

# **R·S·G·B** **BULLETIN**

JOURNAL OF THE RADIO SOCIETY OF GREAT BRITAIN

**September 1946**

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# NEW MEMBERS

THE COUNCIL HAS PLEASURE IN ANNOUNCING THAT THE FOLLOWING HAVE BEEN ELECTED TO CORPORATE OR ASSOCIATE MEMBERSHIP OF THE SOCIETY

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 13,070 A. L. BAIN, 12 Spittal Terrace, Hexham, Northumberland.  
 13,071 L. E. BROOMFIELD, 4 Polmuir Rd., Aberdeen, Scotland.  
 13,072 G. D. BOLT, No. 17 Church Street, Tiverton, Devon.  
 13,073 O. ORMDROD, 34 Bromley Road, Lytham-St. Annes.  
 13,074 H. A. CATLOW, 251 Tydesley Rd., Atherton, Manchester.  
 13,075\* J. L. ROBINSON, 12 Church St., Helmington Row, Nr. Crook, Co. Durham.  
 13,076\* L. FRATER, 133 Marlborough Ave., Broomhill, Glasgow.  
 13,077 H. W. HESKETH, 101 Calder Street, Liverpool, 5.  
 13,078 R. W. BRITTON, 23 Windsor Rd., Kingston-on-Thames.  
 13,079 W. R. SINCLAIR, 216 Ballater St., Glasgow, C.5.  
 13,080 G. L. FOUNTAIN, Karree, Bois Moor Road, Chesham, Bucks.  
 13,081 G. J. LANE, 4 South Road, Redland, Bristol.  
 13,082 W. SARGEANT, 23 Denby St., Bentley, Nr. Doncaster, Yorks.  
 13,083 S. E. BARKER, 173 Clifton Rd., Sheffield, Beds.  
 13,084 N. F. TOMLINSON, 18 Strathcona Rd., Wallasey, Cheshire.  
 13,085 W. FORBES, 13 Kinnell Rd., Fulham, London, W.6.  
 13,086 H. N. BROOKE, 176 Tickhill Rd., Doncaster, Yorks.  
 13,087 H. W. BROOKER, 17 Royal Oak Road, Bexleyheath, Kent.  
 13,088 W. W. S. HENSBY, 36 Lynwood Drive, Collier Row, Romford, Essex.  
 13,089 N. DOVE, 58 Hadfield St., Oldham, Lancs.  
 13,090 A. R. HELLINGS, 1 Salmund Pool Lane, Exeter, Devon.  
 13,091 N. W. CURTIS, Lleydon, Wellington Rd., Mablethorpe, Lincs.  
 13,092 J. W. SUTER, 14 Upton Ave., Cheadle Hulme, Cheshire.  
 13,093 K. G. POWNEY, 44 Harewood Rd., Coventry, Wark's.  
 13,094 A. WELBORN, 29 Little Lane, Furston, Pontefract, Yorks.  
 13,095 R. J. S. SCOTTO, "Ombersley," Barming Woods, Maidstone, Kent.  
 13,096 G. A. BALL, 165, Wigan Road, Ormskirk, Lancs.  
 13,097 C. H. PRICE, 9 Marlborough Rd., Abertillery, Mon., South Wales.  
 13,098 F. W. CLAPTON, 1 Sage Cross St., Melton Mowbray, Leicestershire.  
 13,099 J. A. REID, 35 Landsdowne Rd., Walthamstow, London, E.17.  
 13,100 E. T. PAGE, 14 London Rd., Coalville, Leicester.  
 13,101 C. MORRIS, 91 West End Ave., Doncaster, Yorks.  
 13,102 D. R. MANSEGH, 107 Lawford Rd., Rugby, Wark's.  
 13,103 J. D. MANSELL-DAVIES, Flat 2, 7 Spring St., Hyde Park, London, W.2.  
 13,104 D. J. H. RAITT, 84 Victoria Ave., Ore, Hastings, Sussex.  
 13,105 E. J. BISHOP, 198 Cambrose Ave., Edgware, Middx.  
 13,106 A. R. BROWN, The Mazet, Relubbs Lane, Goldsithney, Penzance, Cornwall.  
 13,107 A. M. ADAM, 95 Highfield Lane, Southampton.  
 13,108 J. HOPKINS, 105 Warren Lane, Chapelton, Sheffield.  
 13,109 V. WILLIAMS, 23 Dudley Rd., Timperley, Altrincham, Cheshire.  
 13,110 J. E. DAVISON, 34, Priory Crescent, Milton, Portsmouth.  
 13,111 P. H. JONES, 67 Deronda Rd., Herne Hill, London, S.E.24.  
 13,112 D. V. BRIDGER, Grayswood Vicarage, Haslemere, Surrey.  
 13,113 S. MCCARTHY, 2 Southfield Rd., Merry Hill, Wolverhampton.  
 13,114 S. R. CLIMAS, Westmoor House, George Green, Slough.  
 13,115 W. L. A. TURNER, 8 Newport Street, London, N.W.8.  
 13,116 A. C. MILLER, Garvald, Cottage Cres., Camelon, Falkirk, Stirlingshire.  
 13,117 L. FORMAN, 49 Bradgate St., Blackbird Rd., Leicester.  
 13,118 R. A. PARKINS, 12 The Drive, Westcliffe-on-Sea, Essex.  
 13,119 A. V. T. DIKE, 6 Victoria Park Road, East, Cardiff.  
 13,120 I. HAMILTON, 66 Greystone Ay., Burnside, Rutherglen, Glasgow.  
 13,121 E. T. EDLESTON, 64 Laburnum Rd., Blackburn, Lancs.  
 13,122 C. LANGSTONE, Glenholme, Old Castle Road, Weymouth, Dorset.  
 13,123 H. C. J. HAVARD, 69 Windsor Road, Neath, Glamorgan, S. Wales.  
 13,124 J. CHRISTIE, 73 Bowman Street, Glasgow, S.2.  
 13,125 MRS. R. A. FLINTHAM, 50 Burton Av., Balby, Doncaster, Yorks.  
 13,126 N. P. MURRELL, 29 Linom Road, London, S.W.4.  
 13,127 A. D. L. NEILL, 498 Strathmartine Road, Downfield, Dundee, Angus.  
 13,128 H. SAINT, Sunbury, Upperwood Road, Matlock, Bath, Derbyshire.  
 13,129 E. CHESTER, 25 Brook Lane, Glodwick, Oldham, Lancs.  
 13,130 R. RICHARDSON, 6 Meadow Grove, High Ford, So. Hylton, Sunderland.  
 13,131 E. W. COURTENAY, 2 Wilmslow Road, Didsbury, Manchester, 20. (Transfer from Associate Grade)  
 13,132 B. LITTLEPROUD, 6 Priory Plain, Gt. Yarmouth, Norfolk.  
 13,133 W. O. BUCHANAN, 158 Brassey Street, Glasgow, N.W.  
 13,134 C. T. ERRINGTON, 5 Launas Park Gdns., Ealing, London, W.5.  
 13,135 N. A. COX, 27, Granville Street, Gloucester.  
 13,136 C. M. SIMPSON, Ross House, Priory Rd., Abergavenny Mon.  
 13,137\* H. HAZELDEN, Sunita, Balcombe Rd., Horley, Surrey.  
 13,138 W. E. GAUNT, 21 Clover Rd., Timperley, Cheshire.  
 13,139 G. MILLER, 197 Queensferry Rd., Rosyth, Fife, Scotland.  
 13,140 R. F. R. BYE, 84 Derwent Rd., Palmers Green, London, N. 13.  
 13,141 J. P. ORME, 44 Franklyn Rd., Chesterfield, Derbyshire.  
 13,142 H. TURNER, Ormonde, Long Lane, Charlesworth, Nr. Manchester.  
 13,143 C. C. MCCARTHY, 70 Kathleaven Street, St. Budeaux, Plymouth.  
 13,144 E. R. JEFFRIES, 88 Helena Crescent, Thurcaston Road, Leicester.  
 13,145 A. E. NUTHEN, 40 Norman Road, Romford, Essex.  
 13,146 R. J. R. JEFFERSON, 137 Sevenoaks Way, St. Paul's Cray, Kent.  
 13,147 T. TROTTER, Flat 3, 13 The Cross, Oswestry, Salop.  
 13,148 W. OLIVER, 36 Oak Crescent, Seamore, Walsall, Staffs.  
 13,149 J. SMILES, 35 Primrose Hill, Smeethwick, 41 Birmingham.  
 13,150 E. TOY, 205 Woodstock Road, Oxford.  
 13,151 L. ROBERTS, 61 Pasture Avenue, Moreton, Cheshire.  
 13,152 P. WATSON, 63 Rotherham Road, West Melton, Nr. Rotherham, Yorks.  
 13,153 G. JONES, 171 Beresford Rd., Longsight, Manchester, 13, Lancs.



- 13,154 DR. G. MACKENZIE, Eilean Donan, New Abbey, Dumfries.  
 13,155 L. CHAPMAN, 4 Lingwell Cres., Middleton, Leeds, 10.  
 13,156 M. PAGE, 51 Dudden Hill Lane, Willesden, London, N.W.10 (incorrectly recorded as 2BOU in May issue).  
 13,157 R. KEMPSTER, 40 Nightingale Place, Woolwich, London, S.E.18.  
 13,158 L. SUTTON, 8 Cogan Av., Walthamstow, London, E.17.  
 13,159 W. RAE, 6 Crumond Rd., South Davidsons Main, Edinburgh, 4.  
 13,160 P. DOHERTY, 31 Marlborough Av., Londonderry, N. Ireland.  
 13,161 J. BRIGHTON, The Post Office, Brockdish, Diss, Norfolk.  
 13,162 C. J. COLLINS, War Office Y Group, Beaumanor Park, Loughborough.  
 13,163 W. WILLIAMS, 4 Lime Avenue, Northampton.  
 13,164 A. HIGBY, High-Trees, Abbs Cross Lane, Hornchurch, Essex.  
 13,165 H. SHUGAR, 13 Durlston Close, Llandaff North, Cardiff, Glam.  
 13,166 J. BOYCE, The Victory, East Farleigh, Kent.  
 13,167 D. WALKER, 40A West Street, Osney, Oxford.  
 13,168 D. SIMMONTE, 23 Cranborne Rd., Potters Bar, Middx.  
 13,169 T. STOVELL, 4 Peveril Close, Sompting, Nr. Worthing, Sx.  
 13,170 F. B. EDWARDS, 57 Harriet Street, Cathays, Cardiff.  
 13,171 M. H. PILKINGTON, Firwood, Portishead, Nr. Bristol, Glos.  
 13,172 H. HORROCKS, 27 Beccles Road, Brooklands, Cheshire.  
 13,173 W. KENNEDY, 393 Corkerhill Rd., Corkerhill, Glasgow, S.W.2.  
 13,174 A. R. GRENFELL, 10 Jesmond Way, Stanmore, Middx.  
 13,175 J. MERCER, 44 Whitgate Lane, Chadderton, Lancs.  
 13,176 R. HIAM, 88 Broad Meadow Lane, King's Norton, Birmingham, 30.  
 13,177 D. E. WILLIAMSON, W./T. Surveyors' Office, Ministry of Transport, Butte Docks, Cardiff.  
 13,178 A. C. NORTH, 224 Harehills Avenue, Leeds, 8, Yorks. (Transfer from Associate Grade.)  
 13,179 R. EDGINTON, 27 Grove Street, Retford, Notts.  
 13,180 S. DREWERY, 49 Severn Road, Redcar, Yorks.  
 13,181 C. PADDOCK, 30 Heaton Street, Higher Broughton, Salford, 7, Lancs.  
 13,182 J. A. GREGORY, 144 Burnt Oak Lane, Sidecup, Kent.  
 13,183 W. NEILSON, 75 Fens Auchterarder, Perthshire, Scotland.  
 13,184 R. NAYLOR, 41 Hospital Rd., Riddlesden, Keighley, Yorks. (Transfer from Associate Grade.)  
 13,185 W. WEARNE, Higher Silver Hill, Helston, Cornwall.  
 13,186 F. B. LITTLE, 4 Barras Lane, Coventry.  
 13,187 H. COOPER, Harrowdene, Southfield Rd., Nailsea, Bristol.  
 13,188 K. HOWARD, Lynton House, Bar Lane, Staincross, Barnsley, Yorks.  
 13,189 R. HIGSON, 194 Downham Street, Blackburn, Lancs.  
 13,190 G. SMITH, 10 Cluny Square, Buckie, Banffshire.  
 13,191 S. O'KEEL, 12 Melbourne St., Reddish, Stockport, Ches.  
 13,192 C. H. MITCHELL, Brookleigh, Brookside Drive, Godley, Hyde, Cheshire.  
 13,193 R. PETER, 3 St. Johns Rd., Queens Park, Chester.  
 13,194 A. C. CORDER, 103 Epping New Rd., Buckhurst Hill, Essex.  
 13,195 E. G. CROPPER, 51 Grantham Road, Sleaford, Lancs.  
 13,196 J. FIELDEN, 28 Hillington Road, Sale, Cheshire.  
 13,197 D. W. BAKER, c/o B.B.C., Seymour Rd., Mannamead, Plymouth.  
 13,198 J. TREAYS, 6 Westcroft Rd., St. Budeaux, Plymouth, Devon.  
 13,199 R. MILFORD, 13 Holdsworth Street, Pennycomequick, Plymouth.  
 13,200 S. FENWICK, 53 Findon Road, Sheffield 6, Yorks.  
 13,201 L. PIERSE, 5 Cockram Road, Surbiton, Surrey.  
 13,202 E. HULME, 20 Parkway, Chadderton, Lancs.  
 13,203 J. A. GOSS, 904 Kingsway, Didsbury, Manchester, 20.  
 13,204 M. SPENCE, 46 Alma Vale Road, Bristol 8, Glos.  
 13,205 A. E. CHAPMAN, 53 Dewhurst Road, Cheshunt, Herts.  
 13,206 D. HITCHIN, 21 Gloucester Rd., Tuebrook, Liverpool 6, Lancs.  
 250 \*G. C. ALLEN, 24 Wiltshire Rd., Thornton Heath, Surrey.  
 2117 \*K. G. FRAZER, Arkendale, Felbridge, East Grinstead.  
 2258 \*H. D. DONALDSON, 15 Sharnhill Rd., Saltcoats, Ayrshire.  
 3992 \*K. C. KERRY, Barkhall, Letterkenny, Co. Donegal, Eire.  
 4385 \*J. SNOWDEN, 48 Huddersfield Rd., Oldham, Lancs.  
 4614 \*W. A. MILLER, 64 Ford's Road, Edinburgh, 11.  
 4732 \*A. AVERY, 35 Arbitration St., Doncaster, Yorks.  
 6409 \*J. D. BLAIR, 95 Hall St., Stockport, Cheshire.  
 7616 \*A. COOKE, 11 Coalbrook Av., Woodhouse Mill, Via Sheffield.  
 7936 \*W. G. DICKSON, 18 Dhu-Varren Parade, Belfast.

## British Empire Receiving Stations (BERS)

- 631 D. SAMPSON, 24 Lalbagh Rd., Bangalore City, India.  
 639 C. GAUCI, 243 Fleur-de-Lys, Birkirkara, Malta.  
 640 C. J. COLLIE, Deohall, Hoogrijn P.O. Assam, India.  
 641 C. B. RAO, c/o Messrs. M. Chinta & Sons, Mftg. Jewellers, Peddapuram, E. Godavari Dt., S. India.  
 642 D. T. KERAGALA, Keragala Av., Santiago St., Kotahena, Colombo, Ceylon.  
 643 M. W. V. SHARPE, c/o Cable & Wireless Ltd., Aden.

- 644 H. J. DARLING, Stonehenge, Tasmania, Australia.  
 645 S. D. PARASURAM, 3 Mukkathal St., Purasawalkam, Madras, S. India.

## Foreign Receiving Stations (F.R.S.)

- 166 J. MERKINE, c/o Mr. D. Weinstein, 4 Yehuda-Halevi, Street, Tel-Aviv, Palestine.  
 167 S. A. ROBINSON, at 9 Gladstone Rd., Colchester, Essex.  
 168 E. M. RAFFOUL, 19 Ibn El-Athir St., Haifa-Palestine.

## Associates

- J. D. ADAMS, 42 Dunbar Av., Norbury, London, S.W.16.  
 W. F. ADAMS, 40 Venmore Street, Liverpool, 5.  
 L. T. BARCLAY, 7 Lyndhurst Tce., Sunderland, Co. Durham.  
 T. A. K. BELL, Lime Court, 16 Linden Gardens, Notting Hill Gate, London, W.2.  
 J. D. BIRD, 27 Vincent Road, East Croydon, Surrey.  
 L. BLAND, 96 Howden Rd., North Shields, Northumberland.  
 J. W. BUSWELL, 9 Holymoore Road, Holymoorside, Chesterfield, Derbyshire.  
 H. S. COLE, 22 Albion Terrace, Edinburgh.  
 W. R. CRITCHLEY, High Street, Heckington, Sleaford, Lincs.  
 T. CROPPER, 39 Manchester Old Road, Middleton, Manchester.  
 R. L. DAVIS, 8 Shaftesbury Rd., Oldfield Park, Bath, Somerset.  
 K. J. DAWSON, 225 George Road, Erdington, Birmingham, 23.  
 R. S. DOLEMAN, 148 Newfield Road, Stockport, Cheshire.  
 J. M. B. DRAPER, Ivybank, Fawkham, Kent.  
 R. J. DUORAK, Kresice 118 Okres Decin, Czechoslovakia.  
 E. E. ELKERTON, 7 Medcroft Gdns., East Sheen, London, S.W.14.  
 D. A. EVANS, Marigold, Earls Road, Mold, Flintshire.  
 G. E. FREW, 5 Faringdon Av., Blackpool, S.S.  
 L. R. GIRLING, 88 Daythulme Road East, Stretford, Lancs.  
 R. W. GORDON, 37 Hathaway Drive, Giffnock, Renfrewshire, Scotland.  
 W. A. GORMAN, 15 Northburn Street, Glasgow, C.4.  
 J. HAMLETT, 116 Moss Lane, Hale, Cheshire.  
 L. S. HARRISON, 137 Beatrice Street, Swindon, Wilts.  
 J. B. HAWORTH, 98 Swinley Lane, Wigan, Lancs.  
 J. H. HEWKIN, 21 "C" Queens Rd., Over Kay's Shop, Nuneaton, Warwick.  
 J. W. HOLGATE, 4 Conaways Close, Ewell, Surrey.  
 S. HOPKINSON, 15 School Tce., Wilsden-Bradford, Yorks.  
 T. W. HORSLEY, 40 Beech Street, Ipswich, Suffolk.  
 J. H. KERNICK, 90 Bathcroft Av., Rayners Lane, Harrow, Mdx.  
 J. B. MARTIN, c/o The Rt. Rev. The Lord Bishop of Liverpool, Bishop's Lodge, Liverpool, 17.  
 A. MERCER, 23 Oakley Road, Caversham, Reading, Berks.  
 S. A. MERRYWEATHER, 60 Croft Road, Cosby, Nr. Leicester.  
 K. MILLER, 24 Ryehill Terrace, Leith, Edinburgh, 6.  
 J. T. MURRAY, Ryelways St., Ballyninch, Co. Down, N. Ireland.  
 E. A. PARKINSON, 8 Hawthorn Drive, Rodley, Nr. Leeds.  
 C. H. RANDALL, 20 Oxhey Av., Oxhey, Watford, Herts.  
 A. ROOME, 66 Peet Street, Derby.  
 M. A. SIMPSON, The Cottage, Addington Pk., West Malling, Kent.  
 K. J. SMITH, c/o Curtis, 114 Poplar Rd., Cleethorpes, Lincs.  
 S. A. SRIKISSON, Bonne Aventure P.O., Via San Fernando, Trinidad, B.W.I.  
 E. A. STEVENSON, 27 Cameron Av., Runcorn, Cheshire.  
 N. P. STREET, Dog House, Hankham, Pevensy, Sussex.  
 E. H. THORNTON, 13 Lindsay Street, Burnley, Lancs.  
 P. F. VAN TOL, Heather Bank, Burwood Park, Walton-on-Thames, Surrey.  
 W. VARLEY, 32 Old Kiln Lane, Bolton, Lancs.  
 D. M. WANIGASOORIYA, Sri Wasa, 19 Galle Road, Mount Lavinia, Ceylon.  
 M. J. PATTON-WEAVING, 5, Hospital Road, Colchester.  
 J. WOODAGE, 68 Windsor House, Nash Street, London, N.W.1.  
 G. A. YATES, 1 Collingwood Road, Bebbington, Cheshire.

## Junior Associates

- A. J. ARTER, Fairhaven, A. Mount Pleasant, Weybridge, Surrey.  
 R. BELL, 17 Pentland House, London, N.16.  
 R. A. BOTTOMS, 363 Camden Road, Holloway, London, N.7.  
 G. N. BOWLING, 23 Chestnut Av., Eastleigh, Hants.  
 A. BURKE, 14A St. Johns Park Mansions, Pemberton Gardens, London, N.19.  
 A. E. CHIFFEY, 39 Elm Park, Stanmore, Middlesex.  
 T. K. COWELL, 214 Streathfield Road, Harrow, Middlesex.  
 A. E. DAVIDSON, 3 Hervey Road, London, S.E.3.  
 T. DAVIS, 47 Isis Street, Earlsfield, London, S.W.18.  
 H. C. DENT, 24 Prospect Road, Eldwick, Bingley, Yorks.  
 D. C. GARDINER, Close Cottage, Slapton Lodge, Slapton, Tovey, Northants.  
 R. S. GROBER, 46 Lynmouth Rd., Stamford Hill, London, N.16.  
 P. A. HARTLEY, 79 Keighley Rd., Colne, Lancs.  
 T. H. HUTCHINSON, Firby Hall, Kirkham Abbey, York.  
 R. JACKSON, 30 Sparsholt Road, Holloway, London, N.19.  
 R. H. MATTHEWS, 32 Dorset Street, West Hartlepool, Co. Durham.  
 N. L. MERRITT, 9 Southampton Road, Eastleigh, Hants.  
 W. B. MILLER, 13 Alder Road, Glasgow, S.3.  
 M. SHERRY, 17 New Drive, Totteridge, High Wycombe, Bucks.  
 R. B. TUCKEY, 36 Tunnel Rd., Galle Common, Nuneaton, Warws.  
 W. G. VARLEY, 32 Old Kiln Lane, Heaton, Bolton, Lancs.  
 E. WITHAM, 86 Providence Road, Walkley, Sheffield, 6.  
 C. E. WILES, 122A Copleston Rd., Peckham, London, S.E.15.

## Corrections to August List

- G5LO should read G5LQ. J. TOVELL, 12 Cambridge Road, Chiswick, W.4.

## AROUND



## THE DISTRICTS

### DISTRICT 1 (North Western)

D.R.: H. W. Stacey, B.E.M. (G6CX), "Sandless," Eddisbury Road, West Kirby, Cheshire. Hoylake 337. Scribe: A. B. Wright (G6FW), 106 Knowsley Road, St. Helens.

**General.**—Will correspondents please note that so far as this District is concerned, Admiralty Scrap can only be purchased through a T.R., as previously stated in these Notes, and that individual permits to buy are not available. Please contact your nearest T.R. if you wish to purchase some of the scrap.

The arrangements which have been adopted are the fairest and most practicable in all the circumstances and they have the support of the vast majority of the members. Although the distribution of the bulk purchases may be something of a lottery, buyers are reminded that the material is purchased as "scrap," and as such it is excellent value for the money.

The D.R. has an attache case full of letters still to answer and cannot reply to any more on the subject, except letters from T.R.'s. There are approximately 1,350 members in District 1 and he would not complain if all the Admiralty Scrap were at the bottom of the sea. G6CX

**Blackpool and Fylde.**—In spite of the chaos on the new bands, several members are active, 14 being especially popular, although 1-7 has not been completely forsaken. BRS members are still conspicuous by their absence from local meetings, 3 out of about 40 being present at the last meeting. All members, licensed or otherwise, are invited to the regular meetings held at the "Bellevue Hotel," Whitegate Drive, on the first and third Tuesday of each month at 7.30 p.m. The area is still living in hopes of obtaining a share of the Admiralty scrap, and the list of applicants grows longer daily. G8GG.

**Carlisle.**—Mr. J. R. Huggon (G3HJ), "Ballachree," Dunmail Drive, Carlisle, has been appointed Acting T.R., and all members in Carlisle and the outlying districts are asked to get in touch with him. The Carlisle Amateur Radio Society, composed largely of R.S.G.B. members, meets on alternate Fridays in the Y.M.C.A., Fisher Street. The next meeting will be on September 20, at 7 p.m. when new members will be welcomed. Congrats to G3ACY on obtaining his licence, and a welcome back to transmitting activities to GSCV, who many years ago operated under the call G6GY. SCV patiently awaits the return of V.H.F. facilities! G2ARW is almost ready to go on the air, while 3ACY and 3HJ are both active, mainly on 14. 4638 is busy with receivers, and 11,479, awaiting the result of his licence application, is working on an oscilloscope. Several members have purchased Admiralty scrap. G3HJ.

**Manchester.**—A special meeting of Manchester and District members was held at the Grand Hotel, Manchester, on Tuesday, August 20 to discuss the new system of representation as explained in the July issue of THE BULLETIN. The feeling of the meeting was that it would have been better had Council permitted the members to elect the Regional Representatives in addition to the Town and County Representatives. Certain resolutions were framed and are being forwarded to the Council.

The meeting formally decided to put forward the following as their official candidates for positions in which the local members are particularly interested.

County Representative for Cheshire	G2HDV
Lancashire	G6OM.
Town representative for Manchester	G2OIL

At the meeting it was decided to elect a vice-chairman to conduct the business during the Chairman's absence on holiday. G5YD was unanimously elected to fill this post.

The resignation of the Secretary, G5OP, was received with regret, and Mr. Marshall (G4ND), of Sale, was duly nominated to fill the vacancy so caused, and elected by a unanimous vote.

The September Meeting will take place at the Grand Hotel, Manchester on Monday, September 23, when G2WQ will give a short talk entitled "The Practical Use of the ECO." G6OM.

**Preston.**—Forty-two members attended the July meeting, when an informal Brains Trust was held. The Blackburn and Darwin group, headed by SFL attended and were warmly welcomed. A series of lectures has been arranged by the T.R. for the winter months. Morse classes are in progress and BRS members are taking advantage of the facilities offered by the licensed members to visit their stations and get practical experience.

On September 20, at the "Three Tuns" Hotel, at 7.30 p.m. Inspector Gee (G6OG) who is in charge of the Lancashire Police Wireless system will give a practical demonstration of Police radio equipment.

**West Cumberland.**—An enjoyable meeting was held at SRZ on August 17 at which those present included: 6WR, SDP, SRZ, 4NS, 4PZ, 3SY, 3BW, 2AU, 2DWG, and a very welcome visitor in 2AYH from Carlisle. The T.R. was asked to stand for County Representative. It is hoped that any new R.S.G.B. members in the area will get in touch with the T.R., and let him have their addresses, so that he can give them details of further meetings etc. G3BW.

### DISTRICT 2 (North Eastern)

D.R.: C.A. Sharpe (G6KU), 56 Moore Avenue, Wibsey, Bradford. Bfd. 10772. Scribe: H. Beadle (G8UO), 13 Chandos Street, Keighley, Yorks.

**Huddersfield.**—Sixteen members were present at the meeting on August 21. The next will be held at the White Hart Hotel, at 7.30 p.m. on September 18. G5YD.

**Bradford.**—G3ADQ is active on 1-8 and looking for contacts. For details of Cambridge House meetings, see Forthcoming Events. The Bradford Short Wave Club are awaiting their transmitting licence and are arranging a winter syllabus.

**Sheffield.**—G2LT has resigned as T.R. owing to ill health. He is thanked for his grand services and all members send him good wishes for a speedy recovery. The new acting T.R. is Mr. J. W. Petty (G4JW), 344 Carter Knowle Road, Sheffield, 11. Monthly meetings continue to be well attended, not only by locals, but also by members from neighbouring towns. At the last meeting a really fine receiver was demonstrated by its constructor, Mr. A. Pugh.

**Leeds.**—LAC G. Milner reports from Iraq that G's have been coming in well over there. He would like to hear from G2VC. Letters can be addressed c/o 8 Thorn Lane, Gledhow, Leeds, 8.

**Doncaster.**—G2BOJ, 2CNK and 3NJ are getting out well on 1-8. SBA and 2CLK have built new rigs and require shacks to put them in. Our lady member, "Butty," has applied for her licence. A welcome is extended to Mrs. Flintham who is now BRS13125. Members are delighted with the electronic scrap they have obtained. BRS193 has purchased premises for his electrical and radio business and is fixing up one room as the Doncaster Society's new H.Q. Mr. P. Ryland demonstrated his home-built oscilloscope to 24 members at the last meeting.

**York Area.**—Mr. G. W. Kelly (G5KC), 146 Melrosegate, Hull Road, is A.T.R. for this area and members are asked to get in touch with him. Group Capt. Johnson (G3JN) recently returned from overseas and is stationed in York. G2ADR is building a band-switched exciter and 5KC a 6L6/807 rig.

**Keighley Area.**—This area includes Skipton, Silsden and Bingley, so will members in these towns send reports to the T.R. for Keighley—QRA in recent BULLETIN. Mr. H. Waddington is now licensed with the call G3ADP and has worked some nice DX. 3UV and 4GJ are active on 1-8. G2CPF now operates from his Keswick QRA at week-ends.

**General.**—Copy now has to reach H.Q. by the 25th of the month, so notes should reach the Scribe by the 21st. G8UO.

### DISTRICT 3 (West Midlands)

D.R.: V. M. Desmond (G5VM), 92 Worcester Street, Birmingham, 5. Scribe: E. J. Wilson (G2FDR), 48 Westbourne Road, Olton, Birmingham.

**Birmingham.**—Activity on 14 seems to be increasing with more three-letter calls being licensed.

**Cannock.**—A meeting of the C.D.A.R.S. was held recently, but owing to the small attendance the election of officers was postponed. The following are active, G2AMG, 2YV, 3ABG, 4CP. Congrats to 2AMG on the arrival of a junior op.

**Coventry.**—G2ZT has been elected an Honorary Life Member of the M.A.R.S. in recognition of his past service as Hon. Secretary (1932-46).

**Stoke-on-Trent.**—The local Society now meets each Thursday night at The Tabernacle Church, Hanley; good progress is being made and a steady increase in membership has been recorded.

**Wolverhampton.**—The W.A.R.S. meet at Baynell's Canteen, Merridale on the third Monday in each month. G2ADJ, 6TC, 6FK, 8KL, 8RT are active.

Sgt. R. Foster, BRS10045, India Command, who has been listening a good deal on 14 has made friends with VU2BY and hopes to get on the air as soon as demobbed. G2FDR.

**Shrewsbury.**—At a gathering of members held at the home of G6KR, it was decided to call a public meeting with a view to forming a local Radio Society.

Station activity is at the moment almost solely confined to the "top" band, but there are signs that 60 Mc/s. and the U.H.F.'s are receiving attention. G6KR.

### DISTRICT 4 (East Midlands)

D.R.: L. Ridgeway (G2RI), 90, Romway Road, Leicester. Phone 24295.

**Northampton.**—A successful meeting was held on August 20. The next meeting will be at The Wedgwood Cafe, Abingdon Street, at 7 p.m. on September 24. G3BA, 5NH and 2SY are active at Daventry, and 4MU, 3RF and 2AAA in Northampton. Members are asked to bring along to future meetings, items of interesting equipment.

**Derby.**—To cement relations, local members have formed the "Derby (R.S.G.B.) Club." Activity is high and Morse classes

are held every Tuesday evening at the Club Room. So far attendances have been good. A receiving contest, with prizes, has been organised for September 29 and 30. Full particulars are available in leaflet form, from the T.R. Next meetings September 22, and October 6, at 11 a.m.

**Leicester.**—Activity on all bands is high with 2IX and 3BU leading the DX. The third Sunday of each month is a popular day. After the meeting, cars, motorcycles, buses and trams all converge on 2RI's garage in a helter-skelter rush to be first in the "dishing-out" of Admiralty scrap, collected during the month. Many fine bargains have been taken away at 50s. per cwt. Do not miss the third Sunday of each month—2.30 p.m., at 27 Belvoir Street.

**Mansfield.**—Seventeen were present at the meeting on August 11. 8MR has recently returned after three years overseas service. 11846 is now G3AFP. 2777 has taken the Morse test and awaits results.

**Nottingham.**—A visit was made to a Naval Store by 22 local members, but unfortunately, the behaviour of some of those attending, has caused the S.N.S.O. to issue an order that future parties must be limited to two cars and six members. The material is of good value and we were treated with every courtesy. Amongst the scrap was an assortment of test gear and V.H.F. equipment. Incidentally the party were well satisfied with their purchases. As final arrangements are not yet completed for the new meeting room, please watch the *Evening Post* on Monday evenings for announcements. XZ2DN, a local member, wants reports on his 14 and 28 transmissions. QRA with 8DZ.

**General.**—It should be noted that from the day the D.R. received from H.Q., the three letters of authority for visits to Admiralty depots, one has been held permanently in each of the counties of Nottingham and Derby, the other has been held in Leicester to cover the remainder of the District. A stamped addressed envelope will ensure a covering letter from the D.R. on confirmation that the official letter has been booked. Per return service. G2RI.

### DISTRICT 5 (Western)

**D.R.:** R. A. Bartlett (G6RB), 31 King's Drive, Bishopston, Bristol. Bristol 46960.

**Bristol.**—The July meeting, attended by 38 members, brought forth much interesting discussion. A request for slow Morse practices was met by offers from 3RQ, 5KT and 5UH, who will provide instruction if enough support is forthcoming. The BULLETIN came in for a hot time, discussion and argument being prolonged. It was agreed to form a committee who would draft a suitable letter to be forwarded to headquarters. The committee consisting of 2IK, 5KT, 5GN and 11333, soon got to work and their proposals have now been sent to H.Q. (and are warmly appreciated.—Ed.)

10762 has offered to arrange a visit to the Burden Neurological Institute for a party of 20 members.

**Cheltenham.**—Fourteen members recently visited the R.A.F. station at Winstone and spent a very interesting time.

**Chippenham.**—G3AAU would like news of G8BG and any of the old gang who were with him at No. 7 E.F.P. Ingham.

**Gloucester.**—G2BJF, 3MA, 3PZ, 4GN and 8BK report active. Further news from this area would be appreciated. G6RB.

### DISTRICT 6 (South Western)

**D.R.:** W. B. Sydenham, B.Sc. (G5SY), Sherrington, Cleveland Road, Torquay. Torquay 2097.

**Torquay.**—A successful "Junk Sale" was held on August 10, when there was an attendance of eighteen. The T.R. has had many visitors recently and has enrolled several new members. Activity is high in many directions. G5SY, unfortunately lost his mast during the recent gales; we hope a new one will have been installed by the time this appears.

**Taunton.**—At a recent meeting, members met to elect a T.R., but, unfortunately, the proposed member was away on holiday. Those present were, ZB2B, G3SB, 5AK, 6LY, BRS10230, 11478, 12283, 12354, 12471, 13050, and Mr. Cawley.

**West Cornwall.**—At the Penzance meeting, held on August 1, V81BH (now residing at Perran), G2DFH, 2JL, 4IV, 40A, 3ADB, BRS7222, 10083 and four new members, Messrs Caddy, Jones, Rampton and Brown were present. Apologies were received for the absence of Falmouth members through lack of transport. Members requiring information re meetings, are asked to contact G2JL (phone day PZ59, night PZ925), or the new Assistant Hon. Sec. and Deputy Acting T.R., Mr. Rogers of 25a Arevenack Street, Falmouth. At the Falmouth meeting held on August 15, at the QRA of 2DDR, G2BHW, 2DDR, 2DFH, 2FQD, 3AGA, 4IV, 40A, 6LY, 8AW, BRS10083, 13014, Messrs Jones, Brown and Brodrie were present. The question of Electronic scrap was discussed. G2JL offered to run local Morse practices on 1.9 Mc/s for the benefit of new members. It was reported that the West Cornwall Radio Club was now affiliated to R.S.G.B., and designs for a Club QSL card were invited. All new members of the club are to apply for R.S.G.B. membership immediately. G5SY.

### DISTRICT 7 (Southern)

**D.R.:** W. E. Russell (G5WP) "Milestones," Mayford, Woking, Surrey. Woking 1589.

**Croydon.**—The T.R. has had no success, as yet, in securing a venue for meetings. 4584, during a visit to Salisbury, met G2FIX and others. G2FWA has built a portable rig for 1.8. G2DP enjoyed his stay with the local gang at Bournemouth. G2DP

**Southampton.**—Ham gatherings have taken place at the T.R.'s shack at 17 Colmore Gardens, Totton. Among those known to be active are: G2FMC, 2FSJ, 3KJ, 3QW, 3RI, 3YI, 5LR, 5OB, 8QW, and 8OV. We had the pleasure, recently, of a visit from GSDM who operated from Southampton in pre-war days. G8QW.

**Coulsdon.**—G2BCI operating under the call XZ2AF (Burma) hopes to be home in September. G2MV continues to do good work on 58 with his 8 element box-shaped aerial. The August meeting of the S.R.C.C. was well attended to hear G2WS give a talk and demonstration on Portable 58 Mc/s Operation. See "Forthcoming Events" for details of the next meeting to be held on October 8. BRS3003.

**Bournemouth.**—The Bournemouth and District Amateur Radio Club has got off to a flying start with the following achievements: the Chamber of Commerce are supplying free QSL cards (these are an exceptionally fine example of QSL card design); a shield has been presented to the club for competition; a well-known local citizen has promised £150 towards the provision of a club room! A big dance in the Town Hall is projected for November. G2DBF, 2HNO, 2NS, 3AAE, 3ABH, 3BM, 3TH, 3XP, 4IJ, 4MY, 6TS, and 8DL are active. G2DBF.

**Reading.**—At the July meeting Mr. Holloway, BRS12070, gave a most interesting talk on receiver noises and continued to explain thoroughly noise limiters and suppressors. It is hoped to arrange a public exhibition of Amateur Radio gear in November. See "Forthcoming Events" for meetings. BRS4573.

**Sutton and Cheam.**—All local members are invited to a meeting at Ye Olde Red Lion, Cheam, at 7.30 p.m. on Tuesday, October 1, with a view to organising regular meetings. BRS7605.

**Portsmouth.**—G2XC gave an interesting talk to the August meeting on 58Mc/s work with a view to stimulating local activity. G2DZT, 8JB, and 8WC would appreciate reports on their 58 transmissions. Will members please note, especially the newer ones, that meetings are held at the Cosham Civic Centre on the first Thursday of the month at 7.30 p.m.

The T.R. would like here, to express his appreciation of the kind things said about the P.D.M. arrangements. G8WC.

**Guildford.**—The next meeting will be at G2ZC on Sunday, September 22. See "Forthcoming Events" for details. Please bring such food as you will need with you! G5WP.

### DISTRICT 8 (Home Counties)

**D.R.:** S. J. Granfield (G5BQ), 47 Warren Road, Cambridge. Tel.: Cambridge 54644.

**Cambridge.**—There is considerable activity in the town. 2PU, 2XV, 5JO, 5BQ, 5DQ and 8PB are chiefly on 14, while 8SY keeps to 28, using a three-element rotary. 5IG maintains a lively vig on 58, and with his new three-element rotary, has worked 6VX of North Cray and 8JV of Nottingham. He hears the following stations fairly consistently: 2CX, 2MR, 5MA, 2MV, 6NP, 6TX, 6YU, and F3JB.

**St. Ives.**—G5BV has now re-erected his rhombic. On surprisingly low power he maintains a reliable circuit with the Far East.

**Peterborough.**—G2NJ is active on 7 at week-ends from Peterborough. He has left Barnet, but hopes to continue on 1.8 Mc/s from another part of London. 2UQ is on 7.

**March.**—G3BK and 3WW are busy on 14.

**Luton.**—Mr. S. W. Folland, formerly BRS3610, is now G3ADK 3KG hopes to be on the air in about a month with a completely new rig. 2LS has contacted VK and 2QX is active on 1.8. Mr. P. L. Taylor (BRS7914) has been appointed lecturer in Electronics at the College of Aeronautics, nr. Bletchley. Members who have recently returned to the District may not have had details of the competition for the District Trophy. Every member can participate and particulars are available from the D.R. on request. G5BQ.

### DISTRICT 9 (East Anglia)

**D.R.:** H. W. Sadler (G2XS), The Warren Farm, South Wootton, King's Lynn, Norfolk. Castle Rising 233.

**Norwich.**—A meeting will be held at 7.30 p.m. Monday, September 30, at St. Thomas' Vicarage, Edinburgh Road, by invitation of G3QF. The T.R. would appreciate a P.C. from those who propose to attend. It is hoped that this will be the first of a series of meetings. Local activity continues to increase as members return to civilian life and several new licences have been in touch with the T.R. 4GF is active on 7 and 14, and 3VM on 1.8. 5LW has also been heard again.

**St. Yarnmouth.**—G3RW and 2FAO are both on 1.8 phone. 6XG is endeavouring to get on to 14, but as he is living in a boarding house, he is having trouble with aerials. 2BXJ, having obtained the required shed, and a 40ft. mast, hopes to be on the air soon. He would be pleased to meet BRS12056 and Mr. Rodgers if they would call in.

**King's Lynn.**—A County meeting will be held on Sunday, September 29 at 3 p.m. Members will please meet at the Tuesday Market Place, and from there they will be conducted to suitable rooms where tea will be provided at reasonable cost. It is hoped at this meeting, to be able to nominate a C.R. for Norfolk and in order that this may be done in a truly democratic manner, it is hoped to see members from far and wide. Although King's Lynn is a long way off for some members, there will be several cars coming from Norwich which would no doubt be able to pack in a few extra if the T.R.'s are notified. There are now 10 active amateurs in the town who will be pleased to welcome members from other areas. A card to Mr. A. W. Brookings, G3IP, 15 Cheeker Street, King's Lynn, would be appreciated. G2XS.



**DISTRICT 10 (South Wales & Monmouthshire)**

Deputy D.R.: D. Alan Dyer (GWSUH), 29 Ladysmith Road, Penylan, Cardiff. Tel.: Cardiff 2691.

*Swansea*.—The monthly meetings continue to be well supported and a committee has been formed to organise the winter programme. We welcome several members back to "Civvy Street."

*Cardiff*.—It is with regret that we accept the resignation of the acting T.R. owing to pressure of business and we thank him for all the good work he has done for the Cardiff area. It is hoped to elect an acting T.R. at the next meeting. The monthly meeting was well supported in spite of the absence of a number of regulars owing to the holiday period. Most members are rebuilding ready for the winter season.

GWSUH.

**DISTRICT 12 (London North and Herts)**

Deputy D.R.: S.A. Howard (GSTY) 92 Arlington Rd., Southgate, N.14. (Enterprise 3219). Scribe: E. H. Laister (BRS3386), 22 Church Hill, Winchmore Hill, N.21.

The 40 odd members who attended the August meeting had the pleasure of listening to "Clarry" (G6CL) talking, for once, not on Society affairs, but on his own experiences in more than twenty years of Amateur Radio. The presence of several other old timers, including G6KW of Birmingham, added highlights to the many memorable events that he recalled.

It is hoped that, by the next meeting, nominations will have been received for the new Area Representatives. This is your chance to have your say, whether you attend meetings or not.

All North London members will be glad to hear that "Bill" Solder, G5FA is now at home again and is making excellent progress after his serious accident. Bill is active on 7 and hopes to renew acquaintanceship with old pals. Congrats to our most junior Junior Associate—Peter of G6CL—who passed his G.P.O. Morse test with flying colours.

*Enfield*.—The BULLETIN came in for some strong criticism at the August meeting when GSTL was a welcomed visitor. Later G5VY gave a very interesting talk on his radio experiences which go back for more than 25 years.

Regular meetings of the group are held on the third Sunday of each month at the A. and B. Cafe, junction of Ladysmith and Southbury roads, at 3 p.m.

GSTY.

**DISTRICT 13 (London South)**

D.R.: S. E. Langley (G3ST), 52 Dumbarton Road, S.W.2. Scribe: W. D. Gilmour (G2VB), 35 Grangecliff Gardens, South Norwood, S.E.25.

The combined district 7 and 13 meeting held in Croydon was supported by 25 members. G5KH and 8TN (the latter back in Civvy Street), were cordially welcomed. Mr. Newton gave an interesting talk on aerials. He has promised to discuss Frequency Changer circuits at a later date.

G2HMV is now on 28 Mc/s. with C.W. BRS4324 has passed his theory exam., and is now busy learning the code. Congrats. from all in District 13.

G2LW would welcome reports on the operation of his 2-element beam. Can anyone arrange a Morse class at his own home for the benefit of the new comers? G2VB has offered.

BRS members are asked to note that "Ann Cup" time is drawing near. The contest will be held at the home of BRS 4324 3 Englewood Road, Clapham South, S.W., on December 15 at 3 p.m.

G3ST.

**DISTRICT 14 (Eastern)**

D.R.: L. J. Fuller (G6LB), Meadow Brook, Vicarage Lane, Great Baddow, Chelmsford, Essex. Tel.: Gt. Baddow 224.

All notes cut this month, as space is wanted for important announcements. Sorry chaps.

The attention of all members is drawn to the C.R. and T.R. Elections. Next year, all of District 14 east of Tilbury, Brentwood, Ongar and Harlow, inclusive of those places, will be in the new East London District under its own D.R., whom the members in that area will be required to elect themselves.

The remainder of the County of Essex will be under a County Representative, with T.R.'s at the following suggested centres, Southend, Chelmsford and District, Colchester and District. Full details have already appeared in the BULLETIN, so now chaps, it's up to you.

*Chingford*.—Most members are active on the air, and at the last meeting two new members were welcomed.

*Chelmsford*.—G2KG continues to be the star turn at DX Hunting, with a formidable list of phone contacts. We welcome our new G—3AGH, and congratulate G2HPH on his good low power contacts with W on 14. It can be done with less than 150 watts. We regret to record the death of one of our newest members Mr. Cox, BRS12146, of Romford, and our deep sympathy is extended to his wife and two young children. We also extend deep sympathy to G3SI of Thaxted, on the death of his father, Alderman E. G. Wright, of the Essex County Council.

*East London*.—Attention is drawn to the meeting at Ilford Town Hall on September 22 (see "Forthcoming Events"). This will be a business meeting, followed by a talk by G2YH on Voice Control and Break-In. The Social Committee intend to run a concert at an early date. Details later. The D.R. again offers his apologies to East London members, for his regrettable lapse in omitting to send in for publication, details of the June

P.D.M. This was pure forgetfulness, and he craves their forgiveness.

*Grays*.—Enthusiasm continues at a high level, and they welcome their new G3—AGU. G3GF is on 14 after his fire, G2CGW is starting a Grays Club Magazine, and a MacElopy Tape Recorder has been offered for Morse practice, for which purpose classes are to be run. Following the welcome news from the G.P.O. a portable D.F. Test will be carried out shortly.

G6LB.

**DISTRICT 15 (London West, Middlesex and Buckinghamshire)**

D.R.: H. V. Wilkins (G6WN), 539, Oldfield Lane, Sudbury Hill, Greenford, Middlesex. Byron 3369. Scribe: E. Holt, 36 Bulstrode Road, Hounslow, Middlesex.

*West London*.—Efforts are being made to set up permanent headquarters at the A.E.U. Rooms, 66 High Road, Chiswick, W.4. Morse practices will be given at meetings for BRS Members and others who require same. Drinks and sandwiches will be available and an Exchange and Mart will be organised. Facilities will be provided for the operation and construction of gear.

*Hounslow*.—Ten members supported the meeting on August 2, when a general discussion took place. At the Hounslow and District Radio Society meeting on August 14, a much-appreciated talk on "Power Amplifiers" was given by Mr. J. Donaldson.

*Ruislip*.—At the July meeting Mr. Frank Whitworth discussed on "Television Technicalities." A general discussion followed on circuit details after a practical demonstration had been given of what a good picture should look like. The Acting T.R. appeals for more support at meetings.

*Ashford*.—Matters arising from the work of the P.W.P.C. and the controversial subject of the District fund were discussed at length at the meeting held on July 20 at G6RS. Enthusiasm is high and certain members are about to revive the Kingston and District Radio Society, which functioned so successfully in pre-war days.

*Twickenham*.—A good attendance was recorded at the meeting on July 28, some coming from quite a distance. Congrats are extended to Mr. Marr (G3AFA), Hampton, on the safe arrival of a son.

*Harrow*.—An auction sale of Admiralty electronic scrap was held at the home of the A.T.R. The gear was brought to town through the efforts of G2UV and G8DU, who had to make three journeys to Portsmouth with large suitcases. As a result of the auction the District Funds profited by the sum of £3 15s. 10d.

*General*.—Members residing in Aylesbury and Edgware who have not received the first issue of *The Rag* must blame their A.T.R.'s for failing to furnish names and addresses. Members who have not received a copy should send a P.C. to the Scribe.

G6WN.

**DISTRICT 16 (South Eastern)**

D.R.: W. H. Allen, M.B.E. (G2UJ), 32, Earls Road, Tunbridge Wells, Kent. Scribe: E. H. Trowell (G2HKU), 27, Unity Street, Sheerness, Isle of Sheppey, Kent.

*Chatham*.—The M.A.T.S. transmitter (G2FJA) will shortly be operating. 6QC recently visited the club. 2HKK has returned from Italy. 2CM is still delving into E.C.O.'s. 2FXI is battling with the B.B.C. on 7. 2FAQ is very busy with a VFO amplifier and a 28 rig. 2HJF is building audio amplifiers. 2FYD operates QRP on 1.8 Mc/s. 2DOH is also on this band but expects to be on 58 soon. 34V is building a frequency meter. Interesting lectures have been arranged and 6NU is always available for Morse practice.

*Canterbury*.—12025 is building receivers of various types. Sheppey. 3GW has a new "top band" rig, 2HKU has added a PA and is consequently QRT!

*Brighton*.—Many local members attended an informal meeting at the home of SAC on July 13, who regrets being unable to answer further letters regarding his transmissions or seeking information unless a S.A.E. is enclosed. Intending visitors are welcome, but please notify him in advance. 3WR is on 14 and 4JH is doing well on this band.

*Maidstone*.—We welcome three new calls: 3ABF (ex-SUIDM) building for all bands, 3ABZ (ex-11315) on 1.8 and 7, and the A.T.R., 7387, who is now 3AGV and on 1.8 only. 4HG has erected a new 1.8 aerial with "bicycle wheel" capacity loading and is busy experimenting with this interesting device. (Details when you've got them, O.M.—D.R.). SUC is active on 14 with a new rig. 11147 has two T.R.F.'s going on all bands, while 13050 is building a superhet, and has a Zepp-fed all-band aerial in anticipation of his call. At a meeting of the M.A.R.S. on August 7th 2UJ gave a talk on 58 Mc/s. which was much appreciated. Sixteen members of the club visited Brookmans Park on August 21, and were much impressed with the 140 kW transmitter and the new mast-radiator in course of construction.

*Tunbridge Wells*.—50Q and 2UJ are active, the latter would appreciate reports on his transmission on 58544 kc/s.

*General*.—Will members who receive a letter of Authority for the purchase of naval scrap, please return it to the D.R. as soon as they have finished with it, as there are still plenty of people on the waiting list.

GSHV has completed a transmitter for 1.8 and is now rebuilding for 7 and 14. Welcome to G3VA, late of District 14, and now in Hove. BRS 8293 has built a quality superhet and would like to meet local members interested in high-fidelity apparatus.

G2UJ.

**DISTRICT 17 (Mid East)**

**D.R.:** A. C. Simons (G5BD), "The Elms," Church Road, Mablethorpe. Phone 69.

G2AUR is now ready to go on the air for the first time. 2FT is working DX on 1.7 and 14. 6UG still receiving only, finds that 28 provides the best DX. 46Z worked 50 countries during July and August and is now building a new rig. An old 3.5 friend of the district ON4HS is on the air again with the call G5VB. Active at Gainsborough are 40F, 3WB and 30S. Congrats to the latter on the arrival of a second junior op. (YL). The Grimsby and District Society is again functioning with all local full calls members. SPIMX was a recent visitor. 8PV having done a little DX is now buying a new RX. 8KH is trying out an ECO to dodge QRM but has run into "tone" trouble. 2DN1 is using 7 by way of a change. 2AJB is also awaiting delivery of new RX. 2HOJ has a 504 on order. 3YQ is rebuilding. 8VI has built a new receiver. 3TZ is still turning over ideas for building. 2VY spends most of his time on the top band. 2QA is still on leave from the M.N., testing bottles—with corks. 9FN is improving his big rig. 6YN continues to do good work with a dry battery supply. 4GX has a new Presetor which works well. 5CY will be active as soon as the seasonal rush subsides. 5LL and 5BD still exclusively on 59, have worked another batch of Italians, run a nightly sked with Nottingham and have had odd contacts with Liverpool and London. G5BD.

**DISTRICT 18 (East Yorkshire)**

**D.R.:** A. G. Dunn (G3PL), 79 Hayton Grove, Hull.

**Hull.**—The August meeting was attended by 25 members. For dates of the next meetings see Forthcoming Events.

Congrats to G4LH and his wife on the safe arrival of a junior op. G3ADJ is the new call of 7345 who will be on the air soon. 2FGQ was demobbed some time ago and is practising the code. 2CGL is now operating from his new QRA. Interest in 60 continues to grow and G2AMJ, 3IU, 3PL, 4LH, 8IM, 5GX, 60S and 2FZX are working regularly. G3ACQ is also operating on the band when on leave. There is already bad QRM at times from radiating super-regens. French and Italian stations have been heard by various members.

**General.**—No reports are to hand from other parts of the District. Don't forget to nominate your candidate for the position of C.R. T.R.'s are also required for Scarborough, Bridlington and Hull. Whitby and Beverley have insufficient members at present. Council have agreed to the suggestion put forward at a recent Hull meeting that in the new Regional scheme Yorkshire shall have three C.R.'s instead of one. This means that each Riding will require at least one C.R. nomination. G3PL.

**DISTRICT 19 (Northern)**

**D.R.:** R. J. Bradley (G2FO), 36 Baby Road, Stockton-on-Tees, Co. Durham.

**Darlington.**—BR86904 is now getting excellent results from his 1-v-1 (untuned HF) and took advantage of his recent illness to make a log of DX stations heard on 7 and 14. The T.R. hopes to arrange regular meetings in the near future and again asks all interested to get in touch with with.

**West Hartlepool.**—Mr. A. R. Donald, G3TO has been elected A.T.R. in place of BR86469 who has now left the district. Membership of the local Society continues to increase. Meetings are held every other Thursday, and details can be obtained from G3TO.

**General.**—Do not forget the P.D.M. on October 26! "Clarify" together with Council members G2IG, 8KZ and STL will be present. Make your reservation now! G2FO.

**Scotland**

**Scottish Records Officer:** J. Hunter (GM6ZV), 51 Camphill Avenue, Langside, Glasgow, S.1. Langside 237.

News is very scarce this month, no doubt due to holidays. Mr. Macadie Scottish QSL Manager wishes GM members to note that he does not handle out-going cards except those for GM stations. Please send all other cards direct to G2MI.

"A" Area (Glasgow and surrounding counties).

**D.R.:** D. R. Macadie (GM6MD) 154 Kingsacre Road, Glasgow, S.4.

The A.R. apologies for the non-appearance of notes last month. He cannot understand where the slip took place as he was convinced that they were sent in. (The only notes received referred to a meeting which would have taken place before the BULLETIN appeared.—Ed.)

At the July meeting, Mr. Jeffries, GM2DI gave a very interesting talk on 58 Mc/s. converters which he has built. He later gave details of his transmitter which is of unit construction and built in an unusual form. (BULL. Article? Ed.). At a previous meeting, GM2DI described his Sterba array then under construction. Proof of its efficiency comes to hand in a card from W6, giving the report RST 599 (loudest European signal ever heard!). Fifty-three members were present. Congrats to Mr. McEwing now GM2DPW, to Mr. Janes, now GM3AEC and Mr. Jack Stewart now GM3AHQ.

"B" Area (Aberdeen and North of Scotland).

**D.R.:** A. G. Anderson, B.Sc. (BR5857), 87 Braemar Place, Aberdeen. Aberdeen 2676.

GM4HZ is operating on 1880 kc/s from Dyce. 2YA has been heard testing on 7. 2OX is experimenting with Franklin drive. 6LG is rebuilding so that all bands can be reached at the touch of a finger. 3UU is trying to get things going in the Moray-Firth area. Will members there give him their support? How about some news from the Far North? Anybody active up there?

Aberdeen is now a depot where Admiralty Electronic Scrap may be purchased. Interested parties should contact the A.R.

"E" Area (Ayrshire and South West Scotland.)

**D.R.:** D. A. MacQueen (GM4PW) 3, Ayr Road, Prestwick. Prestwick 78375. Scribe: Miss J. A. C. Rainie (BR87988), 6 Montgomerie Terrace, Ayr. Ayr 2375.

Three new members were present at the August meeting when 6RV gave a talk on operating. 6140 is continuing to give Morse instruction and 6RV offers to send Morse "over the air" at varying speeds to test the progress made. At a fete in Saltcoats, a Radio Exhibition was arranged by members. The G.P.O. kindly granted permission for 7 Mc/s. transmissions to take place between the fete and a member's home. 2UU, active on 14, reports that some members have left Wigtownshire, but several new ones are coming in. 30L reports from Dumfries, 2BMJ is on 7 with a 6L6 807 and doing well. 2MP is on 14, and is having a good many W contacts.

"E" Area will in future meet in Eldon House Hotel, 14 Eglinton Terrace, Ayr, the second Wednesday of each month. BR87988 has been granted her transmitting licence and awaits a call sign. GM6ZV.

**Northern Ireland**

**D.R.:** J. N. Smith (G15QX), 19 Hauxthornden Drive, Belmont, Belfast. Phone 63323.

Our best wishes are sent to G3RO who has left GI to take up a post in his home town. G12CHJ, having had his call changed to G16VU, is active on all bands. G13ZX is with us again after his Army service. The T.R. had many good "top band" QSO's with him whilst he was in GM. All members in Northern Ireland are pleased to know that the Society is pressing for the removal of the B.B.C. stations from the 7 Mc/s. band. We hope their efforts will meet with success.

G16TK has not so far had any DX contacts on 58 Mc/s., but he continues his calling schedules. He would appreciate co-operation from local stations. G15QX.

**Altrincham and District Radio Society**

Mr. J. G. Barnes, BR86253, 4 Victoria Road, Hale, Cheshire, will be glad to hear from members interested in the re-formation of the Altrincham and District Radio Society.

**Radio Society of Northern Ireland**

A good attendance of members is requested at the monthly meeting which will be held in the Church of Ireland Young Men's Society, Donegal Square, East Belfast, on Friday, September 27, 1946. Attendances for some time past have not been very satisfactory.

As the annual meeting will be held in October, defaulting members should take this opportunity to redeem themselves. The Hon. Secretary is Mr. A. I. Kennedy, G13KN, 49 Kansas Avenue, Belfast.

**Kingston and District Amateur Radio Society**

Mr. J. Hughes, BR86878, 12 Hillington Avenue, Ashford, Middlesex, will be pleased to hear from members interested in reforming the above Society.

**Around the Trade**

The call-sign, G8QA, has been assigned to Tele-Radio (1943) Ltd., 177 Edgware Road, London, W.C.2. and the licenced operator is Mr. Noel Simmons, G3AD, who has received permission from the G.P.O. to use the call G8QA/A at his home address 69 Chester Row, Westminster, S.W.1. Both stations will operate in the 7, 14, 28 and 58 Mc/s. bands.



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# R.S.G.B. BULLETIN

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No. 3

## THE DX BANDS TO-DAY

WITH Zero Hour now a pleasant memory the present time seems appropriate to take stock of our position on the 7 and 14 Mc/s. bands. Prior to the Great Awakening there were many who thought that the interference problem on the later band would be so great as to prevent any worth-while contacts taking place. Experience has shown them to be wrong for already we know of at least a dozen G's who are well on the way to working their 100th country since June 30th. How many of them will ever be able to produce the necessary evidence to claim a post war DX Century Club certificate is another matter! Incidentally, it is because of the doubtful status of so many DX stations, that the Council have decided for the time being not to accept claims for R.S.G.B. DX certificates. That, too, is the reason why we have not been in too great a hurry to plan a revival of DX contests. When the air clears, B.E.R.U. and other events will again figure prominently in the Society's calendar.

During the present transition period, with activity restricted to certain parts of the 7 and 14 Mc/s. bands, it is well known that a small percentage of amateurs have been pulling a fast one by operating outside the prescribed limits laid down by the authorities. Their actions have resulted in a flood of correspondence from members who demand that wilful breaches of the licence regulations should be reported forthwith and the names of the offenders published.

The distressing part of the story is that the G.P.O. have always looked upon the R.S.G.B. as the only organisation that can be depended upon to keep British Amateur Radio on the rails. Prior to the war instances of off-frequency were few and far between, with the result that when the new licence conditions were being prepared, the Society had no difficulty in persuading the G.P.O. to dispense with guard-bands.

It is, of course, most unfortunate that we should continue to be denied the full use of the 7 and 14 Mc/s bands, especially so now that the governments of certain other nations have restored the Cairo allocations to their amateurs. Maybe, that accompanying this editorial will be the long-awaited announcement giving the release dates for the rest of the bands. However, until that time arrives we urge all members to abide by the terms of their licence, for surely, the offenders can derive little

satisfaction from the knowledge that they are beating others to the DX by illegal practice.

The position on 7 Mc/s. is quite a different story for here we are confronted with a state of affairs that is little short of chaotic. It must now be obvious to every active amateur that the release of the high frequency half of the band by the authorities was made with the full knowledge that the military could not cope with the spate of broadcasting that is going on not only between 7.2 and 7.3 Mc/s. (the Cairo allocation shared with amateurs) but also particularly between 7.15 and 7.2 Mc/s. which is outside the broadcast band.

### FURTHER FREQUENCIES RELEASED.

As the result of negotiations which have taken place between the G.P.O. and the Society, the G.P.O. agreed to release the following additional frequencies on the dates stated :—

1,715—1,800 kc/s.	As from August 19, 1946. Class A and B licences 10 watts.
3,500—3,635 kc/s.	As from September 1, 1946. Class A Licences, 25 watts.
3,685—3,800 kc/s.	Class B Licences, 150 watts.

We hope to announce further release dates in our next issue.

We cannot condone off-frequency operation, even when the B.B.C. blandly continues to operate on frequencies which are *ours by right* and those few who do operate outside the present bands do harm to the majority and deserve to have their transmitting licences cancelled.

Finally a word about power. Complaints continue to reach H.Q. that certain amateurs are openly boasting that they have no intention of keeping to their licenced input. Most of these stories can be taken with a pinch of salt, but there are undoubtedly a few people who have a mania for defying law and order. Last month we recorded the fact that three licences had been cancelled for breaches of the regulations. We should be sorry to see the number increased, but increase it will if the "know-alls" do not play the game. The Council are determined to do everything in their power to safeguard the interests of members and they believe that in this they will have the full support of all real amateurs.



# THE CONSTRUCTION AND OPERATION OF KLYSTRONS

By E. D. HART, M.A., M.I.R.E. \*

## Introduction

THE klystron was invented in 1939 by Varian & Varian of Stanford University, U.S.A., but little was done with the valve until the demands of radar for a compact, convenient centimetre-wave generator became insistent. Research was then directed to the klystron and many types were hastily evolved, in both receiving and transmitting sizes. Subsequently, it was almost entirely superseded in transmitting work by the magnetron which was also receiving considerable attention. For receivers and measuring instruments the klystron has remained in considerable use and is likely so to continue.

The word "klystron" is derived from the Greek meaning "waves breaking on the beach" and is indicative of the mode of action of the electron stream. Until recently the word was the registered trademark of the Sperry Gyroscope Co. Inc., but they have now relinquished their rights to it as it had become a standard term in the U.S. Services to describe velocity-modulated valves. The electrons Fig. 1 (a) passing through the first rhumbatron (the "buncher") are acted upon by the r.f. applied *via* the concentric line and assume different velocities according to the phase and magnitude of the r.f. voltage. Passing on to the drift space the electrons form themselves into bunches of different velocity and move into the second rhumbatron (the "catcher") where they give up energy which appears as a r.f. signal in the catcher and may be fed away by the output concentric line. The physical arrangement of the valve may vary somewhat, as will be later seen, and by different connections may be caused to act as amplifier, oscillator, detector, etc.

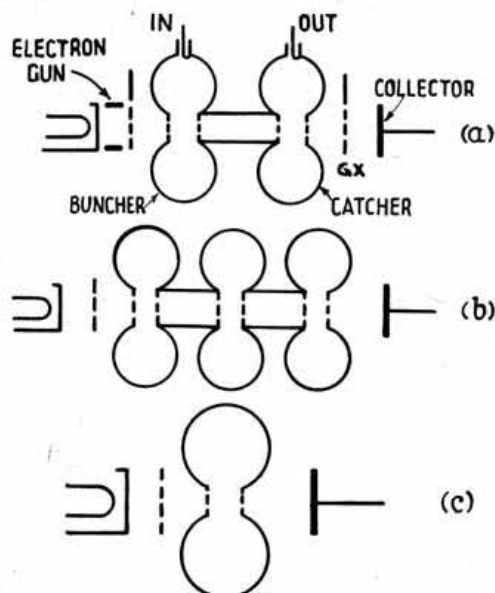


Fig. 1.  
a) Double resonator klystron. b) Multiple resonator klystron.  
c) Reflector klystron.

Apart from rather theoretical and involved papers, very little has been published, especially in Great Britain, about klystrons. This state of affairs has been largely due to the censorship necessary in wartime, but it is hoped that a considerable amount of material may now be released. This present article seeks to describe the construction of the klystron and its practical operation in typical circuits, and to guide the reader as to its uses. It does not attempt to analyse the reasons for its particular operation and does not especially describe any adaptations to purely amateur use.

## General Description

It is assumed that the reader is familiar with the broad principles of operation of klystrons but in order to clarify the more detailed study that follows, a generalised description may be useful at the start. A fuller account and definitions of the special terms will be found in the series of articles by J. H. Shankland (Vol. XIX.—July to December, 1943), entitled "Communication on Centimetre Waves."

## The Different Klystron Types

Klystrons fall conveniently into three main types:

- Ordinary double resonator valves.
- Multiple resonator valves.
- Reflector or reflex valves (sometimes called "Sutton tubes").

To deal with them in order; the double resonator valve forms the majority of those in use and will be used as the example in most of the considerations appearing later in this article. As shown diagrammatically in Fig. 1 (a) it consists of an electron gun assembly, two rhumbatrons separated by a drift space and a collector electrode with or without a final grid  $G_x$  before the collector. In some forms of construction the collector is replaced by a field-free chamber formed by an end cap attached to the catcher rhumbatron. This variation in the "anode" end of the valve may occur in types (a) and (b) above, but not in (c) where the presence of an actual electrode is essential.

Multiple resonator valves Fig. 1 (b) are very similar to the double resonator type but employ a series of rhumbatrons separated by drift spaces. They may be used as amplifiers by applying the input to the first rhumbatron and taking the output from the last. High amplification with a single valve and a single electron beam is thus achieved. For  $n$  stages of amplification  $n + 1$  resonators are required, but the power used is the same as that of a single double resonator valve. Multiple klystrons thus have considerable advantages over the use of several separate klystrons and are easier to tune because of the smaller number of rhumbatrons. They may also be used to do more than one job in the same valve. By suitable dimensional spacing the early stages in a multiple valve may be used for voltage amplification and the last stage for power amplification so that a high overall power gain is realised. Again by using a three resonator valve a very good oscillator-buffer combination can be realised (See "Oscillation and Modulation").

The reflector or reflex klystron, shown in Fig. 1 (c), utilises a single rhumbatron for both bunching and catching. When the electrons leave the rhumbatron after velocity modulation they are subjected to a retarding field due to the electrode at the end of the valve—connected to a source of negative potential, brought to rest and accelerated in the opposite direc-



tion back to the rhumbatron which this time acts as a catcher. The bunching takes place in the transit interval during reflection. It is obvious that the valve can be used only as an oscillator but it possesses considerable superiority over the double resonator type for lower power oscillators. The reflector distance may be much shorter than the corresponding drift space in the double resonator valve due to the double transit of the electron beam and the low velocity of the beam over part of the travel. There is only one resonator to tune compared with the two of a double resonator valve which must be kept simultaneously and accurately in tune if any efficiency is to be realised. In other words, the buncher and catcher are always tuned to the same frequency as they are the same resonator. This advantage becomes peculiarly apparent when the trouble of initially setting-up a double valve has been realised. Reflector valves have attained a wide popularity as local oscillators in v.h.f. receivers, due to this ease of tuning and their smallness and cheapness of construction.

### Physical Details and Practical Construction

The sizes of klystrons vary considerably (as can be seen from Fig. 2), from the large type on the left used for relatively high power transmitting purposes to the

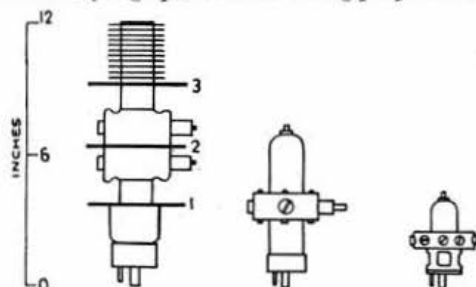


Fig. 2.

Types of klystrons.

From Left to Right: A large transmitting type, a medium-size reflector type, and a small receiving reflector type.

small one on the right used for receiver and low-power measurement work. Large types may be fitted with cooling fins on the end which serve to keep the temperature of the collector or end cap within reasonable limits and may be further cooled by an external air blast. Water cooled valves are also used. In the majority of small valves cooling by radiation from the envelope and resonators is adequate.

The cathode of the valve is a plane circular oxide-coated type and is followed by a conventional form of electron gun assembly (Fig. 3) with a focusing ring and control grid. This control grid, usually positive with respect to the cathode, may sometimes be connected internally to the cathode so that no external voltage supply is necessary, or in the case of large power valves may be entirely absent. The rhumbatrons and the metal supports, tuning rings, etc., of the valve are usually connected together and form the anode. For this reason it is common practice, as with cathode-ray tubes, to earth the positive supply so that exposed metal parts of the valves are not live with respect to other parts of the containing equipment.

The resonators vary slightly in shape but approximate to the re-entrant type shown in Fig. 3 (although usually are diagrammatically drawn as in Fig. 1) and may be wholly or partly enclosed in the vacuum system of the valve. An example of the second type is the reflector klystron of Fig. 2 (b) where two annular copper sheets are ring-sealed in the glass envelope, the resonator being completed externally by a die-cast

assembly containing the output socket and tuning plugs, bolted on to the copper rings. Whatever the structure of the resonators it is obvious that the centre part has to be acted upon by the electron stream and must of consequence be usually within the valve.

Tuning of the rhumbatrons may be done in two ways—mechanically deforming the cavity (one wall is often a corrugated diaphragm to allow this)—or by altering the volume of the cavity by screwing in metal plungers. Actual deformation of the cavity, results in tuning not so much by virtue of the volume change but mainly by altering the capacity between the entrance and exit grids of the resonator. The valve of Fig. 2 (a) is tuned by this method; by compressing rings 1 and 2 for tuning the buncher, rings 2 and 3 for tuning the catcher. The reflector valve of Fig. 2 (b) is tuned by the plunger method, having a large preset plunger for coarse tuning and a smaller one for variable fine control. The total range of tuning possible with any of these methods is only a few per cent., but in the case of a valve with external demountable resonators a greater change can be obtained by replacing the external parts of the resonators. Ganged tuning of klystrons is possible by mechanically coupling together the fine tuning controls, the coarse controls having been preset.

Electrical tuning of the resonators may also be done and in some cases has advantages over mechanical methods. By varying the accelerating voltage (and/or the reflector voltage in a reflector valve) the transit time and correspondingly the frequency is changed. Another method—used in valves employing high beam currents—is to vary the beam current, since by this means the dielectric constant of the beam varies, altering the capacity loading of the resonators. Both of these electrical methods have to be used with discretion since the frequency change is correlated with an output change.

The grids at entrance and exit of a rhumbatron must be designed to have a high thermal and electrical conductivity and as little area as possible in the electron beam consistent with proper operation. Early klystrons used grids formed by making hexagonal holes in copper sheet so that the complete grid formed a honeycomb lattice, but later valves employ grids of other regular geometrical forms; radial fins, wire gauze, or in small valves a simple circular hole in the thin copper walls of the resonator. The spacing between the two grids of a resonator depends on the fact that an electron must pass across the electrical field between them in less than one half-cycle of the particular frequency of operation.

Connections to a rhumbatron are made by concentric lines ending in a loop within the cavity which couples to the magnetic field around the axis of the rhumbatron. A metal-to-glass seal is used for those valves which include the rhumbatrons within the vacuum system, and in others a screwed joint can be made to the external metal work of the resonator, which has the practical advantage that the coupling

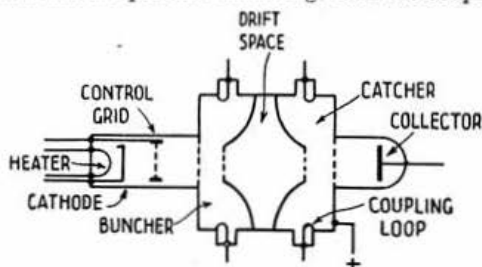


Fig. 3.  
Klystron construction.

can be varied. The term "antenna seal" is frequently used for these concentric output or input terminals. In the case of valves intended only for oscillator work, a permanent feedback line between buncher and catcher can be used, and such a line is frequently built-in the valve so that although it has two resonators there is only one antenna seal—the output.

Electrons which pass through the catcher must be prevented from returning through the grids and their energy must be dissipated in the form of heat. The collector electrode or end cap must therefore be arranged to achieve this either by deflecting the electrons so that they hit the metal shell and resonator external walls or to attract the electrons, in which case, the cooling of the comparatively small electrode requires special attention as mentioned earlier. A form of electron trap, used in high power valves, has a series of grids, similar to the resonator grids, ending in a metal end cap fitted with cooling fins.

All but the highest power and experimental valves are fitted with standard size valve bases (usually international octal), at the cathode end to bring in the heater and d.c. connections. The positive high voltage connection is made to the metal shell and the resonators, and the collector, deflector or reflector electrode at the other end connects to a standard type "top cap." Mounting of the valve is done by means of brackets or studs on the shell and resonators, the valve-holder merely fitting on the base and serving to bring in the supplies as with the usual cathode-ray tube mounting. The r.f. connections are made by flexible coaxial cables plugged in to the antenna seals. Many valves are fitted with fine tuning controls which can be controlled from the normal operating position of the complete equipment by means of shafts and flexible couplers. Fig. 4 shows a representative low-power reflector klystron for receiver work.

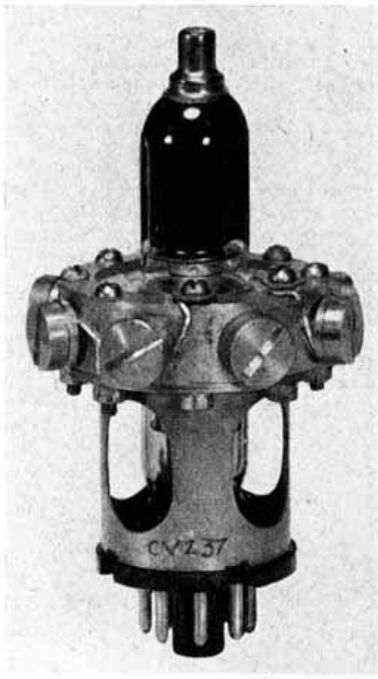


Fig. 4.

Small reflector valve for receiver work.  
Photo. : Courtesy of E.M.I., Ltd., Hayes, Middlesex.

### Valve Ratings

As has been indicated, the sizes of klystrons vary from small tubes, no larger than, and plugging in like, ordinary receiving valves (used mainly in receivers and measuring instruments), to large ones with forced air or water cooling (used for transmitting) with accelerating voltages of perhaps 10 or 20 kV. The theoretical efficiency of a double resonator valve varies between 58 per cent. for operation on the fundamental frequency to 24 per cent. for the 20th harmonic, whilst for reflector klystrons a figure of between 20 per cent. and 30 per cent. is possible. Ratings of typical valves vary between the following limits which illustrate the extremes in size.

Wavelength ..	50 cms—3 cms or lower (600—10,000 Mc/s)
Accelerating voltage ..	250V—20 kV
Beam Current ..	30mA—0.25A
Dissipation ..	5W—2.5 kW
Power Output ..	0.5W—200W
Efficiency ..	10—15 per cent.
Amplification ..	20 times
Filament rating ..	4–6.3V, 0.5–5A

### OPERATION

#### General Considerations

A general circuit for the operation of klystrons is shown in Fig. 5. This comprises power supply connections only, as of course, there are no external circuit elements in klystron stages except possibly a short link of concentric cable. The h.t. supply for the

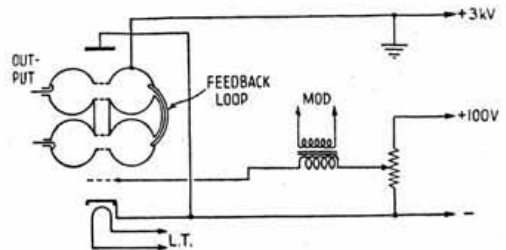


Fig. 5.  
Circuit of double resonator klystron.

resonator depends on the particular valve in use, but for small and medium valves may be up to 3kV at 150mA and should be variable continuously or in small steps to facilitate starting of the klystron. The positive side of the h.t. is usually earthed as it is connected to the resonators and output arrangements while the filament and cathode are at h.t. volts negative to the earth line. When small valves are used in receiver circuits this is not convenient as it is often required to work the klystron local oscillator from the same filament and anode supplies as, say, the i.f. amplifier; in this case the output connection of the klystron must be insulated from the resonator, or other precautions taken.

The control grid bias (positive bias) may be variable up to 100V., at 25mA, and for small valves having an accelerator supply of less than 1,000V may be derived from that same source via a potentiometer network. Larger valves need a low impedance grid supply and a separate power unit is necessary. Both h.t. and grid supplies must be regulated and extremely well-smoothed if any degree of frequency stability is required.

The filament supply is conventional (usually 4–6.3V at 1–2A), but may with advantage be made variable over a small range.

#### Oscillation and Modulation

Setting up a reflector klystron as an oscillator is very

straightforward; a reasonable value of resonator and reflector voltage is applied (Fig. 6) suitable for the valve in use and adjusted until oscillation starts, and the resonator is then tuned until the correct operating frequency is found, when final adjustments can be made. The double resonator valve, however, needs a special technique, particularly if the valve is being used for the first time and its individual characteristics are unknown. Although sometimes tedious this technique is not difficult. A klystron will only oscillate when two conditions have been satisfied; both rhumbatrons have to be tuned to the same frequency and the accelerating voltage must be the right one for the particular adjustment of the rhumbatrons. There are thus three variables and wide scope for adjustment unless some special means are used. In practice the special means may consist of a 100V mains frequency supply connected in series with the direct accelerating voltage so that the accelerating voltage actually applied to the valve has a swing of 200V.

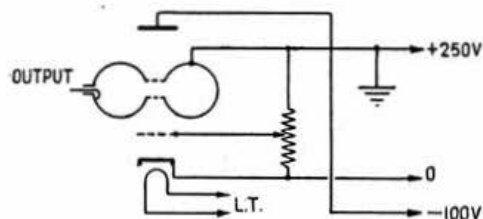


Fig. 6.  
Circuit of small reflector klystron.

Adjust the entrance and exit grids of both resonators so that they are about 0.03 ins. apart (if adjustable), set accelerating voltage and beam current to some suitable value (usually obtained from previous knowledge of the valve or of its particular type) and connect the 100V a.c. supply. Now adjust the tuning of one of the resonators until oscillation starts. This may be detected by an u.h.f. crystal detector and meter connected directly to the output (not with large valves, however), a neon tube detector directly connected or by a dipole on the output coupled to a similar dipole operating a lamp or meter. If oscillation cannot be obtained, adjust the accelerating voltage and repeat the tuning. After oscillation is found, switch off the 100V modulation of the accelerating voltage, readjust the accelerating voltage and retune the resonators to secure maximum output. The oscillation will probably not be at the correct frequency and must be altered. Do this by varying both resonators simultaneously, readjusting the voltage when necessary to maintain oscillation. When final frequency is obtained, adjust all variables again for optimum working and trim finally. This technique becomes quite easy when the peculiarities of the valve in use become known and approximate settings of tuning and voltages have been determined.

If another source of r.f. at the desired frequency is available, the resonators of a klystron may be pre-tuned. Connect the source to the resonator by means of a concentric line having a T connection near the resonator. A crystal detector connects to this T. Tuning the resonator may now be undertaken by using it as an absorption wavemeter, watching the sharp dip in the detector current at resonance. Variations of this method may be used for pre-tuning double resonator valves with an internal feedback line and only one antenna seal. When the resonator of a klystron has been set in this way, oscillation will start when the correct accelerating voltage and beam current have been obtained. A little final trimming will be necessary. If a single resonator has two antenna

seals available, the external source may be connected to one, and the crystal detector to the other; thus using the resonator as a cavity wavemeter.

Klystron oscillators of the double resonator form have two families of modes of oscillation and it may be that output obtained at one mode may be less than that in another mode, and when initially setting up an oscillator all possible variations of accelerating voltage and resonator tuning should be investigated, although apparently satisfactory operation at any one setting may have been achieved. The usual effects of mismatching of the load, resonant lengths of output cable, etc., apply with equal force to klystron oscillators, and in the limiting case the valve may refuse to oscillate.

Klystron oscillators may be readily modulated, in amplitude, frequency or phase. The simplest method (illustrated in Fig. 5) i.e. voltage modulation of the grid, gives both a.m. and f.m. of the r.f. output, the f.m. being produced due to the varying space charge between the resonator grids altering the capacity loading of the resonators. Again, modulation of the accelerating voltage or reflector voltage of a reflector valve will give both a.m. and f.m. By suitable choice of operating conditions, pure f.m. may be obtained over a limited range. Pure a.m. may also be obtained by a complicated process, but in practice, because of this complication, f.m. is usually employed. Systems of pulse-width modulation have been used in an endeavour to keep the f.m. at a low figure.

In the oscillator-buffer klystron a three-resonator valve is used. The first two are used as in an ordinary oscillator, whilst the third resonator is excited from the bunched beam current from the second, and the output load is coupled to this third resonator. By this means, the load is effectively isolated from the oscillator; particularly when a modulated amplifier is used. If two separate klystrons were used, as oscillator and modulated amplifier, the amplifier buncher would be directly coupled to the oscillator catcher and thence to the oscillator buncher—in the three resonator valve the only coupling is electronic.

### Amplification and Frequency Multiplication

The klystron is very much easier to adjust as an amplifier than as an oscillator. This is mainly because the valve will work to some extent with any value of accelerating voltage and there are no voltage modes as in oscillators. The input r.f. is applied to the buncher and the output taken from the catcher, both being tuned approximately to the signal frequency. The buncher is now tuned correctly by adjusting for maximum output from the catcher, when the catcher can then be also tuned for maximum output. Since a large drive will be needed to the buncher in the initial stages (unless it is reduced progressively as tuning proceeds) it will be found that when tuning is complete the buncher will be overdriven—probably indicated by double humping of the output, particularly if the accelerating voltage is low. The drive should be reduced until the output just begins to fall. Although the output does not depend directly on the accelerating voltage, this may be too low and different values should always be tried. Before concluding that an amplifier is operating satisfactorily, buncher and catcher tuning input drive and accelerating voltage should be checked to ensure that optimum conditions have been obtained.

Frequency multiplication may be done by having the buncher tuned to the input frequency and the catcher to the required harmonic output. The preceding remarks on amplifiers apply generally to multipliers, although for sundry reasons their adjustment is more critical.

### Detection and Mixing

If a klystron is fitted with a grid ( $G_x$  in Fig. 1 (a)) between the catcher and the collector, the valve may be used as a detector. This grid must be biased so that the current shown by a meter between the collector and cathode varies with the bunching of the electron beam. In the correct adjustment, applying a signal to the buncher will cause a decrease in collector current. This condition may be attained, in a double-resonator valve with a simple collector, or in a reflector valve, when the collector (or reflector) is operated near the cathode potential. Other methods of detection are possible.

A klystron, connected as a detector, may be used as a mixer if the signal is fed to one resonator and the local oscillator to the other. The i.f. component, which must be of high-frequency (say 45 Mc/s), is taken from the collector.

### Conclusion

It will be seen that the klystron is a relatively complicated valve, but possessing versatile properties and considerable possibilities for future work on v.h.f. communication. Although this review has extended to some length, only a brief introduction to the subject has really been given. The construction of the valve and its operation as an oscillator have been covered at some length, as it was felt that these would be most

interesting to readers, but for those wishing to read further the following list of references may be useful. The author must express his indebtedness to these references for many of the details quoted in this article.

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9. Shankland, "Communication on Centimetre Waves," *R.S.G.B. Bulletin*, 19, 18-21, August 1943.

### The East London P.D.M.

On June 30, history was made when the first official East London, P.D.M. took place at Ilford Town Hall. The arrangements were in the capable hands of Mr. W. H. Matthews G2CD, acting T.R. for the area, and a large attendance was recorded.

After preliminaries had been completed, the President, Mr. E. L. Gardiner G6GR (who was supported by a number of Council Members) called upon the General Secretary to give an address on the work of the Society. "Clarry" obliged in his usual lucid manner, with the aid of his famous Little Black Book, touching on the difficulties which the Society had overcome during the war years, the present position, and the possibilities for the future.

Question time brought forth a number of queries as to Society activities, following which members disposed of an excellent tea, and then settled down to hear a most enjoyable lecture delivered by Mr. H. A. M. Clark, G6OT, on Radar, with its application to gunnery in general, and Ack-Ack in particular. Complete master of his subject, 'OT held his audience enthralled for over an hour, after which the Meeting was declared closed.

The D.R. tenders to all East London members, and to the Society Officials in particular—who gave up yet another hard earned Sunday's rest—his most abject apologies for the omission of these details from the August Bulletin. This sad lapse of memory was due entirely to pressure of work—private as well as Society—and he earnestly hopes that he will be forgiven. G6LB.

### London Members' Ladies Night

The Social Committee have, with the approval of the Council, booked the Victoria Hall, Bloomsbury, London, W.C.1, for a social event to which members are to be invited to bring their ladies. The function will be held on Saturday, December 7, 1946, from 6 p.m. onwards.

Although arranged as a London Members' Ladies Night, the Council hope that many provincial members and their ladies will attend. Dress will be optional.

Tickets (Price 5s. each) can be obtained from any of the following:—

Mr. S. A. Howard, G8TY, 92 Arlington Road, Southgate, London, N.14.

Mr. P. Thorogood, G4KD, 35 Gibbs Green, Edgware, Middx.

Mr. S. E. Langley, G3ST, 52 Dumbarton Road, Brixton Hill, London, S.W.2.

Mr. L. J. Fuller, G6LB, 85 High Street, Chelmsford, Essex.

Mr. H. V. Wilkins, G6WN, 539 Oldfield Lane, Sudbury Hill, Greenford, Middx.

Mr. P. C. G. Bradley, G8KZ, 348 Portobello Road, N. Kensington, London, W.10.

Mr. W. E. Russell, G5WP, Milestones, Westfield Road, Mayford, Woking, Surrey.

Mr. W. H. Allen, G2UJ, 32 Earls Road, Tunbridge Wells, Kent.

### Memorial Fund

As the result of a very careful analysis of the 1,174 questionnaires returned to Headquarters, the Council has decided not to proceed with a Memorial Fund appeal. Instead it is planned to erect a suitable plaque at Headquarters commemorating the names of fallen members. Designs are invited from qualified members.

In the event of it becoming possible at a later date for the Society to purchase or erect a building for the purpose of housing Headquarters it is probable that this will be dedicated to the memory of members who fell during the 1939-45 war.

### Prisoners of War Fund

The Council resolved at its meeting on July 29, 1946, to divide equally among the 50 ex-prisoners of war whose names are recorded in a list held by Headquarters, all surplus monies remaining in the fund after payment has been made for certain gifts which are to be presented to them at a forthcoming reunion.

The Council further resolved that as from July 29, 1946, no further beneficiaries would be accepted by the Society.



# A 100 kc/s QUARTZ FREQUENCY SUB-STANDARD AND HARMONIC GENERATOR

By EDWARD W. NIELD (BRS5882) \*

## General

THE circuit described is based upon that of the General Radio Company of America, which appears in the *Amateur Radio Handbook*, second edition. This circuit is believed to be unique in design, incorporating a tuned circuit in series with the crystal which, when tuned to the resonant frequency of the latter, stabilises operation by cancellation of stray reactances otherwise liable to impair the stability. So effectively is this accomplished, that, in the writer's circuit, a change of D.C. supply voltage and/or heater voltage of 50 per cent. produces a change of only a fraction of a cycle at the fundamental frequency (with correspondingly larger changes at other harmonic frequencies).

In the above simple form, however, the output is low, falling off rapidly on the higher harmonics, and is quite useless above 7 Mc/s, even when the output is directly connected to the aerial terminal of a highly sensitive superhet receiver.

Accordingly, it was decided to add an additional stage, which would serve the double purpose of amplification and harmonic generation. By careful selection of circuit values (in particular, that of the anode choke in this stage), the output level was not only increased, but maintained more constant over the frequency range covered. In its final form, the apparatus was capable of generating signals (separated by 100 kc/s), of a strength sufficient to actuate the A.V.C. circuit of a receiver up to a frequency of 28 Mc/s (this being the limit of the receiver tuning, and not of the apparatus). On frequencies lower

than about 10 Mc/s direct connection was found to be unnecessary.

## The Circuit

The circuit is shown in Fig. 1. V1 is a 6J7G, working as an electron coupled Colpitt's oscillator. The choke, L2, serves to prevent R.F. loss in the anode circuit of this stage, and should be capable of offering a high impedance to all harmonic frequencies. A commercially made "all-wave choke" has been found suitable.

V2 is another 6J7G, biased to cut-off by the potential divider, R8, R5. The signals from V1 drive the grid of V2 more positive on alternate half cycles, and distorted signals rich in harmonics appear in the anode circuit. The choke, L3, is designed to have maximum impedance at the higher frequency end of the range, whilst having a falling impedance at the lower frequencies, thereby levelling up the output.

The tuned circuit L1 (C1, C2), is made resonant at the crystal frequency by the following procedure. With S1 closed, the output is connected, if necessary, to the aerial terminals of a broadcast receiver which is tuned to Droitwich (200 kc/s), and the gang rotated until a zero beat is obtained. The condenser, C10 should be set at about half capacity. Critical adjustment is then made by listening to a suitable harmonic on (say) 10 Mc/s, with S1 open, tuning the receiver to zero beat with the B.F.O. on. If a "straight" receiver is used, the reaction should be set to the point of oscillation. The switch S1 is then closed, and C10 adjusted until zero beat is again obtained. The tuning range of C10 is arranged so that the fundamental frequency of the tuned

\* 6 Hazel Road, Uplands, Swansea, South Wales.

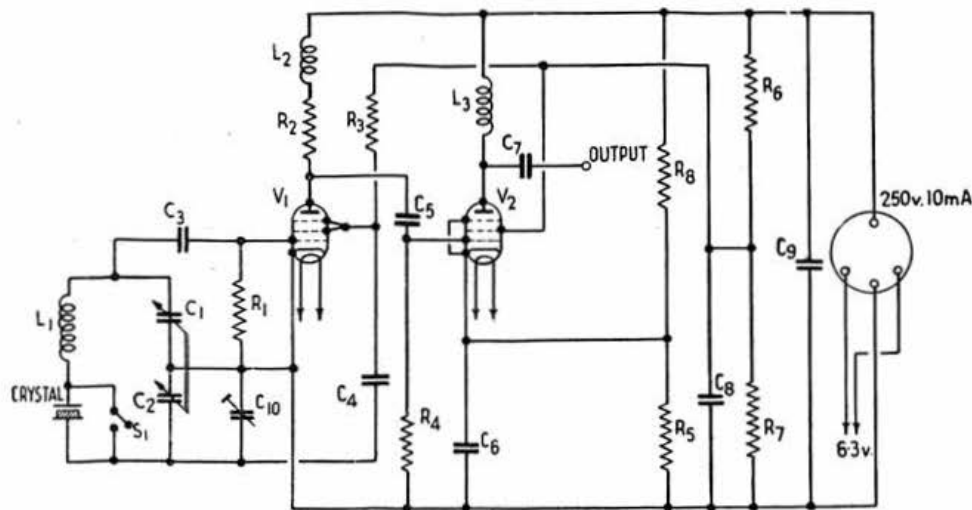


Fig. 1.

Circuit of 100 kc/s quartz frequency sub-standard and harmonic generator.

C1	0.0005 $\mu$ F.	L1	14 mH (screened).	R1	1.0 Megohm
C2	0.005 $\mu$ F.	C10	50 $\mu$ F trimmer	R2	20,000 Ohms
C3	0.01 $\mu$ F mica.	L2	20 mH.	R3	50,000 Ohms
C4	0.01 $\mu$ F mica.	L3	2-5 mH.	R4	0.5 Megohm
C5	0.001 $\mu$ F mica.	S1	Crystal in/out switch.	R5	1,200 Ohms
C6	0.005 $\mu$ F paper.	V1, 2	6J7G.	R6	50,000 Ohms
C7	0.0005 $\mu$ F mica.			R7	30,000 Ohms
C8, 9	0.1 $\mu$ F paper.			R8	40,000 Ohms

circuit cannot be varied by more than a few cycles.

In use, of course, S1 is left opened except for checking purposes. If required, the operating frequency of the crystal may be varied a few hundred cycles either side of the nominal, by rotating C1, C2, but this procedure sacrifices the beneficial effects of the tuned circuit which only manifest themselves when tuned to the crystal frequency.

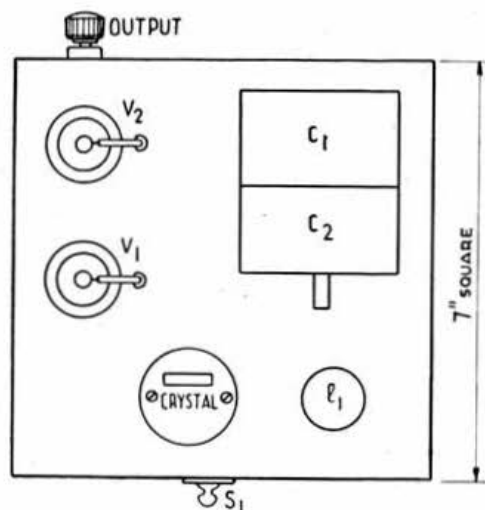


Fig. 2.  
Chassis layout.

The layout is shown in Fig. 2. C1, C2 is an ordinary  $2 \times 0.0005 \mu\text{f}$  2-gang condenser. The coil, L1, was made from part of an old 110 kc/s I.F. transformer, the screening can being retained. The trimmer originally attached, was discarded since it was found to be of too large a capacity to act as C10.

The writer feels that the usefulness of this device as a means for the accurate calibration of receivers, E.C.O.'s, signal generators, etc., will amply compensate for the time spent in its construction, particularly in view of the need to "clean up" on our technique now that licences are again returning, and precision and high-class workmanship are now more than ever called for.

## Bright Ideas

By W. E. PRIEST (BRS5520).

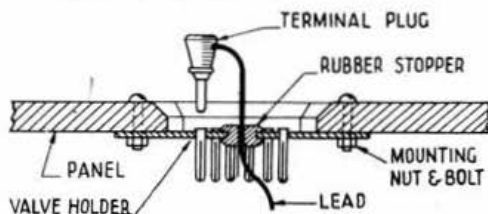
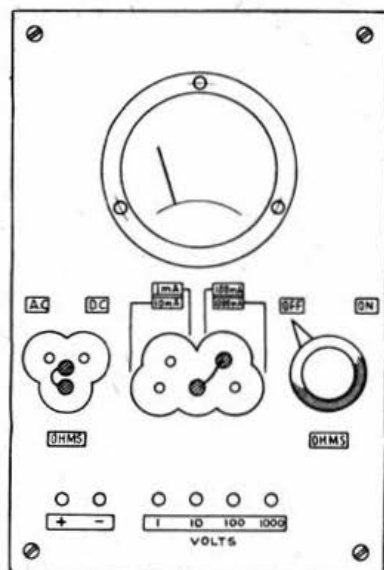
HAVING recently constructed a universal V-O-M whilst trading in the Indian Ocean and Persian Gulf (where suitable parts are almost unobtainable) the writer hit upon a couple of practical hints which may prove helpful to other "unfortunates" in a similar position to himself.

(1) An arrangement for providing efficient connection for the various ranges in volts, milliamps and ohms was facilitated by mounting a chassis-type octode valve socket beneath an aperture cut from the panel. The inside edges of the latter were bevelled to enhance the design. A flexible lead was passed through a rubber stopper forced into the centre of the valve holder and terminated in a battery type terminal plug. The arrangement is an ideal substitute for a rotary switch and has quite a professional appearance when properly constructed.

(2) The only number and letter dies available on board were  $\frac{3}{8}$  in. and, of course, were absolutely out of the question. However, the required printing was done by embossing a strip of metal foil (obtained from an old tubular condenser) by means of the firm's

typewriter, having previously removed the ribbon from the machine and backed the foil by three sheets of blotting paper.

When all the ranges were "embossed" on the strip, and the letters filled in with indian ink, the surplus ink was removed with a cloth and the strip was cut into rectangles of uniform dimensions. They were then glued to the panel in the appropriate positions and



when dry, a thin coat of shellac was administered to the whole panel. The results were most satisfactory.

The accompanying sketches show the finished instrument and the connector.

## Convention

The Council much regrets that it will not be possible to organise a National Convention, on lines familiar to pre-war members, until such time as accommodation and catering conditions improve.

## London Lectures

Included in each copy of this issue is a programme of Lectures to be held at the Institution of Electrical Engineers, London, during the coming session. Additional copies will be sent on receipt of a stamped addressed envelope.

## OUR FRONT COVER

THE MULLARD QVO4-7 is a Beam Tetrode Transmitting Valve suitable for operation at anode voltages up to 400 V., with an anode dissipation of some 7 watts, and at frequencies up to 150 Mc/s. Primarily developed as a R.F. power amplifier, it is also employed as a Class C oscillator. Full details of characteristics and operating conditions can be obtained from the Mullard Wireless Service Co., Ltd., Transmitting and Industrial Division, Century House, Shaftesbury Avenue, London, W.C.2.

# THE MONTH ON THE AIR

By A. O. MILNE, (G2MI)\*

## Off Frequency

If there had not been so many naughty boys during the month of August there would be more DX chatter for you! The position on 7 Mc/s is, however, so serious that we cannot let it pass without comment. On Sunday, August 18th we measured 26 British stations out of the band. The worst offender was 7066 and the best (sic) on 7139. During the evening there were twelve stations using telephony and not one of them was inside the band. In fact there was no amateur station working within the U.K. limits! From the remarks overheard, one came to the conclusion that most of these people had no idea where they were and had no means of finding out. One man said he could not give a frequency check because his receiver was not calibrated! A curious fact which came to light, was that all but three of the off frequency stations logged were in the Midlands—mostly Cheshire and Lancashire. Now what is wrong with mid-Britain? You fellows do not usually let the side down. We expect better things from the backbone of England.

Our old friend Eric Trebilcock comes along once more with an air letter packed tight with 'gen. Gives W6VID/KJ6 as Box 15, Navy 311, F.P.O. San Francisco; CN8MZ as 28 Rue de Querey Rabat, Morocco; FA8C and YR5X via HB9AG; J9ABF, H.Q. Signals Sect., Okinawa, APO, 331. He says PK5LK is at Balikpapan, Dutch Borneo. Eric has heard the following G's in Tasmania on 7 Mc/s. G2FKO, 2YV, 2DPZ, 6BU and 8LG.

G6RH who has worked 100 countries since the war ended, offers VP2MY 14375 (phone), ET2AB 14105, and says W6VKV/I7 now signs I6, QSL via ARRL. G2YS, BR3607 and 3129 confirm that C is the new prefix for Chinese Amateur stations. G3AH has worked ZA2D 14120 who also says QSL via ARRL. He may be all right, we don't know. Lots of pirates say QSL via R.S.G.B., just to give themselves an air of authenticity!

ZD4AB will be back on the air on 14120 and 28016 early in September. G2NJ reports having been called on 7 Mc/s by JEKR, who stated that he was an Army Test station in Norway. G5UM makes the

## FORTHCOMING CONTESTS

"TOP BAND" CONTEST	...	...	...	...	...	...	November 30–December 1, 1946
FIVE METRE CONTEST	...	...	...	...	...	...	February 8–9, March 8–9, 1947
B.E.R.U. CONTESTS	...	...	...	...	...	...	April 12–15, April 17–20, 1947
NATIONAL FIELD DAY	...	...	...	...	...	...	June, 1947
LOW POWER CONTEST	...	...	...	...	...	...	Autumn, 1947

We have an unhappy feeling that if all the Amateurs in this country had to swear an affidavit that they possessed a frequency meter, 100 kc/s bar or other standard frequency check before they could come on the air, there would be a marked decrease in QRM! This off frequency working is by no means confined to 7 Mc/s, nor is it confined to the newly licenced man. Several old timers, including three TR's, were among the offenders and it "just ain't good enough"!

As you will see elsewhere, we have three new bands. 1715–1800 kc/s, 3500–3635 kc/s, and 3685–3800 kc/s. You will notice first that there are now no tolerances, and secondly there is a "Tom Tiddler's ground" between 3635 and 3685. We have it on good authority that said "T.T." is not going to be very pleased with careless people playing around there—so keep clear and be warned in time!

## How's DX?

Well, pretty good, except for the QRM. GM2UU forwards two nice ones, W6OCA/J3 14346, 58. Signal Batt'n, "B" Coy., c/o Postmaster San Francisco and OX2MJ, 14170, c/o 293 Grand Street, Brooklyn, N.Y. His position is 65° 56' N. 36° 41' W. Young Peter Clarricoats of G6CL, now a fully fledged op, worked an interesting contact on August 22—LWFZ on 14 Mc/s I.C.W., who stated that he was in an R.A.F. Wellington, flying over Central Europe. The O.M. at G6CL has been working VESMJ up in Baffin Island on regular skeds. G8PB has worked CR9AG at 2000 B.S.T., frequency 14095, also PZ1FM, whose address is R. E. Warling, Box 109 Paramaribo, Surinam. VS1BY is BR510930 in a tent at Singapore. Input 20 watts from 6-volt battery. He is looking for G's. G5RF would like some information on VP8LK, worked on 27998—very chirpy and difficult to copy.

interesting suggestion that phone contacts might be much enriched by a brief "word picture" of one's shack and location as well as the usual notes regarding the rig. G5RF gives QTH of ZC6FP as F. R. Pope, R.A.F. station, AQIR, Palestine, M.E.F.

## G6ZO

This is the man who ought to be writing "Month on the Air." The wealth of information which he provides would make an article on its own. Here are some of his "catches"!

OA4AQ, 14090; CE4AD, 14280; HK3CX. T6 on various frequencies; ST2OK, 14175; TF3A (3A of pre-February days) 14135; ZD8A, 14220. CR7RA, 14165 (British ship off Mozambique); VU3AZ, 14085; XE2AG, 14110; WSQEN/WIDTS/CT2, 14115 and 14125. They have 1 kw into a rhombic. OQ6RP, 14060; OQ5AF, 14175. VQ4AA, 14165. VP2AT (chirpy) 14085. VP4TR, 14050. He is VP2AT's brother. EL3A is at Monrovia, Liberia. QSL to Cliff Evans, APO605, c/o Postmaster, Miami, Florida. HR1BD, 14165, T7, Box 101, Washingtonville, Honduras. XSM6US is a Swedish ship in the Baltic. GZO thinks ZK1AA, 14145 is genuine. He also makes some further caustic comments about well-known G's working outside the band, and appends a list which literally staggered us!

He tells us that RAEM is the Chairman of the Moscow Radio Club and was the operator on the famous Cheliuskin. In recognition of his services, for which he was made a Hero of the Soviet Union, he has been allowed to use the call-sign RAEM, which was originally the ship's call.

Another old friend, Miles Weeks, now W1WV/6, has heard or worked VS4RM 14145; W4HRP/J3 14100; W2OAA/J8 14090; XU4BC 14040; EL3A 14090 and J9ANB 14130. BR57594 gives W2LFI/FF8 as Frank Petrucci, Pan American Airlines, Dakar, French West Africa. G6GH has nothing much

\* 29 Keehill Gardens, Bromley, Kent.

to report, but says all the good stuff is "snaffled" by the G's working outside the band! G2BAR of Bristol has worked W6OCA/J3, using 25 watts to a single 807. Nice work!

### Fiji

In a letter to G6CL, VR2UH at Suva, reports that Fijian stations are back on the air with a maximum input of 10 watts. It is to be hoped that the authorities can be persuaded to bring them into line with the other Crown Colonies, if only to give us a chance to work some of them!

### 28 Mc/s.

BRS3003 comments on this band and draws attention to the fact that it is never really "dead." It is certainly waking up fast and should be wide open by the time these words are in print.

### Dreamboat Arctic Flight

G2MI and 6CL have been invited by the A.R.R.L. to stand by for tests with the Pacusan—Dreamboat (B29) Flight from Honolulu T.H. via the Arctic to Cairo, Egypt. The Flight was scheduled to take place at the beginning of September. Call to be used W3QR/AM. Frequency 14025 kc/s telegraphy. The flight commander is Lt.-Col. Shannon who has appealed to the A.R.R.L. for the co-operation of amateur stations in addition to Army Air Force stations.

In the event of the flight not having commenced by the time this issue appears, home members are asked to watch the National Press for announcements.

An oblique stroke followed by AM is now used by all U.S. mobile amateur stations.

"Dreamboat" will operate on the following frequencies, 3150, 3452, 4220, 4595, 6355, 6775, 8200, 8280, 11445 kc/s for communication with official stations.

### Tentative Flight Plan

	Local Time	Sun Rise	Local Time Sunset	Elapsed Time
Oahu ..	05.30	05.32	18.40	00.00
Juneau ..	18.57	03.53	20.12	11.57
Victoria ..	01.28	01.52	22.14	16.28
Baffin ..	07.28	00.30	23.40	20.28
Iceland ..	17.00	03.08	21.02	26.00
London ..	22.44	04.24	19.48	30.44
Foggia ..	03.54	04.54	19.17	34.54
Cairo ..	09.39	05.19	18.53	40.00

### Queer Effect

Between 0615 and 0705 G.M.T., August 26, W6LHN and G6CL (14140) maintained contact at S9 plus on C.W. The W6 did not vary in strength throughout the QSO—a very unusual effect as individual W6 signals invariably peak for a few minutes, and then fade. Has anyone a copy of the Ionosphere chart for that morning?

### Tailpiece

Please read the notice about the QSL Bureau very carefully; copy it out, and paste it up in a prominent position!

In future when passing the QRA of the QSL Bureau over the air it will be sufficient to say "Milne G2MI, Bromley, Kent."

### Palestine Amateurs

Mr. J. Baer, who until recently operated from Lebanon, under the call ARLA, is now in Jerusalem (P.O. Box 406), at which address he will be pleased to receive letters from other members serving or resident in Palestine.

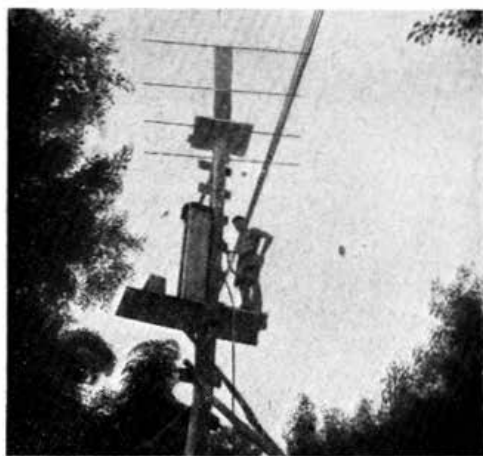
Mr. Baer states that a number of applications for licences are under consideration by the Palestine authorities.

### QSL Bureau Rules

1. The address to which all cards should be sent is G2MI, 29 Kechill Gardens, Hayes, Bromley, Kent, England.
2. Envelopes from G's should also be sent to that address.
3. GW's should send envelopes, but not cards, to 6 Kenfig Road, Gabalfa, Cardiff.
4. GM's should send envelopes but not cards to 154, Kingsacre Road, Glasgow, S.4.
5. GI's should send envelopes, but not cards, to Greenisland Lodge, Greenisland, Co. Antrim.
6. GC's should send envelopes, but not cards, to R. Postill, Victoria College, Jersey, C.I.
7. Do not send cards or envelopes to H.Q. It wastes time, makes things more difficult and causes delay.
8. Put your name and address on your envelopes. Write your call-sign clearly in the top left hand corner.
9. Put a 2½d. stamp on each envelope. Use envelopes of a sensible size.
10. Sort your cards before sending them in, viz. G2, G3, G4, G5, G6, G8, G2 (3 letter) G3 (3 letter) GM, GW, GI, GC and others, and don't put them in envelopes.
11. Send the rare ones direct.
12. Please do as we ask. It does help.

### History in the Making

This photograph taken at Kota Tingii, Malaya, in December, 1941, illustrates a 60 Mc/s. transmitter and array used for passing radar plots to Singapore. The gear was constructed by a small group of airmen, prominent among whom was Don Blow, G3TL, who later became a "Silent Key." It is believed that Ft./Lt. Roden White, G8TX, was the C.O. He, too, was killed during the war.



We are indebted to Mr. E. M. Morgan, BRS12,136, 128 Rainham Road, Castle Estate, Rainham, Essex, for this historic photograph which he carried in his pocket for three and a half years whilst in a Japanese prison camp.

### British Society for International Bibliography

Meetings of the above Society will take place in the Council Chamber of the Institution of Electrical Engineers, Savoy Place, Victoria Embankment, London, W.C.2, on Tuesday, October 15, and Wednesday, December 4, 1946, at 2.30 p.m.

R.S.G.B. members are cordially invited to attend. Details of the B.S.I.B. can be obtained from the President (Dr. S. C. Bradford), 8 Marryat Road, Wimbledon, London, S.W.19.



# THE MONTH ON FIVE

By W. A. SCARR, M.A. (G2WS)

**C**ONDITIONS have ranged from very poor to exceptionally good during the month and there have been some really exciting moments both for European and inter-G DX.

G2XC (Portsmouth) has as usual been one of the most consistent operators and sends a fine log. His investigations on the correlation between weather and signal range are rapidly taking shape and his final conclusions are likely to be of outstanding interest. He has worked all the usual British DX stations during the good spells and had many contacts with G6DH (Clacton) who is also busy studying atmospheric conditions. 2XC's log of four stations worked before 8 a.m. on August 5, proves that the band is not always so empty in the mornings as some of us imagine.

So far 2XC is the only station to send a report of the remarkable conditions which existed on the evening of August 22. Between 1900 and 2215 hours B.S.T. he worked six Italians and F3JB. HB9CD, F8RSN and IIWW were also heard.

OK1AW-X (the X is used by Czech amateurs to denote that they are operating portable) advised G2OS and G6CL during QSO's on 14 Mc/s that between 1845 and 1905 GMT on August 22, several G stations were heard by him calling OK2MV. OK1AW-X was himself on 56 during the week-end of August 24-26. He was located in the mountains at a height of 2,600 metres above sea level.

## Band Planning

Now that two distinct frequency bands have been released around 3.5-3.8 Mc/s, it is suggested that telegraphy operation be confined to the low frequency channel (3500-3635 kc/s) and telephony to the high frequency channel (3685-3800 kc/s).

If this suggestion is widely adopted by all U.K. amateurs using the band, a good deal of difficulty will be avoided.

Are you willing to co-operate?

## Radio Amateurs' Examination

The next Radio Amateurs' Examination of the City and Guilds of London Institute will be held on November 15, 1946, from 7 p.m. to 10 p.m.

The examination will be held at a number of Centres throughout the country, and intending candidates should apply to their local Technical Colleges. The Institute's examination fee is 10s. and Examination Centres may charge a small accommodation fee in addition.

Applications for entry to the examination should be made to Examination Centres not later than October 8, 1946. In view of the fact that a further examination will be held in May, 1947, no late entries can be accepted.

All correspondence in connection with this examination should be addressed to the Superintendent, Dept. of Technology, City and Guilds of London Institute, 31 Brechin Place, South Kensington, London, S.W.7.

\* \* \*

Under the auspices of the Corporation of Glasgow Education Department a Radio Amateurs' Course is to be incorporated in the Radio Technology classes at Allan Glen's School, 134 Montrose Street, Glasgow C.4. The course will begin on Thursday, September 26th, and the fee has been fixed at 7s. 6d. for 26 weeks.

Mr. R. T. Frost, ex-G6FT, has been responsible for making the necessary arrangements.

G5IG (Cambridge) has been very active during August; best contacts have been with G2XC (Portsmouth) and G8JV (Nottingham). He has also heard F3JB, 4 Quai du Port 4, Bandol (Var), France, at S9.

G6SL (Birmingham), the experimental station of Stratton & Co., has been in full operation on 59 Mc/s recently. The aerial is a 3-element beam on a flat roof 600 ft. above sea-level. During the good spells, many stations over 100 miles distant have been worked including 5BY (Devon) and 5TX (Isle of Wight). The report includes suggestions that stations should persevere with CQ calls when the band seems dead and that phone stations should use the key more often.

On this latter point, many of the phone merchants would do well to follow the example of G3CQ (Romford) by punctuating their phone calls with a good clear M.C.W. note giving their call-signs.

Members who are keeping regular schedules are particularly asked to submit details. Prior knowledge gives listening stations a chance to swing their beams in anticipation.

Recent data suggest that early mornings often provide conditions equal to the best evenings. Those who can are asked to put out CQ calls between 9 and 10 a.m. (B.S.T.) on Sundays in order that more information may be collected on conditions at this time of the day.

Finally, did you get that DX report? Well, well, perhaps you forgot to use the key when signing off.

## Codes of Practice

The Council have adopted the following recommendations submitted by the Codes of Practice Committee:—

(a) That the existing Q Code in use by amateurs should continue to be used, with the undermentioned additions:—

QHI Move higher in frequency.  
QHI? Shall I move higher in frequency?  
QLO Move lower in frequency.  
QLO? Shall I move lower in frequency?  
QBK I can work break-in.  
QBK? Can you work break-in?

(b) That the use of the following existing Q Signals be encouraged:—

QSQ Send words once.  
QSV I will send a series of Vees.  
QHM I am searching for replies from the high frequency end of the band to the middle.  
QLM I am searching for replies from the low frequency end of the band to the middle.  
QMH I am searching for replies from the middle of the band to the high frequency end.  
QML I am searching for replies from the middle of the band to the low frequency end.

The Council trusts that members will give publicity to these recommendations.

The Codes of Practice Committee are preparing a booklet dealing with operating practices which it is hoped to publish early next year. Suggested items for inclusion in the booklet should be sent to the Hon. Secretary to the Committee, Mr. G. P. Anderson, G2QY, 16 Latimer Gardens, Pinner, Middx.

## For This Relief . . . . .

Just before this issue closed for press, the B.B.C. announced that in future most of their 7 Mc/s. transmissions will be concentrated between 7.2-7.3 Mc/s. The effect of this change is that the channel 7.15-7.2 Mc/s. is now virtually clear of B.B.C. transmissions between the hours of 6 a.m. and midnight.

## A NEW GREAT CIRCLE MAP Admiralty Chart No. 5085

This is a chart designed to meet the needs of the modern world. While the projection is of particular value to the radio engineer and the meteorologist, it has also considerable interest for aerial navigation, since a straight line ruled from London to any point shows the shortest route to that point and the places traversed by such a route can be seen at a glance.

There is nothing novel in this projection, but hitherto only approximate maps have been produced on it. The calculations for the graduation are laborious, even with mechanical aids, and the outlines of the land can be drawn accurately only by an experienced draughtsman. This chart may claim to be the first of its kind that has been produced with scientific precision throughout.

Only a semi-circle of the graduation was drawn: this was then reversed by photography to obtain the complete circle. For this semi-circle over 1,600 intersections were computed, each of which had to be plotted independently: the curves of Latitude and Longitude were then drawn through these points: each 5° shape was subdivided into degrees by fine pencil lines and the main part of the outline transferred by the method of "similar squares" from larger scale Mercator charts: but it was not possible to use that method for places near the antipodes of London and a further large number of positions had to be computed before New Zealand with its adjacent islands and part of Australia could be drawn.

A few moments spent with a pencil and ruler on this chart will show results surprising to many people: thus, the shortest route to Wellington in New Zealand starts from London in a N.N.N.E'y direction, passes through Norway and the arctic coasts of Siberia: that to San Francisco passes through Greenland and the northern parts of Hudson Bay: while the shortest way to Singapore is through Holland and Northern Germany.

Copies of this useful chart may be obtained from any agent authorised to sell Admiralty charts. The price is 4s. 6d.

### W.A.C. Certificates

As the I.A.R.U. are again in a position to issue W.A.C. Certificates, British Isles members of the R.S.G.B. may submit their cards to Headquarters, where they will be examined. If found to be in order, the I.A.R.U. will be notified.

To claim a W.A.C. certificate, evidence must be submitted confirming contacts with *licensed* amateur radio stations located in the six continents. A stamped addressed envelope should be enclosed for the return of the cards.

Members who wish to apply for the 28 Mc/s. endorsement sticker confirming that they have Worked All Continents on the 28 Mc/s. band, should quote the date of the original W.A.C. certificate.

### FOR THE SHACK

The following publications, etc., are available to members from stock.

Amateur Radio Handbook	...	...	...	4/-
In Cloth Cover	...	...	...	6/-
Radio Handbook Supplement	...	...	...	2/9
In Cloth Cover	...	...	...	5/-
The Transmitting Licence	...	...	...	1/-
Kilocycles to Metres Booklet	...	...	...	1/3
Webbs' Great Circle Map of the World	...	...	...	4/6
Car Plaques	...	...	...	3/6
With Call Sign	...	...	...	4/6
Call Sign Badges	...	...	...	3/6
Members' Note Paper (quarto)	...	...	...	4/6

All above items are post free. Remittance must accompany orders.

R.S.G.B. Sales Dept.,  
New Ruskin House,  
Little Russell Street, London, W.C.1.

### Portable Permits

Authorised amateurs, when operating a portable station, will use their own call sign with the addition of /P, not /PP, as stated in the announcement published last month.

### Model Control Group

Two copies of the first and second letter budgets have now been returned. A small third budget was sent out during July and it is hoped that another will begin to circulate during September.

Contributions, however small, should be sent to Ft./Lt. J. Oswald Dykes, Sunnybank, Llanthony, Nr. Abergavenny, Mon.

The membership of the Group is now 50.

### XA Licences

We understand from XADJ that applications for XA calls should be addressed to the Chief Signals Officer, Allied Force H.Q., C.M.F.

Non-commissioned officers and other ranks must have the written support of an officer, who will be regarded as sponsor and will be held responsible for the station.

The applicant should state:

- (1) Type of equipment to be used;
- (2) Method of frequency control;
- (3) Estimated power input;
- (4) Location of proposed station.

### R.S.G.B. Slow Morse Practices

The following is the schedule of Slow Morse Practices being operated by members of the Society:—

Mondays	21.00 B.S.T.	...	66AI
	21.30	...	G2CPF, G2BJY
Wednesdays	21.30	...	G2CPF, G3LP, GW3GL
	22.00	...	G5FW
Thursdays	21.00	...	66AI
Fridays	22.00	...	G2QI
Saturdays	21.30	...	G2BJY
Sundays	09.00	...	G3LP, G3JK
	10.00	...	G3MD
	10.30	...	G5UM
	11.30	...	GW3GL
	21.00	...	66AI

### Frequencies.

G2CPF (Yorks)	...	...	...	1892 kc/s.
G3JK (Notts)	...	...	...	1865 kc/s.
G5UM (Herts)	...	...	...	1900 kc/s.
G3MD (Essex)	...	...	...	1960 kc/s.
G5FW (Essex)	...	...	...	1915 kc/s.
G2BJY (Staffs)	...	...	...	1905 kc/s.
G3LP (Glos.)	...	...	...	1865 kc/s.
GW3GL (N. Wales)	...	...	...	1965 kc/s.
G2QI (Essex)	...	...	...	1820 kc/s.
G6AI (Lanes)	...	...	...	1819 kc/s.

The organiser (Mr. D. Rock, G8PR, "Sandhurst," Vearage Road, Amblecote, Stourbridge, Worcs.) will be glad to receive further offers of assistance from qualified members.

### Tops

Mr. J. Phillip Evans, GW3WJ, Westcroft, Meliden Road, Prestatyn, reports that a club for first class operators, to be known as "Tops," has been formed. Details can be obtained from Mr. Evans. Please enclose S.A.E.

### Around the Trade

Mr. Frank S. Adams, G2YN, The Croft, Wilton, Salisbury, is shortly to begin the manufacture of high-fidelity receivers and amplifiers. Until recently Mr. Adams was associated with the McElroy-Adams Group, which is controlled by Mr. Ted McElroy and Mr. Reg. Adams, G2NO.

## Silent Keys

We record with deep regret the passing of Miss Connie Jenkins, BR511419, of Cardiff, daughter of Mr. P. R. Jenkins, GW3VL. Connie was a keen member of the Society and a frequent supporter of local meetings.

To her parents and close friends we offer our heartfelt sympathies.

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We also record with sorrow the death of Mr. Alfred Taylor, G8TZ, a popular member of the Barnsley club. A good "ham" and a keen radio engineer his passing constitutes a real loss to the District. Sympathy is extended to his widow and son.

## BOOK REVIEWS

**HANDBOOK OF TECHNICAL INSTRUCTION FOR WIRELESS TELEGRAPHISTS.** By H. M. Dowsett and L. E. Q. Walker. Iliffe & Sons, Ltd., 30s.

Here is a book which has been a classic since the first edition was published in 1913. It has been the standard textbook for training professional wireless operators for over 30 years and is so well known that a complete review of the contents of this eighth edition can scarcely be necessary.

For the benefit of newcomers to the field of radio, however, it can be said that this work covers the theory of electricity and magnetism, D.C. and A.C. technology and the basic radio theory which it is necessary to know in order to operate and maintain a marine or shore station. There is a chapter on generators, motors and transformers which has received an extension in this new edition. Then follow chapters dealing with the operation of aerials, receivers and transmitters which are most extensively illustrated with detailed descriptions of standard types of equipment made by the various commercial concerns who specialise in marine radio communication.

There are chapters on more specialised aspects of the sea-going operator's work, e.g., depth-sounding, direction-finding and automatic distress call equipment, lifeboat and emergency outfalls, sound reproducing apparatus for entertainment on large ships and small telephony sets for use by trawlers.

The new edition includes for the first time some reference to vibrators for the H.T. Supply to marine receivers. To the amateur who may peruse it, however, it may come as a shock to notice that crystal control of marine transmitters is almost unknown, the self-excited single-valve set still being one of the commonest. Crystal wavemeters and monitors for the short-wave transmitters are, however, now widely used and receive a full description in a chapter on transmitter adjustment.

The co-authors of this book are both well-known engineers of Marconi's Wireless Telegraph Co., and their long experience of this type of equipment has enabled them to produce what is generally regarded as the marine operators' "Bible."

H.A.M.C.

**MODERN PRACTICAL RADIO AND TELEVISION.** By C. A. Quarrington, edited by W. H. Date, B.Sc., A.M.I.E. Published by The Caxton Publishing Co., Ltd., Clun House, Surrey Street, London, W.C.2. Three volumes. Price £3 10s. 0d. cash or £3 15s. 0d. by instalments.

Hitherto the works published on radio and television have been of two classes—those of an advanced nature appealing to the comparatively few who have a scientific knowledge of the subject and popular works more suitable for armchair reading. The author of this new work has attempted—and in our opinion very successfully—to cover the subject in a manner which will appeal not only to engineering students but also to the vast body of newcomers to the radio industry. The work will also meet the needs of the many thousands of ex-service men and women who during the war, acquired a knowledge of service equipment and desire to apply that knowledge to a new career in the field of radio engineering.

There are over 500 illustrations, including a special series of oscillograms prepared under the personal supervision of the author.

Volume I contains 29 chapters ranging in scope from an elementary treatise on wave motion to a commendable description of the principles of frequency modulation. Intermediate chapters deal with the theory of electricity and magnetism, capacity and inductance, valve theory, receiver design, noise suppression and many other subjects.

Volume II contains 13 chapters, several of which are devoted to a detailed analysis of typical receiver circuits. A later chapter deals with the application of the C.R. tube to television thus paving the way for a study of television receiver design, adjustments and faults.

Of special interest to radio amateurs is the chapter devoted to the principles of low-power transmission. It is perhaps a little unfortunate that the author specifies no component values in his circuit diagrams, but presumably he has assumed that the reader interested in a special subject will turn to other sources of information for practical data. The omission of any reference to micro-wave technique, and to the principles of radiolocation is no doubt due to the fact that both subjects are of a highly specialised nature. We should, however, have been interested to read a short account of the functions of beam arrays and a description of the less common forms of radiating systems used for short and ultra-short wave communication purposes. A brief account of the theory of wave propagation would also have served a useful purpose.

Volume III, comprising 17 chapters and two appendices, deals primarily with measuring devices and test equipment, subjects which will prove of considerable interest to those who are planning to embark on the career of a service engineer. Instability, distortion, mains hum, ganging, whistles and loud-speaker faults are all dealt with in a generous manner. Miscellaneous workshop hints, and notes on accumulator charging conclude the main portion of this volume but the two appendices (Radio Mathematics and a Technical Dictionary) are most valuable additions.

In future editions we should like to see included a list of selected references or at the least a list of recommended publications to which the reader can be referred for further information.

As a work of reference, *Modern Practical Radio and Television* will no doubt find a place on the bookshelf at many amateur

stations for it has much to commend it. The style is good, the type face clean and the binding in keeping with the House of Caxton.

**BASIC MATHEMATICS FOR RADIO STUDENTS.** By F. M. Colebrook, B.Sc., D.I.C., A.C.G.I. Iliffe, 10s. 6d.

Twenty years ago, "Experimental Wireless and the Wireless Engineer" published a series of articles on mathematics applied to radio. Mr. Colebrook, the author of these original articles, has rendered a valuable service to students and engineers alike in moulding them into a book, which in its 270 pages takes the reader logically from elementary algebra, through logarithms, equations and complex numbers, and trigonometry to the calculus, in a manner which is as lucid as it is concise.

The first six chapters of the book cover the above subjects in a manner which, although quite general, prepares the reader for the final chapter, in which the basic principles which he has learnt are applied to radio engineering. This chapter deals with the mathematics of electrical networks, making free use of vector representation and impedance operators. A simple approach is made to the equations of travelling and standing waves and also power relationships and the matching of circuit impedances.

Professor G. W. O. Howe in his foreword emphasises the need "for the student to clothe his symbols with physical reality and to appreciate the implications of each step of the mathematical development."

Few authors of mathematical texts have acquired such a happy knack of presenting their material in such a way as to encourage this outlook so well as Mr. Colebrook.

The book appears to contain comparatively few misprints but an index might have been a useful addition.

H.A.M.C.

**RADIO VALVE VADE-MECUM.** By P. H. Brans. Obtainable from Ritchie, Vincent & Telford, Ltd., 136A Kenton Road, Kenton, Harrow, Middlesex.

This is a valuable handbook of 208 pages produced in Holland. It comprises a series of tables of the electrical characteristics and base connections of a very wide range of receiving valves with explanatory notes in Dutch, French, English and German.

Table I gives the static characteristics and working data such as recommended anode loads, grid bias resistors, screen resistors etc., of the more commonly used valves. Table II is a continuation of the same information for valves which are regarded by the author as less common. Since the book is of Dutch origin, it is natural that most of the British valves are included in this latter Table.

Table III is a list showing the equivalence between European, British and American types. In Table IV are given replacement types which, whilst not necessarily being identical, can be used with certain modifications to the apparatus in which they are used, such as a changed valve-holder, changed grid bias or screen resistances, retrimming of tuned circuits etc. The nature of the change necessary is indicated.

Table V shows the base connections diagrammatically of the valves included in Tables I and II. Table VI is a comprehensive list of Russian types set out in the same manner as those included in Tables I and II. Table VII is a most useful one relating the numbering of the various Service type valves with that of the nearest commercial equivalent. The original numbers used by separate Services (such as VR91, ARP35) are given as well as the more recent CV numbers (e.g. CV1091). It would appear that this information has been obtained by the author from the British Inter-Services Technical Valve Committee. The information was presumably up-to-date at the time of publication (September, 1945).

Although produced primarily for a Continental market this book contains a wealth of information of value to users of receiving valves in this country.

We understand that orders from Corporate Members of the R.S.G.B. on the Society's notepaper will be executed at a special price of 11s. 3d.

H.A.M.C.

**THE RADIO AMATEUR'S HANDBOOK.** By the H.Q. Staff of the A.R.R.L. (23rd Edition, 1946.) 688 pages, 1,249 illustrations, with 114 charts and tables. Obtainable through R.S.G.B. (price 10/6). Delivery approx. 3 months.

The delayed appearance of the 1946 edition of the Handbook was due to a complete revision of the subject matter. The temporary war-time arrangement of the manual has gone, and familiar "ham" flavour has returned.

In addition to an Introduction, there are three main sections: Principles and Design, Equipment construction, and General. The first section is really a non-mathematical textbook on principles, from the simplest up to magnetrons and pulse technique. The second section is up-to-date in the design and construction, but is especially useful in the chapters on VHF gear and aerials, which have been completely revised to represent the best practice to-day. The third section is the invaluable data on valves, and miscellaneous tables; perhaps the most "thumbed" part of the manual.

The A.R.R.L. Handbook is now so much a part of our amateur work, and professional also, for that matter, that it would be almost impertinent for a reviewer to attempt to do a complete review of the book, as if it were not already almost a tradition. All that the amateur needs to know is that another edition is available. Well, here it is; better than ever, and perhaps more needed just now than ever before.

T.P.A.



## HEADQUARTERS CALLING

## COUNCIL 1946

## President :

ERNEST LETT GARDINER, B.Sc., G6GR.

Executive Vice-President : S. K. Lewer, B.Sc., G6LJ.

Honorary Secretary : H. A. M. Clark, B.Sc. (Eng.), G6OT.

Honorary Treasurer : A. J. H. Watson, F.S.A.A., G2YD.

Honorary Editor : Arthur O. Milne, G2MI.

Immediate Past President : A. D. Gay, G6NF.

\* \*

Members : P. C. G. Bradley, G8KZ, C. H. L. Edwards, G8TL, R. H. Hammans, G2IG, F. G. Hoare, G2DP, S. E. Langley, G3ST, Capt. J. W. Mathews, G6LL, K. Morton Evans, O.B.E., GW5KJ.

G.P.O. Liaison Officer : Arthur E. Watts, G6UN.

General Secretary : John Clarricoats, G6CL.

## July Council Meeting

*Resume of the Minutes of a Meeting of the Council of the Incorporated Radio Society of Great Britain, held at New Ruskin House, on Monday, July 22, 1946, and of an adjourned meeting held on July 29, 1946.*

*Present.*—July 22, 1946. The President (Mr. E. L. Gardiner in the Chair), Messrs. Bradley, Clark, Edwards, Morton-Evans, Hammans, Hoare, Langley, Mathews, Milne, Watts and John Clarricoats (General Secretary).

*Apologies :* were presented for the absence of Messrs. Gay and Lewer.

*Present.*—July 29, 1946. The President (Mr. E. L. Gardiner in the Chair), Messrs. Clark, Edwards, Hoare, Mathews, Milne and John Clarricoats (General Secretary).

*Apologies :* were presented for the absence of Messrs. Morton-Evans, Hammans, Langley, Lewer and Watts.

## Membership

It was resolved to elect 315 Corporate Members, 39 Associates and 11 Junior Associates. Seven Junior Associates applied for and were granted Corporate Membership. Total elected 372.

## Affiliated Societies

It was resolved to grant affiliation to the Hounslow and District Radio Society, the West Bromwich and District Radio Society, and the West Cornwall Radio Club.

## Finance

It was resolved to accept and adopt the Cash Account for the month ended June 30, 1946, and the Balance Sheet for the quarter ended June 30, 1946.

## Booklets

An estimate for printing 25,000 copies of a Service Valves Equivalents booklet was accepted.

## Manchester P.D.M.

It was reported that the District 1 P.D.M. would be held in Manchester on October 13, 1946, the Secretary being in attendance.

## National Institute for the Blind

A letter of thanks for a donation of 25 guineas to the Institute was submitted (see previous Resume).

## Calibration Service

It was agreed to appeal through THE BULLETIN for volunteers who would give accurate frequency measurements over the air (see August issue).

## Off-frequency Operation

It was agreed to give publicity to recent prosecutions against persons who had operated without a licence or on frequencies for which they were, at the time, not licenced (see August issue).

## Circular from V.E.S.

Several members having complained that they had received unsolicited circular letters from V.E.S. Ruislip, it was agreed to take a legal opinion. The Council deplored the fact that unsolicited circulars had been sent to members whose names and addresses had appeared in lists of New Members.

## Unruly Conduct on the Air

It was agreed to advise the G.P.O. of all cases of serious unruly conduct on the air which may be brought to the notice of the Society.

## Message Handling

Council gave it as their opinion that questions relating to the handling of third party messages are covered by the terms of the licence.

## Contests

It was agreed to invite Messrs. Greenaway (G2LC), Hallett (G3CQ), Kirk (G6ZO) and Watson (G6CT) to serve with Messrs. Edwards and Milne on the Contests Committee. It was further agreed that the Committee should consider arranging the following events:—(a) Telegraphy and Telephony Contests on 1.8

Mc/s. (b) D.F. Contests. (c) B.E.R.U. Contests. (d) V.H.F. Contests. (e) Low Power Contests. (f) National Field Days.

It was agreed to record that the Council is in favour of organising a N.F.D. event during the summer of 1947

## Trophies

It was agreed to make the following awards for the year 1947:—  
Rotab Cup . . . . . Mr. R. M. Evans, G6CU/ZC2.

Wortley Talbot Cup . . . . . Mr. W. H. Allen, M.B.E., G2UJ.

It was further agreed that in future all trophies should be held for one year as from the date of the Annual General Meeting. The Secretary was instructed to arrange for the return to Headquarters, by November 30, 1946, of all trophies held by members.

## Broadcasting in the 7 Mc/s. Band

It was agreed to again protest to the G.P.O. regarding the operation of broadcasting stations in the 7.15–7.2 Mc/s. band.

## Commercial Stations in the 14 Mc/s. Band

It was reported that protests had been made to the authorities regarding the continued operation of commercial stations in that portion of the 14 Mc/s. band released to amateurs.

## Italian Radio Society

It was agreed to review at a later date a request from the Italian Radio Society (A.R.I.) that relationships be resumed.

The meeting closed at 9.30 p.m.

The meeting was resumed at 6.20 p.m. on Monday, July 29, 1946.

## Committee Reports

## Reports of the

- (a) Codes of Practice Committee
- (b) Technical Publications Committee
- (c) Social Committee

## (d) Headquarters Station Committee

were submitted and approved. Relevant matters referred to in the Reports were approved for publication.

## Experimental Section

The minutes of a meeting held in January, 1946, were submitted and the suggestions made therein approved for publication.

## Disbursal of Surplus P.O.W. Fund Monies

The Secretary was instructed to prepare a statement for publication based on resolutions passed by the Council, dealing with the disbursal of surplus P.O.W. Fund monies.

## Memorial Fund

The Secretary was instructed to prepare a statement for publication based on resolutions passed by the Council dealing with the Memorial Fund questionnaire.

## QSL Bureau

The QSL Manager was authorised to purchase suitable files and containers for housing QSL cards.

The adjourned meeting terminated at 8.45 p.m.

## Trophy Winners

The Council has pleasure in announcing that the following trophies have been awarded for the year 1947:—

Rotab Cup to Mr. Raymond Evans, G6CU/ZC2 for his outstanding DX work whilst serving in the R.A.F. on Cocos Island.

Wortley-Talbot Trophy, to Mr. W. H. Allen, M.B.E., G2UJ, for his many valuable contributions to recent issues of the R.S.G.B. BULLETIN.

Both trophies will be presented at the Annual General Meeting on December 20 next.

## Representation

The Council has agreed to a suggestion put forward by Mr. A. G. Dunn, G3PL, Representative for District 18 (East Yorkshire), that under the new scheme of Representation, the three Ridings of Yorkshire shall rank as three separate Counties each with its own County Representative.

Members resident in Yorkshire are invited to submit nominations in accordance with this decision.

## Honoraria

The Council has been pleased to award honoraria, totalling £82 19s. 6d. to the following contributors to Volume XXI of the Society's Journal: W. H. Allen, M.B.E. (G2UJ), E. L. Cameron (BR88123), A. G. Chambers (G5NO), W. N. Craig (G6MJ), P. F. Cundy (G2MQ), A. C. Dearlove (G2QO), L. Essen, Ph.D. (N.P.L.), P. W. J. Gammon (G3VB), B. Hentsch (BR85514), A. Hickman (BR84577), G. M. King (G3MY), D. M. MacKay (BR87027), A. S. McNicol (G3JU), C. B. Pretty (BR85329), F. W. Robins (G4CY), R. L. Smith-Rose, D.Sc., Ph.D., A.M.I.E.E. (Honorary Member), L. W. Smith (G2FSI), S. M. Sugden (BR87976), P. J. Collings-Wells (BR86885), E. H. P. Young (BR810,982).

## Norman Keith Adams Prize

The Council has decided that no contribution made to Volume XXI of the Society's Journal qualified for the Norman Keith Adams Prize.

## Designs for Moderns

Raymond Fishlock, G3DI, has produced what is undoubtedly the first QSL card catalogue—an eight page affair, illustrating 12 distinct and highly novel designs. No less than 12 choices of colour are offered with 4 choices of colour for the wording. Prices range from 15s. per 100 for a 2-colour card, to 28s. per 100 for a card in 3 colours. Lots of 250 are priced at 22s. 9d. and 37s. 6d. respectively.

All enquiries should be addressed to G3DI, Sanderlay, The Studio, Castle Street, Rugby.

REPRESENTATION—HAVE YOU SENT IN YOUR NOMINATION ?



## FORTHCOMING EVENTS

- Sept. 17 District 14 (Southend), 7.30 p.m. at 168 Westbourne Grove.  
 17 District 14 (Chingford), 7.30 p.m. at The Temperance Cafe, South Chingford.  
 19 District 6 (Falmouth), 7.30 p.m. Venue to be arranged.  
 20 District 14 (Chelmsford), 7.30 p.m. at 184 Moulsham Street.  
 20 District 1 (Preston), 7.30 p.m. at The Three Tuns Hotel.  
 21 District 15 (West London), 3.30 p.m. at A.E.U. Rooms, 66 High Road, Chiswick.  
 21 District 6 (Torquay), 6.30 p.m. at Y.M.C.A.  
 22 District 7 (Guildford), 2.45 p.m. at Threeways, Churt, Farnham.  
 22 District 15 (Twickenham), 6 p.m. at 23 Warfield Road.  
 22 District 14 (East London), 3 p.m. at The Town Hall, High Road, Ilford.  
 23 District 18 (Hull), 7.30 p.m. at 30 Princes Avenue.  
 24 District 3 (Birmingham), M.A.R.S. Annual General Meeting and Dinner, 6.30 p.m. at Imperial Hotel.  
 24 District 7 (Bournemouth), 7.30 p.m. Lodge Room, Branksome Arms Hotel, Commercial Road.  
 25 Scotland ("A" Area), 7 p.m. in The Institute of Engineers and Shipbuilders, 39 Elmbank Crescent, Glasgow.  
 27 District 14 (Grays), 7.30 p.m. at Baird's Cafe, Orsett Road.  
 28 District 7 (Reading), 6.30 p.m. at Palmer Hall, West Street. Annual General Meeting and Lewis Cup Competition.  
 29 District 9 (Kings Lynn), meet at Tuesday Market Place, 3 p.m.  
 30 District 9 (Norwich), 7.30 p.m. at St. Thomas Vicarage, Edinburgh Road.  
 30 District 2 (Bradford), 8 p.m. at 66 Great Horton Lane.  
 Oct. 3 District 6 (Penzance), 7.30 p.m. Venue to be arranged.  
 3 District 7 (Portsmouth), 7.30 p.m. at Cosham Civic Centre.  
 4 District 14 (Hounslow), 7 p.m. at The Scouts Hall, Sutton Estate, Great West Road.  
 4 District 14 (North London), 7.30 p.m. at Merryhills Hotel, Oakwood (Enfield West).  
 8 Surrey Radio Contact Club, 7.30 p.m. Blacksmith's Arms, South End, Croydon.  
 8 District 7 (Bournemouth), 7.30 p.m. at Lodge Room, Branksome Arms Hotel, Commercial Road.  
 11 District 15 (Harrow), 7 p.m. at 153 Belmont Road.  
 12 District 7 (Reading), 6.30 p.m. at Palmer Hall, West Street.  
 12 District 15 (Ashford), 6.30 p.m. at 81 The Avenue, Sunbury-on-Thames.  
 13 NORTH WESTERN P.D.M. AT MANCHESTER.  
 14 District 2 (Bradford), 8 p.m. at 66 Great Horton Lane.  
 15 District 3 (Birmingham), M.A.R.S., 6.30 p.m. at Imperial Hotel.  
 17 District 6 (Falmouth), 7.30 p.m. Venue to be arranged.  
 18 District 13 and 7, Combined Meeting, 7.30 p.m. at Brotherhood Hall, West Norwood.  
 21 District 18 (Hull), 7.30 p.m. at 30 Princes Avenue.  
 26 NORTH EASTERN P.D.M. AT WEST HARTLEPOOL.  
 28 District 2 (Bradford), 8 p.m. at 66 Great Horton Lane.  
 Nov. 15 District 13 and 7, Combined Meeting, 7.30 p.m. at Brotherhood Hall, West Norwood.

*A cordial invitation is extended to Society members to attend any of the above meetings*

NORTH WESTERN PROVINCIAL  
DISTRICT MEETING

to be held on

SUNDAY, OCTOBER 13th, 1946

at the

Tudor Rooms, Belle Vue, Hyde Rd., Manchester

(Nos. 19 &amp; 33 trams, and No. 8 buses from Piccadilly pass the door)

## PROGRAMME :

Assemble ...	...	12 noon.
Lunch ...	...	1 p.m.
Business Meeting ...	...	2.30 p.m.
Tea ...	...	5 p.m.
Informal discussions, station visits, trade demonstrations	...	5.30 p.m.

Inclusive Charge, 8/6

Tickets to be obtained in advance, and not later than Sept. 30th, 1946, from Mr. S. Levings, G3AO, 55 Derbyshire Road South, Sale, Cheshire. This is necessary owing to catering difficulties.

NORTH EASTERN PROVINCIAL  
DISTRICT MEETING

to be held on

SATURDAY, OCTOBER 26th, 1946

at

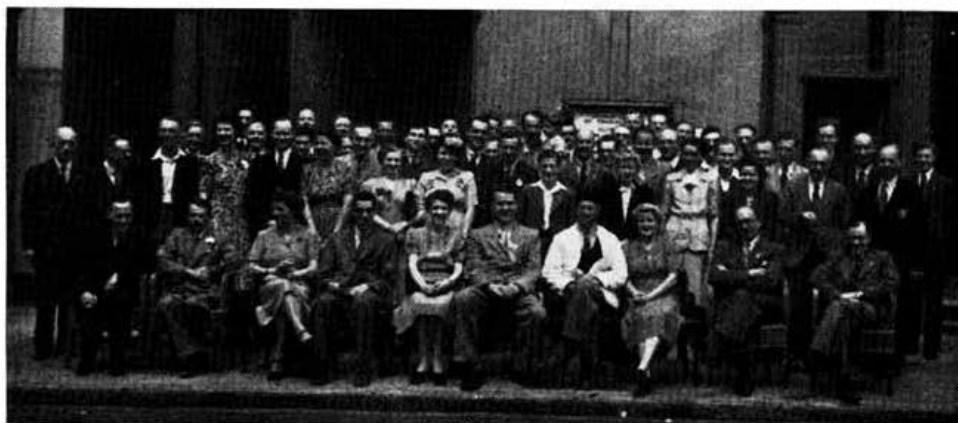
The Grand Hotel, West Hartlepool

## PROGRAMME:

Assemble ...	...	3. 0 p.m.
Tea ...	...	4.15 p.m.
Business Meeting ...	...	5. 0 p.m.

Inclusive Charge, 5/-

Reservations to Mr. A. R. Donald (G3TO), 186, Stockton Road, West Hartlepool, by not later than Oct. 5th, 1946.



SOUTHERN P.D.M. AT SOUTHSEA, JULY 13th, 1946

## EXCHANGE AND MART SECTION

Due to paper restrictions small advertisements can only be accepted on the understanding that they will be inserted as soon as space becomes available. Until further notice no advertisement exceeding 50 words can be accepted.

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**A**MATEURS in South Manchester and districts may we be of service? Eddystone, Raymart, Hamrad components, etc.—in fact if it's anything radio, write or call, we will be only too pleased to meet you. Remember the name.—**J. G. BARNES & Co. (BR86253), 4 Victoria Road, Hale, Altrincham, Chesh.**

**C**OMMUNICATION receiver for sale. R.C.A. A.R.88D. In perfect condition. Recently checked by Webb's Radio; with phones, speaker and instruction manual. What offers over £60.—**P. GOLDMAN, 18 East End Road, Finchley, London, N.3. Fin. 4494.**

**EX-ARMY** 1st class radio mechanic; pre-war experience in retail electrical trade, desires progressive retail post in or near Watford. Excellent references.—**FLAT "A," 162a High Street, Watford, Herts.**

**E**DDYSTONE battery Kilodyne Four, with Bandsread and 6 coils, a real DX'er, £9. Fine All-Dry Receiver, 2-12 Mc/s and Medium Waves, with B.F.O. 6 x 5 x 1 in. (smaller than Cigar Box), complete, £5. 3 Amp. Osram Barretter with base, 10s. 6d. KT 32, 12s. 6d.—**G6ZY, 47 Putney Hill, S.W.15.**

**E**CO/PA, 25/30 watts transmitters, 160 to 20 metres, grey, standard sizes. Switched meter, engraved dials and indicators. Individually built, complete with all coils, valves, £10 4s. Communication RXs 7-valve, brand new 230V. AC Mains, £28. C.W.O. Carriage Extra.—**RADIO TECHNICIANS, 65 Trysull Road, Bradmore, Wolverhampton.**

**EX-R.A.F.** Transmitter-Receiver, model TR9, complete with 9 valves, new condition, ready for operation, or contains many useful items for your rig. Relays, short wave condensers, silver-plated inductances, thermo-coupled meter, milliammeter, etc., £6, carriage paid. Trade enquiries invited.—**STAMFORD RADIO Co., 199 Stamford Street, Ashton-under-Lyne.**

**EX-R.A.F.** Officer, married, available October, seeks progressive situation anywhere in U.K. Experienced retail trade, servicing, television, radar; pre-war amateur, PMG certificate, etc.—**Box C/20, PARRS, 121 Kingsway, London, W.C.2.**

**F**EW new relays, various resistances, some multicontact types. From 2s. 6d. S.A.E. List.—**BR812605, 31 Winchester Road, Bath.**

**FOR SALE.**—H.R.O. Coils, HK 24's, R.C.A. Condenser mike with head amp.—**Box C/11, PARRS, 121 Kingsway, London, W.C.2.**

**FOR SALE** on closing down station. Home constructed communication receiver, 9 valves; full band spread, 5-200 metres; complete with power pack. Transmitter, 20-40 metres 616 C.O. BK25 P.A.; heavy duty power pack, metal rectifier 500V 150mA, also tuned aerial coupling unit.—**Offers to RITCHIE (late GM3KU), 5 Camphill Road, Broughty Ferry, Scotland.**

**G**SIU, Greenford, Middlesex, offers services in design, manufacture and repair of radio and electronic gear. Stocks of general radio supplies. Agent for Eddystone components.—**W. H. WEXFORTH, Assoc. Brit. I.R.E., 1338 Greenford Road, Greenford, Middlesex. Tel. BYRON 4331. WAXLOW 1455.**

**H**ARMONY HOUSE (Prop. G2LN), offers a general purpose balanced twin unscreened H.F. cable. Impedance 83.5 ohms. Polyethylene dielectric. Sixpence per yard, plus postage. Screened H.F. cable, impedance 67 to 77 ohms, 1s. 3d. per yard, plus postage. Send 6d. in stamps for samples.—**116 Cambridge Road, Southport, Lancs.**

**H**ALLICRAFTER SX24 (540-43500kc/s.) crystal filter, "S" meter. Rejuvenated, £45 or offers.—**HAWKINS, 20 Green View, Meanwood, Leeds, 6.**

**L**ABELS.—For the "Rig". Plastic, Cardboard, or Metal, engraved to your requirements, various colours.—Details "SERVOX" SERVICE, 29 Market Street, Watford, Herts.

**Q**SL cards.—Samples Free. For all your printing requirements write to 75 St. Andrews Avenue, Elm Park, Romford, Essex.

**R**C.A.R. 88 Receiver wanted.—Will pay big price for good one.

**R**C.A.R. 88, 41 Ormont Avenue, Cleveley, Lancs.

**S**ALE.—R.C.A. Valves, new, unused. 4 only of each. 866, 27s. 6d. 813, £3. 805, £2. 832, 45s. Det 16, 50s. R.C.A. Ribbon Mike table model, high fidelity. £7 10s. 2KVA Auto Transformers, 230v. to 110v., £5. All above brand new.—**WATERS, GWG30, Radio Relay Station, Kenfig Hill, Glam. Tel: 104.**

**S**ALE.—Surplus gear. Mullard AT4, 2 only, boxed, 35s. each. 6SL7G, 6SN7GT, 6CA, 6H6, 7s. 6d. each. 6AK5, 2C20, 95s. 10s. each. 6AG5, 25s. 1616, 20s. Meters 0-250, 12/0/12, 500/0/500, Micro/PA, 60s. each. 6-pin Oak, 4-pin Mallery, 6 volt Vibrators, 7s. 6d. each.—**BRL1939, 3 Kings Avenue, Kings Lynn.**

**S**ALE.—Vortexton, 30W Modulation Transformer, 2-807 Push-Pull input, variable secondaries; real snip, 35s.—**BULLOCK, 53, Franklin Road, Birmingham.**

**S**ALE.—Rotary Transformer, 24v. input, D.C. output 450v. 25 amp. D.C., £7 10s.—**COLES, 4 Langham Place, Prince Rock, Plymouth.**

**S**X28A for sale. Realigned and perfect. Best offer to:—**G2ZD, 29 Gloucester Road, Brighton, 1; Tel: Brighton 7846, day-time only.**

**S**ALE.—Frequency generator, stabilised power pack, range 100kc/s to 20 Mc/s. E.C.O., V.F.O., crystal controlled multi-vibrator calibrating circuit; V.F.O. bandsread tuning for accurate calibration curves. Complete with calibration curves and very full operating manual, circuit diagrams, crystal, all valves, £15.—**R. E. CAWELL, P.O. Tel: 61 Mess, H.M.S. Ganges, Shotley, Ipswich, Suffolk.**

**S**ALE.—Valves. New. 955, 954 with ceramic bases, 35s. each. Two 6L6's, 15s. each. Two Z62's, 10s. each. U31, 7s. 6d., DF1, 8s. U5, 8s. TH2, 8s. KT8C, 8s. Plessey 8 in. speaker with transformer, 30s. Meters 0-50mA, Turner MC flush, 30s. 0-5A thermo-couple, 20s.—**D. TAYLOR, 372 Brentwood Rd., Gidea Park, Essex.**

**S**W Receiver 9-200 metres; EF39, 6J7, 6V6, 5U4. Separate power pack, band spread, best components 10 gns. 7039 and 1000 kc/s. crystals holders £1 each. Many components, S.A.E. list. Wanted 1-5v. valves; HT; Heater transformers.—**Box B/58, PARRS, 121 Kingsway, London, W.C.2.**

**T**RANSMITTER, CO. FD. P.A. 50 watts. Eddystone, Hammarlund condensers. Three mains transformers. Eddystone coil formers, Webbs rack. Spare set valves.—**Offers to G2FFM, London. Phone: TUL 1291.**

**T**RANSFORMERS 500-0-500 approx. 300mA, 4 volts, 3 amps; limited number, 35s. each, carriage paid.—**CLEGG, G2PB, 22 Limefield Street, Accrington.**

**U**HX 10 complete TX, coils 7, 14, 28, 60 Mc/s. Microphone; perfect order, £25. HT6 Hallifafter TX, £30. Pair 35T unused £3. 829, 50s. Hallifafter RX, 5-10 metres; requires overhaul.—**Box B/70, PARRS, 121 Kingsway, London, W.C.2.**

**V**ALVES. Pair genuine American 211C's brand new, £4 10s. pair. Pair W.E. 242A's, £2 10s. Pair Ediswan ES75's, £2. PT15, £1. Transformers 1, 100-0-1, 100v. 300mA, £4. 10v. 7A, £1.—**G2IQ, 44 Taptinhill Road, Sheffield, 10.**

**V**ALVES, 185, 1R5, 1T4, 384, Peanut Pentodes, brand new, 15s. each.—**BULLOCK, 53 Franklin Road, Birmingham, 30.**

**V**ALVES, brand new, unboxed. R.C.A. 803 (1), 830B (4), 834 (4), 866/866A (4), 955 (2), 954 (1), 956 (1). Taylor T55 (1). TZ40 (1). Elmac 35T (2). Marconi PX25 (1). H.R.O. Crystals 465 Kc/s., complete in holders. Offers separately, or for the lot, to Box C/21, PARRS, 121 Kingsway, London, W.C.2.

**W**ANTED.—Turntable, and crystal pick-up complete.—**BR810893, 181 Broad Lane, Coventry.**

**W**ANTED.—HRO Senior, RCA88, NCSIX.—Details, price, etc. **FINX, "Raffeen," Wath-on-Dearne, Nr. Rotherham, Yorks.**

**W**ANTED.—Communication Receiver in first class order, preferably AR 88; £50 offered.—**Box C/3, PARRS, 121 Kingsway, London, W.C.2.**

**W**ANTED.—Urgently, at reasonable price, 25 watt CW xtr, good wavemeter, and 10-15 watt AF amplifier. Must have standard replaceable components. Also HRO 3-5 to 7.3 Mc/s. coil. **Box B/84, PARRS, 121 Kingsway, W.C.2.**

**W**ANTED.—One each 25B8GT and 70L7GT. Urgent. Your price.—**BR810113, 13 Westgate Drive, Swinton, Lancs.**

**W**ANTED.—Crystal frequency meter, Oscilloscope and Meissner Signal Shifter. For Sale.—**Hallifasters SX24 receiver with preselector £35 or part exchange above.—P. LANDAUER, Red House, Chapel, Nr. Dorking, Surrey.**

**W**ANTED.—Sky Buddy or similar communication receiver; offer in exchange 15 watt A.C. amplifier and 4 watt A.C./D.C. amplifier, both as new and cost £24 to build, or might sell at £14 and £5 respectively.—**BR89558, 75 Westgate, Peterborough.**

**W**ANTED.—Band spread type collafor H.R.O. 7-14 Mc/s. and 14-30 Mc/s. only. Will buy or exchange general coverage coils for same.—**G2AAN, 136 Andover Road, Newbury, Berks.**

**W**ESTON.—M.C. 0-50 microamps 70s. Dual circuit volt-meter 0-7/140 selector switch incorporated, 30s.; 0-10mA. 25s.; Four miniature M.I. chromium-faced 0-5mA dial 1 in., 8s. each. As new.—**Box B/88, PARRS, 121 Kingsway, London, W.C.2.**

**W**ESTINGHOUSE BC348 receiver. 2RF, HFO, 31F, crystal filter, B.F.O. 1-5-18 Mc., 200-500 kc/s., easily adapted to cover 1-5-32 Mc/s. Air trimmed, beautifully designed. As new. Offers. National HRO power unit, 100-120 v. A.C. input, £3.—**G5QL, 20B Cheriton High Street, Folkestone.**

**Y**ORKSHIRE'S Ham Specialists, Fairbank's of Pudsey, Tx. Dept. G5PW, offer from stock T55, 813, 830B, TZ40, 807, 866, 83, RK34, RK25, 6L6 metal, 6J56GT, VR150, 5U4G. Cydon split statos, Sifam R.F. meters, Wode transformers 5v. 4a.; 500v./150mA 6-3 and 5v.; 650v./200mA; DTL; etc. Chokes 20H/200mA, etc. Distributors Raymart, Hamrad, Eddystone, etc.

**6V** vibrator 250v./60mA, D.C. output, variable tap, £2. Jones type P-selector, 30s. Valves 2s. each. Eddystone gear cheap.

Wanted Sky Champion or similar.—**27 Unity Street, Sheerness, Kent.**

**75** Ohm Co-axial 1/4 in. diam. Polythene dielectric 4d. foot. Transmitting racks 19 in. x 48 in., 35s. 19 in. x 10 in. panel and chassis 8s. 6d. complete.—**DRURY AND BEARDOW, 45 Wangey Road, Chadwell Heath; Seven Kings 7225.**

**955** (2); HY615 (2), 15s. each; KT44 (2); Pen 1340, 7s. 6d. each; Metal rectifier 12 volt 1 amp, 7s. 6d.; 1µF 3,000 volts, 10s.; 4µF 1,000 volts, 6s.; 4µF 750 volts, 4s.—**S.A.E. enquiries, Box B/67, PARRS, 121 Kingsway, London, W.C.2.**

**907's**, 384's, 185's, 1R5's, 1T4's, 25s. EF50's, EHC35's, PD220, 10s. 8D2's, EBC33's, P625A's, 6A3's, 8s. V630 (2), RL16, 25A7, 70L7GT, Offers. Midget T.R.F. rectifier, £11. 2µF paper condensers, 7-pin baseboard valveholders, 1s. 6d. each. Exchange?

Wanted R.G. cabinet, universal motor.—**Box C/6, PARRS, 121 Kingsway, London, W.C.2.**