide coverage might prove more satisfactory except for fixed schedules. In general the aerial arrays, which would require an article to themselves in order to give full details, tended to vary between 6 and 24 elements although a 48-element array was employed by G3BUR/P. Corner reflectors and wire netting reflector screens were also popular.

For practical purposes the 420 Mc/s, band represents very nearly the upper limit for normal components and circuit technique as we have come to know them on the lower frequency bands. It therefore provides an excellent introduction to the problems of the micro-wave spectrum. Familiar types of valves such as the 955 and 6J6 are still useful although hard-pressed to compete with the more specialised types, such as lighthouse triodes and

crystal diode mixers.

Propagation

Although final conclusions on the effects noticed during the Tests cannot yet be drawn, there are a number of interesting comments which deserve careful investigation. These include:—

(1) The outstanding signal strengths obtained when both stations were situated in good locations. A possible explanation of this phenomenon lies in the highly-directional aerial arrays (see "A 6-element Array for the V.H.F.'s " published in the September, 1949, issue of the BULLETIN).

(2) The remarkable manner in which signals suddenly appeared out of a "dead" band and the tendency for stations to be heard and worked only once during the Tests. Again the explanation may be due to the use of narrow-angle beams, although a number of cases are reported which cannot be satisfactorily accounted for in this way. For example, G2HNA/P mentions that signals often faded rapidly away, while several other stations report bursts of M.C.W. too brief for identification.

(3) The paramount influence of the choice of Several stations improved results considerably after moving a matter of only a few hundred yards. The apparent high degree of attenuation of transmissions caused by near-by fir trees is commented upon both by G3CU/P (in connection with the transmissions of G2FKZ/P) and G8TS/P. In the case of G2FKZ/P this effect is believed to be one of the causes of the relatively high percentage of stations heard but not contacted. G3APY/P found that, contrary to a popular belief, better results were obtained from the top rather than from the side of a hill.

(4) While a number of the contacts appeared to have been made over the top of intervening hills, G2RD/P was the only station who reported signals arriving from an unexpected direction. He found that the transmissions of G3AHB/A were coming from approximately 45 degrees further east than would be represented by a direct path between the two stations and suggests that the signals were being reflected from a range of hills near Walton Heath. A similar check carried out by G3CU/P showed that his 14 contacts were all over direct paths.

(5) Graphs of atmospheric pressure, temperature and humidity as recorded at Birmingham were supplied by G3BUR/P but no correlations are immediately noticeable. G2WS/P mentions signal flutter during periods when the temperature was falling rapidly. G5MA reported that during the day, which was extremely warm with temperatures rising to over 80 degrees in Southern England, conditions on 144 Mc/s. appeared to be very good with the band wide open.

Transmitters Crystal Controlled

Call	P.A.	Approximate Output Watts
G2FJD/A G2FKZ/P G3MY/P G6NM/P G8TS/P	832 2 × CV53 CV16 832 DET24	? (input 5 watts) 4 1.5 3.5

G2RD/P, 3BUR/P, 3CGQ/P, 3CU/P, 3LN,

Self Excited—
Single CV82: G2RD/P, 3BUR/P, 3CGQ/
6HD, SJI/P.
Pair of CV82: G2WS/P, 3APY/P, 3ENS/P.
Pair of RL18: G3AGM/P, 3DSV, 6NB/P.
6J6 double triode: G2HNA/P, 2JT/P.
Pair 8012: G4CG, GW4OS/P.
Pair 8025: G5EM/P.
Cerman LD5: G8OX.

Receivers

G2FJD/A: Superhet converter with B28 (crystal mixer-SCR522 c.c. oscillator).

G2WS/P: Home-built superhet (crystal mixer—ECC91 p.p. oscillator—3 × 12 Me/s. I.F.).
G3MY/P: Superhet converter with BC455 (1N21 crystal mixer—6J6 oscillator/tripler—6AK5 1st I.F.).
G6XM/P: Double superhet (lighthouse triode R.F.—955 mixer—955 oscillator—3 × 70 Me/s. I.F.—2 × 7 Me/s. I.F.).
G8JI/P: Superhet (p.p. diode mixer—p.p. oscillator—5 × I.F.).
Modified R1294: G2FKZ/P, 3CU/P, 3FZL/A (with 446A R.F.),
G4CG (with CV53 R.F.).
Modified R1359: G3AGM/P, 3DSV, 6HD.
Modified ASB4 or 8: G2HNA/P, 2RD/P, 3LN, 3BUR/P,
6NB/P, BRS6818.
Modified P58: G3APY/P, 3ENS/P (with 446A R.F.).

6N B/P, BRS0818.
Modified P58: G3APY/P, 3ENS/P (with 446A R.F.).
Super-Regen: G2JT/P (6.16), 3LN (CV82), 3CGQ/P (955),
5BM/P (6.16), 6XM/P (955), 8QX (modified A.M. Test Set
228), STS/P (6.16), GW4OS/P (6.16).

Official Entries

Call	Location	Height A.S.L.	Stns. Con- tacted	Stns. Heard Only	Approx Max. Dis- tance (miles
G2FJD/A G2FKZ/P	Cambridge 3 miles S.W. Wan-	-	1	2	15
G2HNA/P	tage, Berks Stafford Castle Scafell Pike, Cum-	Ξ	6	1	45 27
G2JT/P G2RD/P	berland Nr. Dorking, Surrey	3,000	1 6	-	95
G2WS/P	3 miles W. Crow- borough	710	6	1	40
G3AGM/P G3APY/P	Nr. Whipsnade 3 miles W. Amber-	-	1	î	1
G3BUR/P	gate, Derbyshire Walton Hill, Wores.	1,100 1,036	8	1	85 70
G3CGQ/P	1 mile N.E. Whip- snade	790	4	_	45
G3CU/P	Honor Oak, Lon- don, S.E.23	250	14	1	50
G3ENS/P	Broomsbriggs Hill, Nr. Loughborough	750	6	_	45
G3FZL/A	North Seat, Hast- ings		5	1	63
G3LN	King's Norton, S. Birmingham	_	5	_	50
G4CG G5BM/P	Wimbledon, S.W.19 4 miles S. Chelten-	-	1		7
	ham	950	5	- '	85
G6HD G6NB/P	Beckenham, Kent Chobham Common,		1	3	4
G6XM/P	Surrey 1 mile W. Alder-	_	7		40
G8JI/P	6 miles S.W. Bir-	560	8	177	40
GSQX	mingham Great Malvern,	800	6		50
GSTS/P	Beacon Hill, Nr.		2	1	23
GW40S/P	Farnham 5 miles S.E. Mold,	600	5	1	37
	Flintshire	988	1	-	95

Check Logs

G2CG/P	Barkway, Herts	-	4	-	38
G3DSV G3MY/P	London, E.4		1	1	11
G6YP	6 milesS, W, Sheffield London S.E.5,	1,350	3 4	5	70 40
BRS6818	Ware, Herts	terest		2	(28)

Some Outstanding Contacts

Time B.S.T.	Station.	Station "B"	Strength of "A" at "B"	Strength of "B" at "A"	Approx. Dis- tance (miles)
1115	G3MY/P	G3ENS/P	59A3	59A2	45
1130	G3CU/P	G3FZL/A	58A2	58A2	50
1130	G8JI/P	G3APY/P	59A2	59A2	50
1200	G3LN	G3APY/P	59A2	59A2	°50
1210	G2RD/P	G3FZL/A	58A2	57A2	50
1225	G3APY/P	G3BUR/P	59A2	59A2	50
1300	G5BM/P	G3APY/P	58A2	56A2	85
1345 1430/	G3MY/P	G3BUR/P	59A2/A3	56A3	70
1830	GW40S/P	G2JT/P	57A2	57A2	95
1510	G2FKZ/P	G3CGQ/P	55A2	57A2	45
1820	G3FZL/A	G2RD/P	59A2	59A2	50
1903	G3EMY	G3APY/P	58A2	59A2	50
2010	G3FZL/A	G3AHB/A	57A2	58A2	63

THE MONTH ON THE AIR

By ARTHUR MILNE (G2MI)*

Contest Time

-HOSE who are interested in Contests will have studied the imposing list of R.S.G.B. and other International Contests, projected for the coming winter season, with some misgiving. There are some, of course, who enter, merely to increase their total of countries worked, others just for the fun of giving away a few points. Many like to pit their skill, their wits and their equipment against the world and go out to win. By mention of the word "wits," we are not making a pass at the small minority who want to win regardless! Using one's wits is meant to cover the intelligent use of the time available, accurately forecasting the dull periods, when a little sleep can be snatched and so on. This brings us to the point. In these days when so many amateurs are located very close together, those who form part of a small group might well discuss amongst themselves who is going in for which contest. If there are three keen DX men all within a mile of each other, some agreement might be reached so that one concentrates on B.E.R.U., one on the "CQ" Contest and one on the A.R.R.L. DX Contest. Heavy local QRM is not a very reasonable handicap when one is competing against people who are in isolated locations with all the attendant advantages. Anyway it is just a thought passed on for consideration. It will be noted that there is a telephony section of B.E.R.U. next year. Let us all take a good look round the phone rig, just to make sure that the carrier envelope does not resemble a porcupine!

Pirates

There is little doubt that unlicensed operation is rapidly increasing. We have our own ideas about the reasons for this but we believe there are probably several hundred pirates now active. The only people who can take effective action are their own associates and the local amateurs. Some there are who have so lost their sense of decency that they are using the calls of amateurs who gave their lives in the war.

calls of amateurs who gave their lives in the war.

A letter has reached us from ex "G4TQ" asking us to publish his apologies to all the amateurs who have worked him in the past, under the impression that he was genuine. He has now passed both his technical and Morse exams and asks that he shall in due course be accepted with a clean sheet. A man who has the courage to admit his error, is obviously one who can make a fresh start. The incident should, therefore, be regarded as closed.

Notes and News

BRS11494 remarks on the conditions prevailing on September 21 when 28 Mc/s, was full of W's and ZL's with YS2AT for full measure! He asks where are all

the Cubans these days?

ZD2P is now ZD2DCP, Port Harcourt, Nigeria. He QSL's 100% and is on 14 Mc/s. C.W. only at present but hopes to be on 'phone later.' QSL via R.S.G.B. GM3CIG says FASPX on 14 Mc/s. 'phone QSL's. 'CIG is ex VU2BV and will be pleased to send a card to anyone still needing one. ZD6DH is having special cards printed and they will be distributed shortly.

G5CR forwards a note from W4BRB to correct the address given last month for VP5BD. This should read Cayman Brac. 'BRB is now up to 62 countries worked on 3.5 Mc/s. G5CR gives the address of EA6AF (7040) as Bartolone Pina, Casa de Espana 2,

Palma de Mallorca, Balearic Is.

G4NS has worked a couple of queer ones—XA1A who gives his QTH as Macaso! Also FS5I who said he was in "Central Africa." '4NS has our sympathy when he complains of people, mostly Europeans, who just call blindly on a rare DX frequency, often when said DX is actually transmitting.

ZC6DZ definitely is not Peter Keller, who is in

Tripoli. Cards are in from ZC6DZ. QSL via R.S.G.B. G2FTK has worked XON4AZ on 7 Mc/s. on the yacht Victory sailing on the River Sambre near

Charleroi, Belgium.

YO, appears to be the new prefix for Rumania.
All stations ask for cards via Box 95, Bucharest.

G3AAE is another one trying to get a card out of FASBG but says FA3WW, 8JO, 8RY and 9ED all QSL. A new one on in Cyprus is MD7DC, 14,044 C.W. and he QSL's. EA8AO is now back in Madrid as EA4CH.

G6XS says JA2CK on C.W. puts in a terrific signal about 0900 G.M.T. He wants to know if there are any C.W. stations in Utah. VP8AD has been located. His address is R. Maclaren, A/s Compania Int. de Radio, Balcarce 226, Piso 1°, Buenos Ayres.

BRS18017 gives YO3RF, 14,030 C.W. UA0PA (14,020 C.W., Zone 18), LZ2EO, FN8AD (14,250 in French India at 1715 G.M.T.), and XZ2SY,

Box 611, Rangoon.

G3CHP recently worked a station in Southern Rhodesia and found that his mother, uncle and aunt and brother were there on a visit, so occurred an unexpected family reunion. G3ESY at Hereford has caused much local interest and speculation with his balloon supported aerial. It is good to see that Hereford is on the air at long last.

G8HX has sent the U.K. address of AP2H, R. Jellis, 26 Church Street, Langold, Worksop, Notts. All accumulated cards have thus been cleared.

MP4BAD will be leaving for home soon. Ex-VQ4HRP will shortly be operating with a MP4 call. Welcome back to a very old-timer, G5YH, active once again.



AN OLD FRIEND.

Miles Weeks, W6ZZ, of Menio Park, California, is probably best known to the many British amateurs to whom he gave their first transatantic contact, under his pre-war call, W1WV. This view of his operating position shows that in moving from the East to the West Coast, W6ZZ has lost none of his interest in DX. His present equipment includes a Collins 75-A1 receiver, a BC-221 frequency meter and, seen below the telephone instrument, a "phone patch" which is used to connect the transmitter and receiver to the public telephone service — an increasingly popular practice amongst American amateurs.

VS2CQ reports that VS2BX and 2PU are pirates, 'BX is on leave and 'PU has never been issued. AC4RF says that cards have left India from him, and also AC3SS. 4RF is in Eastern Tibet at present. AC4NC is still active in Lhasa.

VP4LL (the old VP4TAI) states that all three letter calls are being changed to two letters. VE8MB is active on Cornwallis Is. (95° W., 75° N.), in the Arctic Ocean on 14 Mc/s. phone. AP2Y has come through with cards. He says AP2F is now back in G, AP2X has gone to Egypt. 2J and 2N are still active. GM3EOJ has worked UA0AA who gave QTH as East Siberian Expedition. 7,039 kc/s. He has worked 29 countries on 7 Mc/s.

ZD3B, now G3FHV says that ZD3A is now back in England. ZD3D is active in Gambia and cards have

arrived from him. QSL via R.S.G.B.
G6XS who reports that XZ2KM has left Burma, comments on the pile-up when news got round that he had a sked with FO8AB. The territory around his frequency was completely blotted out by the "cannibal tribes" all trying to break up the QSO and each other's calls. The exhibition was sickening to hear.

GI3BKG and G6TA have drawn attention to some interesting tests made by JA2AZ who works on 28 Mc/s. and then puts his contact through via a 14 Mc/s. circuit to some other part of the world. G6TA worked W7FJE/KL and W1CUX by this relay system and GI3BKG was extended to VESSW. The comment from both stations was that the circuit was excellent and that there was no "sing round." Quite a remarkable technical achievement for amateur equipment.

ZD9AA

Bert Mobey of ZD9AA has by this time left Tristan da Cunha. The motor vessel Pequena departed in October and Bert is now on leave at his home in 180 Park Road, Redhill, Durban. After the end of October he will begin his next tour of duty at the Aeradio Station, Beaufort West, South Africa, and hopes to be on with a ZS call. "Red," the other operator, is remaining on Tristan and hopes to be able to spend some time on the amateur bands, despite the heavy load of normal work which will now fall on his shoulders. No one has yet been found to replace Bert but it is hoped that another amateur will take on sometime soon.



Margaret Mills, G3ACC, is regularly active on both the DX and L.F. bands. With a total of 111 countries worked—97 confirmed—since receiving her licence in July, 1946, she may soon be the first British YL to qualify for DXCC. This recent view of her station in East Dulwich, London, shows that the feminine touch can keep even a DX station neat, tidy and comfortable to operate—but perhaps these features are due to her war-time training as a W.A.A.F. Signals Officer. The equipment includes a compact 150 watt 813 P.A. transmitter with built-in 1,500 volt power supplies; an AR77E receiver; a crystal calibrator and a small speech amplifier for occasional telephony transmissions. Meg's only regret is that her call-sign is less appropriate than her former B.R.S. number—7388.

The motor vessel *Pequena* will be visiting the island roughly every 15 weeks during the summer months in connection with the fish canneries recently established there, so Tristan da Cunha will cease to be the loneliest inhabited place in the world.



Many DX stations made their first contact with Honduras, Central America, as the result of the activities of Marion and Nan Brashear at HRIMB. The transmitter ends in a pair of 812's and runs at 150 watts input.

'Ware 3595 kc/s.

MEMBERS who operate in the 3.5 Mc/s. band and who live south of a line drawn between the Wash and Liverpool are asked to avoid using the spot frequency of 3595 kc/s. during the period from 0800 to 1800 G.M.T. daily.

This frequency is being used by the Air Traffic Control Centre at Uxbridge (call MVU) to operate an important service. During recent weeks amateurs operating on 3595 kc/s. have interfered severely with this service.

Members are reminded that the 3.5 Mc/s. band is shared in the United Kingdom with other services.

Australian Amateurs Maintain Flood Communications

A USTRALIAN amateurs played a vital role in maintaining emergency communications when flooding occurred in the Hunter Valley district of New South Wales, last June. During the floods, described as probably the most serious in the history of the State, many hundreds of messages, including police, emergency and press telegrams, were passed to and from the West Maitland police transmitter, special authorisation being granted for this work. The stations VK2AHA and AKP remained in operation continuously from Sunday morning June 19 until late on the following Tuesday. Many other amateurs co-operated by relaying urgent messages and by keeping the frequencies clear of interference.—

Amateur Radio.

Convention Windscreen Stickers

MEMBERS who intend to travel by car to the Manchester Convention can obtain a suitable windscreen sticker on application to Headquarters. The R.S.G.B. diamond emblem, set out in white against a black background, is enclosed by the words "Manchester National Convention, October 21–23, 1949."

SCOTTISH REGIONAL MEETINGS

Good Attendances in Glasgow and Aberdeen

THE Region 14 Meeting held in Glasgow at the Institute of Engineers and Shipbuilders on September 17, 1949, attracted the largest R.S.G.B. gathering ever recorded in that part of the country—92 members being present. Three representatives from Headquarters were present in the persons of the Executive Vice-President, Mr. W. A. Scarr, M.A. (G2WS), Council Member, Mr. Phil

Mr. Thorogood addressed the meeting on matters concerning Contests when it was made clear that the Contests Committee puts in a tremendous amount of work on behalf of the membership.

After tea at 4.30 p.m. a rag-chew followed until 5.30 p.m. when all members made their way to the Ca'dora Hotel for dinner. During this function it was announced that a gift voucher valued £5 5s.



Ca'dora Hotel, Glasgow. September 17, 1949.
Left to right: GM3DJS, BRS—, GM3AKR, 3CSM, G4KD, GM6MD (R.R. No. 14), G6CL, 2WS, GM6MS, 6XW, 3PB.

Thorogood (G4KD), and the General Secretary, Mr. John Clarricoats (G6CL).

The meeting opened with an address by the General Secretary on Society affairs, in the course of which he dealt with a variety of topics. He later answered questions.

Mr. Scarr then spoke on the work of the Scientific Observations Groups and appealed for more members to come forward and offer their services as volunteer observers. Mr. Scarr displayed a very interesting piece of 420 Mc/s. gear which attracted close attention.

had been presented by Clydesdale Radio of Glasgow. The lucky winner was Mr. J. N. Piper, GM3COE, of Fife.

Following a number of toasts the General Secretary on behalf of local members made a small presentation to the T.R. for Ayr, Miss Rainie, GM3AKR. During his speech G6CL spoke of the good work being done by Miss Rainie. Miss Rainie replied suitably.

Between the toasts light entertainment on the piano was rendered by a blind member, Mr. Fraser. The visitors included Mr. J. Douglas, GM2CAS, from Aberdeen (Region 12 Representative), Mr. Phil



Copyright Angus Photos, 15 King Street, Dundee (GM3AOR).

REGION 12 MEETING.
Northern Hotel, Aberdeen. September 18, 1949. Seated left to right: GM3UU, 6MD, G6CL, 2WS, GM2CAS (R.R. No. 12), G4KD, GM3ALZ

Hardie, from Edinburgh (Region 13 Representative), and DL4BC.

Before proceeding to the meeting the Headquarters' party saw something of the beauty of Loch Lomond in fair weather. (And are greatly indebted to their guides, GM6MS and GM6MD, of Glasgow, and GM3BCL of Aberdeen.—J.C.)

GM6MD.

North of Scotland Meeting

THE first R.S.G.B. Official Regional Meeting to be held in the North of Scotland took place at the Northern Hotel, Aberdeen, on Sunday, September 18, 1949, with about 50 members in attendance. Headquarters, was represented by the Executive Vice-President (Mr. W. A. Scarr, M.A., G2WS), Council Member, Mr. Phil Thorogood, G4KD, and the General Secretary (Mr. John Clarricoats, G6CL). Other visitors included Mr. David Macadie, GM6MD (Region 14 Representative and Scottish QSL Manager), from Glasgow and ZLIABD from New Zealand.

During lunch the R.R. (Mr. John Douglas, GM2CAS) made presentations to Messrs. S. Mackay and P. Walker in recognition of the help they had given in connection with the raffle.

At the business meeting the General Secretary referred to many aspects of the Society's work and later answered a number of questions. Afterwards Mr. Scarr spoke briefly on the work of the Scientific Observations groups and Mr. Thorogood outlined the activities of the Contests Committee.

During tea a number of valves were distributed. The raffle was then drawn and to the "disgust" of the male element it was found that all the four prizes had gone to the opposite sex—the first prize (a portable radiogram) being won by a baby girl!

After tea Mr. Scarr gave a much appreciated talk on V.H.F. work referring in particular to the type of equipment being used in the south for 420 Mc/s. operation.

The catering arrangements were very well carried out by the hotel staff who deservedly received the warm congratulations of the representatives from London.

The R.R. wishes to place on record his personal thanks to those who supported the event.

GM2CAS

L.M.R.E. (Mexico) Presentation

A T the London meeting held on September 30, 1949, at the Institution of Electrical Engineers, Mr. V. T. Dickens, XE1FE, presented to the Society the pennant of the Liga Mexicana de Radio Experimentadores. In a short speech Mr. Dickens expressed the hope that the pennant would be looked upon as a symbol of friendship, emphasising the earnest desire of L.R.M.E. to work in close harmony with the R.S.G.B.

The Executive Vice-President (Mr. W. A. Scarr) in thanking Mr. Dickens asked that the cordial greetings of the R.S.G.B. be conveyed to the President and Council of L.R.M.E. The pennant would be displayed at Headquarters to provide a visible sign of the friendship which exists between the amateurs of Great Britain and Mexico.

Also warmly welcomed at the meeting were Dr. Gosta Siljeholm (SM5SI), a prominent member of the Swedish Society, Lt.-Commander William A. Smith, U.S.N. (W3AN), Mr. P. C. Scheller (OZ4FT) and Miss Nina Barratt, a recently-joined Associate, who was accompanied by her guide dog. Miss Barratt is sightless.

I.A.R.U. 25th Anniversary

THE French (R.E.F.) and Belgium (U.B.A.) National Societies have proposed to I.A.R.U. Headquarters that the 25th Anniversary of the foundation in Paris of the International Amateur Radio Union shall be commemorated in some suitable manner.

The Council has agreed to support the projected Congress (which will probably take place in Paris during the spring of 1950) and has nominated Messrs. V. M. Desmond, G5VM, S. K. Lewer, G6LJ, A. O. Milne, G2MI, W. A. Scarr, G2WS, A. J. H. Watson, G2YD, and the General Secretary to represent the Society.

The Society has suggested to the I.A.R.U. that an opportunity should be provided for discussions to take place on matters of general interest to the I.A.R.U. Societies and has asked that the following items be placed on the agenda of the Business Meeting:—

To consider co-operation between I.A.R.U. Societies in connection with:—

(a) Scientific Observations.

(b) Band Planning and Operating Practices.

(c) Contests.

(d) Future International Conferences.

The Society plans to prepare short papers on these four subjects for submission to the I.A.R.U. Societies prior to the Congress.

Radio Components Exhibition, 1950

NTERESTED members may like to make a note that the seventh annual Exhibition of British Components, Valves and Test Gear for the radio, television, electronic and telecommunication industries will be held in the Great Hall, Grosvenor House, Park Lane, London, W.1, from April 17 to 20, 1950. Admission will be by invitation of the organisers—the Radio and Electronic Component Manufacturers' Federation (22 Surrey Street, Strand, London, W.C.2).

Representation

R EGION 15 comprises the counties of Antrim, Down, Armagh, Fermanagh, Londonderry and Tyrone. In the list published on page 83 of the September issue the two first named counties only were mentioned.

THIRD ANNUAL R.S.G.B.

AMATEUR RADIO EXHIBITION

WILL BE HELD AT

THE ROYAL HOTEL
Woburn Place, London, W.C.I

Wednesday, November 23rd,

Saturday, November 26th, 1949

The Exhibition will be opened at 2.30 p.m. on November 23rd by Lord Sandhurst, O.B.E.

Hours:

November 23rd - - - 2 p.m. to 9 p.m. November 24th 25th and 26th 11 a.m. to 9 p.m.

> Admission by Catalogue (To be issued free to Members)

Radio Amateurs' Examination

F the total of 898 candidates who sat for the 1949 Radio Amateurs' Examination, last May, 636 (71 per cent.) were successful. The official report, issued by the City and Guilds of London Institute, confirms that the general standard of the work submitted, both technically and the manner in which the questions were answered, was fairly high. The slight rise in the percentage of failures compared with last year—from 24·5 per cent. to 29 per cent—is accounted for by the fact that almost 40 per cent. of the candidates did not attempt to answer question No. 3

For the benefit of prospective candidates a copy of the 1949 paper is reproduced below. The duration of the examination was 3 hours; candidates were advised to attempt to answer all questions and to make use of diagrams where applicable. The maximum possible marks which were obtainable

is affixed to each question.

The Examination Paper

1. What steps should be taken in the design of a transmitter to minimise the risk of interference to broadcast and television reception?

Indicate what special precautions can be taken to reduce radiation of harmonics. (20 marks.)

- 2. What types of message may be exchanged with other amateur stations? For what purposes is the use of the station prohibited? (15 marks.)
- 3. An alternating voltage of 10 volts at a frequency of $5/\pi$ Mc/s. is applied to a circuit of the following elements in series:—

(i) a capacitance of 100 pico-farads,
 (ii) a non-inductive resistor of 10 ohms.

- (a) What value of inductance in series is required to tune the circuit to resonance?
- (b) At resonance, what is the current in the circuit? (15 marks.)
- Discuss the advantages and disadvantages of a tuned radio-frequency and a superheterodyne receiver for amateur reception on the 14 Mc/s. band.
- 5. State the essential difference in the operation of a triode valve as a detector and as an amplifier. Explain the meaning of the terms "amplification factor" and "impedance" of a valve. (10 marks.)
 6. Describe three methods commonly used for

 Describe three methods commonly used for coupling transmitters to aerials and discuss the relative merits of each type of coupling. (10 marks.)

- 7. Describe a method of obtaining the hightension supply for an amateur transmitter from alternating current mains. Include particulars of the smoothing circuit. Illustrate your reply with a diagram. (10 marks.)
- 8. What do you understand by "over-modulation"? Describe a simple modulation meter and explain how it is used to indicate depth of modulation. (10 marks.)

Examiner's Report

The official report on the manner in which the individual questions were answered should prove a valuable guide to those members engaged in preparing themselves or others for the 1950 examination.

Question 1 (transmitter interference).—Fairly well

done by most candidates.

Question 2 (types of messages).—Very well done by

practically all candidates.

Question 3 (calculation).—This question was attempted by approximately 60 per cent. of candidates, a small number of whom obtained correct answers to part (a) while a fair number answered part (b) correctly. It was observed that some candidates who attempted part (a) did not use the indices method of calculation and became confused with the handling of unwieldy quantities.

Question 4 (receiver).-Well done by most can-

didates.

Question 5 (valve).—The first part of this question was well done by most candidates while the second and third parts were fairly well done. With regard to the latter part of the question, a number of candidates gave the D.C. instead of the A.C. resistance of the valve.

Question 6 (aerial coupling).—Fairly well done by

most candidates.

Question 7 (H.T. rectifier).—Very well done by all candidates.

Question 8 (modulation).—First part of question fairly well done by most candidates. Very few answered the second part correctly.

Co-operation between Radio Amateurs and Aircraft in Distress

R EPRESENTATIVES of the Society recently attended a meeting at the Air Ministry to discuss the question of co-operation between radio amateurs and aircraft in distress. They stressed the point that if an aircraft has made a forced landing and is unable to obtain replies on normal R.A.F. distress frequencies, aid may be forthcoming if transmissions are made on a frequency within one of the amateur bands. They also suggested that amateurs and others could be alerted to listen on R.A.F. distress frequencies, by means of a B.B.C. announcement. In such cases the call sign of the aircraft would have to be stated.

The meeting was attended by representatives of the G.P.O., the M.C.A., the Admiralty and other

Government Departments.

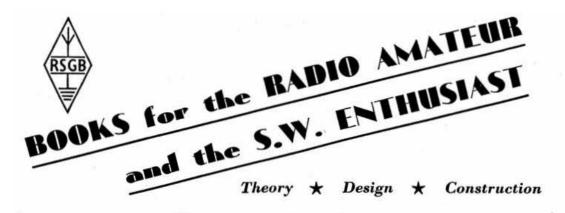
It is understood that the Society's offer of cooperation is being further considered by the Air Ministry.

Considerations affecting the Accuracy of Measurements—Continued from page 112

meter circuit in the B.F.O. to measure the very small input signal, and (b) the accuracy of the output meter for the output. The fact that two quantities differing widely in magnitude are being measured also increases the chance of error. The alternative, and the method which is recognised in telecommunications practice, simply uses the meter for comparison, thus an extemporised valve voltmeter or a cathode ray tube is quite suitable. In this method a signal is fed to the amplifier input and the output is fed through an attenuator-usually of the decade type-to the meter. Proper termination of the units is, of course, necessary. Provision must be made to switch the meter from source to amplifier output. The meter is first switched to the source and the deflection noted. It is then switched to the amplifier output and the attenuator adjusted until the same deflection is obtained. The reading of the attenuator will now show the gain of the amplifier. It should be noted in this method that reliance is being placed on an attenuator, the calibration of which may be trusted with confidence, the less reliable instrument serving merely for comparison.

Personal error cannot be dealt with in a general way. For example, what one person considers to be good reproduction of music another will say has too much bass response. It must be remembered that the only way to make comparative measurements is by using calibrated microphones and speakers and

rooms of known acoustic properties.



The R.S.G.B. "Amateur Radio" Series:

- SERVICE VALVE EQUIVALENTS. The third (revised) edition
 of this popular 28 page booklet contains the commercial equivalent
 type numbers of many hundreds of British and American Service
 valves and cathode ray tubes. Price 1/- (by post 1/3).
- TRANSMITTER INTERFERENCE. An invaluable guide to the cure of broadcast and television interference caused by amateur transmitters, including television receiver data essential for determining whether the trouble is due to receiver design. 32 Pages. Price 1/3 (by post 1/6).
- MICROWAVE TECHNIQUE. A concise account of the principles involved in the design of communication equipment for frequencies above 500 Mc/s. This booklet makes an excellent introduction to the new U.H.F. bands. 54 Pages. Price 2/- (by post 2/3).
- V.H.F. TECHNIQUE. A comprehensive guide to the construction of amateur equipment for the frequency range 30-300 Mc/s. with chapters covering propagation, frequency measurement and frequency modulation. 91 Pages. Price 3/6 (by post 3/9).
- VALVE TECHNIQUE. A most useful handbook on the calculations associated with thermionic valve practice, showing how to obtain optimum results from modern valves in receivers and lowpower transmitters. 99 Pages. Price 3/6 (by post 3/9).

American Publications:

- RADIO AMATEURS' HANDBOOK. (1949 Edition)) Published by the American Radio Relay League. The standard manual on the design and construction of all types of up-to-date amateur equipment, receivers, transmitters, auxiliary apparatus, V.H.F. equipment, aerials, etc. Price 18/6.
- A.R.R.L. ANTENNA HANDBOOK. (1949 Edition.) An entirely revised and enlarged edition of this well-known publication covering the theory, design and construction of amateur transmitting aerials from simple end-on types to multi-element beams. Price 11/-.
- RADIO HANDBOOK. (11th Edition.) The latest of the famous handbooks published by Editors and Engineers of California covering the entire field of amateur radio equipment. Price £1.5.0
- RADIO AMATEUR NEWCOMER. (4th Edition.) An excellent introduction to Amateur Radio. Starting from the very beginning this book takes the reader in easy stages through the art of building a complete amateur station, with notes on operating codes, prefixes and learning the Morse code. 156 Pages. Price 8/-.
- ANTENNA MANUAL. Editors and Engineers. A comprehensive manual on aerial design and construction eminently suitable for the amateur or field engineer. Price £1.7.0
- SURPLUS RADIO CONVERSION MANUALS. Vols. I and II.
 Vol. I includes BC-221, BC-342, BC-312, BC-348, SCR-274, SCR-522, etc. Vol. II includes ARC-5, APS-13, BC-375, TA12B, LM Frequency Meters, etc. Tested conversions of surplus military equipment to practical amateur use. Price 18/6 (each volume).



FULLY ILLUSTRATED

TRADE ENQUIRIES

Delivery for American Publications is approximately 4 weeks. Prices are subject to alteration without notice. Remittances should be made payable to the Society. Orders for American Publications can only be accepted from residents in the British Empire.

INCORPORATED RADIO SOCIETY OF GREAT BRITAIN

NEW RUSKIN HOUSE, LITTLE RUSSELL ST., LONDON, W.C.I.

Telephone:

Holborn 7373

HEADQUARTERS' CALLING

COUNCIL, 1949

President:

VICTOR M. DESMOND, G5VM.

Executive Vice-President: W. A. Scarr, M.A., G2WS. 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: S. K. Lewer, B.Sc., G6LJ.

Members: W. H. Allen, M.B.E., G2UJ, A. P. G. Amos, G3AGM, I. D. Auchterlonie, G6OM, F. Charman B.E.M., G6CJ, D. N. Corfield, D.L.C. (Hons.), A.M.I.E.E., G5CD, P. A. Thorogood, G4KD. Co-opted Member: W. N. Craig, B.Sc., G6JJ.

General Secretary: John Clarricoats, G6CL.

July Council Meeting

Resume of the Minutes of a Meeting of the Council of the Inc. Radio Society of Great Britain, held at New Ruskin House, on July 12, 1949, at 6 p.m.
Present.—The President (Mr. V. M. Desmond, in the Chair), Messrs. A. P. G. Amos, I. D. Auchterlonie, 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).

Apologies.—Apologies for absence were presented on behalf of Messrs, W. H. Allen and F. Charman.

Convention.

It was agreed to apply to the G.P.O. for permission to operate At was agreed to apply to the G.F.O. for permission to operate an amateur station at the Exhibition under the callsign GB3RS/A (the Headquarters' call). Mr. Mathews voted against this motion as he considered the first use of GB3RS should be reserved for the station which the Society hopes to operate at the Festival of Britain Exhibition in 1951.

Amateur Television Transmissions.

Resolved-

To request the G.P.O. to permit selected applicants to operate television transmitting equipment within certain sections of the 420-460 Mc/s, amateur band. (The request has been refused but the Council intends to make further overtures to the G.P.O.—ED.).

Membership.

Resolved (a) To elect 61 Corporate Members, 19 Associates and 4 Junior Associates. (Total elected 84).

(b) to grant Corporate Membership to 6 Associates who had

applied for transfer.
(c) to grant affiliation to the Bournemouth Radio and Television Society.

New Technical Publications.

Resolved-

To print 10,000 copies of each of two new technical publica-

tions, viz. Receivers and Simple Transmitting Equipment.

To authorise the Technical Committee to commence work on the Third Edition of the Amateur Radio Handbook.

Distress Signals from Aircraft.

Distress Signals from Aircraft.

Mr. Amos mentioned that during a recent B.B.C. News broadcast U.K. amateurs were asked to listen for signals from an aircraft reported overdue. Unfortunately neither the frequency nor the callsign of the aircraft were announced. It was agreed to write to the Air Ministry and to ask that an interview be arranged to enable representatives of the Society to discuss matters relating to co-operation between radio amateurs and aircraft in distress.

(See man 122 for report on meeting with Air Ministry represents.

(See page 122 for report on meeting with Air Ministry representa-tives.—ED.)

The meeting terminated at 8.30 p.m.

Representation

The following are additions or alterations to the list of Representatives published in the February, 1948, and subsequent issues :-

Vacancies

County Representatives

Messrs. E. H. Trowell, G2HKU, and K. R. Peattie, GM2FQG, have resigned as Representatives for the counties of Kent (outside the London area), and Dumbartonshire and Argyllshire respectively. Nominations for their successors should be made in the prescribed form and sent to reach the General Secretary by October 31, 1949.

Town Representatives
Messrs. L. E. Profaze, BRS6942, and P. H. Hunter, BRS13331,
have resigned as Representatives for the towns of Southgate,
and Bexhill and Hastings respectively. Nominations for their
successors should be made in the prescribed form and sent to
reach the General Secretary by October 31, 1949.

Change of Address

Regional Representative

Region 8.-Dr. W. P. Cargill, G5LR, 125 Hill Lane, Southampton.

London (I.E.E.) Meeting

Nearly 200 members were present at the Institution of Electrical Engineers on Friday, September 30, 1949, when Mr. R. L. Varney, A.M. I.E.E. (G&RV) lectured on the Suppression of Interference to Television. Numerous pieces of equipment, including examples of filters, were on display. A vote of thanks to the lecturer was proposed by Mr. J. W. Mathews (G&LL). The Chair was taken by Mr. W. A. Scarr, M.A. (G2WS), Executive Vice-President.

Slow Morse Transmissions

W		310# 110	36		111331	53753
B.S.T.		Call		kc/s.	100	Town
Sundays						
09.30	***	G6NA		1840	***	Guildford
Mondays						
13.00		G3AXN	***	1870		Southend-on-Sea
20.00		G2AJU		1900		Stutton, Ipswich
20.00		G3BHS		1820		Eastleigh, Hants.
20.00		G3DSR		1750		Derby
21.00		G2BLN	***	1900	***	Bournemouth
21.00		GSVR		1850	***	London, S.E.2
22.00		GSTL	***	1896		Ilford
22.30		G4GA		1896		Chingford
Tuesdays	1,155		200			
13.00		G3AXN		1870		Southend-on-Sea
20.00		GIZHLT		1900		Belfast
22.30		G6JB		1820		Salcombe, Devon
23.00		GM4AN		1820	***	Kirkaldy
Wednesday			200	1000000	200120	
20.00		PAOAA		3625		Hilversum
20.00	***	GSAFD	***	1783		Southampton
22.00	***	G6NA	***	1840		Guildford
22.00	***	G3DLC	***	1800		Grays, Essex
	***	GODLO	***	1000	***	Olays, Losex
Thursdays		G3AXN		1870		Southend-on-Sea
18.00	***		***		***	Southend-on-Sea South Woodford
22.00	***	G2BCX	***	1873	***	
22.30	***	G3ARU	***	1873	***	South Woodford
22.30	***	G3OB	**	1803	***	Manchester
Fridays		1000000		unaco?		
13.00	***	G3AXN	***	1870	***	Southend-on-Sea
19.00		G3BLN	***	1900	***	Bournemouth
20.00	***	G2AJU	***	1900	100.00	Stutton, Ipswich
20.00		G3AKW	***	1860	***	Wirral
20.00		G3BH8	***	1820	***	Eastleigh, Hants.
20.30		GSLZ	***	1868		Gravesend
22.30		G6JB	***	1820	***	Salcombe, Devon
23.00	***	GM4AN	***	1820	***	Kirkaldy
Saturdays						
23.00		G3CHY	2.0	1800	***	Ashton-u-Lyne
	0.00		T. af	ter Octol	per 29	

Volunteers in districts not covered by these transmissions are invited to write to Mr. C. H. L. Edwards, GSTL, 10, Chepstow Crescent, Newbury Park, Ilford, Essex.

Silent Keys

We record with deep regret the passing of Mr. W. Nigel Greasley, G8VO, of Harrow, who died suddenly on September 17. Originally licensed in 1927, Mr. Greasley was well-known on the 3·5 and 14 Mc/s. bands.

Also with sorrow we record the passing of Major P. J. Best, M.B.E., A.M.(Brit.) I.R.E., G4QH. Prior to the war Mr. Best who was on the staff of the G.P.O. carried out the inspection of Amateur Radio Stations in the Lancashire area and in that capacity did much to foster a friendly spirit between the Post Office and local amateurs. At the outbreak of the 1939-45 war he went overseas with the local Territorials, later transferring to the Radio section where his promotion to the rank of major was rapid. After the war he operated from Germany with a D call sign, thereby keeping in touch with his amateur friends in England.

After his return home he became actively associated with

After his return home he became actively associated with the Preston Radio Society of which body he was Chairman at the time of his death. He rendered invaluable assistance to the group during the recent N.F.D. The heartfelt sympathies of his many friends in the

Amateur Radio movement are extended to his relative

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October 21st - 23rd, 1949

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- ★ EDDYSTONE—" 680." 15 valves (2 RF and 2 IF). 30 Mc/s. to 480 kc/s. Accurately calibrated dial (flywheel loaded) with 140 to 1 ratio. Mechanical bandspread with scale length equal to 90 inches per range. Stabilised H.T., crystal filter, variable selectivity, "S" meter, noise limiter, B.F.O., push-pull output, etc. Book your order now for delivery in rotation. Price £85.
- "750" DOUBLE SUPERHET. This new Eddystone receiver will not be available until early 1950, but you are advised to book will not be available until early 1950, but you are advised to book your order now for delivery as soon as production commences. Coverage 30-5 Mc/s. to 480 kc/s. First I.F. I,600 kc/s., second 85 kc/s. giving good image ratio and high degree of variable selectivity to cover CW and phone operation. Gear driven 200 to I ratio, flywheel loaded tuning, auxiliary bandspread indicator giving 240 kc/s. per inch and requiring six knob rotations to tune one megacycle. Stabilised H.T., hum free noise limiter, B.F.O., R.F. and I.F. gain controls, carefully designed AGC circuits, etc. Price £45.
- RADIOVISION—"Commander" Double Superhet. 9 valves, rectifier and neon stabiliser. Coverage 1-7 to 31 Mc/s. Calibrated full vision dial, 50 to 1 ratio. Separate calibrated electrical bandspread on amateur bands. Series noise limiter with adjustable clipping level, "S" meter, B.F.O., R.F. and I.F. gain controls, etc. £48 10s., or £12 deposit and 12 monthly payments of £3 6s. 11d., or 18 of £2 6s. 8d.
- DENCO-" DCR 19." 12 valves. Coverage 0.175 to 36 Mc/s. DENCO—"DCR 19." 12 valves. Coverage 0·175 to 36 Mc/s.
 (including long and medium wave bands) in six ranges. Switched
 5 position selectivity from 100 cycle bandwidth to 8 kc/s. in
 broad position. Crystal filter, crystal calibrator checks every
 500 kc/s. "S" meter, B.F.O., noise limiter, etc. £49 l0s.
 See these models on our stand No. 19 at the R.S.G.B. Amateur Radio
 Exhibition, Royal Hotel, London, W.C.1, November 23-26.

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A.C./D.C. MOTORS. These are converted dynamotors as sold elsewhere for 25/-, our price is 12/6, post 1/6.

VALVES. 1T4-1S5-1S4-3S4, 6/6 each. 1R5, 7/6. 5O4-V96O, EHT 5,000 V. 10 mA., 6/6 each. 6K7, metal, 5/6. Acorn 955-954, 3/6 each. 9001, 9002, 4/6 each. 9003, 3/6. 6V6G, 7/6. Y63 Tuning Eye, 8/-. All post paid. 6C8, 7/6. 807, 7/6, 6L6, 10/6, EF50, 5/6. 6F6, 6/-. 6 x 5, 4/6. Special Offer. RCA 811's, new and boxed, 10/6. RK20's, 10/6, post paid.

NEW IN34 CRYSTAL DIODES. 5/3 each, post paid. SPEAKERS. 3½", 8/6 each plus 1/- postage; 5", Plessey or Rola, 10/6, postage 1/-. 8" P.M., 19/6, postage 1/6. 10" P.M., 25/-, postage 2/-. 18" Baker's P.M., £6, plus 10/- packing and carriage.

We can still supply our MW Coil Pack for the BC453, Price 17/6 complete with conversion circuits.

TYPE A1271 MICROPHONE PRE-AMPLIFIER. Contains EF36, 2 transformers-resistors, condensers, etc., in neat black metal case, $5'' \times 5'' \times 5''$. 10/- each, post paid.

SMALL MAINS TRANSFORMERS. Our own make. Input 200/240 V. Output 6·3 V. and 4 V. 2 A., 12/6 each, post 9d. Input 200/230 V. Output 240 V. 60 mA. 6·3 V. 1·5 A., 15/e each, post 1/-. For use with metal rectifiers. Input 200/230 V., output 6·3 V. 2·5 A., 10/6, post 1/-.

MAINS TRANSFORMERS. Input 230 V., output 350-0-350 V., 250 mA. 6·3 V. at 12 A. and 5 V. 10 A. 35/- plus 4/6 carriage.

I mA. SELENIUM METER RECTIFIERS. 1" × 1" × 1". 4/- each post paid.

MAINS TRANSFORMERS. Input 160/180/200/220/240 V. Output 585 V. 150 mA. 10 V. 4 A. 2-0-2 V. at 3·5 A. 6·3 V. C.T. 3·5 A. Price 17/6 plus 2/6 carriage.

MAINS TRANSFORMERS. Input 110/210/230/250 V.
Output 2 x 4 V. at 4 A. 9 V. at 4 A. 85 V. at 1 A. 285 V.
120 mA. 44 V. at 200 mA. 10 V. at 3 A. Price 17/6 plus 2/6 carriage.

J50 Pencil Rectifiers, 3/ each. U.S. Miniature Neons, 110V., 1/3, postage 3d.

FILAMENT TRANSFORMERS. Input 230/115 V. Output 5 V. 2 A., 5 V. 3 A., 6·3 V. 6 A., 6·3 V. 2 A., 6·3 V. 1 A., 2·5 V. 2 A. Metal cased 5" x 5" x 4". Price 35/- plus 2/6

TRII96. These 6 V. superhets are the best buy of the day. Just fit an Osmor all-wave coil pack and twin variable con-denser with minor adjustments and you have a first-class receiver. Price 29/6 with circuit, carriage 2/-.

receiver. Price 29/6 with circuit, carriage 2/-.
RII32A. This grand 10-valve superhet, covering from 100 to
126 Mc/s., Case measuring 20" x 12" x 12". Price £4 19s. 6d.,
or converted ready for use on 144 Mc/s. band. Price £7,
plus 10/- carriage and packing.

MAINS POWER SUPPLY UNIT. In black enamelled
case, 9" x 6" x 6", contains heavy-duty transformer, rectifier
valve, smoothing choke, condensers, panel light switch and
fuses. Input 200/260 V A.C. Output 6-3 V. at 3-5 A. H.T.
350 V. at 80 mA. Price £3 5s. This power unit is suitable
for RII55 and RII32A and is supplied with Jones pluss.

10cm ROTARY BEAM AERIALS. Made for U.S. Army. Consists of Aluminium Circular Tray, 3" diameter, with reflector and Dipole mounted on geared chassis with A.C. Motor and Selsyn Pulse Motor. Price £2 10s. Add 10/- for case (returnable).

OSMOR MINIATURE ALL WAVE COIL PACKS. Measure 3½" × 2" × 1½" for 465 Kc/s., IF's, 33/6. post paid. 12 V. VIBRATOR UNIT WITH AUDIO PENTODE AMPLIFIER. Complete in steel case for 30/-. A bargain, TWIN-GANG VARIABLE CONDENSERS. -0005 µF, Midget ditto with dust covers 8/-, 3-gang 8/6. All

SELENIUM RECTIFIERS H.W. 60 mA. 4/6. 120 mA. 6/6. 6 V. or 12V. 1 A. F.W. 10/6 and 6 V. or 12 V. 4 A. F.W. 25/post 6d.

250-WATT DOUBLE-WOUND TRANSFORMERS. 230/110 V. Made by G.E.C. With steel shroud. New. £2 7s. 6d. each. Post paid.

HIC ET UBIQUE

Aylesbury and District Radio Society

An appeal for increased support at the local meetings of the above Society has been made by the Hon. Secretary, Mr. J. G. Penrice, BRS6882, 31 Prebendal Avenue, Aylesbury.

At the Annual General Meeting the following officers were elected for 1949-50. President; C. A. Sharp (G6KU); Vice-President: E. J. Simonard (G2CQV): Secretary; V. W. Sowen (G2BYC): Treasurer; J. J. Platt (G2VO): Public Relations Officer; J. H. Macdonald (G4GJ). In his Annual Report the retiring secretary, Mr. W. S. Sykes (G2DJS), observed that the membership included over forty licensed transmitters and that an overall increase in members had been reflected in attendances at meetings. A varied syllabus has been arranged and copies will be circulated as soon as they are received from the printers. Members look Torward to meeting old and new friends at the fortnightly meetings at Cambridge House.

County Durham Hamfest

A County Durham Hamfest will be held at the Imperial Hotel, Darlington, on Sunday, October 30, 1949, at 3 p.m. Tickets (price 5s. 6d. each which will cover the cost of high tea) can be obtained from the C.R., Mr. T. Orr, G3IV, 31 Grange Park Avenue, Sunderland, or from T.R.'s and Club Secretaries.

The proceedings will be enlivened by an exhibition and a raffle. There will also be a special section devoted to 2 metre work whilst B.R.S. members will find much to interest them.

Coventry Amateur Radio Society

At a recent meeting of the Society, Mr. W. Grimbaldeston, B.Sc. (G6WH), gave a lecture on "Short Wave DX Propagation." Other activities have included a "Transmitter Night" when the Club call-sign G2ASF was used, and the Annual General Meeting on September 26.

Derby and District Amateur Radio Society

Members have been busily engaged in decorating and preparing the new headquarters in the basement of the Derby School of Arts and Crafts. It is hoped that when this work is completed meetings will be held weekly, instead of once a fortnight as at present. On October 26, Mr. W. A. Mead, G5YY, will speak on "Transformer Winding." A meeting will also be held on Novem-

Hampstead Hamfest

The next meeting, to be held at the new H.Q., 1 Broadhurst Gardens, N.W.6 (behind John Barnes), at 7.30 p.m. on Friday, October 21, will take the form of a dinner followed by a junk sale. Tickets for the dinner (5/-) can be obtained from Mr. B. Wardman, 59 Eton Place, Eton College Road, N.W.3 (Telephone Primrose 2175).

Midland Amateur Radio Society

As a povel departure from their normal activities, the M.A.R.S. As a novel departure from their normal activities, the M.A.R.S. recently held a highly successful week-end under canvas. An interesting selection of gear was operated on all bands from 1·8–420 Mc/s. with the call-signs G2AK/P, G6DL/P, G5IW/A and G3BUR/P. The event attracted considerable interest and was well covered by the Press. Recordings, made by the B.B.C. mobile unit featured G5LK and his wife, and were later broadcast in the Midland Regional programme.

Old-Timers' Badge

Eric Martin, G6MN, Bridge Street, Worksop, Notts., would like to hear from any Old Timer interested in possessing a suitable lapel badge to mark his long association with the Amateur Radio movement. The price will depend upon the number manufactured, but it is unlikely to exceed 5/-.



The Midland Amateur Radio Society Field Day.-Station G2AK in

Sheffield Activities

A Rag Chew and Junk Sale will take place on October 19 at the Dog and Partridge, Trippet Lane at 8 p.m. Members are asked to take particular note of this date which is additional to the regular fortnightly meetings.

Slough Group

Owing to pressure of work, Mr. F. J. Tuckfield, G2HOX, has been compelled to resign the secretaryship of the Slough Town Group. The new Secretary is Mr. R. Young, 16 Elmhurst Road, Langley, Bucks., G3BTP.

Stourbridge Amateur Radio Society

Thirty-five members and guests attended the September meeting to hear an interesting talk by Mr. Butcher of R. and A. Laboratories on "Moving Coil Loud Speakers." It is proposed to hold a local Amateur Radio Exhibition during December.

Sunderland Radio Society

The programme for the autumn and winter has now been arranged. Monthly business meetings will be held on Nov. 2, Dec. 7, Jan. 4, Feb. 1, March 1. Special lectures include: Oct. 19 "Quality Disc Reproduction" by B. A. Holden, M.A.; Oct. 26 "Magnetic Tape Recording" by J. M. Carter, B.Sc.; Nov. 16 "The Decca Navigator" (film); Jan. 11 "Design of R.F. Components for Superhets" by A. E. Coghlan; Feb. 8 "Sensitive Relays" by R. V. Duesbury; March 8 "Class C Amplifiers" by K. V. Draycott, G2BDI. Meetings are held at the Club Room, Top Floor, Prospect House, Prospect Row, Sunderland (8 p.m.).

Sutton and Cheam Radio Society

The 11th issue of the local News Letter issued during September The 11th issue of the local News Letter issued during September contained details of recent meetings as well as the programme for the winter season. Forthcoming lectures include: October 18 "Getting on Two Metres Easily" by Mr. D. Hoult, G400 (Radiocraft Ltd.): November 1 "Manufacture of Modern Cathode Ray Tubes" by Mr. S. A. Bell (G.E.C. Ltd.): November 15 "Ham Shack Gadgets" by Mr. D. Hoult: December 6 "Recording Technique" by Mr. G. Westwood, late Senior Recording Engineer, B.B.C. A junk sale is to take place on December 20. Meetings are held at the Sutton Adult School and Institute, Behill Avenue, Sutton.

Thames Valley Amateur Radio Transmitters'

Society

The T.V.A.R.T.S. Annual Dinner will be held on Saturday,
December 3rd, 1949, at the Carnarvan Casfle Hotel, Hampton Court.

There will be the usual excellent fare and cabaret, followed by party games, dancing and a grand draw. The President, Mr. Les Cooper, G5LC, extends a hearty welcome to all old friends. Enquiries to the Club Secretary, Major A. Eden, 31 Chatsworth Crescent, Hounslow, Middx.

Torbay Amateur Radio Society

At the September meeting of the Society which was well attended, Mr. Launder, B.Sc. (G3FHI), gave an interesting lecture on the oscillatory circuit whilst Mr. W. B. Sydenham, B.Sc. (G5SY) demonstrated his new frequency meter and multivibrator. The Society, which now has a junior section for members between the ages of 14-17 years, meets every third Saturday in the month at the Y.M.C.A., Castle Road (7.30 p.m.).

New Book

Making the Most of Your Receiver. Published by Messrs. Stratton & Co., Ltd. 12 pp. Price 1s.

This new booklet contains useful advice on how to obtain the best results from Eddystone and other short-wave receivers. Information is given on suitable aerials, including general purpose and folded dipole types; aerial installation on board small vessels; the importance of a good earth; care of batteries; notes on loudspeakers and the minimising of electrical interference. ference.

OUR FRONT COVER

'HE picture on the front cover this month shows a Universal AvoMinor being used to check the screen voltage of the PM24M Crystal Oscillator which is being adjusted to run from a 250 volt plate supply. The screen voltage is being obtained by the setting of a high wattage variable resistance.

The photograph, submitted by Mr. R. C. Parnaby (G2DPA), of Beverley, Yorks, was awarded a prize in the " Avo " competition for R.S.G.B. members.

SCR522 TRANSMITTER COMPONENTS.--Modulation transformer, 3,6 each. Audio choke, 1/6 each. Meter switch, 2/- each. Two meter sockets, 6d. per pair. Or all the above for 6/-. Or all the above, plus the transmitter SCR522 as advertised in July Bulletin at 10/- the lot. Alternatively we can offer the receiver. SCR522, brand new, and the above 10/- parcel, for 40/-.

AERIAL TUNER with micro dial, silver-plated coil 3" diameter, 17 turns, gauge 10, 2/- each.

CYLDON.—Condensers, variable '0002 up to 200 watts, price 2/6 each.

NEUTRALISING condenser, ceramic base, up to 3,000 V., 2/- each. Or the above three items for 5/-.

THE FAMOUS COLLINS AMERICAN COMPONENTS. All Brand New. I.F. set, 455 kc/s., original boxed, 2 I.F. transformers and I B.F.O. tuning assembly, at 20/- the set. Collins microphone transformer, 41 to 1, at 7/6 each. Collins 20 watt modulation transformer for two 6L6 to 807, or two 807 to 807, 20/-. Collins output transformer, 7,500 to 500 ohms, 12/6. Collins smoothing choke, 8 H., 100 mA., 160 ohms D.C., 10/-.

"GUARDIAN" American aerial change-over relays, D.P.D.T., with muting S.P.S.T., 200 watts, 12 V. D.C., 5/-.

"SIGNAL" telegraph keys, with shorting switch, 5/-,

5BPI oscilloscope, 5" tube with socket and M.U. metal screen, completely encased in steel cabinet, 30/-.

MINIATURE 6-way Jones plug and socket, encased, two octal sockets, ten mica condensers, 1/6 the lot.

POLYTHENE sleeving for 20 gauge wire, 12 yds for 1/6.

"AEROVOX " -1 µF. 600 V. wkg. D.C., at 4/- per dozen.

BRAND NEW CRYSTALS.—A.M. 7,010 kc/s., 7,050 kc/s., 7,090 kc/s., 7,110 kc/s., 7,160 kc/s., 7,170 kc/s., 7,210 kc/s., 7,260 kc/s., 8,060 kc/s., 8,060 kc/s., 8,110 kc/s., and 8,007-69 kc/s., all at 8/6 each. Please pick an alternative when ordering in case your required frequency is sold out.

WEE MEGGERS. Brand new at £5 15s. each.

COILS of 100 yds. P.V.C. 18 gauge connecting wire. Red or black, at 5/- per coil.

HANDSET, containing No. 7 moving coil microphone and moving coil earpiece, complete with "Press to talk" switch, 4/6 each.

With orders under 5/- please add 6d. postage.

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The Management & Ltaff

of LABGEAR LTD., request the pleasure of making your acquaintance at the R.S.G.B. CONVENTION at at the R.S.G.B. CONVENTION at the Corn Exchange, Manchester, October 21-23, to see an exhibition of the latest Labgear Amateur Components and Equipment. LABGEAR LTD.

Should you be unable to attend, may we draw your attention to an important

NEW CATALOGUE

containing details of all Labgear S.W. Products, including a wealth of hitherto unreleased information regarding their application.

Post free, 101d.

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SPECIAL OFFER - brand new -Receiver Type 78 AND ASSOCIATED EQUIPMENTS

A Newsletter reader has sent us an interesting article on this popular Receiver, which details of the conversion of the unit for normal use.

This receiver consists of an RF amplifier, a mixer with separate local oscillator and a inter win separate local oscinior and acceptate theck oscillator. A limiter monitor and desynn trimmer is also incorporated. Frequency coverage is 2:4–13 Mc/s. in two bands, with provision for AVC.

Tuning is effected by a rotating coil driven by a back lash free mechanism from the front panel and the associated dial is calibrated at 10 kc/s. points. Setting accuracy is plus or minus 6 kc/s.

The R.F. circuit is tuned by means of a two-gang condenser directly calibrated and tuned from the front panel. Valve line-up:

(V1) EA50 Diode Limiter. (V2) EF50 1st R.F. (V3) ECH35 Frequency Changer. (V4) 6J5 B.F.O. (V5) EF39 100 kc/s. Crystal Calibrator.

This receiver is ideal for use with the Modulator type 76 which was designed with it and comprises an I.F. Strip and push-pull modulation amplifier (9 valves). Also available is the Aerial tuning unit 126, which comprises a rotating coil, rev. counter and aerial ammeter.

We are making a special offer of the we are making a special offer of the complete three units, that is, the Receiver 78, Modulator 76, and the Aerial Tuning Unit, all Brand New, at an all-in price of £5 to callers,

To all purchasers of the complete units, full details of the conversion of the Receiver type 78 valve filaments to normal use will be given.

FOUNDATION METERS

Q.M.C. and B.P.L. manufacture. Q.M.C. and B.P.L. manufacture. Brand new Guaranteed instruments. Basic FSD 1 mA. Scale 3½" Recetangular flush mounting. Calibrated 0-50, 0-100 V., ohms.

ONLY £2 (Post and ONLY Package 1/-)

AMPLIFIERS TYPE A1134A

A Battery operated 2-stage pre-amplifier complete with two valves in transit case. Batteries required 120 V. H.T. and 2 V. L.T. Valves supplied L.D. 210 and QP220. Ideal for microphone, pick-up, or loud speaking inter-com. 12/6 (Carr. and pkg. 2/-).

OSCILLATOR TYPE 37

A complete VFO made by RGD, inclusive of A.C. power pack. Frequency coverage

22-70 Mc/s. Six Valves supplied: P61, SP42, EL32, DD41, 807 and VU39A. 10 watts. Circuits and calibration chart supplied.

A few only at £6 · 10

TO CALLERS ONLY

The famous TU9B and TU26B Transmitter Tuning Units complete in outer case $17\frac{1}{2}$ × $7\frac{1}{2}$ × 8° for only **7/6**: or less outer case for 5/-.

I/I6 H.P. A.C. MOTORS

A complete A.C. Motor ready for use without adaptation. A h.p., 2,500 r.p.m. for use on 220-250 V. A.C. mains. Spindle fitted with 2" dia. pulley ready for use with small belt drive. Fitted with 3' 3-way mains lead. A far superior model to those previously offered. Carriage paid 27 /6

All Woden Transformers

and Chokes available ex stock.

M.O.S. NEWSLETTER

A lively publication that catalogues a host of bargains, gives circuit diagrams and much practical information. Send 6d. for specimen copy or 5/- for a year's subscription.

Terms: Cash with order

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Fop Band Contest

HE second "Top Band" (1.8 Me/s.) Contest of the 1949 programme will be held during the weekend of November 5-6.

The contest is open to all members who are licensed to operate on the band, wherever situated. An award will be made to the leading station in the British Isles (prefix zones: G, GC. GD, GI, GM, GW). The leading overseas entrant will receive a certificate of merit. There are few changes in the rules—as they relate to British stations—since the February event.

Attention is drawn to the comment, made after the last contest, that while the section 1800–1930 kc/s. was extremely congested, activity in the remaining portions of the band, which extends from 1715–2000 kc/s., was negligible. Competitors are also reminded that the tone report To should only be given to stations whose notes are "Purest D.C."

A list of the counties which form the R.S.G.B. regions will be found on page 83 of the September, 1940, issue of the BULLETIN. (See also paragraph on page 121 of this issue). The contest is open to all members who are licensed to operate

Rules
1. The contest is open to all fully paid-up members of the

2. The contest will run from 9 p.m. G.M.T. on Saturday, November 5, to 8 a.m. on Sunday, November 6.

3. Entries will only be accepted if submitted on foolscap or quarto paper and set out in the form below:—

Top Band Contest

Name Nove	mber 5-6, 1949 Call Sign
Address	Region
Transmitter	
Aerial System	
Receiver	

Con	Time	Call Sign of station	1	Points Claimed				
No.		worked	Sent	Recd.	Reg.	3	4	5
1 2		G2 G3	599 599	599 599	06 07	3	4	Г
				Sub- Totals Total				

Declaration; I declare that my station was operated strictly in accordance with the rules and spirit of the Contest and I agree that the ruling of the President of the R.S.G.B. shall be final in all cases of dispute.

Signed.

4. Details at the top of the entry form must be completely filled in and the declaration signed, otherwise the entry will be disqualified.

Gisquanned.

5. 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, November 14, 1949.

6. Contest operation during local hours of restriction in the use of electricity for wireless which have been publicly announced is probabilized.

is prohibited.

7. Proof of contact may be required. 8. Contacts with ships or unlicensed stations will not be permitted to count for points.

9. The contest is confined to two-way telegraphy contacts

10. Only the entrant will be permitted to operate his apparatus

during the contest.

11. An exchange of RST report and Region number will be 11. An exchange of RST report and Region infimer will be required before points for a contact can be claimed. The report and Region number must be sent as a six character group, e.g. 579R07 or 579R11 for Regions 7 and 11 respectively. All reports must be acknowledged with "R."

12. Only one contact with a specific station during the contest will be permitted to count for points.

13. The system of point scoring will be as follows:—

(a) For entrants in the British Isles (G, GC, GD, GI, GM,

Three points will be scored for contact with a station in the entrant's own R.S.G.B. Region. Four points will be scored for contact with a station in any other R.S.G.B. Region. Five points will be scored for contact with a station outside the British Isles (e.g. DL2).

outside the British Isles (e.g. DL2).

(b) For entrants elsewhere—

Three points will be scored for contact with a station in the entrant's own country.

Four points will be scored for contact with a station outside the entrant's own country.

14. The power input to the final stage of the transmitter or to any preceding stage must not exceed 10 watts.

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

16. Stations can also be disqualified for unethical operating procedure reported by the monitoring stations.

17. An award will be made to the station in the British Isles with the highest total score. Certificates of merit will be awarded to the stations placed second and third, and to the leading station outside the British Isles.

18. The Contests Committee reserves the right to alter or amend these Rules at any time prior to the commencement of the contest.

Logs of non-contestants should be marked "Check Log." Before attempting another contact, be sure that the last one was completed. Be sure that your report records are correct. Do not work stations twice. Be sure you post your log in time.



Around the Trade

The directly-heated double tetrode QQZ04-15, recently introduced by Mullard Electronic Products Ltd., should have many applications for mobile and portable V.H.F. work. This valve, which is claimed to be the first of its type in the world, operates efficiently at frequencies up to 186 Mc/s. The maximum output power into the load is 19 watts at the lower frequencies, falling to 16 watts at 186 Mc/s. The QQZ04-15 may be used in all stages of mobile and portable transmitters, and provides the distinct advantage over receives tween in

may be used in all stages of mobile and portable transmitters, and provides the distinct advantage over previous types in that the filament may be switched off during stand-by periods; this results in a considerable saving in battery consumption. The valve gives full output within 3 seconds of switching on. The common screen to both halves of the valve should obviate the necessity for neutralisation. Other features which make the QQZ04-15 of value in the design of mobile V.H.F. equipment are its small size and single-ended construction which make possible its use as a multiplier in the earlier stages, in addition to its normal use as a power amplifier.

The list price is £3 10s. 0d.

Messrs. W. W. Haffenden, Ltd., of Richborough Rubber Works, Sandwich, Kent, have recently released a new type of power plug which possesses the following important advantages:—
(1) It will fit 3-pin or 2-pin sockets.
(2) Connections can be fixed in a moment and without tools.
(3) The tribber cosing setures excellent insulation.

(3) The rubber casing ensures excellent insulation.
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WIRELESS OPERATOR/MECHANIC required for the Nyasaland Government Aviation Department for 2 to 3 years with prospect of permanency. Commencing salary according to age, qualifications and experience in the scale £490 to £865 a year. Outfit allowance £30. Free passages. Candidates, over 25 and preferably single, must have had at least 4 years secondary education and be able to transmit and receive Morse at 25 words per minute in plain language, and code groups at 20 groups per minute. They must have a knowledge of the maintenance of radio transmitters and of diesel electric plants up to 15 KVA, the installation and maintenance of V.H.F. D./F. equipment, the theory and design of aerial systems, and of radio theory and workshop experience. Apply at once by letter, stating age, whether married or single, and full particulars of qualifications and experience, and mentioning this paper to the CROWN AGENTS FOR THE COLONIES, 4. MILLBANK, LONDON, S.W.I. quoting M/N/24898(3B) on both letter and envelope. The Crown Agents cannot undertake to acknowledge all applications and will communicate only with applicants selected for further consideration.

AERADIO OPERATOR required by Government of Northern Rhodesia for one tour of 24 to 36 months in first instance. Salary, according to age and experience, in scale £490 to £840 a year. Gratuity payable on satisfactory termination of engagement. Free passages. Candidates, aged 22 to 40, must possess: (a) ability to manipulate and adjust a typical communications receiver; (b) elementary knowledge of radio theory and ability to carry out. minor repairs on communications and equipment; (c) knowledge of Civil Aviation telecommunications procedures and codes; and (d) ability to receive and transmit the International morse code in five letter groups at 20 groups a minute and plain language at 25 words a minute. Apply at once by letter, stating age, whether married or single, and full particulars of qualifications and experience, and mentioning this paper to the CROWN AGENTS FOR THE COLONIES, 4, MILLBANK, LONDON, S.W.I, quoting M/N/23749(3B) on both letter and envelope. The Crown Agents cannot undertake to acknowledge all applications and will communicate only with applicants selected for further consideration.

WIRELESS STATION SUPERINTENDENTS required by Nigeria Government Posts and Telegraphs Department (for aeronautical wireless stations) for 18-24 months with prospect of permanency. Outfit allowance £60. Free passages. Salary according to age and experience in scale £600-£850 a year (including expatriation pay). Candidates must hold first-class radio-telegraph operator's certificate, have had recent experience in wireless operating and direction finding apparatus, have thorough knowledge of transmitters and receivers and be capable of maintaining (under an Engineer's instructions) diesel engine sets driving small generators. Apply at once by letter, stating age, whether married or single, and full particulars of qualifications and experience, and mentioning this paper, to the CROWN AGENTS FOR THE COLONIES, 4, MILLBANK, LONDON, S.W.I, quoting M/N/24044(3B) on both letter and envelope. The Crown Agents cannot undertake to acknowledge all applications and will communicate only with applicants selected for further consideration.

B.E.R.U. CONTESTS, 1950

JANUARY DATES: 24-HOUR PERIODS: TELEPHONY CONTEST: TELEPHONY RECEIVING CONTEST

Foreword

HE dates of the B.E.R.U. Contests for 1950 have been advanced, for the first time, to the latter half of January. This has been done parly in order to avoid clashing with other International contests and partly to permit the effective use of those bands which, later in the year, might be of little value for world-wide communication.

There will be two operating periods of 24 hours each for the Telegraphy Contest spread over two weekends and a separate Telephony Contest of 24 hours dura-Each contest will be divided into Senior (maximum input 150 watts) and Junior (maximum input 25 watts) sections, running concurrently. In addition there will be a Receiving Contest held during the period of the Telephony Contest. This is the first time that such a contest, which does not require a knowledge of Morse operating, has been organised by the Society and it is hoped that a large number of B.R.S. and B.E.R.S. members will enter.

A trophy or miniature cup will be awarded to the fully paid-up member of the R.S.G.B. scoring the highest number of points in each section. Certificates of merit will be awarded to the first three stations in each section and also to the leading station in each prefix zone, provided that at least three entries have been received from the zone in question. In addition a second certificate will be awarded for each zone from which ten or more entries have been received. The prefix zones have been slightly regrouped; for this reason the Prefix Zone chart should be carefully studied.

Entrants should take particular care to ensure that their entry is posted within 8 days of the conclusion of the contests, complete with the declaration and zone analysis sheet. No less than 17 entries had to be disqualified last year due to their failure to meet these requirements. Logs will be acknowledged on receipt: non-competitors are invited to submit check logs no matter how small.

Reports of off-frequency operation, overmodulation, bad tone or other unethical procedure may result in disqualifications. Competitors should conform, as far as the terms of their licences permit, with the R.S.G.B. Band Plan, which is as follows:

Telegraphy only: 3,500-3,600 kc/s.; 7,000-7,050

ke/s.: 14,000 - 14,150 ke/s.; 28,000-28,200 ke/s.

Telephony only: 3,600-3,635 kc/s.; 3,685-3,800 ke/s.

Telegraphy or

Telephony: 7050-7300 kc/s.; 14150-14400

ke/s.; 28,200-30,000 ke/s.

Rules: Transmitting Contests

- The event will be divided into four sections, namely :—

1. The event will be divided into four sections, namely:—
(a) Senior telegraphy (150 watts maximum input).
(b) Junior telegraphy (25 watts maximum input).
(c) Senior telephony (150 watts maximum input).
(d) Junior telephony (25 watts maximum input).
2. The contest periods will be as follows:
Sections (a) and (b) from 17.00 G.M.T. January 14, 1950, to 17.00 G.M.T. January 15, 1950, and from 17.00 G.M.T. January 28, 1950, to 17.00 G.M.T. January 29, 1950.
Sections (c) and (d) from 17.00 G.M.T. January 21, 1950, to 17.00 G.M.T. January 22, 1950.
3. The contests are open to all British subjects living within the British Empire and British Mandated Territories and to British Cecupational Forces operating properly authorised stations, who are fully paid-up members of either the R.S.G.B. or one of the British Empire Societies listed overleaf. All entrants agree to be bound by the Rules of the Contests.
4. Entrants who are not members of eithe Contests.
5. An entrant not located in one of the prescribed Prefix Zones shall be considered as being in the Prefix Zone nearest to his station.

his station.

6. Contacts with ships or unlicensed stations located in countries where licences are obtainable will not be permitted to count for points. The decision as to whether a station is to be classed as unlicensed will rest with the R.S.G.B. Contests Com-

Only the entrant will be permitted to operate his apparatus for the duration of the contest.

Entrants must provide their own log sheets which, together with the analysis sheet and declaration, must be legibly written

with the analysis sheet and declaration, must be legibly written or typed as set out overleaf.

9. All entries must be posted within 8 days of the close of the contest and bear postmarks dated not later than January 30, 1950, in the case of the Telephony and Receiving Contests, and February 6, 1950, in the case of the Telegraphy Contest. No entries will be accepted by the R.S.G.B. Contests Committee, New Ruskin House, Little Russell Street, London, W.C.I., later than May 8, 1950.

10 The judging of entries will be carried out by the R.S.G.B. Contests Committee. The Council's decision will be final in all cases of dispute. No correspondence can be entered fnto regarding any decision made by the Council or Contests Committee.

11. Operation is restricted to the following bands: 3·5, 7, 14 and 28 Mc/s. (This rule excludes the use of the 1·8, 21 and 27 Mc/s. bands and frequencies above 30 Mc/s.) The Telegraphy Contest is open for type A1 (C.W.) transmission only and entrants receiving consistent tone reports of less than T8 will be disqualified. The Telephony Contest is open for type A3 (amplitude modulated telephony) transmissions only.

modulated telephony transmissions only.

12. The conditions laid down in the entrant's licence must be observed. The input to the valve or valves delivering power to

the aerial must not exceed 150 watts in the Senior sections or 25 watts in the Junior sections.

13. Only one contact with a specific station may be made on

13. Only one contact with a specific station may be made on each band during the contest.

14. Fifteen points will be scored for the first contact on a specific band with a British Empire station located in any Prefix Zone outside the competitor's own zone. Fourteen points will be scored for the second contact on the same band with the same zone, thirteen points for the third contact, and so on, to the fifteenth contact, which contact will score one point. All contacts with that particular zone on that band thereafter will count one point each. This scoring procedure will be repeated on each band to encourage multi-band operation.

15. Serial numbers must be exchanged and acknowledged before points may be claimed for a contact. The serial number of 5 or 6 figures will be made up of the RS (telephony) or RST (telegraphy) reports plus three figures which may begin with any number between 000 and 400 for the first contact and which will increase in value by one with each successive contact; e.g. 287 for the first contact, 288 for the second contact, etc.

Rules: Receiving Section

1. The Receiving section will be concerned with telephony only and will run concurrently with the Telephony contest as

only and will run concurrently with the Telephony contest as given above.

2. The scoring system will be the same as for the transmitting sections, viz.: fifteen points will be scored for the first station heard on a specific band within any Prefix Zone outside the competitor's own zone. Fourteen points will be scored for the second station heard on the same band in the same zone, and so on. This scoring procedure will be repeated on each band to encourage multi-band operation.

3. Before points can be claimed, the following information must be logged: (a) Call of station heard; (b) Call of station being worked: (c) Entrant's report on the signals of the station heard (RS); (d) The Serial Number given by the station heard to the station being worked.

4. CQ and Test calls will not count for points.

5. The same station may only be logged once on each band during the contest.

during the contest.

British Empire Societies

Amateur Radio Club of India. Canadian Amateur Radio Operators' Association. Canadian Section A.R.R.L. Hong Kong Amateur Radio Transmitters' Society. Jamaica Amateur Radio Club. Malta Amateur Radio Society.
Montreal Amateur Radio Club.
Newfoundland Amateur Radio Association.
New Zealand Association of Radio Transmitters.
Northern Rhodesia Amateur Radio Society. Radio Society of East Africa. South African Radio League. Wireless Institute of Australia.

FORMAT OF THE B.E.R.U. ENTRY FORM

B.E.R.U. Contest, 1950	Section
Name (Block Letters)	Callsign
Address	
Transmitter	
Input Power to last valve	
Receiver	
Aerial Systems used	

Date	G.M.T.	Band	Callsign	SERIAL	Delate	
	Contact Estab- blished (2)	Used Mc/s.	Station Worked (4)	Sent (5)	Received (6)	Points Claimed (7)

TOTAL ...

DECLARATION :-

I hereby certify that my station was operated strictly in accordance with the rules and spirit of this Contest, and I agree that the decision of the Council of the R.S.G.B., shall be final in all cases of dispute.

... Signed... If an entrant is a non-member of the R.S.G.B., he must sign the following additional Declaration:

I hereby certify that at the time of the Contest I was a fully paid-up member of

Receiving Contest

The entry form for this contest should be prepared on the lines set out above with the following amendments:—

Column 2: G.M.T. station heard.

Column 4: Station heard.

Column 5: Entrant's report on station heard.

Insert New Column: Station being worked.

Column 6: Serial number given by station heard to station being worked.

Date _____ Signed ___

being worked.

Prefix Zone Chart and Specimen Score Analysis Sheet

	3	Mc/s.	3	Ac/s.	1	Mc/s.
Prefix Zone.	Contacts	Points	Contacts	Points	Contacts	Points
AP, VU2, 4, 5, V87 DL2, 6, GC, GD, GI, GM, GWD1, 2, 7 (ZC4), MB9, MD1, 2, 7 (ZC4), MF2, ZB1, 2 WE3, 4 VE1, 2 VE3, 4 VE5, 6 WK2, 3, 7 WK4, 7 WK5, 6 WK9, VR4 VO, 5, 7, 9 WP1, 5, 7, 9 WP2, 3, 4, 6 WP8, VK1 WP1, 5, 7, 9 WP2, 3, 4, 6 WP8, VK1 WP1, 5, 7, 9 WP2, 3, 4, 6 WP8, VK1 WP1, 5, 7, 9 WP2, 3, 4, 6 WP8, VK1 WP1, 5, 7, 9 WP2, 3, 4, 6 WP8, VK1 WP1, 5, 7, 9 WP2, 3, 4, 6 WP8, VK1 WP1, 5, 7, 9 WP2, 3, 4, 6 WP8, VK1 WP1, 5, 7, 9 WP2, 3, 4, 6 WP8, VK1 WP1, 5, 7, 9 WP2, 3, 4, 6 WP8, VK1 WP1, 5, 7, 9 WP2, 3, 4, 6 WP8, VK1 WP1, 5, 7, 9 WP2, 3, 4, 6 WP8, WR1 WP1, 5, 7, 9 WP2, 3, 4, 6 WP8, WR1 WP1, 5, 7, 9 WP2, 3, 5, 6, ZK, ZM WP1, 2, 3, 4, 5, WP3, WP1, MP4 WP1, 2, 3, 4, 7, 8, 9 WP	{					
TOTALS						

Note.-Some of the above prefixes may be out of date at the time of the Contest.

MAKE SURE YOU HAVE READ THE RULES CARE-FULLY AND DO NOT FORGET TO SIGN THE DECLARATION AT THE FOOT OF THE FORM.

SUGGESTIONS FOR FUTURE CONTESTS ARE INVITED.

Safety First!

-VEN a few hundred volts can cause unpleasant physiological effects if carelessly handled. Thevoltages developed at many modern amateur stations are capable of causing serious injury or death. Reasonable precautions should always be taken.

All apparatus and wiring should be placed so that it is impossible to touch points of high D.C. or

R.F. potential under normal operating conditions. The aerial should never be directly connected to the anode coil of the output stage (see note in Licence). Never attempt to change transmitter coils with the power ON.

Use double-pole iron clad switches to ensure complete isolation of all mains transformers. These switches should be clearly marked with ON-OFF

positions.

Connect a pilot lamp across the primary of H.T. transformers-preferably of the neon type to reduce the possibility of a burnt out bulb. This lamp should be clearly visible to the operator at all times.

Orderliness in layout is the keynote of safety.

Morse keys connected in H.T. circuits should be of the enclosed insulated type; otherwise employ Microphone stands should be keying relays. earthed.

Insulated extension spindles fitted to transmitter tuning condensers will eliminate danger from exposed grub screws.

High wattage bleeder resistances across powerpack filter condensers will prevent shocks from fully charged condensers.

At least one other person in the house should always know how to operate the main switch in case of emergency.

If it is necessary to touch the transmitter while the power is ON keep one hand behind the back or in a pocket. Never wear earphones while working on the transmitter.

Make sure that all metal work is effectively earthed. Do not rely on gas piping or radiator systems.

Take your time-develop a safety technique.

THE R.S.G.B. CORDIALLY INVITES ALL OVERSEAS ENTRANTS B. E. R. U. CONTESTS THE MEMBERSHIP, ANNUAL SUBSCRIPTION

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ALL Ham supplies—wide range by all well-known makers including Eddystone, Denco, Labgear. No lists yet. S.A.E, with enquiries.—NEWSON, G3GY, Market Place, North Walsham.

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A LL new unused. AR.88:—LF Handbook 12s. 6d.; Mains 7tansformer, 50s.; smoothing capacitator, 15s.; Set Valves, 90s. (2); RBJ:—Handbook 12s. 6d.; Set LF's. and BFO, 25s. R.C.A. 813 (2) with bases, 50s.; 866A, 15s. (2); 6D6 (7), 9s.; 6C6 (6), 6s.; X66 (3), 15s.; 1625 and base, 7s. 6d.; 523 (3), 12s. 6d.; 6l.6 (3), 10s.; 6L6 (2), 12s.; 6N7 (2), 6s.; 6SL7 (2), 12s.; 12RP2000 (12), 5s.; 123 (1), 10s.; R.C.A. 100 kc/s. bar. 20s.—Westwell, 8 Boundard Road, Cheadle, Cheshire. [902]

A MATEUR selling up. 30 Valves 6 V., some new. New Q5-100 kc/s. crystal. D.C. V/voltmeter. Chassis with mains, 1.F. Transformer 3-gang condenser with Q-max dial. 18 Wearite coils, trimmers, padders. M/coil microphone, Universal Avominor, etc., etc. Many other items. Many new. Worth over 230. The lot 220 or offers.—Information from Murrell, 22 Berkshire Road, Henley-on-Thames, Oxon.

BAND switched Transmitter 6L6, 807, 813PA, for 28, 21, 14. 7, 3-5 Mc/s. complete in rack with modulator and power pack made by the late G6HP, using a pair of 811 valves as modulators in class. B B". Clapp oscilloscope complete power pack, 1·8, 3·5, 7 Mc/s. output. BC342 Receiver. "8" meter, also Type 53 Transmitter, using a pair of 813 valves in PA, 805's as modulators, super job, a reasonable price accepted.—G3VO, 39 Glen View Road, Burnley. Telephone No. 3554. [917]

BC348-excellent condition—635, 6V6 Audio. Less P/P, 211

B—with P/P £12 10s. 0d. Inspection invited. Want HRO less P/P Valves coils. Perfect mechanically essential.—G3BQS,6 Calton Road, New Barnet, Herts. [918]

BC348 unconverted, £15. BC221 Frequency meter £10. Box 926, Parrs, 121, Kingsway, London, W.C.2. [926]

BRAND new surplus valves in makers cartons (not ex-equipment re-boxed). 6H6, 1s. 6d.; 6K7, 6SK7, 6C5, VR91 (EF50), 645, 645, 645, 645, 674, 687, 686, 680, 676, 676, 68.; 688, 5046, 677, 687, 676, 767, 66.

Po

W.C.2. [909]
CLEARANCE.—Gear Surplus to immediate requirements, SX28 with speaker (well used but O.K.). 3339 (as new with spare blue "photo" CRT). 25 W. 'Phone/C.W. Transmitter/Receiver (3-14·5 Mc/s.) in 2 suitcases. Weston Analyser in case. Power packs. Valves, meters, assemblies, miscellaneous components. Write (S.A. E.) stating offers, requirements or make appointment Saturday afternoons.—G8PF, 10 Martin Grove, Morden, Surrey.

COMPLETE 1154 transmitter with 200/250 A.C. Power supply—output 1200 V. 250 mA., 250 V. 150 mA., 6·3 V. 13 A., D.C., including microphone, junction box, connectors, handbook, etc. Spare set of PA's. 30 ft. ½ co-axial. Three unused 813's.—Offerso exchange Contax accessories to BRS8475, Buckstone, Chobham,

Spare set of PA's, 30 tt. 4 co-axes. Three analysis exchange Contax accessories to BRS8475, Buckstone, Chobham, 1896

Spare set of PA's. 30 ft. 4" co-axial. Three unused \$13's.—Offers or exchange Contax accessories to BRS8475, Buckstone, Chobham, Surrey.

CONVERTER E.D.C. Rotary 230 V. D.C. 230 V. A.C. 1.O.A. filtered silenced, £5. Offers.—Box 915, Parrs, 121 Kingsway, London, W.C.2.

CRYSTAL Microphone Inserts (Cosmocord Mic-6, guaranteed brand new, 15s. 6d. Post free.—RAD10-AID LTD., 29 Market Street, Watford. Phone Watford 5988.

C43 Transmitter PF813, new, unpacked. Sell licenced amateur C412. Collect 40 miles N. of London.—Box 930, Parrs, 121 Kingsway, London, W.C.2.

ENSIGN Autorange camera, Tessar F3·8 lens, Deckel shutter C1-1/400th sec.), delayed action mechanism, coupled rangefinder, rising front, etc.; takes 120 film; in leather case, with filter, £19. Also Voigtlander 6 × 30 Binoculars, in case, £6. Would exchange for good quality communications receiver.—G3DHL, 32 Barwick Street, Scarborough.

EXCHANGE or sell B.2 portable complete, £14; R.C.A. AVT-15, 6L6 modulating 6L6, £4; Pullin meter, £9; TR1196, £4; want BC221· set drawing instruments; Taylor, etc., signal generator; R1132; Valve tester. S.A.E. please.—R. Stokes, 23 Hawthorn Vale, Leeds 7.

FOR SALE.—AR88D perfect condition, £31. Transmitter BC.19 with P-1 1200 V., 346.as new, £20. SCR522 and A.C. P.P. £15. Power pack stab. Volt 8 F.B. 400 D.C. 300 ma. 150 GB. 6-12 V. L.T. 3 meters, £15.—Box 928, Parrs, 121 Kingsway, London, W.C.2.

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H ALLICRAFTER S29 Sky Traveller A.C./D.C./Battery with Auto-transformer 230/110 V., £25 or offer.—Box 937, PARRS, 121 Kingsway, London, W.C.2.
H ALLICRAFTER S29 Sky Traveller A.C./D.C./Battery with Debard (out all day), where can pursue hobby. No objection BRS using gear and coaching for licence. Wood Green, Palmers Green, Southcate, etc., area.—G3AGZ ex ZE2J1, Sc./LDR, R. Evenert, 4 Clifton Road, Alexandra Park, London, N.22. [913]
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both as new. Offers.—52 Barnsley Road, Goldthorpe, Nr. Rotherham.

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WANTED.—Metal cabinet as made by Hallicrafters for use with table model SX28 or SX28A Receiver. Can anyone supply please?—Box 916, PARKS, 121 Kingsway, London, W.C.2.

WANTED.—The Amateur Radio Handbook by R.S.G.B. State price.—J. J. GLASS, 16 Wedderburn Drive, Harrogate. WANTED.—Thing unit TN17/APR.4; Manual for AN/APR.4. Will consider TN16 or 18/APR.4.—BRS18329.

WANTED.—Valve RK61.—BRS17976, 5 Garston Drive, Watford, Herts. [997]

WANTED.—100-150 W. transmitter 'phone, C.W. All Ham bands F.B. only.—Box 927, PARRS, 121 Kingsway, London, W.C.2.

WESTINGHOUSE charger, new 240 A.C. to 12 V. 20 A. D.C., latest transformer type. Bargain £14.—G3APT, 29 Sunnymede Drive, llford. WHEATSTONE sender with tape punch in serviceable condition wanted together or separately.—Jones, 1 Victoria 1933

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