

# **R·S·G·B** **BULLETIN**

JOURNAL OF THE RADIO SOCIETY OF GREAT BRITAIN

**November 1945**

*The original front cover for this edition was not available.*

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## AROUND



## THE DISTRICTS

### DISTRICT 1 (North Western)

**D.R.:** H. W. Stacey (G8CX), "Sandless," Eddisbury Road, West Kirby, Cheshire. **Haylake 337.**  
**Scribe:** A. B. Wright (G6FW), 106 Knowley Road, St. Helens, Lancs.

**Liverpool.**—Congrats. to the T.R., Mr. John Anthony, who was married on October 20, and best wishes to his bride. The D.R. was present and can confirm the contact! **G6CX.**

**Bury.**—Mr. Lees is anxious to arrange organised meetings in Bury. Will interested members please write to him at 9 Buckingham Avenue, Liverpool, 17?

**Warrington.**—The T.R., Mr. F. A. Vost, G2DF, has now been released from the R.A.F. All members, old and new, are asked to write to him at 26 Pinewood Avenue, Warrington, with a view to organising a local "get-together."

**Burnley.**—Mr. P. Nicoll, G5ZN, pre-war T.R., has now returned to "civvy" life, after five years in the R.A.F., including three in India. He will be pleased to hear from local members, who may contact him at 35 Reedley Road, Reedley, Burnley. (Phone: Nelson 517.)

**Rochdale.**—It is proposed to hold a meeting of local members on Sunday, November 25, at 3 p.m., at 331 Manchester Road, Sudden, Rochdale. If sufficient support is forthcoming, further meetings will be arranged, so will all members who can, kindly attend. **BR87083.**

**Ashton-u-Lyne & District.**—An enjoyable meeting of the Radio Society was held on October 14. A talk on Valve Voltmeters proved very interesting, after which refreshments were partaken of, these being in good supply. The next meeting is timed for 2.30 p.m., on Sunday, November 18, at H.Q., A.C.S. Educational Room, Stamford Street (near Market Avenue), Ashton. A letter received by the T.R. from BR89566, serving in India was very welcome. **G5PX.**

**Preston.**—It is not possible to commence meetings yet owing to the difficulty in finding a suitable room. Inquiries are still being made, and any suggestion re suitable premises would be welcomed by G5AD at 11 Priory Crescent, Penwortham Hill, Preston. The following are known to be active, and awaiting the re-issue of tickets: G3CA, 5RU, 5AD, 60G, 6FC, 6SQ, and 8NF. Mr. Emmott, BR86561, would like to correspond with any Preston BRS; address: Hut 9, Y Site, R.A.F. Station, Shalbach, Palfreave. **G5AD.**

### 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.

**Barnsley.**—G5IV recently visited Scarborough and tried to contact 2CP, 6MV and 6SO without success. He sends 73 to 2SO, 5UA, 81J, 8NM and 8PK. 4JJ and 6XG have now been demobbed, the later was married recently (congrats OM). 6LZ and 3PG hope to be demobbed in the near future.

**Bingley.**—G6HF held a social gathering to meet 4GA of Chingford.

**Bradford.**—G3HA is on his way home from N. Africa. News of local members would be welcome.

**Doncaster.**—2CLK and 4DP have been demobbed. 2CKR is still with the Air Ministry on Radar. 2BOJ and 8414 report active. 193 considers that QSL cards should remain but not to be collected like cigarette cards.

**Halifax.**—8SJ is turning to radio professionally. 2DUX is in VK where he attends local meetings.

**Keighley.**—G2VO is now on his way to Palestine. Whilst in Belgium he visited the Ghent broadcasting station. It is a 400 watt rig, CO-FD-BA-PA which is run by the owner of a radio shop who built the gear himself.

**Sheffield.**—A successful sale of surplus gear was held at the October meeting when we were pleased to welcome G4JJ of Barnsley and Mr. Bourton of Scarborough. Mr. E. Stubbs exhibited an interesting piece of equipment. 3VY has now been demobbed. The December meeting will be held on the 19th, and not the 26th.

**General.**—G8RF reports that Yanks in the Far East are on the air officially. (On whose authority.—Ed.). Calls heard include ZLIAG/HS, VK3BC/VK9, VU5SB, VU5IG, VS3AG and EP550. **G8UO.**

### DISTRICT 3 (West Midlands)

**D.R.:** V. M. Desmond (G5VM), "The Chestnuts," Hanley Castle, Worcester. **Scribe:** E. J. Wilson (2FDR), 48 Westbourne Road, Olton, Birmingham.

**Birmingham.**—A meeting of M.A.R.S. was held on Tuesday, October 16 when Mr. B. K. George gave a lecture and demonstration of an oscillograph made from standard parts. On Saturday, October 27, a visit to an automatic Telephone Exchange was arranged and proved most interesting. **2FDR.**

**Coventry.**—C.A.R.S. is once more in being with the following officers:

Chairman, L. W. Gardner, G5GR; Secretary/Treasurer, C. J. Taylor, G2ZT; Committee, R. Palmer, G5PP, J. Tuck, G6TD, and Mr. Watts.

The meeting place is the John Hough Mission Schools, Room 8, at 7.30 p.m. on alternate Mondays commencing November 12. **G5GR.**

**Evesham.**—BR84736, now in Italy, is building a mains receiver, but is held up for spares. 2FQP has left for another district. 4144 cannot receive members but if they will send him news of their activities for this column it will be appreciated.

**Gl. Malvern.**—The next meeting of the T.R.E. Amateur Radio Society will be on November 19th, when Mr. R. H. A. Carter will speak on "The Study of Atmospheres and their Relation to Meteorology." The meeting will be held in the lounge of House 9, The College, College Road, Gl. Malvern, at 8 p.m. Local amateurs are cordially invited to attend.

### DISTRICT 4 (East Midlands)

**Deputy D.R.:** Albert E. Cliptone (G8DZ), 77 Julian Road, West Bridgford, Nottingham.

**Beeston.**—The T.R. has arranged a dinner and dance to be held at Hands Cafe, The Square, Beeston, on January 12, 1946. The inclusive charge is 5s. (licenced bar). Reservations should be in not later than the middle of December. **BR85514.**

**Derby.**—A meeting was held at G2OU on October 26 when a discussion on amateur equipment took place. As there is still no T.R. in Derby G2OU is carrying on until a new one can be appointed. **G2OU.**

**Leicester.**—The meeting held at G8CZ of Melton constituted a record when 14 members attended from as far afield as Kenilworth and Grantham. It is with regret that we say goodbye to our acting T.R. Ken Chapman, who is taking up a civil appointment near the Big City. G2IX has been appointed in his place and it is hoped that members will give him their full support.

Discussions took place on provincial representation, QSL bureau, and licenses; it was the view of members present that the first two subjects are capable of solution. Our thanks are recorded to Mrs. Clark for the excellent tea she provided. **G2IX.**

**Northampton.**—In view of the poor support at the meetings held here it was decided to suspend them until more interest is forthcoming. **BR87888.**

**Nottingham.**—At the last meeting a Radio Quiz brought forth a large number of questions on licences, QSLs, etc. The attendance at meetings still continues most satisfactory and increasing interest is being shown. It seems that the introduction of fortnightly meetings in a central locality was just the thing that was required. The fact that non-members are invited to attend is also proving a good point, in that we are getting people who are really interested in our hobby who did not know how to get in touch with a local Radio Club.

On December 6 we journey to Messrs. Ericsson's at Beeston for a talk and demonstration on the procedure adopted in checking quality amplifiers. Our thanks are due to that company for the loan of gear and the hall.

Cpl. Rose, BR87725, is anxious to get in touch with friends; he is at present in S.E.A.A.F. **G8DZ.**

### DISTRICT 5 (Western)

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

**Bristol.**—Twenty-seven members attended the October meeting, including 2FQO, 9031, 9036 from Scotland who are now stationed in Bristol. We were also pleased to welcome 4775 who came down from Stonehouse and mentioned he would like to get things moving in his area. Phone: Stonehouse 110.

The T.R., 2BAP, announced that future meetings will be held at Keen's Cafe, Park Row, Bristol. A vote of thanks was accorded to 2BYU for allowing the use of his premises during the war years. Financial matters came up for discussion, the T.R. stating that we now had the sum of £4 0s. 8d. in hand. Those present were reminded that the Institute of Scientific Workers had invited R.S.G.B. members to attend two lectures at the Physics Theatre, Royal Fort, Bristol, on November 1 and 21—subject Atomic Energy.

**Swindon.**—G3JO, 7 Surrey Road, Swindon, has been appointed Acting T.R. and would be glad to hear from local members. He reports that 3NC is still in the R.A.F. but hopes for release shortly. 2CGN, whilst home on leave, visited 3JO to discuss plans for future activities. 2BUJ also home recently, hopes to commence construction soon. 3HS and 8VP are also preparing for the "day."

**Gloucester.**—BR85508, 76 Regent Street, Gloucester, is now Acting T.R. 6564 also wishes to help with meetings. 2DZG and 10,304, stationed at a camp near Cheltenham, are anxious to get in touch with local members. 2FZO, of Moreton-in-the-Marsh

reports from Yatesbury to say he is in "dock," but hopes to get cracking on his rig when home on sick leave. 9032, with the C.M.F. in Southern Italy, wishes good luck to the Bristol meetings. G6RB.

### DISTRICT 6 (South Western)

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

*Taunton.*—Members and friends met at the Y.M.C.A. on October 14. Those present included G2JM, 4BN, 5AK, 6LQ and 2DRW. A hearty welcome was given G6LQ, after an absence of six years, and to G2JM after his illness. It was decided, if the necessary arrangements can be made, to hold a Victory Social on December 13. The T.R. was unable to be present owing to other engagements. The Scribe has had visits from G8JF and G3SB.

*Penzance.*—Two meetings have been held during the past month. The first was attended by G3CC, 3KO, 6ZT, 8XA, 8VY, 2BCL, BR89063 and 10,448. G3CC gave a talk on Electronic Theory. At the second meeting a sale and exchange was held. Those present were G3CC, 3VY, 6LV, 6ZT, 2BCL, BR88748, 9063, 9568, and 10,448. We are glad to note more interest in the meetings on the part of BRS members. We are sorry to lose G4CT who has now returned home. G5SY.

### DISTRICT 7 (Southern)

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

The D.R., and the T.R.'s join in wishing overseas District 7 members the season's greetings and a speedy return.

*Bournemouth.*—It has been decided to change the day and time of our monthly meetings for the time being. They will now be held on the last Thursday in each month at 7 p.m. The first will be on November 29 at 45 Parkwood Road.

2HXO.

*Croydon.*—The October meeting was attended by 25 members including G2DP, 2HP, 2LW, 2VB, 3DF, 3ST, 3TV, 4DC, 4KY, 4NI, 5HI, 2FWA, 1545, 3003, 4324, 6894, 8417, 8996, 9287, 9631, Messrs. Groves, Hyslop, Ulrick and Watson. It was very pleasing to see G5HI after his long absence abroad. He is now stationed in Berlin. 4150 is in Greece. 2FWA likes his new abode in N. London. He has 2NJ, 3GX and 3JS as work-mates. See "Forthcoming Events" for the next meeting.

G2DP.

*Coulsdon.*—Whilst on leave from the B.A.O.R. 2ANR and 3179 called on the T.R. 4458 has nearly completed his 100 kc/s. Freq. meter.

BR8300.

*Guildford.*—The September meeting, held at G2ZC, Churt, was attended by the usual enthusiasts who were not disappointed—the expected treasure hunt materialised and was won by G2NH and G6NA (in the unavoidable absence of the D.R.). Thanks are due to 2ZC for the hospitality and congrats. are offered to him on his engagement to Dr. Falconer. The October meeting saw an attendance of nearly 40 to hear another of G6OW's talks to the newcomers, but which contain much for the old-timer as well. The next meeting in this area will be at Weybridge (see "Forthcoming Events"). A postcard please to G6NK, 32 Waverley Road, Weybridge if you are attending.

*Portsmouth.*—The inaugural meeting of the re-formed S.H.R.T.S. was held at SJB. Fifteen members attended and after the election of officers decisions on policy were taken. Meetings will be held on the first Thursday in each month. A welcome is extended to local members, who are asked to get in touch with the Hon. Sec., G8WC, 65 Ebery Grove, Copnor. The early return of 2XC is anticipated and that of 6YK not too long deferred we trust.

G8JB.

*Reading.*—The entries for the Lewis Cup were of a high standard and the judges had a difficult task. The award was finally made to G4CY for his calibrated oscillator. The competition promoted a fine display of ham gear ranging from modulators to a deaf-aid. Progress continues with the club amplifier. The inspection of the telephone exchange was made enjoyable by the helpful explanations of BR87578. Mr. H. F. Bartlett, B.A., lectured on transmitters at the October meeting, and very ably took us through all the stages from master oscillator to power amplifier. See "Forthcoming Events" for the next meetings. The D.R., Mr. Russell (G5WP) will be present on November 24.

BR84573.

*Southampton.*—The Southampton branch of the Society has secured club premises at Shirley. Meetings are held on Sundays and Wednesdays at 3 p.m. and 7 p.m. respectively. Full details may be obtained from the T.R., G8QW, 17 Colmore Gardens, Totton. On November 3 a meeting was held at the University to hear a lecture by Mr. Finn on the Cathode Ray Tube. G8QW.

G5WP.

### DISTRICT 8 (Home Counties)

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

A word of thanks to those members who have expressed appreciation at the re-appearance of notes for this District. Their continuance depends entirely on your co-operation, of course, so please make a habit of reporting as frequently as possible.

A District Meeting has been arranged for Friday, November 23, at 7 p.m., at the "Jolly Waterman," Mitcham's Corner, Chesterton Road, Cambridge. This will be our first post-war meeting, and a really good attendance is expected. A welcome is extended to new and old members at present in this area.

*Cambridge.*—Enthusiasm is at a high level here. 5JO, 2XV, 2DT and 2PU are known to be very busy rebuilding their stations, and a rumour that a W station had already been heard on 14 Mc/s.

caused an extra spurt among the DX hounds. 2XV will shortly be ascending a telegraph pole erected in his garden, carrying a beam array complete with director, reflector, and motor assembled for quick mounting. This feat should be worth witnessing. ... 2DT has covered a considerable mileage in search of a communication receiver, but has been too late on each occasion. Sgt. Allimundo (4HK), of Manchester, is stationed at Waterbeach, and would like to contact any other member at this station.

*St. Ives.*—G5RL, who is stationed at Petersfield, Hants. has planned his new rig. He sends the very sad news that 2nd Lt. Pat Frazer (G8ST), who joined the Indian Army, is now known to have lost his life in action at Singapore, in 1942. He was a grand lad and will be missed in this District.

*Bedford.*—BR85912 has had six years in the R.A.F. and now contemplates a further period of service in the Far East. He has sent news of other members in the Bedford area. 5PA, who is in the R.A.F., is now back in U.K. after three years in M.E.F. 5FO is still in the town, and 6HB is still in the army with a commission.

*Luton.*—G2MD, formerly of Bedford, is now resident at 2 Ichfield Street, Dunstable (Phone 447) and would like to contact other members in this area. He has met 2BLA. Will 3KG please communicate with the D.R.?

*Peterborough.*—No news to hand from this town. The D.R. would like to know the present whereabouts of 2NJ. G5BQ.

### DISTRICT 9 (East Anglia)

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

*Norwich.*—Mr. Briggs, the T.R., has written to the last-known address of all local members in an endeavour to revive meetings. Those who have not yet replied or have not received a letter are asked to get in touch with Mr. Briggs at the address given last month.

*Yarmouth.*—The T.R. reports meeting 2FAO whilst on leave from Bavaria. We regret to hear that 3RW is in hospital in Pontypridd suffering from the after effects of malaria. We wish him a speedy recovery.

*King's Lynn.*—G5UD and 4LM are getting gear together for 56 Mc/s. in preparation for an early resumption. G2XS has heard from Lieut. (E.) E. W. Burgis, R.N., G6FB, of whom little has been seen since 1939. We congratulate him on having a "junior op." of each sex: he is at present stationed at Plymouth and looking forward to doing some U.H.F. work soon.

Lt. G. W. D. Spurrell, writing from S.E.A.C., has never missed a copy of the BULL. during his two years overseas. He has sent home for his radio books and is busy swatting morse. He would be pleased to hear from old friends c/o The Dales, Sheringham, Norfolk. G2XS.

### DISTRICT 10 (South Wales & Monmouthshire)

*Acting D.R.: H. H. Phillips (GW4KQ), 80 Cottrell Road, Roath Park, Cardiff. (Cardiff 4512 during business hours.)*

*Cardiff.*—A variety of interesting topics were discussed at the October meeting attended by ten members who were pleased to welcome GW5BI upon his re-initiation to District activities 7589, who has regularly attended monthly meetings over the past two years, travelling on each occasion over 50 miles, bade farewell on his return to District 13.

Feverish overhauling and rebuilding of U.H.F. equipment is evident following Council's announcement of post-war licence policy.

The next meeting will take place at the home of GWSUH, 29 Ladysmith Road (off Penylan Hill), Roath Park, Cardiff, at 2.30 p.m. on Sunday, November 25, 1945, when new and visiting members may be assured of a cordial welcome.

*Swansea.*—Nine members attended the inaugural meeting at which it was decided to hold fortnightly meetings, and 15 were present on the occasion of the second meeting, when Mr. W. Bowen (GW4CC) was elected Acting T.R. GW2WO, on leave from B.A.O.R. paid a surprise visit whilst GW3AX and 2FRB were also amongst those present.

Meetings will take place on alternate Wednesdays at the Y.M.C.A., St. Helens Road, Swansea, commencing at 6.30 p.m., but owing to intervention of Press date for this issue, a list of dates will appear next month. Meantime, those interested should communicate with GW4CC at Thistle Dhu, Upper Killay, Swansea.

The Swansea Short Wave Club under the Presidency of GW4CC with GW3AX as Secretary/Treasurer, has made a welcome appearance and has hopes of affiliation with the R.S.G.B. in the near future.

The writer in congratulating GW4CC upon his election, would express appreciation of the work he has undertaken in his endeavours to arrange regular meetings in Swansea. The success of his efforts speaks highly of the co-operative spirit prevailing in the amateur fraternity.

*General.*—Congrats., too, to GW3XY upon his recent promotion to Lt.-Cmdr. The D.R. was pleased to meet 2DHM, on leave from Italy, before his return to Greece and 6655, now stationed in the District, whilst it has been reported that several members are expected to be recipients of bowler hats in the near future.

GW4KQ.

### DISTRICT 11 (North Wales)

*Deputy D.R.: C. Spillaine (BR81060), 14 Queensway, Prestatyn, North Wales.*

*Rhyl.*—GW5FU, after four and a half years with Admiralty Signals, is now back home, and hopes to resume activities shortly.

*Caernarfon.*—Ft./Lt. Brown, ex-VU2AL, is building a new receiver for 28 Mc/s. and hopes to be active on that band upon the resumption of full licences.

**Penrhyn-Deudraeth.**—BR88828, after running a hydro-electric power station for the M.O.W. during the war, is now back with Metro-Vickers in Manchester.

**Anglesey.**—2CSX is keen on 112 and 224 Mc/s. and has been plotting courses for inter-District skeds. He wishes to hear from others similarly interested. He is now at 7 S.F.T.S., Peterborough, and would be glad of contacts. F.O. D. M. Williams, Officers' Mess, above QRA will find him.

BR10,310, R.E.M.E., reports full war period of service activity. Is now on demob.

**Colwyn Bay.**—S./Sgt. Moston, GW2GV, reports from M.E.F. is in 28 group so should be out soon and is looking forward to starting up again. Sends 73 to all old friends.

**Prestatyn.**—A meeting at the Savoy Cafe on October 21 brought together 2CSX (from Anglesey), 4444 (who travelled 40 miles by cycle), G2GG, 1060, 9073 and others from the locality. BR85837, until recently with B.A.O.R., now reports from 185 Inf. Bde., M.E.F. GW4CK is on a commission course at Cosford. He saw a copy of THE BULLETIN in a letter rack and thereby contacted 5510 and 10,345. The writer is now out of the Service, so hopes to resume activity shortly.

**Ruthin.**—4728 is now home from M.E. and is waiting for demob with 27 group.

**General.**—BR84700 is now at Compton Bassett, Wilts. BR84023 is back from M.E., and in group 20.

BR83044 is at Madras, India, after a long spell of globe trotting. BR81060.

## DISTRICT 12 (London North and Herts)

**D.R.:** Seymour Buckingham (G5QF), 41 Brunswick Park Road, New Southgate, N.11. (Enterprise 3112). **Scribe:** C. R. Stevens (2DHF), 22 Branford Court, Southgate, N.14. **Palmer Green 0548.**

**North London.**—The meeting held at the home of BR84249 was attended by nine members and one visitor. Although the meeting was held in the Tottenham area only two local members were present. It appears strange that new members fail to attend these informal meetings where they would be made most welcome. We were pleased to see our District Representative, G5QF, after his return from hospital. As the news relating to the re-issue of licences was known the discussion took a definite trend towards transmissions on 56 and 112 Mc/s. BR83386 mentioned that he is contemplating constructing a butterfly oscillator for 112 Mc/s.

One member present (no names, no packdrill) had acquired a large valve and wished to know details, he had tried it out with 250 v. on the anode without results. The details were looked up: anode volts 16,000. One large valve for sale!

The question of returning to the pre-war weekday meetings was raised, but it was decided that until transport becomes easier to carry on with Sunday afternoon meetings.

Our thanks are due to our host and hostess for their generous hospitality, especially as the next meeting on December 2 will be held at the same address (see "Forthcoming Events").

Letters have been received from 2CQJ at present in Berlin, BR86560 on H.M.S. Trumpeter and BR85930 in India, who sends 73 to Lintoll, Bill Hartley Pugh (G4JF) and others at the S.T.C., New Southgate.

G3YY is present in Wellhouse Hospital and we wish him a speedy recovery.

It is with much regret that we have to record the passing of Captain (Bunny) Phillips (PXL) one of the earliest amateur experimenters. He will be greatly missed by all who knew him.

**2DHF.**  
**St. Albans.**—G5LI, 2HAB, 2HDM, 7097, 7238, 8569, 8824 and one prospective new member enjoyed a different type of meeting when 3412 demonstrated his new superhet in working order and the attention of all was directed to a 10 watt A.C./D.C. amplifier which has been causing much trouble. The amplifier was literally torn to pieces and many suggestions made for its improvement but it still does not work properly. In last month's notes read 2HDM for 2DHF! Congrats. to 9135 on gaining his commission in R.E.M.E. 2CNC is now back in the Channel Islands and has met 3GS, 4LI and 5OU. BR83412.

## DISTRICT 13 (London South)

**Acting 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.

At the September meeting which as usual was well attended (26 members being present), G4KY gave a demonstration of his 112 Mc/s. Receiver. G2VB, 2LW and BR87943 attended the District 7 meeting at Chert, Surrey, and were well received.

In order to create interest in the South Eastern section of District 13, Mr. F. W. Winsford, G4DC, is holding a meeting at his home, 63 Elranger Road, New Cross Gate, on Sunday, 3 p.m., November 18, when it is hoped all local members will do their best to attend. Buses 36, 53, 21, trams 36, 38, 35, 54, 74 to New Cross Gate.

BR88429, of Addiscombe, who is in India, requires a young pen-friend. Another pen-friend is wanted for a young American amateur. ON4WG is coming to England shortly and will be staying with G3DF. We can assure him of a great welcome in District 13 of which he is very familiar.

BR8 members are asked to note that the Ann Cup will be presented at the meeting to be held at BR84324, 3 Englewood Road (Clapham South Station) at 3 p.m., Sunday, December 2. This will take the place of the usual meeting at Y.M.C.A., Croydon. We hope there will be a good show of apparatus, especially U.H.F. gear, which is going to be useful at this time.

Our thoughts go out to our members still Overseas. We wish them a speedy return home, and a Merry Xmas.

Speedy recovery to G6RF, who is in hospital near Liverpool. Those who would like to send him a line can do so through G2VB.

The great day is round the corner, we shall greet you on the air soon. G3ST.

## DISTRICT 14 (Eastern)

**Scribe:** L. J. Fuller (G6LB), "Meadow Brook," Vicarage Lane, Great Baddow, Chelmsford, Essex. Telephone: Gt. Baddow 224.

**Romford.**—The Victory meeting held at Romford on October 1, was a great success, 20 members attending from Romford, Ilford, Chingford, Brentwood and Chelmsford. Members stood in silence for a few moments as a tribute to their brother amateurs who have made the Supreme Sacrifice, after which G6LB addressed the meeting, touching on various topics, chiefly concerned with post-war activity. He also warned against paying inflated prices for pre-war communication receivers.

G3LA from Brentwood gave an interesting talk on R.A.F. radio, and G3FT followed with a yarn about African natives using drums and hollow logs for DX contacts! He was unable to answer the Scribe's query as to whether the said implements were hand-spread or not!

On the subject of Government surplus, it was agreed that every effort be made for members to obtain this gear. In this connection the Romford Society expressed their ability to act as bulk buyers for their own particular locality. It was felt that many other local Societies would be able to follow suit and it was urged that the Society do everything to keep such bodies informed as to the procedure whereby this can be done.

The meeting was unanimous that the QSL Bureau be continued by the Society when activity starts again. The Scribe did not vote on the last issue, he's had some! A second meeting was held on October 15, when 2FXM was re-elected T.R.

A long and interesting letter is to hand from 2DBT (now on his way to Singapore) who wishes to be remembered to all old friends.

Romford members are anxious to contact the Southend, Brentwood, Ilford and Welwyn Radio Societies, with a view to reorganising Field Days. Romford now meet every Tuesday instead of fortnightly.

**Chelmsford.**—The Scribe, who has recently added an H.R.O. to his "family" of receivers, was pleased to meet Jimmy Watson, G6CT, when the latter was passing through Chelmsford. He has also enjoyed another pleasant contact with Capt. Louis Varney, G5RV. Much DX was worked in theory over the usual "pints of mixed" and Chelmsford ether seems due for a considerable shaking-up after "A.R." Day—may it not be too long delayed.

**Southend.**—W./Cmdr. Max Buckwell, G5UK, who is now on his way home, has kindly offered to do all he can to get the Southend meetings going again. Local members should get in touch with him at his home, 19 Meadow, Westcliffe-on-Sea, or telephone Leigh-on-Sea 76178.

**Chingford.**—The October meeting was again well attended. The ever popular "junk sales" will be continued in future, because, as the T.R. rightly says, the Old Timer's junk may often be the budding Ham's manna! G6LB.

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

**D.R.:** H. V. Wilkins (G6WN), 539 Oldfield Lane, Sudbury Hill, Greenford, Middlesex. **Byron 3369.**

The District dinner and dance reported elsewhere in this issue was a great success.

Some 20 members and visitors took part in a sale of the apparatus of the late 2BAJ at the September meeting. We are pleased to say that the whole of the gear was disposed of. At the October meeting 10 members took the opportunity afforded by Mr. Donaldson (9621) to visit the Hounslow Telephone Exchange. 9621 is thanked for his very lucid explanation of the working of a fully automatic exchange and the A.T.R. for arranging the tea.

**West London.**—An interesting discussion took place on pre-war activities and contacts, 6 members being present.

**Ashford.**—6378 and 10,715 were welcomed as new members to the meetings, the latter has now entered the Navy. The 6 members present discussed congestion and means of combating it on the 7 and 14 Mc/s. bands. The A.T.R. is resigning in December and offers are wanted from someone willing to take over as from January, 1946.

Letters have been received from 3XH who wishes to be remembered to 6PR, 4AK, whose bride enjoyed her first social evening here, 4IH wishes his 73 to be conveyed to old friends, 5UF is a newcomer to the district, while 8IH sends 73 from Somerset where he is now stationed. 2FZQ is also a new member to this district, 3750 is with the R.A.F. in South East Asia, 6006 with R.A.F. in Azores, 8806 at Aboukir R.A.F. station, 9087 is still in Italy, 10,168 is serving with the B.A.O.R., and 10,747 is at an R.A.F. station in Oxfordshire. A welcome to all the new members who have reported.

G6WN.

## DISTRICT 16 (South Eastern)

**D.D.R.:** W. A. Scarr, M.A. (G2WS), 8 Beckenham Grove, Shortlands, Bromley, Kent. **Scribe:** E. H. Trouell (2HKU), 27 Unity Street, Sheerness, Isle of Sheppey, Kent.

A sincere welcome is extended to the new members in this District (Kent and Sussex).



We regret to learn from 3JF that C. T. Fairchild, 3YY, is very ill and unable to write. He is now having penicillin after M. and B. treatment and his address is c/o Hut 3, Wellhouse Hospital, Barnet, Herts. 9210 has been on leave and visited 2WS and 10,000. 6VC has built a Freq. Meter and is curing snags in his PA gear.

**Beckenham and Bromley.**—The D.D.R. (2WS) hopes to start regular meetings in this area and invites interested members in N.W. Kent to a preliminary meeting at his house. Will members wishing to attend, please contact Mr. Searr at the above address as soon as possible?

**Gillingham.**—On October 14 twelve members of the M.A.T.S., enjoyed a visit to the R.B.C. Checking station at Tatsfield and were shown the gear by the Chief Engineer. Meeting night is every Monday, 7 p.m., at the Foresters Hall, King Street.

**Herne Bay.**—2BWP has had visits from G. Jones, Ft./Sgt. Thomas, and 5PY. He has also heard from 4JG in Turkey, who states that although he has visited 14 countries he has not met any members.

**Shepperton.**—3GW expects to be a civilian by the time these notes appear. 2VA is now living at 94 Halfway Road, though he is stationed at R.N. Barracks, Corsham.

**Sussex.**—Ft./Sgt. Vincent, 8439, 2 Priory Close, Pevensey Bay, would like to contact local members. 8407 (Hailsham) in his first report says that he has built an oscillator, R.C. bridge, 3-valve receiver and a 5-valve S./Het. He would like to hear from local members. Mr. Barnard, SAC, now a civilian, has made progress in a complete station rebuild. 3WR is doing likewise and expects to be "out" soon. Members interested in a local meeting should contact SAC at 4 Gleton Avenue, Hove, 4, not later than November 24. 2HKU.

### DISTRICT 17 (Mid East)

**D.R.:** A. C. Simons (G5BD), Admiralty Road, Mablethorpe. Phone 69.

BR8562 during an A.T.C. flight in an Anson was allowed to do a little operating; he expects to be in khaki by Xmas. G5LL, looking forward to an early demob.; thinks 5 metres will be "long wave stuff."

G4IF, a newcomer to Grimsby, hopes to find a house so that he can get his transmitter going when the time comes. 3169, after three years in VS7, is now at Binbrook and hopes to make some contacts in Grimsby during his stay there. 4GX (33 Douglas Road, Cleethorpes) invites new members to get in touch with him and arrange personal contacts. 2VY has no report but is still waiting a VE card from LU3AJ so some DX is still standing by! On October 28 14 Mc/s. was very lively and about 40 stations were heard (see M.O.T.A., Ed.). In case we get 56 Mc/s. facilities shortly the D.R. will be pleased to hear from anyone who will be working on that band. G5BD.

### DISTRICT 19 (Northern)

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

**Catterick Camp.**—Weekly meetings continue to be well supported. The following talks have been given recently: "U.H.F." by G2TA, "Receivers" by G2TA, and 8RF, "Steel Tape Recording" by BR88768 and "Crystal Grinding" by BR810132. For the benefit of members arriving at Catterick, meetings are held every Tuesday at 7 p.m. in the Quiet Room, Y.M.C.A., Kemmel Bus Terminus.

**Darlington.**—2HMK is still busy with his morse and is being assisted by BR86943, who is now stationed at Barford Camp, near Barnard Castle. 6943 has recently been married. Hearty Congrats. O.M. 2CKN has been "demobbed." SHQ has been on leave and is now stationed in this country.

**Newcastle-on-Tyne.**—Congrats to BR89853 on his recent marriage. 9853 has completed a 4 tube receiver and is planning a lattice mast. 3SD has been demobbed. He has completed a double superhet, but is short of a mast at the moment. 3ZY, now back in this country, sends 73 to SU1AX, 1MS, 5KW, G4PF, BR89167 and others who helped to make life in the Middle East a little more interesting. 3ZY would like to contact 4LV and F./Sgt. Blair (BR8 number unknown) via his home address.

**South Shields.**—G5SB has undertaken to act as T.R. for South Shields and the D.R. asks all members to give him their full support.

Letters have been received during the month from BR85159, who is building receivers and planning his post-war station, Mr. Whitelock of Castle Eden, who is designing 56 Mc/s. aerial systems and BR84805, who finds life in Burma pretty unpleasant. 4805 would welcome letters from any member who cares to write.

**S.O.S.**—Of the last 60 letters received by the writer, only one contained a stamp for reply. In future—no stamp—no answer! G2FO.

### Northern Ireland

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

The Y.M.C.A. Club is still attracting many R.S.G.B. visitors, recent callers included G3TH, 5RY, 6PF, 8MA, 2FWD, BR8379, BR84641, 8980, 8748, 1060 and 8GPI.

G12AJ, 2COF and 2FDL having been demobbed, are heartily welcomed back to the District. There may be other GI's back in the fold, but no news has been received from them. BR84706 writes again, this time from the Gold Coast, to say he has hopes of being home by next July. G18LF has been cleaning up his

aerial masts, and a new wire is in position in readiness for the return of his licence. G13JP is also ready for the word "Go." G15QX.

### Scotland

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

It is our pleasure to include notes from six of the eight Scottish Districts this month and we hope that all districts will be active shortly.

**"A" District (Glasgow and surrounding counties).**

**D.O.:** D. R. Macadie (GM6MD), 154 Kingsacre Road, Glasgow, S.4. **Scribe:** J. D. Gillies (2FZT) 3 Berriedale Avenue, Glasgow, S.3. **Merrylye** 4060.

The programme of the Glasgow Amateur Radio Club for the coming season offers the following: A film show for the November meeting; a talk by Mr. R. Kennedy, BR88637, for the December meeting on "Characteristics of Valves," and in January a lecture by Mr. J. R. Rimmer, BR89503, on "Ultra High Frequencies." The Committee have arranged a series of short lectures to occupy the first 20 minutes of each meeting. The subjects are concerned with the newcomers' approach to radio.

Staying in the District at present is John Kyle, D.F.M., A.F.M., and a warm welcome is extended to him. Ft./Lt. Ian McDermid is home on long leave, we are hoping that he will be demobbed to swell our ranks in December. Congrats. to Mr. C. F. Greenwood on his recent marriage. 2FZT.

**"B" District (Aberdeen and the North).**

**Acting D.O.:** T. Laing (GM6LG), 27 Viewfield Crescent Aberdeen. **Aberdeen** 7765.

Mr. Laing has kindly offered to send in notes of activity in the District and looks forward to hearing from members with a view to having a chat and trying to make arrangements for future meetings. GM6IZ has received some publicity in the local press for his work with the Police transmitters. GM5JK is looking forward to the great day and is putting his shack in order, while GM3RL is clearing space for the return of his impounded gear. GM6LG.

**"C" District (Dundee, Angus, Forfar, Perthshire, etc.).**

**D.O.:** Jas. Gouck (GM3NH), 4 School Drive, Dounfield, Dundee.

On October 14 a visit was paid to the Carolina Port Generating Station (Dundee Corporation). The party was 21 strong and much interest was shown by all. Our thanks go to the members of the staff of the Generating Station who arranged the visit and acted as guides. GM3NH.

**"D" District (Edinburgh, Midlothian, etc.).**

**D.O.:** J. Wilson (GM6XI), 52 Macdonell Road, Edinburgh, 9.

It is too early to judge the result of last month's announcement, but members who have not yet advised the D.O. are urged to do so without delay. GM6XI.

**"G" District (Borders, namely, Peebles-shire, Selkirkshire, Roxburghshire and Berwick).**

**D.O.:** J. P. Blair (GM5FT), 35 Market Place, Selkirk. Selkirk 2215.

At the October meeting held at King's Hotel, Galashiels, 15 members were present, 7 being licensed amateurs. A proposal that Berwick members should appoint a T.R. and hold meetings in the town was agreed upon. GM5FT.

**"H" District (Fife).**

**D.O.:** A. W. Lawson (GM2NQ), "Makora," Kinghorn.

All Members! You have got a "date"! On December 19, 1945, at 7.30 p.m., a meeting will be held at 3A Bank Street, Kirkcaldy—our old "shack"! Those members uncertain of the QRA will find it easier to meet at Bill Hoperoff's (GM4AN), St. Clair Street, Kirkcaldy. GM2NQ.

### Can you Help?

Dudley Nourse, VK2DQ, 165 Gypsum Street, Railway Town, Broken Hill, N.S.W., Australia, seeks information regarding the socket connections, filament and plate voltages, etc., of the Telefunken type RV21P 2,000, general purpose V.H.F. valve.

Lt. J. B. Rudkin, BR87060, 3 Coy., 8 Army Signals, C.M.F., wishes to buy or borrow a copy of the instruction booklet relating to the Hallicrafter Skydriver Model S16 with crystal gate. If any member can help he is asked to send the book by registered air mail to the above address. All expenses will be refunded.

### Calling the Far North

Mr. G. Openshaw, 2BTO (c/o Temperance Hotel, Thurso) and Mr. J. C. Graham, GM3TR (Air Ministry Control Station, Wideford Aerodrome, Kirkwall, Orkneys) will be glad to contact members travelling to or resident in the Orkney Islands.

### Continental Valves

Mr. G. Harris, BR8998, 11 Kingswood Grove, Moorgate, Acombe, Yorks, having recently serviced a German car receiver using Continental E. Series Bantam Metal Valves, sends information concerning two types which he had to open up in order to identify them.

**Valvo ECH 11.** An ECH 33 was substituted and worked very well. Although unable to check the heater current it seemed to be slightly greater than that of the ECH 11.

**Telefunken EZ11.** An 84/6Z4 was substituted and results were satisfactory. The same remarks re heater current apply.

# NEW MEMBERS

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

## British Receiving Stations (B.R.S.)

- 10,358 W. T. ASH, Little Priors Cottage, Church Lane, West Bergholt, Colchester, Essex.  
 10,359 K. L. DEAN, McMichael Radio, Pratts Bottom, Farnborough, Kent.  
 10,360 E. M. LEE, Belling & Lee, Ltd., Cambridge Arterial Rd., Enfield.  
 10,361 G. P. BRICE, 69 Donald Street, Cardiff, Glam.  
 10,362 A. J. ABRAHAM, 32 Forest Court, Snarebrook, Essex.  
 10,363 B. H. MILES, 66 Jameson Rd., Bexhill-on-Sea, Sussex.  
 10,364 J. P. WILSON, 51 Brondesbury Villas, London, N.W.6.  
 10,365 I. M. JONES, 186 Grace St., Byker, Newcastle-on-Tyne, 6.  
 10,366 E. W. POOLE, 4 Raby Road, New Malden, Surrey.  
 10,367 R. E. HOPE, 1 Station Cottages, Crowhurst, Nr. Battle, Sussex.  
 10,368 H. MAKIN, 6 Hubert St., Highroad Well, Halifax, Yorks.  
 10,369 S. N. GEE, 171 Cort Crescent, Leicester.  
 10,370 H. ASHWORTH, 49 Commercial St., Todmorden, Lancs.  
 10,371 S. CLAUDOT, 86 Eccleston Rd., W. Ealing, London, W.13.  
 10,372 R. M. BAILEY, 25 Acacia Rd., Croydon Rd., Beckenham, Kent.  
 10,373 T. R. POPE, 142 Temple Farm Estate, Strood, Nr. Rochester, Kent.  
 10,374 W. H. WESTACOTT, 48 Hamilton Street, Canton, Cardiff.  
 10,375 H. W. HOSKEY, 26 Tewkesbury Place, Cardiff, Glam.  
 10,376 E. R. HALL, 9 Dakhill Rd., Nether Edge, Sheffield, 7.  
 10,377 R. J. MACPHERSON, 145 Boundary Rd., Chatham, Kent.  
 10,378 E. SALISBURY, High Street, Garstang, Nr. Preston, Lancs.  
 10,379 D. L. ST. GEORGE, 53 Leaside Crescent, Golders Green, London, N.W.11.  
 10,380 N. CONDLIFFE, 100 Henrietta St., Ashton-under-Lyme, Lancs.  
 10,381 P. R. MEAD, 25 West Avenue, Hayes, Mdx.  
 10,382 E. H. CLARK, 59 Rugby Road, Worthing, Sussex.  
 10,383 J. C. TYLER, 66 Owlscotes Rd., Pudsey, Nr. Leeds, Yorks.  
 10,384 J. HARRIS, 29 Sandringham, Court, London, W.9.  
 10,385 H. B. DIXON, 3 Brookdale Avenue, Greasby, Wirral, Cheshire.  
 10,386 F. E. MOLE, 41 Gritanwood Rd., Eastney, Southsea, Hants.  
 10,387 E. G. SENSECALL, 155 Whittington Rd., Bowes Park, London, N.22.  
 10,388 G. B. MILES, c/o 12 Fagley Crescent, Bradford, Yorks.  
 10,389 E. G. DOWNS, 15 Claremont Sq., Islington, London, N.1.  
 10,390 M. J. TREBLE, 1 Rectory Rd., Canton, Cardiff.  
 10,391 J. G. SMITH, 200 Lancaster Drive, Elm Pk., Hornchurch, Essex.  
 10,392 H. J. HOVELL, 32 Queens Road, Loughton, Essex.  
 10,393 F. T. BERRY, Ma-Be, Exeter Cross, Liverton, Newton Abbot, Devon.  
 10,394 L. R. TANNER, Fry Cottage, Prey Heath, Mayford, Nr. Woking, Surrey.  
 10,395 P. POOTE, 17 Broad Lane, Hampton, Middlesex.  
 10,396 T. G. BROWN, 23 Elmsdale Rd., Mossley Hill, L'pool, 18.  
 10,397 K. KETTLER, 183 Byron Ave., Manor Park, London, E.12.  
 10,398 S. V. HONEYMAN, 67 Haverhill Rd., Balham, London, S.W.12.  
 10,399 S. J. HAMMOND, 6 Wash Lane, Clacton-on-Sea, Essex.  
 10,400 P. RUSHFORTH, Brookfield, St. Annes Rd., Prestwich, Lancs.  
 10,401 C. D. WILLIAMS, c/o 36 Finsbury Rd., London, N.22.  
 10,402 J. SHARPLES, 607 Blackburn Road, Darwen, Nr. Blackburn, Lancs.  
 10,403 A. LANG, 141 Nuttal Street, Blackburn, Lancs.  
 10,404 H. MOSS, Firwood, Sunninghurst Lane, Darwen, Nr. Blackburn.  
 10,405 C. V. BEARDOW, 5 Farm Road, Southgate, London, N.14.  
 10,406 L. P. BALL, 87 Vener Road Sydenham, London, S.E.26.  
 10,407 S. A. ROLLASON, c/o 128 Nineven Road, Birmingham, 18.  
 10,408 L. LEWIS, 10 Queens Acre, Cheam, Surrey.  
 10,409 N. C. ODART, 176 Hammersmith Grove, London, W.6.  
 10,410 C. R. BARTLETT, 210 Ashley Road, Parkstone, Dorset.  
 10,411 A. H. THOMPSON, Merricks, Gorse Way, Hartley, Longfield, Kent.  
 10,412 E. H. TURNER, 41 Percival Rd., Sherwood, Nottingham.  
 10,413 R. J. TAYLOR, 48 Gwalodgyarth, Merthyr Tydfil, Glam.  
 10,414 H. GIBSON, 32 Roots Hall Avenue, Prittlewell, Southend-on-Sea, Essex.  
 10,415 A. W. J. AYLES, 58 Elmes Road, Bournemouth, Hants.  
 10,416 J. A. BRETHERTON, Yew Tree Cottage, Soudley Church, Stretton, Salop.  
 10,417 F. J. SCOTT, The Grove, Fen Ditton, Cambridge.  
 10,418 H. J. PARKINSON, 10 Clifton Grove, Egremont, Wallasey, Cheshire.  
 10,419 A. TAYLOR, 3 Maple Rd., Farnworth, Nr. Bolton, Lancs.  
 10,420 H. G. NEILL, 3 Poplar Vale, Antrim Road, Lisburn, N. Ireland.

- 10,421 B. H. WILSON, 24 Lyndhurst Rd., Highams Park, Chingford, E.4. (Transfer from Associate Grade.)  
 10,422 D. CORNFORTH, 79 Falmer Rd., Darlington, Co. Durham. (Transfer from Associate Grade.)  
 10,423 C. W. MALLORY, 114 Wandsworth Bridge Road, Fulham, London, S.W.6.  
 10,424 H. E. LOWE, 4 Andrew Terrace, Abney Rd., Mossley, Nr. Manchester.  
 10,425 A. R. FELTHAM, New Buckenham, Norwich, Norfolk.  
 10,426 S. R. SMITH, 17 Cedar Court, Upper Park Road, New Southgate, London, N.11.  
 10,427 A. H. MORTON, Rugby Road, Pailton, Nr. Rugby, Warwickshire. (Transfer from Associate Grade.)  
 10,428 T. N. CARTER, Spurn View, 11 High Cliff Rd., Cleethorpes, Lincs.  
 10,429 W. KAY, 6 Ryddingwood, Penwortham, Preston, Lancs.  
 10,430 R. A. COX, Whepstead, New Rd., Bourne End, Bucks.

A CORDIAL WELCOME IS EXTENDED  
TO THE  
**520**  
NEW MEMBERS  
WHOSE NAMES ARE LISTED

- 10,431 G. C. HAYWARD, 92 Pine Ridge, Carshalton, Surrey.  
 10,432 S. F. BELL, Tringham-on-Sea, Norwich.  
 10,433 C. F. MASON, 279 Conway Crescent, Perivale, Mdx.  
 10,434 W. L. PRESTON, 24 Hollycroft Ave., Long Lane, Darcy Lever, Bolton, Lancs.  
 10,435 H. B. HEATH, 34 Hamilton Street, Newcastle-on-Tyne, 4.  
 10,436 A. J. COLLINS, 28 Bernice Terrace, Plymouth, Dev.  
 10,437 L. W. ROBINSON, 191 Creighton Ave., E. Finchley, London, N.2.  
 10,438 D. J. HOUSE, 36 Osborne Rd., Winton, Bournemouth, Hants.  
 10,439 A. H. BENTLEY, 84 Ellor Street, Salford, 6, Lincs.  
 10,440 A. B. PHILLIPS, 260 Watford Road, Harrow, Mdx.  
 10,441 R. A. UPTON, Danesbury, Reynolds Rd., Beaconsfield, Bucks.  
 10,442 MISS M. ELLIS, Farriers, Crowborough, Sussex.  
 10,443 R. L. COBE, 14 Campbell Street, Gainsborough, Lincs.  
 10,444 R. J. HODGES, 3 Park View, Riverhead, Sevenoaks.  
 10,445 E. F. WILDING, Cannemore, Hempstead Lane, Gloucester.  
 10,446 A. A. NICHOLSON, 179 Sandon Road, Stafford.  
 10,447 C. E. SAINSBURY, 41 Ritchies Rd., S Tottenham, London, N.15.  
 10,448 V. PRAGNELL, c/o 59 High Street, Penzance, Cornwall.  
 10,449 V. G. POOLE, 4 High Street, Merton, London, S.W.19.  
 10,450 S. YETTHAM, 1 Oakfield Road, Clapton, London, E.5.  
 10,451 R. ANDERSON, 10 Broadway, Kettering, Northants.  
 10,452 W. F. ALDRIDGE, 152A Uxbridge Road, Shepherds Bush, London, W.12.  
 10,453 W. E. LAWMAN, 92 Sandringham Road, South Gosforth, Newcastle-on-Tyne.  
 10,454 G. ANDERSON, 9 Alfred Avenue, Eastbourne Street, Hesse Road, Hull, Yorks.  
 10,455 H. VICKERS, 9 Grimsby Road, Louth, Lincs.  
 10,456 K. G. THOMPSON, 672 Old Ford Road, London, E.3.  
 10,457 J. H. NEWTH, The Lodge, Bristol Mental Hospital, Manor Road, Fishponds, Bristol, Glos.  
 10,458 E. BUTCHER, 78 Archers Road, Eastleigh, Hants.  
 10,459 E. A. JEWITT, 3 Railway Houses, Londesboro Street, Hull, Yorks.  
 10,460 F. HAMER, 9 Aldwych Rd., West Derby, Liverpool 12.  
 10,461 S. THAW, 6 High Croft Crescent, Almondsbury, Huddersfield, Yorks.  
 10,462 A. E. HANNIS, 13 Gosbrook Road, Caversham, Reading, Berks.  
 10,463 MISS P. N. CRAVEN, 71 Ravenhurst Road, Harborne, Birmingham, 17.  
 10,464 H. P. EVANS, Pen-y-Bryn, Clifton Road, Abergavenny, Mon.  
 10,465 C. A. REDDICK, 26 Willett Way, Petts Wood, Orpington, Kent.  
 10,466 P. S. GURNEY, 61 Wheelwright Road, Birmingham, 24.  
 10,467 W. L. MAYON, 33 Ulleswater Street, Bolton, Lancs.  
 10,468 J. M. FRUDD, 388 Broxtowe Lane, Aspley, Nottingham.  
 10,469 R. S. PEMBERTON, 48 Thornton Street, Brixton, London, S.W.9.  
 10,470 F. M. MOORE, 10 Northumberland Av., Berwick-on-Tweed.  
 10,471 L. R. PEARSON, 22 Bowood Road, Clapham Common, London, S.W.11.

- 10,472 C. D. HALDANE, 6 Addison Terrace, Brackley Road, Towcester.
- 10,473 C. H. MELVILLE-SMITH, 1 Granville House, Granville Place, London, W.1.
- 10,474 A. G. FELTON, 74 Brampton Rd., East Ham, London, E.6.
- 10,475 D. MOORE, 39 Markham Avenue, Carcroft, Nr. Doncaster, Yorks.
- 10,476 Mrs. K. M. PYKE, 22 Parkhill Rd., Croydon, Surrey.
- 10,477 J. G. MCKENZIE, c/o 67 Hamilton Street, Camelon, Falkirk, Stirlingshire, Scotland.
- 10,478 J. L. TILLET, 36 Salisbury Road, Thorpe Hamlet, Norwich, Norfolk.
- 10,479 V. G. CROUCHER, 96 Birbeck Road, Tottenham, London, N.17.
- 10,480 L. FRANKLAND, 107 Saville Road, Blackpool, S.5, Lancs.
- 10,481 J. R. SIMPSON, Northdene, Kitchener Road, Anstey, Leicester.
- 10,482 L. DAVIS, 36 York Road, Chingford, London, E.4.
- 10,483 C. F. LAWSON, 155 Chipstead Valley Road, Coulsdon, Surrey.
- 10,484 J. H. HILL, 19 Henleaze Road, Westbury-on-Trym, Bristol, Glos.
- 10,485 H. LILLISTONE, 29 Sherborne Avenue, Ipswich, Suffolk.
- 10,486 Miss D. L. PETTET, 38 Perth St., Stepney, London, E.1.
- 10,487 A. E. THOMAS, 59 Hook Lane, Wellington, Kent.
- 10,488 H. L. THOMPSON, Grove Cottage, Grantchester, Cambridge.
- 10,489 R. E. KEMP, 8 Biggin Avenue, Mitcham, Surrey.
- 10,490 L. H. LUCAS, 133 Utting Avenue, Liverpool, 4.
- 10,491 E. BIRD, 95 Hillaries Rd., Erdington, Birmingham, 23.
- 10,492 J. D. HERAUD, 216 City Way, Rochester, Kent.
- 10,493 F. A. CLINTON, 20 Clifton Avenue, Walthamstow, London, E.17.
- 10,494 K. E. MARCUS, 35 Merton Avenue, Hillingdon Station, Uxbridge, Mdx.
- 10,495 E. W. SQUIRRELL, 47 Spruce Hills Road, Walthamstow, London, E.17.
- 10,496 S. J. McDONALD, 29 Edward Street, Oswestry, Salop.
- 10,497 J. DAISLEY, 8 Hillcrest Avenue, Carmyle, Glasgow, E.2.
- 10,498 F. G. BEALE, Police Superintendent, Police Office, Penzance, Cornwall.
- 10,499 J. GRANT, 47 Rectory Rd., Felling, Gateshead, 10.
- 10,500 J. J. SIMPSON, 53 Tile Kiln Lane, Bexley, Kent.
- 10,501 K. HELLEWELL, 11 Huddersfield Road, Elland, Yorks.
- 10,502 R. E. WATTS, 19 Bridge Rd., Chichester, Sussex.
- 10,503 E. I. JONES, c/o 121 Gog, Tregaron, Cards.
- 10,504 E. A. WELLING, 121 Kingshill Drive, Kenton, Harrow, Mdx.
- 10,505 J. H. CLAYTON, 7 Clifton Park Rd., Rhyl, Flintshire.
- 10,506 J. T. BRAYBROOKS, 5 Ailsa Terrace, Tiverton, Devon.
- 10,507 D. RAYNOR, 11 Selborne St., Witton, Blackburn, Lancs.
- 10,508 A. HAWKYARD, 7 Southgate, Honley, nr. Huddersfield, Yorks.
- 10,509 K. G. EVE, Halden, Chapel Lane, New Longton, Preston, Lancs.
- 10,510 M. E. ALLWOOD, c/o 5 Willis Road, Cambridge.
- 10,511 J. W. CHARGE, 34 Wimborne Drive, Pinner, Mdx.
- 10,512 MAJOR A. W. DEAN, c/o Near East Arab Broadcasting Station, Jaffa, Palestine.
- 10,513 C. L. LAUCHLAN, c/o Westminster Bank, Ltd., 145 Clapham High Street, London, S.W.4.
- 10,514 C. A. LEES, 128 Minstead Rd., Erdington, Birmingham, 24.
- 10,515 R. E. PONTING, Alandene, Nursted Rd., Devizes, Wilts.
- 10,516 R. T. MORRIS, 192 Barnsley Rd., Pitmoor, Sheffield, 4, Yorks.
- 10,517 R. CLARK, 387 Gander Green Lane, North Cheam, Surrey.
- 10,518 F. H. ROUSE, 107 Hall Farm Drive, Whitton, Twickenham, Mdx.
- 10,519 D. A. CLARE, 32 St. James's Avenue, Gravesend, Kent.
- 10,520 B. A. HOLLEY, Florence Villa, First Tower, Jersey, Channel Islands.
- 10,521 W. BROWN-SAUL, 19 Percy Street, Liverpool, 11.
- 10,522 H. T. DEAN-TUBES, 102 Poplar Walk Road, Herne Hill, London, S.E.24.
- 10,523 H. FIELDING, 89 Waverly St., Derker, Oldham, Lancs.
- 10,524 J. M. ELLINGWORTH, The Butler's Cottage, Old Woodhouse, nr. Loughborough, Leics.
- 10,525 A. M. G. COPPIN, 60 Gore Road, Raynes Park, London, S.W.20.
- 10,526 G. R. HARVEY, 52 Probert Rd., Oxley, Wolverhampton, Staffs.
- 10,527 R. H. PEACOCK, The Great Northern Telegraph Co., Ltd., 31 Mosley Street, Newcastle-on-Tyne, 1.
- 10,528 T. H. WOOD, 73 Woodbine Grove, Penge, London, S.E.20.
- 10,529 F. S. T. SHARP, 140 Eden Park Av., Beckenham, Kent.
- 10,530 T. SHEPHERD, 12 Trafalgar Terrace, Trafalgar Street, Radford, Notts.
- 10,531/22BU A. F. BULGIN, Bye-Pass Road, Barking, Essex.
- 10,532 K. F. RIDOUT, 3 Geraldine Rd., East Hill, Wandsworth, London, S.W.18.
- 10,533 Miss S. WILLIAMS, 36 Beaudessert Road, Handsworth, Birmingham, 20.
- 10,534 C. SELLARS, 70 Skelwith Road, Sheffield, 9.
- 10,535 I. P. SCOTT, The Vicarage, Shipton-by-Beningborough, York.
- 10,536 R. E. MILLER, 8 Church Lane, Esholt, Shipley, Yorks.
- 10,537 C. W. BECKMAN, 42 Brookdale, New Southgate, London, N.11.
- 10,538 F. WOOD, 67 Ronald Street, Oldham, Lancs.
- 10,539 R. GAY, Brinklow Crescent, Plumstead, London, S.E.18.
- 10,540 C. M. BALBI, c/o Sea Radio, 29 Market St., Watford, Herts.
- 10,541 J. R. MIDDLETON, 402 Whitton Av., Greenford, Mdx.
- 10,542 A. JONES, 81 The Grove, Wheatley Hills, Doncaster, Yorks.
- 10,543 C. H. ALDRIDGE, 195 Manor Hall Rd., Southwick, Sussex.
- 10,544 L. G. WIGHT, 72 Warwick St., South Bank, Middlesbrough, Yorks.
- 10,545 M. LITTLE, 3 Primrose Av., Bangor, Co. Down, N. Ireland.
- 10,546 J. J. WATTS, 15 St. James's Close, Eastcote, nr. Ruislip, Mdx.
- 10,547 E. J. CORNES, 137 Field Lane, Burton-on-Trent, Staffs.
- 10,548 J. B. GURNEY, Ashfield, Glebe Lane, Stourbridge, Worcs.
- 10,549 R. L. FRESHAM, 17 Downing Drive, Greenford, Mdx.
- 10,550 K. C. GINN, Mill Hill, Halesworth, Suffolk.
- 10,551 L. LEVAY, 55 Moss Rd., Kearsley, nr. Bolton, Lancs.
- 10,552 A. W. BARRY, New Holme, Manor Road, Seaton, Devon.
- 10,553 E. C. HART, 30 St. Leonards Rd., Hove, 3, Sussex.
- 10,554 D. F. ASHCROFT, 125 Airport Rd. Knowle, Bristol, 4.
- 10,555 R. STANFORTH, Homefield, Hinckley Rd., Barwell, nr. Leics.
- 10,556 W. H. BABIDGE, 9 Woodfield Rd., Panteg, Pontypool Road, Mon.
- 10,557 K. O. BARNES, 66 Lowther Drive, Enfield West, Mdx.
- 10,558 J. H. WILLIAMS, 19 Wembley Av., Lancing, Sussex.
- 10,559 P. W. PUMPHRY, Wenall, Flint, N. Wales.
- 10,560 C. F. POLLARD, 63 Clitheroe Av., Rayners Lane, Harrow, Mdx.
- 10,561 H. OWEN, 23 Parkville Road, Prestwich.
- 10,562 N. H. MARSON, 118 Pomona St., Sheffield, 11, Yorks.
- 10,563 W. S. FURZE, Beach Hse., Gwithian, nr. Hayle, Cornwall.
- 10,564 R. S. SELLWOOD, 102 Clarkes Av., Worcester Pk., Surrey.
- 10,565 P. A. SHOOSMITH, 23 Manor Drive, Ewell Court, Ewell, Sy.
- 10,566 D. R. ADAIR, Cosy Lodge, Culmore Rd., Londonderry, N. Ireland.
- 10,567 C. MARKIE, 79 Allesley Old Road, Coventry, Warwick.
- 10,568 E. GRESLEY-JONES, 102 Parrin Lane, Monton, Manchester.
- 10,569 B. HILL, 3 Bradford Street, Tamworth, Staffs.
- 10,570 S. BRIERLEY, 8 Sidney Av., N. Shore, Blackpool, Lancs.
- 10,571 F. E. SMITH, 9 Blois Rd., Steeple Bumpstead, nr. Haverhill, Suffolk.
- 10,572 D. H. NORTON, Wisteria, Higher King's Av., Exeter Devon.
- 10,573 F. A. BEST, Hadresham, Outwood, nr. Redhill, Surrey.
- 10,574 H. J. LEE, 78 Duller Road, Leicester.
- 10,575 E. SOUTHWELL, 33 Clifford Road, Blackpool, Lancs.
- 10,576 C. P. LEE, 17 Caledonia St., Bradley, Bilston, Staffs.
- 10,577 W. V. HANCOX, 54 Bennetts Hill, Dixons Green, Dudley, Worcs.
- 10,578 N. A. HARRIS, 30 Lushington Rd., Harlesden, London, N.W.10.
- 10,579 F. B. RICHARDSON, 108 Brampton Rd., St. Albans, Herts.
- 10,580 E. G. LINTON, Devonla, Horsell Vale, Woking, Surrey.
- 10,581 D. C. GRIFFITHS, 11 Norfolk St., Mt. Pleasant, Swansea, S. Wales.
- 10,582 E. G. WATKINS, 50 Downlands Av., Bexhill-on-Sea, Sx.
- 10,583 F. E. LANCASIER, Hawthorn Bank, Bailey Hills Road, Bingley, Yorkshire.
- 10,584 W. B. STORRY, Highfield, Whitecraigs, Giffnock, Renfrewshire.
- 10,585 E. W. KERRIDGE, 20 High Street, Eton, Bucks.
- 10,586 I. METHVEN, 71 Essex Drive, Scotstoun, Glasgow.
- 10,587 L. F. GRAY, 13 Keats Way, Greenford, Mdx.
- 10,588 D. HEATON, 1 Jer Lane, Horton Bank Top, Bradford, Yorks.
- 10,589 F. MAXWELL, 48 Langdale Rd., Hinckley, Leicester.
- 10,590 R. OATES, 2 Raley Street, Barnsley, Yorks.
- 10,591 A. SEED, 3 Withert Av., Bebbington, Wirral, Cheshire.
- 10,592 F. WEBB, 40 Essex St., Forest Gate, London, E.7.
- 10,593 J. COOPER, Nairobi, Cairo Av., Peacehaven, Sussex.
- 10,594 H. BATES, The Harlequin, Radcliffe-on-Trent, Notts.
- 10,595 P. JACKSON, 80 Bushey Hall Rd., Bushey, Herts.
- 10,596 C. EWEN, 20 Park Crescent, Strathaven, Lanarkshire.
- 10,597 R. F. WARD, Glangarif, The Rhod, Wroxham, Norwich.
- 10,598 W. H. MASON, 11 Russell Hill, Purley, Surrey.
- 10,599 W. R. HAWKINS, 7 Smalley Road, London, N.16.
- 10,600 C. F. ATKINS, Bourton-on-the-Hill, Moreton-in-Marsh, Glos.
- 10,601 D. G. HARDCASTLE, 3 Shrubbery St., Kidderminster, Worcs.
- 10,602 T. LAWSON, 22 Gaul Street, Leicester.
- 10,603 J. SPENCER, 47 Raistrick Common, Brighouse, Yorks.
- 10,604 W. S. GODWIN, 35A Hawkwood Road, Boscombe, Hants.
- 10,605 J. COLBOURNE, 5 Church Road, Hayes, Mdx.
- 10,606 G. H. KILLICK, Lemsford, Welwyn Garden City, Herts.
- 10,607 J. A. RUSSELL, 1 Bramble Close, Maidstone, Kent.
- 10,608 R. D. CARTER, 4 Walls Av., Hunderton, Hereford.
- 10,609 R. BALDWIN, 103 Chesterfield Rd., St. Andrew's Park, Bristol, 16.
- 10,610 F. W. DAVIES, 322 Court Oak Road, Harborne, Birmingham, 32.
- 10,611 C. F. RHODES, c/o 33 Winrose Drive, Belle Isle, Leeds, 10.
- 10,612 G. W. GOWER, 22 Portland Street, Chatham, Kent.
- 10,613 N. A. CHAMPNESS, 8 Shrublands Close, Chelmsford, Essex. (Ex 2A.A.M. 1929.)
- 10,614 D. G. BICKERTON, Marden, Sutton Rd., Shrewsbury, Salop.



- 10,615 H. RANSON, 65 Garden Walk, Ashton-on-Ribble, Preston, Lancs.
- 10,616 W. B. WOOLLEN, Pale Manor Staff Club, Malvern, Worcs.
- 10,617 C. W. STAINROD, 10 Rosemary Road, Wickersley, Rotherham, Yorks.
- 10,618 E. G. PLUME, The Queen's Head, Balsham, Cambridgeshire.
- 10,619 E. WHEELER, 7 Highbridge Rd., Aylesbury, Bucks.
- 10,620 I. W. PECK, 50 Waveney Drive, Lowestoft, Suffolk.
- 10,621 R. S. CRAIG, New Rd., Llanelly, Carmarthen, Wales.
- 10,622 M. A. JOEL, 83 Victoria St., Carrickfergus, Co. Antrim, N. Ireland.
- 10,623 N. A. STARNES, 32 Ranmore Rd., Cheam, Surrey.
- 10,624 J. W. KEMBLEY, Vincents Cottage, Elphinstone Avenue, Hastings, Sussex.
- 10,625 G. L. BIRCHENOUGH, 20 Nursey Lane, Overden, Halifax, Yorks.
- 10,626 L. C. FOY, 23 Manthorpe Rd., Plumstead, London, S.E.18.
- 10,627 G. A. ARNOLD, 4 Rose Cottages, Holway Av., Taunton, Somerset.
- 10,628 A. A. BARNETT, 88 Bowes Rd., Palmers Green, London, N.13.
- 10,629 E. A. CHAMBERS, 15 Compton Rd., Winchmore Hill, London, N.21.
- 10,630 F. A. MURFET, 1 The Mount, Verulam Rd., St. Albans, Herts.
- 10,631 D. K. BELLWOOD, 12 Manor Drive, Cotingley, Bingley, Yorks.
- 10,632 G. T. CHURCHLOW, 2 Iveagh Terrace, Prince Avenue, Southend, Essex.
- 10,633 F. HAYWARD, 20 Ferndene Rd., Withington, Manchester, 20.
- 10,634 T. H. LAWSON, 4 Springfield Gardens, West Wickham, Kent.
- 10,635 A. W. HARRIS, 4 Channel View, Northam, N. Devon.
- 10,636 A. WAINMAN, 3 Wellington Crescent, West Bridgford, Notts.
- 10,637 I. W. CARPENTER, 95 Liddell Gardens, Kensal Rise, London, N.W.10.
- 10,638 G. BERRISFORD, The Lodge, Marston Bank, Rochester, Nr. Uttoxeter, Staffs.
- 10,639 R. S. TURNHAM, 1 Mentmore Close, Kenton, Mdx.
- 10,640 R. M. CLOKE, 32 Constance Street, Newport, Mon.
- 10,641 J. G. REEVE, 35 Salisbury Road, Barnet, Herts.
- 10,642 R. CONGREVE, 101 High Street, Burton Latimer, Northants.
- 10,643 R. S. COOKE, 7 Dickens Avenue, Finchley, London, N.3.
- 10,644 J. H. BARRETT, 101 Larkhall Rise, Clapham, London, S.W.4.
- 10,645 R./O. H. M. DOYLE, R322169, R.F.A. Green Ranger, c/o G.P.O., London.
- 10,646 P. J. YATES, 207 High Street, Langley, Bucks.
- 10,647 F. A. BENDALL, 74 Fullerton Road, Milehouse, Plymouth, Devon.
- 10,648 J. R. BURCHALL, 70 Richmond Hill Court, Richmond, Surrey.
- 10,649 G. R. MILES, 28 New Road, Peterborough, Northants.
- 10,650 R. F. HAWKINS, Roseleigh, Westenhanger, Hythe, Kent.
- 10,651 E. F. SMITH, 56 Cary Road, Leytonstone, London, E.11.
- 10,652 R. LUCAS, 6 Amberley Street, South Sunderland.
- 10,653 E. C. A. MORRIS, 35 Matham Grove, East Dulwich, London, S.E.22.
- 10,654 G. F. HEATH, Torre, Stourbridge Road, Bromsgrove, Worcs.
- 10,655 F. W. ANDREWS, Melbecks, Tan-y-Fron Road, Abergele, N. Wales.
- 10,656 H. E. JONES, 176 Bristol Road, Birmingham, 5.
- 10,657 F. WHALEY, Heathfield Rectory Lodge, Norton Fitzwarren, Taunton, Somerset.
- 10,658 H. G. EMBLEM, 207 Wembley Hill Road, Wembley, Mdx.
- 10,659 L. N. HOCKING, 6 River Court, Taplow, Bucks.
- 10,660 F. J. BRIGHT, 1 Friars Close, Blackfriars, London, S.E.1.
- 10,661 E. B. JAMES, 4 Weeth Road, Camborne, Cornwall.
- 10,662 J. S. TUCKER, Jameson Cot, Pawlett Road, West Huntspill, Nr. Highbridge, Somerset.
- 10,663 F. W. PARKHURST, 56 Cromwell Road, Pen Mill, Yeovil, Somerset.
- 10,664 G. C. ANDREWS, 127 Henry Street, Chatham, Kent.
- 10,665 F. H. RAYNS, 2 Poynters Close, Totteridge Lane, London, N.20.
- 10,666 F. E. WOODS, 143 Ackers Hall Avenue, Knotty Ash, Liverpool, 1.
- 10,667 W. DIXON, c/o 22 Longroyd Crescent, Burton Road, Leeds, 11.
- 10,668 L. R. CHARITY, 41 Marksbury Avenue, Richmond, Surrey.
- 10,669 G. R. FARLEY, 11 Park Mansions, Allitson Road, London, N.W.8.
- 10,670 J. L. GRAY, 53 Airlie Gardens, Hyndland, Glasgow, W.2.
- 10,671 R. A. PITT, 8 Shirley Avenue, Bexley, Kent.
- 10,672 J. G. WRIGHT, 31 Samuel Street, Preston, Lancs.
- 10,673 D. J. MARSH, West View, Western Road, Cheltenham, Glos.
- 10,674 W. J. ERRILL, 14 Ravenswood Close, Collier Row, Romford, Essex.
- 10,675 D. METTRICK, Flat 4, Franche, Tibberton Road, Malvern, Worcs.
- 10,676 H. MAIDMENT, Post Office, Alderbury, Salisbury, Wilts.
- 10,677 T. HIGGINSON, 13 Penylan Place, Roath Park, Cardiff
- 10,678 G. E. SANDERS, Sandbanks, Wellingborough Road, Rushden, Northants.
- 10,679 S. W. TAYLOR, 97 Park Lane, Hayes, Mdx.
- 10,680 E. HAIGH, 161 Wortley Road, Rotherham, Yorks.
- 10,681 L. A. LANDALE, 129 Ash Grove, Heston, Mdx.
- 10,682 R. M. ROSS, 9 Heath Rd., West Harrow, Middlesex.
- 10,683 J. RUSDEN, Derwent 36 Howder Hall, Sliden.
- 10,684 R. J. ELWELL, 25 Princes Gdns., W. Acton, London, W.3.
- 10,685 W. N. TABERNER, 52 Preston Rd., Standish, Wigan, Lancashire.
- 10,686 D. G. LANGHAM, 30 Carvarvon Avenue, Enfield.
- 10,687 D. G. THOMPSON, 131 Main Street, Keswick, Cumbria.
- 10,688 R. R. WAKEFORD, 18 Davis Street, Wallend-on-Tyne, Northumberland.
- 10,689 H. STOTT, 1 Endsleigh Gdns., Blackpool, S.5., Lancs.
- 10,690 T. W. MANFIELD, 32 Newton Rd., Wimbledon, London, S.W.19.
- 10,691 M. J. DIBLE, Nettleton House, North Park, Gerrards Cross, Bucks.
- 10,692 L. MONK, 5 Rawlins Street, Fairfield, Liverpool, 7.
- 10,693 A. R. CORNWELL, 83 Devonshire Rd., Chiswick, London, W.4.
- 10,694 D. WYNNE, 97 Hanover St., Castleton, Rochdale, Lancs.
- 10,695 S. JONES, 66 Town Lane, Dukinfield, Cheshire.
- 10,696 J. K. SMITH, Marche Hall Lodge, Halfway House, Nr. Shrewsbury.
- 10,697 C. F. FORD, 12 Sunset Ave, College Gdns., Chingford, E.4.
- 10,698 A. D. BUSHELL, 46 Cavendish Rd., Sunbury-on-Thames, Middlesex.
- 10,699 E. H. CHESTER, 17 Milton Road, Cambridge.
- 10,700 O. E. FAIRHURST, 120 Kent St., Grimsby, Lincs.
- 10,701 J. YARWOOD, 13 Shawheath View, Shawheath, Knutsford, Cheshire.
- 10,702 R. M. WELLS, 87 Dale Avenue, Edgware, Middlesex.
- 10,703 C. H. TURNER, 8 Market St., Wibsey, Bradford, Yorks.
- 10,704 W. BAKER, 55 Hudling Lane, Burnley, Lancs.
- 10,705 L. P. ALSTON, 51 Keswick Rd., Sheldon, Birmingham, 26.
- 10,706 R. E. BARKAWAY, 190 Connaught Rd., Luton, Beds.
- 10,707 R. N. NICHOLSON, 8A Hazelmere Rd., Kilburn, London, N.W.6.
- 10,708 P. N. JAMES, 273 Upper Beacon Rd., Loughborough, Leicestershire.
- 10,709 D. E. THOMAS, 14 Lon-y-Dail, Rhwibina, Nr. Cardiff, S. Wales.
- 10,710 R. L. BURGESS-SMITH, Assistant Warden, L.A. Hostel, Braunton Rd., Davenport, Northants.
- 10,711 S. R. ROBINSON, 45 Kimberley Gardens, Harringay, London, N.4.
- 10,712 A. B. SADLER, 76 Courtland Ave., Ilford, Essex.
- 10,713 J. A. ROSS, 21 Tillingbourne Gdns, Finchley, London, N.3.
- 10,714 A. NEGRI, 43 Hartswood Rd., Stamford Brook, London, W.12.
- 10,715 P. J. VINCENT, 30 Squires Bridge Rd., Shepperton, Mdx.
- 10,716 W. M. DUNNELL, 22 Stanley Rd., Broadstairs, Kent.
- 10,717 F. WILSON, 5 Princess Ave., Kings Rd., Prestwich, Manchester.
- 10,718 J. H. BRUNT, 1A Saffron Rd., Biggleswade, Beds.
- 10,719 L. H. CHILDE, c/o 14 Conisboro Ave., Caversham Huts, Reading, Berks.
- 10,720 W. DUMBELL, 3 Boydell Ave., Latchford, Warrington, Lancs.
- 10,721 W. W. KING, Portree, Broomhill Landford, Salisbury, Wilts.
- 10,722 G. T. BATCHELOR, 20 Brecon Street, Canton, Cardiff.
- 10,723 W. J. WILSON, 15 Stewart Drive, Clarkston, Glasgow Scotland.
- 10,724 W. WAUGH, Tynron Kirk, Tynron, Dumfriesshire.
- 10,725 J. MCPHAIL, 14 Espedair Street, Paisley, Scotland.
- 10,726 G. H. GARDENER, 13 Great Knollys Street, Reading, Berks.
- 10,727 A. ALLEN, 114 Lynn Rd., Wisbech, Cambs.
- 10,728 M. A. TICKNER, 12 Hollingbourne Gardens, West Ealing, London, W.13.
- 10,729 C. A. D. SMALL, 134 London Rd., Sevenoaks, Kent.
- 10,730 E. G. KEELER, 15 Leighton Crescent, London, N.W.5.
- 10,731 T. R. DOBSON, 461 Abbey Lane, Sheffield, 8.
- 10,732 D. V. MCLEOD, 2 St. Martins Avenue, Epsom, Surrey.
- 10,733 V. WELLS, 162 Freshfield Road, Brighton, 7, Sussex.
- 10,734 T. STOKES, 97 Woodhead Rd., Sheffield, 2.
- 10,735 M. G. KEEBLE, 62 Seaward Avenue, Southbourne, Bournemouth, Hants.
- 10,736 P. R. DRAKIN, Marlwood, Parbold, Nr. Wigan, Lancs.
- 10,737 J. M. ELLIOT, 67 Clavering Rd., London, E.12.
- 10,738 C. S. DURLING, 118 Sturdee Ave., Gillingham, Kent.
- 10,739 D. M. EMMERSON, 7 Springfield Rd., St. Leonards-on-Sea, Sussex.
- 10,740 G. G. SMITH, 52 High St., Newhall, Burton-on-Trent, Staffs.
- 10,741 F. R. ESTALL, St. Dionis, Avondale Rd., South Benfleet, Essex.
- 10,742 V. R. WHITTLE, 5 Swan Meadow Rd., Wigan, Lancs.
- 10,743 W. M. SMITH, 20 Allank Park Street, Largs, Ayrshire.
- 10,744 P. J. FOAKES, 4 Kinitis Way, West Bromwich, Staffs.
- 10,745 G. A. AMEY, 6 Coleman Street, Southampton, Hants.
- 10,746 W. A. TAYLOR, 51j Mantion Cres., Mantion, Workson, Notts.
- 10,747 D. W. BURGESS, 107 Mornington Rd., Greenford, Mdx.
- 10,748 R. R. ELKIN, 6 Laburnum Grove, North End, Portsmouth, Hants.

- 10,749 H. F. DEAN, 39 Langdale Rd., Heaton Chapel, Stockport.  
 10,750 C. C. RICHES, Eastbourne House, Bradwell, Gt. Yarmouth, Norfolk.  
 10,751 R. LEATHERBARROW, 396A Higginshaw Lane, Oldham, Lancs.  
 10,752 P. L. SCOREY, 7 Richmond Terrace, Shelton, Stoke-on-Trent.  
 10,753 A. ELLIS, 84 Cotton Hill, Bromley, Kent.  
 10,754 K. V. RAINBIRD, 33 Sunnyside, North Shields, Northumberland. (trans. from Associate Grade).  
 10,755 R. W. PINFOLD, The Inlands, Daventry, Northants.  
 10,756 C. DAVIES, 21 Addison Rd., Port Talbot, S. Wales.  
 10,757 D. A. SMITH, 37 Queensway, West Wickham, Kent.  
 10,758 R. R. ADAMS, 121 Bellingham Rd., Catford, London, S.E.6.  
 10,759 H. B. HADDEN, 200 Capstone Rd., Bournemouth, Hants.  
 10,760 D. O. LIGHT, 18 York Rd., Bournemouth, Hants.  
 10,761 F. J. GLYNN, 47 Uttoxeter Rd., Blythe Bridge, Staffs.  
 10,762 H. W. SHIPTON, 65 Coton Mount, Shrewsbury, Shrops.  
 10,763 H. W. WIKLEY, 107 Longfields Crescent, Hoyland, Barnsley, Yorks.  
 10,764 F. C. PEASLEY, 2 Chiltern View, Tetworth, Oxford.  
 10,765 J. E. HARRIS, Virginia, Ottershaw, Surrey.  
 10,766 G. W. HALL, 25 Aughton Ave., Aughton, Sheffield, Yorks.  
 10,767 C. JAY, 16 Highlever Rd., N. Kensington, London, W.10.  
 10,768 R. OUTHWAITE, 112 Bath Street, Glasgow, Scotland.  
 10,769 G. W. MORTON, 42 Southfarm Rd., Worthing, Sussex.  
 10,770 R. S. MACQUEEN, Holly Cottage, Pant, Nr. Oswestry, Salop.  
 10,771 W. STANDING, 22 Railway Rd., Darwen, Lancs.  
 10,772 C. J. KETTLER, 32 Westmere Drive, Mill Hill, London, N.W.7.  
 10,773 I. O. SHAW, 167 Perth Rd., Cowdenbeath, Fife, Scotland.  
 10,774 B. S. TAYLOR, 295 Railway St., Splott, Cardiff, S. Wales.  
 10,775 A. M. SKANE, Moray Hotel, Macduff, Banffshire, Scotland.  
 10,776 D. A. JENNINGS, 49 St. James Ave., Beckenham, Kent.  
 10,777 A. E. BUCKMASTER, 9 St. Merryns Close, Plumstead, London, S.E.1.  
 10,778 R. E. MAYES, 16A Lewin Rd., Streatham Common, London, S.W.16.  
 10,779 S. F. BRANSGROVE, 25 Standfield Gardens, Dagenham, Essex.  
 10,780 P. BARR KINGCOME, 227 Wilton St., Glasgow, N.W., Scotland.  
 10,781 G. A. BLOOMFIELD, 12 Montpelier Row, Twickenham, Middlesex.  
 10,782 S. R. ALLEN, 29 Poplar Rd., Sutton, Surrey (B.E.R.S. 257).  
 10,783 D. R. HOWARD, 14 Hallowell Rd., Northwood, Middlesex.  
 10,784 F. R. PIPER, 25 Eastern Ave., Shoreham-by-Sea, Sussex.  
 10,785 D. A. REA, 38 St. Georges Rd., West Hill, Hastings, Sussex.  
 10,786 R. E. SPARRY, 133 Birmingham Rd., Allesley, Coventry.  
 10,787 G. K. MILLS, 20 Brooke Rd., East, Waterloo, Liverpool.  
 10,788 J. H. SHARPLEY, 24a Albermarle Rd., Beckenham, Kent. (trans. from Associate Grade).  
 10,789 R. J. LANG, 11 Radnor Drive, Bootle, Liverpool, 20.  
 10,790 M. R. H. SCOTT, 12 Belgrave Place, Camden Road, Bath, Somerset.  
 10,791 J. B. TOWNSEND, Brookside, Church Road, Whitechurch, Bristol.  
 10,792 P. A. GOULD, 36 Rutland Rd., S. Hackney, London, E.9.  
 10,793 G. R. MILESTONE, 16 Eightlands Lane, Bramley, Leeds, Yorkshire.  
 10,794 J. L. HOLGATE, 88 Lea Farm Drive, Hawksworth Estate, Leeds 5.  
 10,795 L. FINCH, 105 Replingham Rd., Couthfields, London, S.W.18.  
 10,796 J. G. PARRY, 6 Maelgwyn Drive, Deganwy, Caerns, N. Wales.  
 10,797 K. H. WALKER, Blendon, Barratts Lane, Banstead, Surrey.  
 10,798 E. J. CLAY, 85 Shorncliffe Cres., Folkestone, Kent.  
 10,799 A. C. FOSTER, 143 Beauchamp Rd., Upper Norwood, London, S.E.19.  
 10,800 T. W. ROBERTSON, 23 Portway, Ewell, Surrey.  
 10,801 P. LOWRY, 73 Limsfield Ave., Thornton Heath, Surrey. (trans. from Associate Grade).  
 10,802 W. J. RAVEN, c/o S. of E., New Ranges, Shoeburyness, Essex.  
 10,803 A. TAYLOR, 45 Aneford Rd., Northfield Estate, Leicester.  
 10,804 F. C. MATTHEWS, 25 High Street, Billericay, Essex.  
 10,805 J. ROLFE, 61 Muirkirk Rd., Catford, London, S.E.6.  
 10,806 R. T. COLE, Inglenook, Langport Rd., Somerton, Som.  
 10,807 G. H. STUBBS, Hillside, Hurn Road, Christchurch, Hants.  
 10,808 J. G. WALFORD, 34 Station Road, Alford, Lincs.  
 10,809 F. G. DIVER, 174 Guinness Buildings, Lever Street, Finsbury, London, E.C.1.  
 10,810 D. JAMES, 251 Eastwood Road, Rayleigh, Essex.  
 10,811 J. E. HODGKINS, c/o 43 Hawthorn Ave., Bury, Lancs.  
 10,812 H. I. WATSON, 10 Randolph Cliff, Edinburgh, Scotland.  
 10,813 D. BAIN, 24 Fillyside Ave., Edinburgh, 7, Scotland.  
 10,814 C. COX, Fairlawn, Greenhill Park Rd., Evesham, Wores.  
 10,815 H. O. FREEMAN, Ferndale, Wildern Lane, Hedge End, Southampton.  
 10,816 W. B. STOKES, 44 Rosebery Close, Garth Rd., Morden, Surrey.  
 10,817 R. J. BAKER, 17 Sladedale Rd., Plumstead, S.E.18.  
 10,818 T. REECE, 97 Keppoch St., Roath Park, Cardiff, S. Wales.  
 10,819 R. HARRIS, 7 Riverside Ave., East Molesey, Surrey.  
 10,820 C. J. SHORTER, 22 Sutherland St., Edgehill, Liverpool, 7.  
 10,821 R. A. FLITTER, 17 Buckingham Close, Enfield, Mdx.  
 10,822 MISS M. F. INGLE, c/o 672 Old Ford Rd., Bow, E.3.  
 10,823 J. MORRIS, St. Bernards Bank House, St. Bernards Bank, Knott End, Lancs.  
 10,824 O. S. DUNN, 12 Westfield Rise, Hesse, Nr. Hull, Yorks.  
 10,825 C. H. WALKER, Singletree, Botley, Oxford.  
 10,826 J. P. QUINN, 45 Sandgate Rd., Hall Green, Birm'gh'm, 28.  
 10,827 J. F. COLLETT, 64 Taunton Rd., Sparbrook, Birm'gh'm, 2.  
 10,828 F. BYRNE, 32 Quarry Rd., Thornton, Liverpool, 23, Lancs.  
 10,829 R. R. DAWES, 44 Park Road, Crouch End, London, N.8.  
 10,830 H. W. SHEN, 163 Whitmore Rd., Harrow, Mdx.  
 10,831 E. C. CROSS, Hazeldene, Hellingly, Hailsham, Sussex.  
 10,832 D. STEWART, 18 Palm Street, Middlesbrough, Yorks.  
 10,833 R. N. HOWELLS, 85 West Drayton Rd., Hillingdon, Mdx.  
 10,834 S. C. BURROWS, 58 Leigh Rd., Eastleigh, Hants.  
 10,835 D. LANGLOIS, Terra Nova, Gorey Hill, St. Martin, Jersey, Channel Islands.  
 10,836 C. M. MCKENZIE, 2 Perrots Avenue, Haverfordwest, Pembro.  
 10,837 F/O B. M. MORRISSEY, Officers' Mess, Cottesmore, Nr. Oakham, Rutland.  
 10,838 A. REES, 4 Masefield Avenue, Southall, Middlesex.  
 10,839 A. E. WARD, 12 Ashbourne Cres., Roby, Nr. Liverpool.  
 10,840 W. OXLEY, 143 Stallsfield Avenue, West Derby, Liverpool 11.  
 10,841 D. H. POWELL, 6 West Way, Shirley, Surrey.  
 10,842 T. S. PARRAMORE, The Ferns, New Town, West Malling, Kent.  
 10,843 J. R. RICHARDSON, 5 Ellercroft Rd., Lidget Green, Bradford.  
 10,844 F. HOLLINS, 39 Bourn Avenue, Hillingdon Heath, Mdx.  
 10,845 W. BAYLISS, 82 Hodgehill Common, Ward-End, Birmingham 8.  
 10,846 J. THORN, 245 Hospital Bridge Rd., Whitton, Twickenham, Middlesex.  
 10,847 J. REYNOLDS, 379 Caerphilly Rd., Birchgrove, Cardiff.  
 10,848 C. H. HESS, 32 Clarendon Rd., Edgbaston, Birmingham 16.  
 10,849 G. W. GROSSE, Melita, Rouse St., Pilsley, Chesterfield.  
 10,850 R. L. KING, Hill-View, Cliffe-at-Hoo, Rochester, Kent.  
 10,851 J. PATMORE, 5 Brookfield Close, Mill Hill, London, N.W.7.  
 10,852 G. M. GORMLEY, 35 Chain Lane, Mickleover, Derby.  
 10,853 W. HALL, c/o 324 Holderness Rd., Hull, Yorks.  
 10,854 E. GREGORY, 102 Fulham Court, Fulham, London, S.W.6.  
 10,855 J. A. MUSTO, 6 Vale Rd., Sutton, Surrey.  
 10,856 J. C. BURGE, 2 Rosebery Rd., Rochester, Kent.  
 10,857 L. R. FINNIMORE, 4 Hookway, Crediton, Devon.  
 10,858 D. ALVEY, 24 Roundwood, Ossett, Yorks.  
 10,859 R. D. COYLE, 35 Patrick Street, Strabane, N. Ireland.  
 10,860 B. BOUGHEN, 41 Bushbury Lane, Wolverhampton, Staffs.  
 10,861 E. BOOTH, 99 Walton Rd., Sale, Manchester.  
 10,862 J. E. BANNISTER, 20 Dumbarton Rd., Lancaster.  
 10,863 A. HENDERSON, 4 Sharpey Ave., Scotforth, Lancaster.  
 10,864 I. J. WOODINGS, c/o 83 Victoria St., Glossop, Derbyshire.  
 10,865 G. TITHMARSH, 151 Chester Rd., Streety, Staffs.  
 10,866 E. L. KELLAND, 8 Recreation Avenue, Leigh-on-Sea, Essex.  
 10,867 D. MACLEAN, 2 Mulberry Terrace, Off School Street, Weymouth, Dorset.  
 10,868 J. C. PEEBLESS, 37 Maitland St., Lodge Lane, Liverpool 8.  
 10,869 P. WHITEHEAD, 68 Loxwood Ave., Worthing, Sussex.  
 10,870 W. A. MURRAY, c/o Miss F. M. Whistler, Redknocker, South Petherton, Somerset.  
 10,871 R. B. WILSON, 9 Hereford Rd., Derby.  
 10,872 J. LAWTON, 126 Lord Street, Allenton, Derby.  
 10,873 J. C. COOK, 15 Jubilee Street, Woodston, Peterborough.  
 10,874 J. FORSTER, 40 Collingwood Rd., Haverton Hill, Billingham, Co. Durham.  
 10,875 C. WELLS-MCCULLOCH, 53 Canal Bank, Monton, Eccles, Manchester.  
 10,876 A. RAPSTONE, 190 Park Avenue, Hull, E. Yorks. (Trans. from Associate Grade).  
 10,877 L. V. DOLBY, Castor, Nr. Peterborough, Northants.  
 10,878 G. HEPWORTH, 28 Hut Green Rd., Whitby Bridge, Goole, Yorks.  
 10,879 R. MITCHELL, 18 Brook Street, Selby, Yorks.  
 10,880 H. MILHAM, 3 Cadboro Road, Rye, Sussex.  
 10,881 B. STRAD, 60 Grove Street, Rochdale, Lancs.  
 10,882 A. E. CHAMBERS, Eleanor Cottage, Spencers Wood, Reading, Berks.  
 10,883 J. NAISBITT, 44 Princes Ave., Hamsey Green, Sanderstead, Surrey.  
 10,884 H. COUSINS, 103 Chadacre Rd., Ewell, Surrey.  
 10,885 K. J. GODFREY, 2 Elm Road, Exmouth, Devon.  
 10,886 L. CROFT, 15 Frederick Ave., Barnsley, Yorks.  
 10,887 A. R. BRYANT, Kirklea, North Close, Kirk Merrington, Ferryhill, Co. Durham.  
 10,888 J. J. GASCOIGNE, 4 Paul Street, Frome, Somerset.  
 10,889 P. DENNY, 109 Sheen Court, Richmond, Surrey.  
 10,890 A. J. WHITE, Emlin House, St. Lukes Rd., Pontnewynydd, Nr. Pontypool, Mon.  
 10,891 R. V. DANIEL, 26 Hannah Rd., Kensington, Liverpool 6.

Note.—Changes of address which have taken place since election are not recorded in this list.

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## AROUND THE DISTRICTS

WITH the impending return to civilian life of many hundreds of members who have been absent from their homes for the past six years, the time seems opportune to consider what steps should be taken to extend District activities.

It must be remembered that at least 70 per cent. of our present membership (most of whom have been or are in the Services) have had no practical experience of experimental amateur radio, and although many of them have by now acquired some knowledge of our peace-time activities, very few have yet made contact with those who will shortly become their near neighbours on and off the air. It would seem therefore, that our first task is to revive the Town Representation scheme so that every member can take part in local activities. The T.R. scheme has of course been operating with considerable success in some towns throughout the war period, but in other areas it has lapsed.

It has always been the desire of the Council that Town Representatives should be elected by those they represent but for the past six years that democratic principle has been difficult to apply due to the fact that many of our most experienced members have been absent from their homes. During the war our District Representatives have been asked to make temporary appointments, and right well have the acting T.R.'s tackled their job. Incidentally many of these T.R.'s were not even members before the war but their enthusiasm has enabled many a town group to function with something approaching peace-time efficiency.

It would be unfair at the present juncture to revive T.R. elections because, in spite of the acceleration of demobilisation, many members are still absent, but we strongly urge every D.R. to use his best endeavours during the next few months to see that, providing the membership warrants it, no town in his district is without an acting T.R.

A Town Representative is regarded by the Council as the Society's mouthpiece in his own town and as such he is responsible to his D.R. for all matters concerning the local membership. He is expected to arrange meetings and visits and to report regularly to his D.R. upon the activities of his group.

Many T.R.'s have established useful contacts with technical schools, and as a consequence interesting and instructive lectures have been arranged with the co-operation of the school authorities. In other towns it has been found possible to link up with local pre-Service training units (such as the A.T.C.) thereby solving the accommodation problem besides

providing facilities for keen cadets, interested in radio, to meet more experienced workers. Generally speaking however T.R.'s have been compelled to depend upon the generosity of local members—and their ladies—for accommodation and hospitality. Under war-time conditions fire-side meetings were satisfactory, but now that peace has returned it seems desirable that more extensive accommodation should be sought in all but the smaller towns. This immediately raises the question of running costs. Past experience has shown that the easiest solution to the problem is to levy a small charge at all meetings to cover local expenses, including incidental expenses incurred by the T.R. For years this method has been employed with marked success in many towns, and an extension of the idea appears to be desirable in those towns where it has not yet been tried out. The local fund would be used not only for the purposes referred to but would also be drawn upon to cover the expenses of running Field Days and similar communal functions.

As soon as the catering position improves we consider that every T.R. should make an effort to organise a dinner to which the ladies can be invited. This could very well become an annual event. Prior to the war numerous social functions were arranged, but in most cases the sponsors were the Committees of local affiliated Radio Societies. In many parts of the country members keep together through the medium of such Societies, an arrangement which merits consideration by the membership in all provincial towns where no local Society is functioning.

During recent years several T.R.'s have experienced difficulty in drawing up programmes which will hold the interest of members. With a return to more normal conditions their problems should soon disappear. We suggest that during the next year or two every member who has served in a radio capacity at home or abroad should be invited by his local T.R. to give a talk on his war-time activities. There is no doubt that such talks would prove extremely popular. In addition, we recommend T.R.'s to invite representatives of radio concerns to speak at local meetings. Visits to places of technical or topical interest, summer outings and field days will all help to provide T.R.'s with items for inclusion in their post-war programmes.

As soon as licences are restored lectures designed to assist the newcomer should be arranged, and in order to foster interest in the construction of equipment, competitions should be organised. Many

(Continued on page 68)



# RADIO RECEIVER SPECIFICATIONS

## Including a Method of Specifying Performance

By A. STUART McNICOL (GM3UU).

### Introduction

FOR more than a year the correspondence columns of THE BULLETIN have revealed a demand for a standard in relation to Communication Receivers, but there has been considerable divergence of opinion as to the nature of the standard sought. It is interesting to note a tendency by some to rely on purely mechanical specifications to obtain a satisfactory radio performance. The trouble lies in the fact that even those amateurs who have built their own receivers have not had, as a rule, the facilities necessary to make the complex tests required to measure performance. Until very recently manufacturers did not advertise performance figures. As a result most of us have only the vaguest recollection of how the necessary measurements may be made, and even less knowledge of what figures to expect.

Where radio standards were discussed the correspondents approached the subject from two angles, viz., a minimum standard of performance, and a standard method of measuring performance. While the need for some cheap and reasonably efficient receiver is beyond dispute, it is probable that a standard system of measuring and expressing performance is even more urgent. If it can be simplified in such a way that a person completely ignorant of electricity could be instructed in a few words what to look for and what to avoid, it will be doubly welcome.

### The Development of Performance Specifications

In pre-broadcasting days the Radio Press carried advertisements of amateur-constructed sets, and performance was described by such phrases as "Receives Paris Time Signals," or "Range 1,000 miles." Broadcasting introduced commercial advertising seeking to sell to a non-technical public. At first, terms such as "Receives local station on loudspeaker and many others on phones" were used, but soon the arrival of the multi-grid valve made a large set both reliable and desirable. Consequently the number of valves became the criterion by which the probable performance was gauged. Some manufacturers included not only H.T. rectifiers, but even barreters in the "valves" numbered, though later the phrase "including rectifier" was added. By the middle 30's broadcast receivers with provision for the reception of short-wave stations were common, and the American "Communication" receiver reached this country.

Up to this time there was no attempt to furnish any quantitative measurements. Sensitivity, selectivity and reproduction were referred to in terms borrowed from Hollywood, and even in the booklets issued with particular sets no useful clues were given. The communication receivers started the trend towards figures, first by giving sensitivity. At the outbreak of war some manufacturers had added details of selectivity—but only in regard to their best products—while others preferred to remain silent. Although there are, both in this country and in the United States, standard specifications for the measurement of broadcast receiver performance, no such standards exist for communication receivers, and for reasons which follow, it is obvious that the one specification is not suitable for the two types of receivers.

In passing it is impossible to refrain from commenting on the strange silence maintained by manufacturers of broadcast receivers about the

performance figures which they might have used to advertise their products. Technical ignorance of the general public is no answer. For many years the public was supplied with valve data sheets and transformer and loudspeaker response curves, so that soon it knew that virtue lay in a straight-line response or a steep-slope valve, even if it knew nothing about the manner of preparing these graphs or what they really meant.

### Broadcast and Communication Receivers Compared

The standards required for broadcast receivers are totally different from those required for communication receivers. Broadcasting demands that "local" stations of high field strength on the medium band should be received at a steady level of good volume, with high quality reproduction and freedom from interference. The more distant stations and the short-wave section of the set are very secondary features. Every amateur knows the family response to an invitation to listen to a DX programme on short waves!

A communication receiver on the other hand need only be considered by its ability to deal with weak signals. The essence of the receiver is *communication*, not the reproduction of all musical frequencies. It is required to find and hold the weak and fading signal amid a welter of strong signals, atmospherics and man-made static. The output is normally to phones and in any event does not require to be high, while reasonable clarity of speech is all that is asked in the musical scale.

### Factors Governing Communication Receiver Performance

Without thinking, one is inclined to say that the most important single item in performance is low noise level, but the term is applied to receivers in two ways. The general use of the term applies to the background of noise heard when a receiver is connected to an aerial. It might best be called the "operational" noise level, and the noises heard include not only those generated within the receiver, but also those reaching the circuit from external sources. The particular use of the term refers to the noises created *within* the receiver and could be called the "bench" noise level. Operational noise level is dependent on selectivity and sensitivity in addition to the "bench" noise level, and it cannot be measured in a single unit. "Bench" noise level can be measured in the laboratory and the term "noise equivalent" is used to designate the factor. It is expressed as "the c.w. input voltage, in microvolts, required to produce an output equal to the receiver noise input." Textbooks state that amateur-type superheterodynes of modern design should have a noise equivalent below 0.5 microvolt, and the best types should be better than 0.1 microvolt.

Selectivity, a very important feature, is best expressed graphically. The points on the graph are determined by injecting a signal at different frequencies off resonance, and ascertaining the ratio of the signal voltage at the off-resonance frequency to the signal voltage required at resonance to produce an equivalent output. The voltage ratios, often expressed in decibels, are plotted against frequency and produce an almost symmetrical curve. When it is inconvenient to reproduce the curve, quotations from the curve may be given. This is normally done by stating the number



of kilocycles per second (kc/s.) off resonance at so many decibels down. As intelligibility depends on bandwidth it would seem to be more logical to quote the whole width of the curve at two levels, widely separated. If the figures at 2.5 and 40 decibels down were quoted a useful picture of the whole curve would be given. At 40 decibels down the curves of most receivers have widened to embrace a band several times as wide as at 2.5 decibels down. As a consequence many other signals may have crept in to add their quota to the background noise. The ideal receiver would give the same bandwidth at both these levels, and in practice the band-pass crystal filter has made that possible in the I.F. section of the superheterodyne receiver. So far no equally efficient device is generally available for the radio frequency side of a variable tuning circuit, and thus signals far removed from the desired frequency may be converted into the I.F. and pass through its band-pass filter.

The principal source of trouble of the latter type is image frequency interference. This occurs when an unwanted signal on the "other side" of the oscillator frequency is heterodyned and passed into the I.F. stages because it happened to be off the oscillator frequency by a frequency equal to the I.F. This type of interference is measured by ascertaining the field strength voltage at the image frequency required to produce the same output as a standard field strength voltage at the receiver frequency. The ratio of these two voltages is quoted to show the performance of the receiver at various frequencies. The image ratio varies in proportion to the I.F. and inversely to the signal frequency, though the variations are not in simple proportion.

Various combinations of one or more unwanted signals may heterodyne with each other, or with the fundamental frequency of the oscillator or with a harmonic of that frequency and so reach the I.F. amplifier. As with image frequency interference, the solution lies in providing adequate selectivity preceding the first detector, and the image ratio gives a useful guide to all these aspects of selectivity.

The problem of drift stresses the point that a good receiver must be good from all angles. If a receiver passing a bandwidth of 10 kc/s (at 2.5 decibels down) were to drift 4.5 kc/s. in half an hour the signal input would normally be audible without returning. A set with a band-pass crystal unit for a bandwidth of 300 cycles which drifted at that rate would require retuning some 15 times in half an hour. Similarly, the highly selective set which is stable will have a busy time chasing a drifting signal, while the unselective set "sits pretty"!

In the case of a simple device, such as a quartz crystal, drift is expressed in cycles/sec./C°. In a radio set which has numerous components changing temperature at different rates such a method of measurement does not seem practicable. Drift is not at a regular rate even when the set has been in operation for some time, and, owing to differences in design, two receivers might drift through exactly the same frequency band in a given period, and yet the change of temperature at the selected point or points might be twice as great in the one as in the other.

For these reasons the total drift in kilocycles per second in one hour, at an initial frequency of 15 Mc/s. in a room temperature of 70° F. (21.1° C.), after an initial heat up of 10 minutes would be a practical measurement simply taken. The figure thus obtained would then be used to divide the selectivity figure at 2.5 decibels down and the drift expressed in bandwidths per hour. It should be unnecessary to add that, if the set had variable selectivity, the measurement would be taken at maximum selectivity.

Sensitivity is intentionally placed last in the

consideration of the more important aspects of a communication receiver. It is expressed by ascertaining the input in microvolts required to produce a standard output. To maintain consistency it would be advisable that the measurement be made at 15 Mc/s. and as the standard output for broadcast receivers (50 milliwatts with 30 per cent. modulation) has already been adopted by at least one manufacturer of communication receivers, it may be as well to accept it. The sensitivity figures given in textbooks vary from over 10 microvolts for a simple four-valve superheterodyne down to less than one microvolt for the most elaborate, and expensive, types. It should never be overlooked that in addition to the desired signal, every other noise including atmospherics, man-made static and interfering signals is magnified along with it, unless eliminated by selective devices in the circuit, while receiver noises are also picked up and amplified as the signal passes through. It follows that in an extreme case a one-valve battery set might give a more clearly distinguishable signal than a receiver with 1 microvolt sensitivity, and one should avoid being unduly influenced by sensitivity alone.

There are numerous other measurements which might be made, and the question arises, where can we stop? Is it not probable that, if a manufacturer turns out a receiver giving good figures for the more important items, it can be assumed that he will have taken reasonable care of the minor ones?

In regard to quality, it has already been pointed out that selectivity and high quality reproduction are incompatible. There is another angle. The amateur who tries to transmit a wide band of musical frequencies on our DX bands will take up an unfair share of the ether and end up by getting himself thoroughly disliked. Rather, should he try to see how far he can prune his speech frequencies without losing intelligibility. It is hoped that as compensation he will find a wide field for quality in frequency modulated transmissions on such very high frequencies as may fall to our lot.

## A Method of Specifying Performance

It would be very convenient if selectivity, curve, image ratio, noise, drift and sensitivity were measured in similar units, for a formula could then be devised whereby these units could be reduced to a single factor indicating performance. That is impossible, but there is no reason why a "Communication Index" should not be used, based on the RST principle, but giving scientific figures instead of the arbitrary ones used in the latter system. Some compromise is necessary, but with it, it seems that selectivity in bandwidths, curve ratios at 2.5 decibels down and 40 decibels down, image ratio at 15 Mc/s. (suitably converted) noise equivalent, drift in bandwidths and sensitivity might each be expressed by one figure, and yet give adequate scope to cover receivers ranging from the simpler to the most elaborate types.

The following are the necessary modifications:—

*Selectivity* at 2.5 decibels down is expressed by the number of kilocycles per second in the width of the band, to the nearest whole figure. Under 500 cycles counts as 0 while anything over 9.5 kc/s. would remain at 9.

*Curve* is shown by dividing the bandwidth at 40 decibels down by the bandwidth at 2.5 decibels down, and subtracting 1 from the answer. The "perfect" curve would thus be represented by 0 and 9 would represent all curves whose bases at 40 decibels down were more than 9.5 times as wide as the base at 2.5 decibels down.

*Image ratio* presents a little problem. It is desired to keep the figure 0 for the best value and 9 for the outside limit, while normally image ratio increases

with efficiency. To overcome the difficulty it would best be expressed by giving in decimals the reciprocal of the image figures at a frequency of 15 Mc/s. and showing only the second decimal figure. Thus an image ratio of 50/1 would be shown by the figure 2 representing .020. Image ratios worse than 12/1 would be shown by 9 and 0 would indicate better than 200/1.

Noise equivalent is shown by one figure, the nearest tenth of a microvolt, the decimal being used, and the rules for 0 and 9 being applied as in the previous examples.

Drift is shown in bandwidths per hour, ascertained in the manner already suggested.

Sensitivity is represented by one figure also, the sensitivity in microvolts, and 0 would mean 0.5 microvolt or better while 9 would indicate anything less sensitive than 8.5 microvolts.

The formula for the proposed Communication Index is obtained by taking the initial letters of these six items in the useful order selectivity, curve, image, noise, drift and sensitivity, giving the easily remembered mnemonic "Scinds." It has not been possible to obtain all of the figures required to apply it to an existing set, but from material kindly made available by Messrs Stratton Limited, the manufacturers of the Eddystone 358 series of communication receivers, the following quotations have been estimated:—

Eddystone 358, Communication Index 431XX3.

Eddystone 358X, Communication Index 001XX3.

Noise and drift figures were not available. It is interesting to note that, unless the drift in the crystal band pass filter set is under 150 cycles in an hour, a figure of 1 or more will appear in the fifth position, while the 358 set would show 0 unless the drift exceeded 2,000 cycles. For comparison it is estimated that a four-valve super-het consisting of a frequency converter, 450 kc/s. iron cored I.F. stage, detector with A.V.C., B.F.O., and pentode output might have a Communication Index of 549529.

The advantages of the system lie in its compactness, simplicity, and usefulness. It is even unnecessary to remember what the figures represent and yet it appears adequate to cover all types of communication receivers for ordinary bands. On the very high frequencies different standards would apply and the system is intended only for sets working on the ordinary amateur bands.

#### EDITORIAL—(continued from page 65)

town groups already compete annually for trophies presented by local members.

As times goes on and more resources become available it may be possible to organise officially-sponsored technical lectures in the main provincial towns, similar to those held at the Institution of Electrical Engineers, London.

Surveying the whole field, we feel confident that under the zealous leadership of our D.R.'s, supported by enthusiastic T.R.'s the home membership can look forward to a very bright future. J.C.

#### DISTRICT 15 DINNER—(continued from page 74)

toast which has special significance after six years of terrible war.

The energetic social activities of dancing and drinking followed the dinner, to the strains of a good four-piece band, the show being ably M.C.'d by Mr. Jack Sutton, BRS9746. During the evening there were many spot prizes and a lucky-dip for both ladies and gentlemen (pretios to you). Activities ended just after 11 p.m.

The following members were present:

Dr. R. L. Smith-Rose; G2CV, TJ, G3BR, HT, SH, UQ; G4AQ, AR, DC, GB, KD; G5IJ, LI, FR; G6CJ, CL, DZ, GR, JK, LJ, NB, OT, TR, QM, WN, XP; G8DR, KZ, MS, PD, PI; 2FBK; BRS2842, 3425, 3811, 3867, 4473, 4542, 4781, 5246, 6275, 6447, 7487, 9422, 9705, 9746, 9936, 10,409, 10,504, 10,951; ex VE3DG; W2IUA; and 54 other ladies and gentlemen. G8PD.

#### Forthcoming Events

- |         |   |         |   |
|---------|---|---------|---|
| Nov. 15 | District 4 (Nottingham), 7 p.m. at The Foresters Hall, Peachey Street, Nottingham. Discussion on U.H.F. gear.   | Nov. 20 | Scotland "D" District, 7.30 p.m. in Chamber of Commerce Rooms, 25 Charlotte Square, Edinburgh. Business. Election of Office Bearers and Discussion on future District activities. |
| Nov. 16 | London Meeting, 6.30 p.m. at Institution of Electrical Engineers, Savoy Place, Victoria Embankment, W.C.2. Tea at 5.30 p.m. Lecture on "Aerial Systems for the Radio Amateur" by Mr. F. Charman (G6CJ). | Dec. 2  | Districts 7 and 13, 3 p.m. at BRS 4324, 3, Englewood Road (Clapham South Station).  |
| Nov. 17 | North Western P.D.M., 12.30 p.m., Stork Hotel, Liverpool.   | Dec. 2  | District 7 (Southampton), 3 p.m. at 9 Carlisle Road, Shirley.   |
| Nov. 18 | District 4 (Leicester), 2.30 p.m. at G2IX, 19 Francis Avenue, Narborough Road, Leicester.   | Dec. 2  | District 12, 3 p.m. at BRS4249, 9 Falmer Road, West Green Road, Tottenham. (41 bus to Black Boy Lane. Falmer Road is first left and then first right down Black Boy Lane.)        |
| Nov. 19 | District 18 (Hull), 7.30 p.m. at the Imperial Hotel, Paragon Street.  | Dec. 6  | District 4 (Nottingham), 7 p.m. at No. 6 Canteen, Messrs. Ericsson's, Beeston.  |
| Nov. 20 | West Drayton R.A.F., 7.30 p.m. at The Camp.   | Dec. 7  | District 15 (Harrow), 7 p.m. at BRS6527, 153 Belmont Road, Harrow, Mdx.   |
| Nov. 21 | District 15 (Hayes), 7 p.m. at The Labour Hall, Southall, Middx.  | Dec. 8  | District 15 (Ashford), 6.30 p.m. at BRS5056, 9 St. Hilda's Avenue. (Southern Rly. bus 117 alight St. Hilda's Church, bus 90 alight Fordbridge Road).                              |
| Nov. 22 | District 2 (Sheffield), 8 p.m. at the "Dog and Partridge", Trippett Lane. "Valve Voltmeters" by Mr. I. S. Christie, BRS7707.  | Dec. 8  | District 7 (Reading), 6.30 p.m. at Palmer Hall, West Street.  |
| Nov. 23 | District 8, 7 p.m. at "The Jolly Waterman," Chesterton Road, Cambridge.   | Dec. 9  | District 15 (West London), 5.30 p.m. at BRS6275, 51 Rusthall Avenue, Bedford Park, Chiswick, W.4.   |
| Nov. 23 | District 15 (Harrow), 7 p.m. at BRS6527, 153 Belmont Road, Harrow.  | Dec. 10 | District 3 (Coventry), 7.30 p.m. at the John Hough Mission Schools. Demonstration of Members' apparatus.  |
| Nov. 24 | District 7 (Reading), 6.30 p.m. at Palmer Hall, West Street.  | Dec. 17 | District 18 (Hull), 7.30 p.m. at the Imperial Hotel, Paragon Street.  |
| Nov. 25 | District 10 (Cardiff), 2.30 p.m. at GW8UH, 29 Ladysmith Road (off Penylan Hill), Roath Park.  | Dec. 18 | District 3 (Birmingham), 6.30 p.m. at Chamber of Commerce, New Street.  |
| Nov. 25 | District 14 (Clungford), 4 p.m. at A.T.C. H.Q., Fretoria Road. Discussion on "Oscillators," opened by G2XG.   | Dec. 19 | Scotland "H" District, 7.30 p.m. at 3a Bank Street, Kirkcaldy.  |
| Nov. 26 | District 3 (Coventry), 7.30 p.m. at the John Hough Mission Schools. Lecture on "Measurements" by Mr. L. W. Gardner, G5GR.   | Dec. 29 | Annual General Meeting, 2 p.m. at Institution of Electrical Engineers, London.  |
| Nov. 28 | Scotland "A" District, 7 p.m. in Institute of Engineers and Shipbuilders, 39 Elmbank Crescent, Glasgow. Film Show.  |         |   |
| Nov. 29 | District 5, 7 p.m. at Keen's Cafe, Park Row, Bristol (near University).   |         |   |

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

# OVERHAUL OF MOVING-COIL METERS

P. D. COLLINGS-WELLS (BRS6885)\*.

**T**HE overhaul of small moving-coil meters can, in nearly all cases, be carried out without the assistance of a skilled workman, the only requirements being patience and a reasonably steady hand. In the procedure to be described a fair knowledge of the construction and basic principle of such instruments is assumed.

The faults that can usually be overcome by an overhaul are: (a) Irregularity of performance; (b) stickiness of movement over parts of the scale; (c) complete failure to operate.

The following tools are required: a set of small screwdrivers, small-nosed pliers, a midget soldering iron (e.g. a "Pyrobit" iron). An ordinary sewing needle, stuck into a pencil-like handle, has been found a very useful tool for this work. A good light is also essential. A lamp of the "Angle-poise" type is excellent as it keeps the direct light off the eyes, apart from being easy to adjust as regards position.

All work must be carried out on a perfectly clean, smooth table. Two clean sheets of well-glazed paper will be found useful; one on which to do the actual work, and the other on which to lay the various parts.

It is vitally important that the work is done slowly and gently, with complete absence of violent or quick movements. (It should here be noted that in the procedure described below the actual sequence of the various operations will alter according to the make and/or size of the instrument.)

## Preliminary Operations

First remove the instrument from its case, then detach the scale, supporting it from the underside until it is well clear of the pointer. This precaution is necessary in order to avoid any possible chance of damage occurring to the latter. It must be remembered that any force on the end of the pointer may cause damage to the bearings of the instrument. The pointer should never be touched or pushed over with a finger, as the latter is too insensitive to feel any small obstruction to movement.

(If the fault is due to stickiness of the movement it is advisable at this juncture to pass a suitable current through the winding to ascertain if the defect is still present. It is quite possible that the pointer had been just touching the scale at certain points in its travel.)

The magnet should now be removed. It will be found, when its securing screws have been taken out, that the magnet will cling very firmly to the pole-pieces, so it must be eased off gently with finger and thumb and not pulled off sharply. A keeper must be placed across its poles as soon as it is taken off.

The two leads from the terminals of the instrument can now be removed. At this point the remaining parts should be closely examined with a magnifying glass in order to obtain some idea of the condition of the movement and also to decide how much more dismantling is necessary. The spring that is visible should be closely examined for sagging and touching turns, as these are two common causes of faults (a) and (b). It may be found that a small hair or piece of fluff is lodged between two turns, thus causing stickiness of movement. Such an obstruction can easily be removed by using the needle stuck in the handle.

If the meter is "dead," this is the point at which to examine the connection between the coil and the

upper spring. If the cause of the fault is still not obvious, the dismantling of the instrument will have to be completed.

## Complete Dismantling

The remainder of the assembly, which consists of pole-pieces, core coil, springs, etc., can now be removed, usually in one piece, from what was the back of the case of the meter. Extreme care in handling is now vitally important, the pointer being the most easily damaged part. It is not wise to try to remove the pointer, for not only does this tend to upset the balance when it is replaced, but the bearings may also be seriously damaged due to even the slight forces imposed during the removal and replacement of the pointer. If the pointer is bent, it should not be straightened until the reassembly operation is well under way.

It is now possible to examine the lower spring in the same way as the upper one, and if the cause of stickiness of movement has not yet been located it may be found here. If the meter is still "dead," a continuity test can be applied by connecting the coil into a circuit comprising a cell, headphones, and a suitable resistance. The connections to the coil should be made from the zero-setters, so as to include both springs in the circuit. If no appreciable click is heard in the 'phones on completing the circuit, the connections between the coil and the springs can be very gently touched with the end of a pin. If this causes a loud crackling or a loud click, it will indicate that this connection is faulty. If, however, there is no crackling, it will probably mean that there is a break in the coil.

## Removing the Coil

Having reached this stage, a decision must now be taken as to whether or not the coil should be removed. If the cause of the fault has not been revealed, or if there is a break in the coil, work must be continued. Even if the fault has been found, it might still be necessary to clean the bearings. Nevertheless, it should be remembered that the actual removal and replacement of the coil is the most delicate part of the job, and should not be undertaken unless it is thought to be really necessary.

If it is decided to continue, the next part of the procedure is to unsolder the springs; at the zero setters only, not at the inside. This operation should be carried out with a light touch of the iron, as excessive heat is liable to destroy the special temper of the springs.

As the construction of bridging pieces varies in different types of meters the sequence of operations will alter considerably from this point onwards. As the bridging piece may either be fixed to the pole pieces, or independent of the latter, the structure must be carefully examined to decide upon the best method of proceeding. In certain types the pole pieces can be removed next, leaving an assembly consisting of the coil, and core, and a small casting, to which are attached the core and the bearings. When removing the pole-pieces great care must be taken to prevent them falling on to, or even touching the coil. The core can probably be taken out now, and even greater care is needed to keep it clear of the coil. When the coil is being removed it is only necessary to loosen one of the two bearing screws. The coil must be gently supported while this bearing is being loosened, or it might fall forward and damage the pointer.

\*Horslake, Cheriton Bishop, Nr. Exeter, Devon.



## Cleaning Operation

The cleaning of the parts can now be started. All cleaning must be dry. The best tool to employ for cleaning such parts as pole-pieces, etc., is a small artist's brush. A cloth should not be used as it is liable to leave behind tiny bits of fluff or hair. The cleaning of the jewel bearings and coil pivots can be carried out with the aid of a small piece of balsa wood, which is rotated inside the jewel bearings, and into which the pivots are gently pushed. Before reassembly commences all parts, including the magnet, scale and outer case, should be well cleaned with the brush to remove all traces of dust. If the work has to be left, even for an hour or two, after the cleaning has been completed, all the parts should be covered over with saucers.

## Re-assembly

Great care and patience is necessary in replacing the coil. No attempt should be made to tighten up the bearing screws until it has been ascertained that the pivot points are in the bearing cups and not outside them. The screwing-up of the bearings should be done progressively, with frequent stops made to permit the needle being pushed over gently with the brush. It will be an easy matter to see when the bearings are, even slightly, too tight. When they are finally adjusted, and there is no lateral play in the coil, the nut locking the bearing screw can be tightened, with a small screwdriver still holding the bearing screw in the correct position. The rest of the reassembly is

quite simple, the sequence being opposite to that described above.

## Re-soldering the Springs

The best method of resoldering the springs to the zero-adjusters is to solder the top spring first (with only a touch of the iron, as before) afterwards moving the top zero adjuster until it is at right angles to the bridging piece, thus it will easily engage with the adjusting screw on its case. The position of the bottom zero adjuster is immaterial, so that, when soldered to the spring it can be used to bring the pointer approximately to zero, while the top adjuster is later used to bring it more accurately to this position.

It will probably be found that the balance weight needs readjustment. There are three main types of balance weight; first, a small nut, moving up and down a threaded "stub"; second, a small drop of a special substance, which (originally in paste form) is allowed to set hard when the correct weight has been applied. The third type takes the form of a tiny coil of wire, which is slipped over the stub, and secured there by a coat of shellac. The first type is easy to adjust, but the other types take longer and require more patience. When adjusting the counter-weight, the instrument must be turned at all angles to make sure that the pointer always retains the same position.

When reassembling is complete, the meter should be connected in series with a reliable instrument, a cell and potentiometer. In this way the steadiness of movement can be tested, as well as the accuracy. If necessary, the scale can be recalibrated from the reliable instrument.

# PANEL LETTERING

By C. EDWARD ADAMS, P.A.S.I. (BRS3412).

THE purpose of these notes is to bring to the attention of readers an article which appeared in *QST* for August, 1944 (Page 38) entitled "A Hand Screening Process for Amateur Instrument Panel Lettering" in which results were claimed to be comparable with those on the *Hallcrafters* receivers done by the Commercial Silk Screen Process.

The method has been tried out with some success by the writer using the following materials, all of which are available or obtainable in this country:—

Typewriter—preferably one with larger than standard type.

Roneo Klarotype Stencil—obtainable from any estate agent's or other office where duplicating is done.

Several hard wood blocks slightly larger than the lettering required—for single controls a block 3 in. × 1 in. ×  $\frac{1}{2}$  in. will be suitable.

Piece of sponge rubber for each block and of the same size as the block (this was cut from an old sorbo rubber kneeling mat).

Small brush.

Small quantity of white paint and turpentine (or printer's ink if available).

Artist's varnish spray (as used for setting charcoal and pencil sketches).

Small bottle of thin transparent varnish.

## Processes

First stick the rubber pad on to the block with rubber solution and when ready to proceed type in capitals the required wording (TONE CONTROL: VOLUME CONTROL: A.V.C.: B.F.O.: R.F. GAIN: PHONES: "S" METER, etc.) on to the stencil using the carbon backing sheet provided, after carefully changing the ribbon control to "Stencil"

and cleaning the type with methylated spirits and an old tooth brush.

Give the surface of the pad a generous coating of ink or paint. In this connection some experimenting may be needed to ascertain the correct consistency of the paint which can be diluted as needed with the turpentine. Then cut the stencil to a size slightly larger than the pad and place face downwards thereon. Press on to the panel after making a few trial impressions to see that the ink is running properly, taking care to get the lettering upright and using chalk guide lines to ensure straightness.

The result should be a perfect impression of the typewritten wording on the stencil, but if it is in any way unsatisfactory it should be immediately wiped off with a rag and another impression taken. Spray with varnish to reduce setting time and prevent smudging.

The method can be used on a fairly large scale where several similar panels have to be lettered, as many impressions can be obtained from one stencil. If a sufficiently large block and rubber pad are available a whole panel can be lettered in one operation (instead of doing each control separately) with the aid of one foolscap stencil. With a suitably-sized stencil and pad practically any wording can be applied. The work need not be confined to white on black as described as any coloured paint or ink could be used as required.

The original article was written by W9GQP of the *Hallcrafters Co.*, Chicago.

## News from Europe

Cpl. Chandler, **G6BP**, recently met SP1BP of Lwow and SP2OK, of Katowice. Both have been in concentration camps. They ask to be remembered to all Gs who worked them before the war.

Capt. T. B. Fox, **G3HU**, No. 1 X-ray Repair Section, R.E.M.E. c/o 108 (Br.) Gen. Hosp., B.A.O.R., will be glad to hear from any member serving in Germany.



# A SIMPLE METHOD OF MEASURING DISTORTION IN A.F. OSCILLATORS AND AMPLIFIERS

By L. W. SMITH (2FSI) \*

**M**EASUREMENT of distortion in A.F. oscillators and amplifiers is usually a job calling for fairly elaborate gear and calculation. The circuit described here gives a measure of all the harmonics in a signal lumped together and expressed as a percentage of total signal. Its disadvantage lies in the fact that the individual harmonics cannot be analysed without the use of wave filters.

## Principle

The method used is to eliminate the fundamental frequency and to obtain a reading on a detector which is a measure of all other frequencies appearing in the signal. The original tone (frequency plus harmonics) is then fed into the detector via a calibrated voltage divider, this being adjusted to give the same reading on the detector as before. The setting of the potentiometer then gives the ratio of harmonics to total input.

The method is based on that described by D. F. Schmit and J. M. Stinchfield (*Electronics*, May, 1930) to whose description the reader, interested in the theoretical development, is referred.

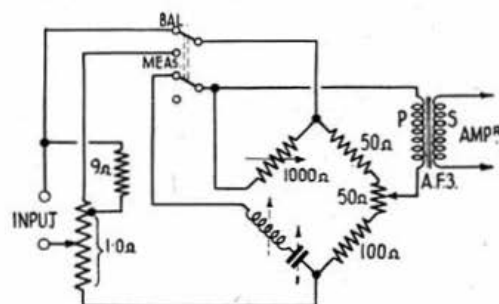


Fig. 1.  
Bridge circuit used for measuring distortion in A.F. oscillators and amplifiers.

## Circuit

The circuit shown in Fig. 1 consists primarily of an input potentiometer and a bridge circuit, one arm of which comprises a simple tuned circuit. The values of potentiometer and resistance indicated give a scale range of 0-10 per cent. distortion, which is sufficient to cover the majority of apparatus in which some knowledge of the amount of distortion is desirable. The double change-over switch serves to change the circuit conditions for "Balance" and "Measure" operations.

In the author's bridge, the tuned circuit is made up of a coil and the necessary condensers to tune to predetermined frequencies, governed by a rotary switch, together with a variable condenser to cover frequency variations.

If the tuned circuit is made continuously variable, it is unnecessary to continue the range above, say, 5 kc/s. because above this frequency the harmonics tend to fall more and more outside the audio frequency range, and as the gain of the amplifier falls off at high frequencies, this will result in a low reading of harmonics in the "Balance" position and therefore, in an inaccurate reading in the "Measure" circuit.

## The Potentiometer

The measuring potentiometer is merely a device for determining what proportion the voltage input, to the amplifier in "Balance", is to the total input. Details of the construction are shown in Fig. 2. The tapping is used to give a calibrated zero point. The resistance of the wire should be adjusted so that the resistance between the tap and the other end of the potentiometer is 1 ohm.

The only other point to note is that the whole potentiometer should be of rigid construction, with particular reference to the slider arm and its attachment to the control spindle.

When the potentiometer is complete it should be connected in the set and the circuit arranged for measuring. With a tone connected to the input, the potentiometer should be adjusted until the output of the amplifier is zero. It is preferable to use 'phones for this operation as a more accurate zero point may be obtained. This point on the potentiometer dial is calibrated as 0 (zero). The scale from this point to the end is subdivided into tenths, and may be further divided into hundredths, thereby indicating distortion values to 0.1 per cent., although this degree of accuracy is unnecessary for most purposes.

The other resistance in the potential dividing network should be adjusted to 9 ohms. Using these values it will be seen that the slide wire now measures a total of 10 per cent. of the whole input. The scale will now indicate 0-10 per cent. distortion in 0.1 per cent. steps.

## Operation

To obtain accurate balance points, it is necessary to use a fairly high gain amplifier, with a visual indicator on the output. The gain should be about 80-90 db. for satisfactory operation and should be reasonably level over the audio frequency range. The amplifier used at the author's station consists of a 6J7G followed by two 6J5's in cascade, but any reasonably flat amplifier with sufficient gain is satisfactory.

As the input impedance of the measuring circuit is very low (approx. 10 ohms) it is advisable to build out

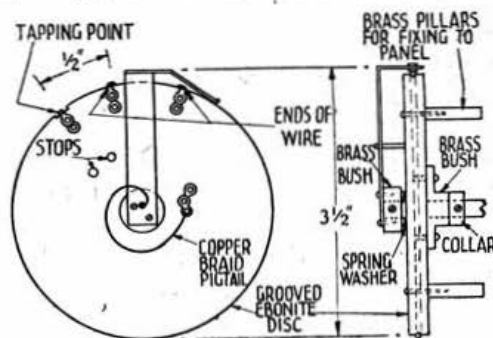


Fig. 2.  
Mechanical details of potentiometer. To secure the ends of the wire, soldering tags are mounted so that the tips may be bent over the edge of the disc and the ends of the wire soldered thereon. The tapping point must be recessed into the edge of the disc to allow free travel of the slider.

\* 3 Dornberg Road, Blackheath, London, S.E. 3.



# A FRESHMAN'S GUIDE TO AMATEUR RADIO

By A. O. MILNE (G2MI).

## PART V—CONTESTS AND FIELD DAYS

AS it takes "all sorts to make a world," it is only to be expected that some outlet for the sporting instinct should occur in the sphere of Amateur Radio. In this particular case, the urge for competition and the pure thrill of a sporting contest may also be coupled with the more serious business of testing equipment under the most exacting possible conditions.

In the course of ordinary day-to-day working, inherent faults in design or layout do not make themselves apparent, but when the equipment has to work at high pressure for many hours at a stretch, small technical and practical faults become an intolerable nuisance. For example, some rather cumbersome way of changing bands or changing aerials may not be very troublesome when it has to be performed once or twice a day, but under the intensive conditions of a competition, such things waste precious time and may even cost the operator a place in the final result.

In days gone by, many amateurs often spent months of thought and effort preparing for some annual contest. In fact it would not be an exaggeration to say that some began preparing for the next year, a few days after finishing a contest.

It should be understood, therefore, that there was a serious and legitimate reason behind the apparently frivolous facade of the Amateur Radio contest.

It is no idle statement that the speed and adaptability acquired in the competitive events of organised Amateur Radio did much to fit many of our members for the arduous trials which they so ably surmounted during the recent war. This is particularly true of National Field Day.

### Contests

So far as R.S.G.B. was concerned, in the years before the war, there were three main annual contests, namely, B.E.R.U. Senior, B.E.R.U. Junior (power limited to 25 watts) and the 1.7 Mc/s. contest.

The British Empire Radio Union Contest, "Beru"

for short, was open to members of R.S.G.B. and affiliated societies throughout the Empire. It took place during each of the first two week-ends of February and was followed by the Junior (25 watts) contest during the third and fourth week-ends. The Empire was divided into a number of zones, successful contact with each zone providing a multiplier to the number of points scored; i.e. supposing a contestant made the following contacts:

New Zealand	..	..	4
Australia	..	..	3
India	..	..	2
South Africa	..	..	3
Barbados	..	..	1
Gold Coast	..	..	1

The number of points scored would be 14 (contacts) multiplied by the zones worked.  $14 \times 6 = 84$  points.



In pre-war days 56 Mc/s. Field Days were frequently organised by the Society. Here is G2QYP in action near Elstree, Herts, with an ambitious rotary beam of small dimensions.



Portable operation was a feature of summer-time activities prior to the war. Here is the aerial system used by G8TL for some special tests which took place in East and South London on 1.7 Mc/s.

It will be seen that, as the number of contacts increased, an extra zone or two contacted towards the end of the contest could cause a very gratifying increase in the final score. A handsome silver trophy was awarded to the winner of this event and was held for one year. A small replica, presented at the same time became the winner's permanent property. The Junior event followed along the same lines and a similar trophy was awarded to the winner.

The 1.7 Mc/s. contest was usually held early in January each year. Although DX was rare, the standard of operating was always of a high order, power being limited to 10 watts. In some years, quite long distances have been covered but normally it was mainly a domestic affair.

### International Contests

Prior to the outbreak of war, almost all the national societies were organising contests, in fact they were multiplying at a rather alarming rate. For some years, however, there had been several regular events which were patronised by many British amateurs, chief amongst which was the A.R.R.L. DX Contest held in

March. Although this was in no way an R.S.G.B. affair, the Society was custodian of a handsome trophy, presented by Arthur Braaten, W2BSR, which was awarded annually to the British zone winner in this event. As a test of endurance, both for the operator and his equipment, this American contest easily surpassed all others, for it involved 90 hours of operation, spread over a period of eight days. Other contests which evoked interest were the Australian event, organised by the Wireless Institute of Australia and the rather involved "D.J.D.C." organised by the German Society, D.A.S.D.

Contests are always good fun, even if they are something of an ordeal. To win or be placed represents an achievement of which the individual concerned might justly be proud.

### Field Days

The R.S.G.B. has always been in the lead so far as Field days are concerned.

National Field Day was originated in 1933 and the idea was subsequently adopted by the A.R.R.L. and many other societies, most of whom synchronised their event with the British date.

Each R.S.G.B. District was allowed to put four stations on the air, one for each of the four bands, 1.7 Mc/s., 3.5 Mc/s., 7 Mc/s. and 14 Mc/s. Sites might be selected anywhere within the R.S.G.B. district, except in the case of the London districts which were allowed to choose sites in outer areas near their own districts. Restrictions on power weight and portability were imposed and there was also a zero

hour before which no equipment could be installed on site.

The event usually extended from about 5 p.m. on a Saturday until a similar hour the following day, installation beginning about midday on the Saturday. The stations were run by a team of operators drawn from the district and as N.F.D. was always run in June, full advantage was taken of the chance to make a camping week-end holiday by all concerned. Many interesting world-wide contacts were made especially with portable stations overseas. One country in particular, always put up a good show with a station, somewhere near the pyramids. Many Swiss portable stations also used to be active during N.F.D. week-end.

There is no doubt whatever that N.F.D. provided most valuable experience to many of our members, who put it to good use during the war.

Well, folks, there it is, that was Amateur Radio before the war. It is no part of the present writer's job to hazard any guesses for the future, that must be left to another and abler pen. It is hoped that a further series of articles will be published shortly to give our Freshmen some tips on the technical side. The present series of which this is the final instalment, has been concerned primarily with the general set-up. We hope you have found it interesting. Any questions?

### Side Slip

Due to a printer's error Part IV of "A Freshman's Guide to Amateur Radio", published last month, was described as Part VI.

## DISTRICT 15 WORLD VICTORY 'DINNER AND DANCE

**D**ISTRICT 15 held its first peace-time dinner and dance for six years at the Park Royal Hotel on Saturday, October 20, when 120 guests attended to renew old and make new friendships.

The gathering was honoured by the presence of Dr. Smith-Rose, D.Sc., Ph.D., M.I.E.E., D.I.C., A.R.C.S., and Mrs. Smith-Rose, who appeared to enjoy their first visit to a "ham" social event. Headquarters was represented by the President, Mr. E. L. Gardiner, B.Sc., G6GR, Mr. S. K. Lewer, B.Sc., G6LJ, and Mr. F. "Dud" Charman, G6CJ, all of whom are District 15 members and Mr. H. A. M. Clark, B.Sc., G6OT, and Mr. John Clarricoats, G6CL, who reside in neighbouring District 12.

The reception took place at 6 p.m., the District Social Committee Chairman, Peter Bradley, G8KZ, announcing the guests as they arrived.

An excellent war-time dinner was followed by toasting and speech-making. When presented in a write-up, this part of a function always seems rather boring, but in actual practice this was not the case at the Park Royal Hotel.

After the Loyal Toast had been proposed by the Chairman and District Representative (Mr. H. V. Wilkins, G6WN), Mr. H. W. Pope, G3HT, proposed the health of the R.S.G.B. Perhaps it should be pointed out here that speakers were asked to keep the length of their speeches down, which they did—even G6CL did not produce his little black book! The President in his reply gave the welcome news that amateur operation on certain National frequency bands would be permitted in a few weeks time. He also said that the Society now had nearly 10,000 members and that there was £10,000 in the Post-War Fund.

Dr. R. L. Smith-Rose, in proposing a toast to Amateur Radio, said that since the war began it has become increasingly evident that radio amateurs are not second-rate tinkers, but men and women who are keenly interested in wireless. Amateurs had made a great contribution to the war effort, in fact,

right from the time when they were relegated to the "useless" short waves 20 years ago, they had pioneered the way.

Mr. John Clarricoats, General Secretary of the Society, in his reply, spoke of the present time as a great Renaissance in the life of the Society. The biggest Society meeting ever had been held on the previous evening at the I.E.E., London, and we were on the road to peace-time activities and expansion. He looked forward to arranging a Convention as soon as catering and the hotel position improved. He concluded by saying that everything was being done by the Council to get licence facilities restored as soon as possible.

A toast to District 15 was proposed by Mr. H. A. M. Clark, Honorary Secretary of the Society, who said he was well qualified for his task as he spent at least eight hours of every working day in District 15, and knew many of its members very well. He looked forward to the time when the two Districts would be competing again in National Field Days and other "ham" events.

Mr. Wilkins, in replying, gave a brief outline of how amateur radio and District 15 in particular had grown. In 1922 there were, he said, only about 200 licensed amateurs in the whole of the British Isles whereas in 1939 there were 113 in District 15 alone. He anticipated there would be at least 136 when licenses were re-issued. Mr. Wilkins expressed the hope that Mr. Buckingham, G5QF, Representative for District 12, would make a speedy recovery following his return home from hospital.

Mr. F. "Dud" Charman, in proposing the health of the ladies, spoke of the great debt "hams" owe to their wives. He also extended greetings to the visitors on behalf of the District. After replies had been made by Mrs. Winsford (wife of G4DC), for the ladies, and Mr. T. B. Cocking, G2CV, for the visitors, Mr. Peter Bradley, G8KZ, offered a toast to absent friends—a

(Continued on page 68)



# THE MONTH "OFF" THE AIR

By A. O. MILNE (G2MI)\*

TO the old timers the reappearance of this feature will be a sign and a portent, to the newcomers it will mean little at first. Perhaps it should be explained that the normal title of this article would be "The Month on the Air," but it was changed in September, 1939, for the duration. M.O.T.A. was a regular feature before the war and carried on for some time after the war began. Its function is to tell you what there is to be heard and worked on the amateur bands. It depends on you for its "copy," G2MI is just the collector and writer-up of your observations, so let's hear about what you hear on the air!

Although at the time of writing, Amateur Radio has not restarted officially, many of the boys overseas appear to be on the air under various forms of official or semi-official sanction. For example we hear from H.Q. 214 Group, R.A.F., C.M.F., that the Allied H.Q. there have provisionally allocated 7120—

7210 kc/s for amateur transmission by British and American Service personnel from 0600—1800 hours daily. Calls to be XAAA—B—C, etc.

We have been told that the United Nations have agreed that all their amateurs will be activated together. This may be so but a few minutes listening on 14 Mc/s any afternoon will "make yer fink"! In our opinion, agreement or no, unless the United Nations have another think, and quickly, it will take three times as long to rid our bands of "pirates" as it will to remove the military stations therefrom; the ostensible reason which is put forward for keeping us off at present. In short, if the Military can spare time, gear and frequency space to allow their people to play at amateurs on our bands, then they can use the time to better advantage in packing up and quitting.

It should be emphasised that except that our Post Office is loyally observing the United Nations agreement, we would be back on the air. If you want

\* 29 Kechill Gardens, Hayes, Bromley, Kent.

## RE-ISSUE OF LICENCES

THE following statement was made by Mr. E. L. Gardiner, G6GR (President), at a meeting of the Society held on Friday, October 19, 1945, at the Institution of Electrical Engineers, London, W.C.2.

\* \* \* \*

*"The Society has been informed that, due to over-riding military necessity, the G.P.O. cannot yet obtain clearance for amateurs to resume their transmissions on the International amateur frequency bands. It is anticipated that a delay of from four to six months may occur before the bands are cleared of military traffic."*

*"An agreement has been reached with other Governments that operation on International amateur frequency bands will commence simultaneously."*

*"The Society has been informed that permission is likely to be granted within a few weeks for amateur operation to commence on certain National frequency bands."*

\* \* \* \*

By International amateur frequency band is meant any frequency which is used for international communication, e.g., 7 Mc/s. A National frequency band is one on which international communication is not normally possible, e.g., 56 Mc/s.

### Applications from Pre-War Licencees

Holders of pre-war radiating licences who have not yet applied for their licence should communicate immediately with:

Radio Branch, W2/6,  
Engineer-in-Chief's Office,  
(Alder House), G.P.O.,  
London, E.C.1.

stating:

- (a) Name of Licencee.....
- (b) Address of Licence Station.....
- (c) Call Sign.....
- (d) Address to which all future correspondence is to be sent.....

Holders of pre-war non-radiating licences who have not yet applied for a radiating licence are requested to do so in accordance with the terms of the announcement published in the September, 1945, issue of the R.S.G.B. BULLETIN.

Those who do not wish to apply for the re-issue of their licence should notify the Radio Branch immediately, at the same time giving an address to which their impounded apparatus is to be returned.

### Impounded Amateur Equipment

Further to the statement published on Page 177 of the June, 1945, issue of the R.S.G.B. BULLETIN, the Council is pleased to announce that all impounded amateur equipment will be released by the G.P.O. at the earliest possible moment. It is expected that the return of the equipment will commence at about the time this is published.

### Warning

Members are warned that no transmitting equipment may be operated until a sending licence has been obtained from the G.P.O.

to know why we are being kept off our bands ask the U.S. State Department! We wonder if, even now, they will pull a fast one on us and be back first. The rub comes hardest when we are being asked by the Americans what we are doing to get our Authorities moving! They should address their inquiries to Washington, not London.

Here are some of the calls which have been heard by G6CL and G2MI, on 14 Mc/s.

October 20th. 1500-1530 GMT. W8NDB/KA, W8QUW, W2LVV, VU2XO, FA8JD, SU6ZY, ON4L, ZC6A.

October 21st. W4FXP, W9THI (14350), ON4U (14350), 3A, SU1C (cw & 'phone), ZC6A, GW3AL (R.A.F.), F8JW, XU6JD (W9NKT), DN1BH (14110), HB9KE, BIJ, VQ4MIL, EI5X.

Other stations have been heard at odd times and include W3AG/XU, LX1AC (giving QRA in Switzerland), Z2ZX, W9SAP/VU, J0AA, KA1JZ, VK3BC, G9YL (T9 S9), OZ3A, SM5LF.

G3WS reports hearing some of the above and adds SM8PS and SM4MZ on 14 Mc/s. and LA2Y on 7 Mc/s. on the 20th. DX4U (Belgium), SM3Z, EA1FB and CN2R were heard on the 21st. Between midnight and 1 a.m. on the same date he heard CT1VR, SM5ZP, HB9CU and U3VA.

G8KW reports the following between 7075 and 7150 Mc/s. on October 14th:—ON4H, ON4X, ON4FB, ON4L ('phone), F8RMF, F8RZ, FT4B, DNDP, SM5LF (S9) DA1AA, OK1FB (near Frankfurt), I1ALA ('phone), OH9Q, HB9ZZ, PX1Y and W2ODN.

14 Mc/s. VU5SB, W8TNI LZ1XX, KB1KW and ON4F. W8NDB says that he is in Luzon on a ship with 100 watts, and W2ONV gives his location as "a ship near Tokyo." Quite a number of these Americans give their correct home address, name and "handle." G8KW has also heard several stations on 3.5 Mc/s., including ON4F, LX1AF, OK1ZS (Prague), LA2B (Stavnaes), HB9K ('phone), DX4GB, HB9XA.

It is quite obvious that many of these stations are being operated by service personnel using R.A.F. Army, or Navy gear, and that some degree of permission has been obtained. Oh, yes, we almost forgot, of course there is another pirate in the 7 Mc/s. band—The B.B.C. Home Service! If that unnecessary transmission remains there much longer, in defiance of the Cairo Convention, it will provide a valuable precedent to any unscrupulous Government who decides to "pinch" a frequency for itself elsewhere in the spectrum. They might even appropriate a G.P.O. frequency—Ye Gods!

Send your reports in to G2MI. There must be hundreds of pirates on the air that we have not yet logged!!

\* \* \*

**Stop Press.**—We have received official information from the Swiss Society, U.S.K.A., that their amateurs have been re-activated on 56, 112 and 224 Mc/s.

Reports are also to hand from Switzerland listing many of the calls recorded above and also several others, F8FN, W8CQB, W9MTD, G7YL, ZC4NX, EI2X, SM5LU, IGY (giving QRA, Frankfurt), F8CC, 3C. They also complain of many badly modulated Italian 'phones in the 7 Mc/s. band. GD4AA and CV1JJ were S9 and thought to be near the Swiss Frontier. G5CC and OZ2NAX have been heard on 3.5 Mc/s.

Space is limited, but we will do our best to keep you informed. See you next month.

\* \* \*

**Late Extra.**—The Norwegians are back on 56 and 28 Mc/s. Official!

**Late Final.**—Jim Kirk, G6ZO, sends us the following

information from Italy. Calls so far issued in the XA series are as follows:

Major G. I. McHale .. .. XAAC  
Major L. W. Richards .. .. XAYM—G3YM  
Major J. M. Kirk .. .. XAZO—G6ZO

XAZO is at Sanleucio near Caserta and is using 25 watts. His contact with XAAA at 1640 G.M.T. on October 27 was the first legitimate amateur contact to be made in that theatre.

XAAA and XAAB are U.S. personnel.

### Late News from the U.S.A.

Information has been received from Mr. K. B. Warner that the A.R.R.L. Headquarters station W1AW will shortly be broadcasting special Bulletins between the hours of 8 p.m. and 11 p.m. local time, on the following spot-frequencies:—3555, 7145 and 14280 kc/s. Mr. Warner anticipates that U.S. amateurs, like our own, will soon be operating on certain "national" frequencies.

### Defence Regulation Rescinded

We understand that the Postmaster-General has now signed an Order in Council rescinding the Defence Regulation which prohibited any British Isles subject from holding or purchasing transmitting equipment except under licence.

### Councillor G6CL

Members interested in local government may like to know that Mr. John Clarricoats, G6CL (General Secretary), was returned by a substantial majority to the Southgate Borough Council at the recent municipal elections.

### MORSE RECORDER—(continued from page 72)

the screw head, which fixes the roller (F) to the detail (G). The roller must bear securely on the motor spindle.

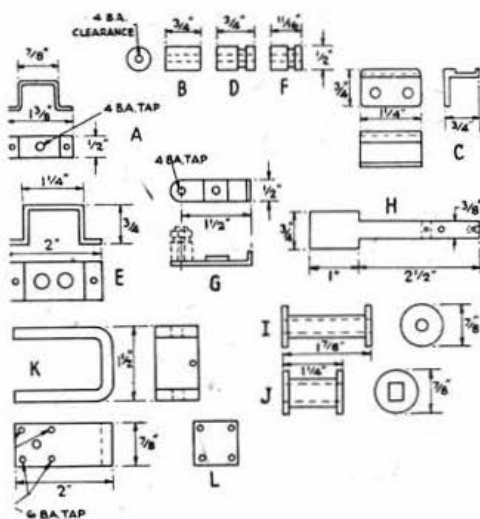


Fig. 3.  
Details of parts required for the construction of Morse Recorder.  
The designations agree with those shown in Fig. 2.

Insulating tape must be wrapped round the motor spindle to provide sufficient friction for it to pull the paper tape.

The pen used should possess a broad nib adjusted so as to bear lightly on the paper. The pen mechanism operates from about 12 volts A.C., obtained from a small transformer.

# Letters to the Editor

## Break-In

DEAR SIR,—The snags mentioned in G2MQ's letter in the October BULLETIN can be overcome by slightly delaying the change-over from send to receive and *vice versa*. The advantages are that neither the receiver H.T. nor the C.O. stage need be keyed and no "rare" Service type quick-action relays are necessary. Old P.O. sounders can be altered to handle aerial feeders and for receiving muting, transmitter keying, C.O. grid-blocking, buzzer or audio-oscillator monitoring of a bug key, etc. Old car cut-outs with the outer heavy winding removed are satisfactory. With these and one modern multi-contact relay of, say, the 3,000 type, everything can be accommodated. On C.W. auxiliary contacts added to a straight key will operate the delay system while the main contacts key the buffer or P.A. stage. When a bug key is used the auxiliary contacts can be fitted above the paddle, as the delay system is not concerned with "dits and dahs" but solely with the closing of a power pack or battery bias circuit. The inherent disadvantage of losing the first signal upon "Send" can be overcome by making a longer-than-usual T(est) or G(7MH) when starting to call, or a longer "B" (BK) when using break-in with the distant station.

When using telephony, the voice takes the place of the key and operates the delay system, the loss of the first syllable being overcome by tapping the microphone before commencing to speak. Simple gear for C.W., which will operate at keying speeds of from 5 to 35 and more w.p.m. and give delays up to 5 seconds and longer can consist of, say, an old P.O. type "B" relay, a single triode valve (run off the P.A. H.T. if desired), one condenser and two resistors, one of which is variable for altering the amount of delay. For telephony, the same system can be used with the addition of a diode valve to rectify the signal "borrowed" from the transformer secondary winding, or a previous stage in the modulator. This borrowing provides the bias that, on C.W., was given by the pack or battery. If sufficient actuation is not obtained by this arrangement, a further triode valve can be added in front of the diode for amplification (all running off the P.A. H.T. as the current consumption with a sensitive relay is extremely small). By using a close-speaking microphone the receiver output is not so likely to initiate any unwanted change-over and in difficult cases headphone reception should prove a complete solution. Finally, the whole system can be operated manually and give "Push to talk" or "Switch on for keying."

Yours faithfully,

N. P. SPOONER (G2NS).

26 Southlea Avenue, Southbourne, Bournemouth, Hants.

DEAR SIR,—Mr. Cundy's letter in the October BULLETIN may dissuade others from giving break-in a fair trial. In practice I found the snags easily surmounted.

When I went on the air in October, 1935, I used a 6L6 crystal oscillator operating as a regenerative plate oscillator on 1.75 and 7 Mc/s., and as a triode on 14 Mc/s., both keyed in the cathode circuit with a normal key click filter placed *at the key*. At that time all transmissions were monitored on an E.C.O. wavemeter-monitor and an A.C./D.C. broadcast receiver was working within a few feet of the transmitter. No clicks were noticed and reports confirmed their absence. The filter values were not very critical, and as a result of experiments made while I held an A.A. licence I used a 1  $\mu$ F condenser in series with a 250 ohms resistance placed across the key, and an inductance consisting of the secondary of a 20/1 B.T.H. transformer in series with one of the key leads.

One night in November, 1938, I decided to work my C.O. by remote control from a comfortable fireside, and ran about 35 ft. of flex from the key there to a bell movement relay breaking the cathode circuit of the C.O. The key filter was placed across the relay contacts. I raised G8OK, Guernsey, told him what I was doing and received his report that there were no clicks of any kind. He suggested that I take the next step and key direct in the 35-ft. leads. I followed his advice, placing the filter at the key, and found it perfectly successful.

These comforts probably made me lazy, for a few days later I monitored on my 0-v-1 receiver, which was using a separate indoor aerial. I soon found I could work break-in, provided I did not mind the thumps when the other man was near my frequency. As a result I continued using break-in conditions for all QSO's, except faint DX. Where signals were too weak to be picked up on the indoor aerial they were well below the level at which any useful break-in working could be performed with an outside aerial, and in my opinion expensive high frequency relays for aerial leads would be superfluous.

These experiences were based only on crystal oscillators and power not exceeding 10 watts. The effect of higher power and superhet receivers is a matter to be determined at, I hope, an early date, but it should not present much difficulty. If necessary, a pair of insulated contacts added to the ordinary hand key would serve to break the receiver H.T. or short the receiver input.

Yours faithfully,

A. STUART McNICOL (GM3UU).

DEAR SIR,—Being also interested in Break-in, my eye went straight to G2MQ's letter in the October issue and I should like to make some comments.

(1) Is it necessary for aerial change-over and receiver muting relays to operate at keying speed? I favour separate keying and break-in relays both operated by the key. The break-in relay to have a time delay on opening such that it only opens between words at the keying speed in use. The break-in relay can change over and mute directly or through further relays if the time delay involved is kept small enough. Practical experiments, however, are prevented by my absence on service.

(2) Before the war, on a three-stage M.O. transmitter, I keyed in the screen of the doubler, leaving the M.O. running. With the M.O. on a cast aluminium chassis and the coils screened the M.O. gave a strength 5 signal in the receiver. Just right for choosing a clear spot.

Yours faithfully,

D. G. FARQUHARSON, Capt. R. Sigs. (G3MF).

## Magnetic Recording

In the past few years Headquarters have received many inquiries from members seeking information on the design and construction of magnetic sound recording equipment, as well as requests for details of other systems. Such letters are usually forwarded to Mr. D. W. Aldous, BRS1006, of "Strathdee," Studley Road, Torquay, who is Technical Secretary of the British Sound Recording Association, BCM/BSRA, London, W.C.1.

Sgt. F. Rose, BRS10355, of Sunderland, is anxious to contact fellow workers on magnetic recording, and we suggest that the best way for him and others interested in this subject to get in touch is to write to Mr. Aldous, as his Association maintains a file of persons concerned with this branch of recording.

The B.S.R.A. is hoping to arrange a meeting in London, or a big provincial centre, before Christmas, and an invitation is extended to R.S.G.B. members, particularly if they would give some indication to the B.S.R.A. Secretary beforehand that they would be able to attend.

## New Empire Radio School

Air forces of the British Commonwealth are to have an Empire Radio School which is now being formed at R.A.F. Station Debden near Saffron Walden, Essex, under the control of the Air Ministry and R.A.F. Technical Training Command.

The school has been established with two main objects, firstly to ensure that radio instruction maintains progress and secondly to train signals officers, signals and radar leaders and instructors.

Liaison will be maintained with all Commonwealth air force radio schools, with all commands, and with the Empire Air Armament School and the Empire Air Navigation School, as radio is becoming an essential part of much navigation and armament equipment. Through the Air Ministry advice on all subjects concerning radio training will be available to Commonwealth air forces. The school is to have its own training research and development section and a small writing section for producing training publications.

The latest types of radio equipment and aircraft will be available for advanced and specialised study by pupils from all over the Empire.

## Stray

● Inspired by the host of "phony's" now busy on 14 Mc/s. \* G6LB suggests the following item for the ITMA script:

"Please mister, you buy nice Shamateur Radio Call Book—very foaxy, all hoaxy."

## Congrats

● To Ft./Sgt. R. Morfett, BRS6479, whose wife presented him with a son on September 11, 1945.

## Silent Keys

We record, with deep regret, the passing of:

L.A.C. T. H. Cooper, R.A.F., G4PK, of Langley Oldbury, near Birmingham.

Mr. Leslie C. Crasburn, BRS9438, of Heswell, Cheshire.

Killed in the L.M.S. train disaster on September 30, 1945.

Second Lieutenant Patrick D. G. Fraser, 3/17 Dogra Regiment, G8ST, of Hemingford Greys, Hunts. Killed

in action in Singapore on February 15, 1942.

Captain N. G. Gologan, 4/6 Gurkha Rifles, 2DOK, of

Kingston Hill, Surrey. Died from wounds received in

action near Mandalay on May 19, 1945.

Corporal A. Jones, BRS5733, of Rayleigh, Essex. Killed

in a road accident in Germany on June 22, 1945.

Flying Officer V. C. Upton, R.A.F., BRS5776, of

Holloway, London. Killed in action off the coast of

Norway December, 1944.

Our heartfelt sympathies are offered to the relatives of these deceased members.

## HEADQUARTERS CALLING

## COUNCIL 1945

## President:

ERNEST LETT GARDINER, B.Sc., G6GR.

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

Honorary Secretary: H. A. M. Clark, B.Sc., 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: F. Charman, G6CJ, D. N. Corfield, D.L.C. (Hons.), G5CD, Lt. Col. K. Morton Evans, O.B.E., GW5KJ, F. Hoare, G2DP, E. H. Laister, BR53386, S. E. Langley, G3ST, W. E. Russell, G5WP.

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

General Secretary: John Clarricoats, G6CL.

## September Council Meeting

*Resume of the Minutes of a Meeting of the Council of the Inc. Radio Society of Great Britain, held at New Ruskin House, Little Russell Street, London, W.C.1, on Monday, September 17, 1945, at 6 p.m.*  
 Present: Messrs. E. L. Gardiner (President), H. A. M. Clark, A. J. H. Watson, A. O. Milne, D. N. Corfield, E. H. Laister, S. E. Langley, F. G. Hoare, W. E. Russell, A. E. Watts, and John Clarricoats (General Secretary).

(1) The Secretary presented apologies for the absence of Messrs. Gay, Lewer and Charman.

(2) It was unanimously resolved to elect 3 Life Members (Messrs. Cutler, G2OL, Keiller, G6HR and McAlinsh, G6SMN), 165 Corporate Members (133 proposed by Corporate Members, 32 supported by references), 14 Associates, 3 Junior Associates, 2 Foreign Corporates, 2 Junior Associates to Corporate membership.

(3) It was unanimously resolved to accept and adopt the Financial Statement and Monthly Balance Sheet.

(4) It was agreed (a) that the balance standing to the credit of the War Contingencies Reserve Fund be transferred to the credit of the Post-War Development Fund and (b) that the Past President's Photographs Reserve and the Provincial District Meetings Reserve, be written back to Revenue and that any charges under these headings shall be made in the year in which they fall.

(5) It was unanimously resolved to loan a further sum of £2,000 free of interest to H.M. Treasury on the same terms and conditions as previous loans.

(6) It was reported that stocks of Handbooks and Supplements had fallen to 1,852 and 2,120 copies respectively, representing sales during the past three weeks of 2,201 Handbooks and 675 Supplements. It was agreed to obtain estimates for further reprints.

(7) After a full discussion it was agreed to consider that an emergency is deemed to be still continuing, and in view of that fact to make no change at present in regard to subscription rates. It was considered that the appropriate time to effect changes to the statutory rates would be when the Articles of Association are revised.

(8) Messrs. J. W. Mathews, G6LL, and R. H. Hammans, G2IG, were nominated, in accordance with Article 43 to serve on Council for the year 1946. The retiring officers, together with Messrs. Morton Evans, Laister, Langley, Hoare and Russell were also nominated.

(9) Matters relating to the handling of Council business were discussed and in certain cases it was agreed to adopt different methods of procedure. It was agreed to call a Special Meeting of the Council for Sunday, October 28, 1945, at 10 a.m.

(10) Matters relating to the reissue of licences and impounded apparatus were considered at great length.

(11) Surprise was expressed that no official intimation had been received from the A.R.R.L. regarding the reissue of licences to U.S. amateurs.

(12) Press cuttings relating to the reissue of licences (Daily Mail) and Walkie Talkie equipment (Sunday Graphic) were tabled. In connection with the former Press report the Secretary stated that in an interview with the Daily Mail he had made it clear that the Society hoped licences would be issued during the next few months. The Daily Mail report stated that licences would be issued in October, 1945. The Secretary stated that he had asked for a correction to be published, but as far as he was aware this had not been done. Considerable confusion had been caused as the result of the publication of incorrect information. The Secretary stated that he could give no information regarding the Sunday Graphic story.

(13) The Secretary reported that the Daily Express had published in certain Provincial editions, a story based on the work

carried out by Capt. E. S. Shackleton, G6SN, during the time he was a prisoner of war in Germany. He was of the opinion that the story had been prepared from verbal information which he had supplied to the Daily Express whose representative had agreed not to use it until permission had been obtained from Capt. Shackleton and the War Office. He was unable to state whether permission had in fact been obtained for the information to be published.

(14) An Editorial for inclusion in the October issue dealing with technical articles, was submitted and approved for publication subject to minor amendments.

(15) It was agreed to appoint Mr. W. A. Scarr, M.A. (G2WS) and the General Secretary to serve as Society Representatives on an advisory Committee being set up by the City and Guilds of London Institute to consider matters relating to the introduction of technical examinations for prospective candidates for amateur licences. Messrs. Watts and Clark were appointed deputy representatives.

(16) Correspondence was tabled from the Experimental Station Manager (Mr. D. W. Heightman, G6DH) and Mr. R. C. Jennison, regarding the future of the Section. It was agreed to defer discussion until a future meeting.

(17) It was agreed to revive the issue of Society certificates (W.B.E., H.B.E. and B.E.R.T.A.) in accordance with the Rules governing such awards.

(18) It was reported that the Society was represented by Mr. R. H. Hammans, G2IG, at a recent Press visit to a Naval Training Establishment at Portsmouth.

(19) It was reported that a special Committee was being set up by the Radio Industry Council to consider the general question of disposals of surplus Government radio equipment. It was agreed to again approach the M.A.P. for information.

The meeting closed at 9.45 p.m.

## QSL SERVICE

THE Council has decided that the Society shall provide a comprehensive QSL Service at an annual charge of 5s. to members resident in the British Isles. This will include the cost of envelopes and postage for the delivery of cards received at the Bureau to the member's address. It has also been decided that the Society shall provide the initial capital required for setting up the organisation, this to be a charge on the Post-war Development Fund. The service will also be available to non-members, who are fully licenced transmitters resident in the British Isles, at a charge of 20s. per annum. Members will be advised when the service is ready to begin operations.

A QSL management committee is to be formed under the Chairmanship of Mr. A. O. Milne, G2MI, (the present QSL Manager) to prepare a working scheme. Members in the London area willing to offer their services to this committee, particularly those with expert knowledge of business indexing and filing, are asked to communicate with Headquarters.

## Attendance Records Broken at London Meeting

At the first post-war meeting of the Society held at the Institution of Electrical Engineers, London, on Friday, October 19, 1945, an audience of some 500 members and friends enjoyed the showing by Ft./Lt. P. A. Thorogood, G4KD, of a series of six technical films. The films dealt with the following subjects: Basic Electricity (in technicolour), The Principles of Radio Location, I.F.F. (Identification Friend and Foe), A.I. (Air Interception), "Gee" (Navigational Aid) and H2S (Bombing through Overcast).

Ft./Lt. Thorogood in a brief introduction referred to the value of films for technical training purposes.

At the conclusion of the display, Mr. S. K. Lewer, G6LJ (Executive Vice-President) voiced the thanks of all present to Ft./Lt. Thorogood.

During an interval in the proceedings, the President (Mr. E. L. Gardiner, G6GR) presented the Courteney Price Trophy to Miss Constance Hall, G8LY. Miss Hall was awarded the trophy in 1939 in recognition of her outstanding experimental work during the International 56 Mc/s. Contest organised by the Society in 1938.

Mr. Gardiner also read a statement, dealing with the re-issue of licences. The statement appears on Page 75 of this issue.

## Meeting of D.R.'s being Arranged

Arrangements are being made to convene a meeting of all D.R.'s to discuss with the Council, matters relating to Provincial Representation on Council, the arrangement of Districts, the election of Town Representatives, and the future governing of the Society. It is anticipated that the meeting will be held either in London, or Birmingham, early in the New Year.

## The Northern Radio Club

Society members are cordially invited to attend meetings of the above Club which are held on Wednesday evenings from 7-9.30 p.m., at 16 Stratford Road, Heaton, Newcastle-on-Tyne.



**City of Belfast Y.M.C.A. Radio Club (G16YM).**

There was a large attendance at the 22nd Annual General Meeting of the above club held on September 5 in the City Y.M.C.A. Many visitors were present including G3FF, 3NM, 6PF, BR81060 and 8748.

The following officers were elected for the year 1945-46:

**President:** Mr. J. Herbert Ireland, G16YM. **Vice-Presidents:** Rev. W. E. Davey, BSWL330, Messrs. J. S. Phillips, J. Jensen, 2DGU, W. E. Dorman and W. E. Caughey, 2DZG. **Chairman:** Mr. R. Barr, G15UR. **Hon. Secretary:** Mr. Frank A. Robb, G16TK. **Hon. Treasurer:** Mr. W. Douglas. **Hon. Auditors:** Messrs. Jensen, 2DGU and Mr. J. Patton, G13CM. **Librarians:** Messrs. Boyd, BR88796, and Bunting, BR88351. **Senior Committee:** Messrs. J. Johnston, BR87937, C. C. Black, BR82744, S. Black, G13IA, W. McCauley, 2FIQ, and J. Patton, G13CM. **Junior Committee:** Messrs. Magowan, BR88690, Ingram, BR88807, and Boyd, BR88796.

An interesting programme is being arranged for the coming season, including visits to radio and electrical concerns. Club night is each Wednesday at 8 p.m., Morse Classes Thursdays at 7.30 p.m. and practical classes on Fridays at 7.30 p.m. A very fine library comprising more than 150 volumes and monthly radio journals including the R.S.G.B. BULLETIN, QST, Wireless World, Practical Wireless, C.Q. and Radio News, is available to members. Full particulars may be had on application to the Hon. Secretary either on Wednesday nights at the club or by writing to 60 Victoria Avenue, Sydenham, Belfast, N.1.

**"Radio" Handbook**

**Editors and Engineers Ltd.,** Los Angeles, Calif., U.S.A., announce that the Tenth Edition of the "Radio" Handbook is due to appear early in December. British Isles members may order this publication through the Society. Price 12s. cash with order; delivery about three months from date of order.

The Tenth Edition will be cloth bound and gold-stamped as previous editions.

**Decorations Won by Members**

The General Secretary will be pleased to receive information which will enable him to compile a list of members who were awarded decorations during the recent war. A fairly extensive list is already in existence at Headquarters but it is believed that several members have not informed the Society of honours conferred upon them.

**Capt. A. W. ("Bunny") Phillips**

(PXL, BR84486).

THE death on October 10 last of Capt. A. W. (Bunny) Phillips has deprived Amateur Radio of an outstanding personality and the Society of a very staunch supporter. Capt. Phillips, whose home was in Holloway, North London, held the call PXL way back in 1912. When the first world war broke out he enlisted in the Royal Flying Corps in which service he qualified as a pilot. Shot down whilst on a special mission he was taken prisoner and during his captivity was associated with one of the most famous mass escape plots of all time. Shortly after the war his eyesight failed but his cheerfulness and great courage enabled him to enjoy life to the full. During the recent war, in spite of complete blindness, he served as an A.T.C. instructor in radio and navigation. Many a present-day R.A.F. pilot owes much of his basic knowledge to Capt. Phillips.

One episode in his life will serve to illustrate his perseverance. Whilst at No. 1 Radio School, R.A.F., Cranwell, in the summer of 1943, he expressed a desire to fly again. For five days he was induced to remain on "terra firma," but on the sixth he slipped away on the pretence of resting. Upon returning to the Mess for tea his friends discovered that he had not only been flying, but for some minutes had actually piloted the aircraft—a dual control Oxford.

Until illness overtook him a few months ago he regularly attended North London meetings and frequently offered the hospitality of his own home. He seemed to have no regard for danger for on many occasions he arrived at meetings quite unattended in the midst of an air attack.

Having been a prisoner of war Capt. Phillips proved a splendid advocate for the R.S.G.B. P.O.W. Fund. Those who attended the last P.D.M. held in Lincoln will not easily forget his eloquent appeal on that occasion.

Capt. Phillips was an enthusiastic Freemason and a member of the Anglo-Colonial Lodge.

His widow and daughter, to whom we offer our heartfelt sympathies, may take comfort from the knowledge that his passing has left a wide gap in amateur circles. His outstanding personality and cheerful manner will always be remembered by his many radio friends.

The General Secretary represented the Society as well as the North London District, at the funeral which took place on October 13 at Golders Green Crematorium.

J.C.

**Radio Control of Models**

The response to the enquiry published last month has not been overwhelming but those members who have written to express their interest, could no doubt form themselves into a useful group, providing a Group Leader can be found. Any offers?

**I.E.E. Radio Section**

On December 11, 1945, Dr. R. C. G. Williams, B.Sc.(Eng.) will open a discussion on "The Servicing of Radio and Television Receivers." The meeting will take place at the Institution of Electrical Engineers, London, at 5.30 p.m., and tea will be served free of charge from 5 p.m. Society members may attend this meeting at the invitation of the President and Council of the Institution.

**Welcome Home**

Up to the time of going to press the following members had informed Headquarters of their safe return from Japanese prisoner of war camps:—

Signalman John H. Bolton, BR84034, of 119 Langham Road, Blackburn.

Cpl. R. E. Maddison, BR8441, of 17 Ryecraft Avenue, Wolverhampton, Staffs.

L.A.C. Stanley Saddington, 2FXQ, of 240 Stoney Lane, Yardley, Birmingham.

L.A.C. E. Wake, G5RP, of Old Gaol House, Abingdon, Berks.

Signalman S. H. G. Weeden, BR83812, of 38 Felsberg Road, London, S.W.2.

Lt.-Col. Tom Whimster, G8UJ, of 42 Tolmers Road, Cuffley, Herts.

We extend a warm welcome to them all and trust that they will soon recover fully from their privations.

We urge all members to keep us informed of the homecoming of other ex-Japanese prisoners of war who were licenced British Isles amateurs at the outbreak of hostilities.

**The Microwave Group**

The immediate possibility of a return of Amateur Licences for operation on bands of National Frequencies provides a renewal of interest in the Microwave Group, which, although in existence throughout the war period, has remained dormant over the past year or so.

Insufficient scope has hitherto been available for amateur experimental work on microwaves and budgets issued have been confined to a disciplinary interest on this subject. Apart from holding a "watching brief" the Group Manager (Mr. H. H. Phillips, GW4KQ, 80 Cottrell Road, Roath Park, Cardiff) has found little opportunity of communicating with those interested in this group during the "dormant" period, but is actively engaged in preparing the next issue of the budget which will be circulated during the coming month. Offers of assistance will be particularly welcomed and group members who have contributions on hand are requested to communicate with GW4KQ at the earliest opportunity.

**R.A.F. Emergency Fitting Parties**

We have received from Sgt. S. T. Hall, G3BR, a list of nearly 150 members who served with the original R.A.F. Emergency Fitting Parties during 1939 and 1940. Due to pressure on our restricted space it is not yet possible to publish the list, but we hope to do so at an early date.

**Speedy Recovery**

● To Major Ken Ellis, SU5KW, who is suffering from malaria and yellow jaundice. He is in hospital in Cairo.

**EXCHANGE AND MART SECTION**

MEMBERS' private advertisements 2d. per word, minimum charge 3s. Maximum words accepted, 100. TRADE advertisements 6d. per word, minimum charge 9s. Maximum words accepted, 50. An additional charge of 1s. 6d. is made for use of Box Numbers. TERMS: Cash with order. All copy and payments to be sent direct to Advertisement Managers, Parris Advertising Ltd., 121 Kingsway, London, W.C.2, by the 25th of the month for following month's issue.

ALL KINDS OF PRINT, especially QSL Cards.—Send your inquiries to G6MN, Castlemount, Workshop.

AMATEUR equipment designed and built to specification: transmitters, speech amplifiers, modulators, etc. All types of valves in stock. Personal attention to all inquiries.—G8WL, 26 Waverley Road, Kenilworth. Phone 775.

AMATEUR Wireless Supplies: transformers, L.F. and swinging chokes, standard or to order, 250v 80mA, 6.3v 3A, 5v 3A, 25s. 1000v 250mA, 75s., etc. W/W quality output transformer, 35s. 5/15H 250mA swinging choke, 38s. 6d. Valves: 6V6, etc., 2-gang .0005, 12s. Send S.A. envelope for list. — 16 Crystal Palace Parade, London, S.E.19.

AVOMINOR D.C., 50s. 3in. CRT, £1. Double-button mike inset, 12s. 6d. Mostly new.—BCP, 3 Clarence Road, Hastings.

BARGAIN, every item—and a Guarantee. Send 1d. stamp for List. Everything the Ham requires. 35 watt amplifier kit complete, £25 7s. 6d. Speakers from 2½ in P.M., 27s. up to 15 watts. 450v 8uF Electrolytics, 4s. Enamelled wire. Copper tubing, etc.—R. F. ARMSTRONG (Electronics) Ltd., Dept. TR.11., 69 Eversley Road, Sketty, Swansea.

B.T.H. Transverse current mike, serviced by makers, not used since; with special Partridge trans., telescopic chromium stand, extend 6ft. Offers!—2FJR, 76 Bridge Road, Sutton Bridge, Lincs.

**COMMUNICATION Receivers.** Genuine offer, perfect condition: Eddystone "358" 31,000 to 2,100kc, £40. Eddystone "358" Crystal Gate, 31,000 to 900kc, £65. Taylor Oscilloscope £17.10s. Sullivan Wavemeter, 3 calibration charts, £20. DM 36A.C. freq.: expander, converts to 5, 59. Converter DC/AC 231/230, 250 watts, enclosed filter cabinet, £14. Taylor 425 0/1 m.A., 60s. Taylor 30 0/50mA, 35s. Weston 0/200V D.C., 40s. C.R. tubes 4081, 35s. AC81A, 35s. D.C. eliminator for "358", 60s. Browns "A" phones 120 ohms, 35s., two pairs 4,000 ohms, 37s. each. High grade components, amplifier value over £30. Entire equipment cost over £800, will accept first offer £165, or sell separately.—GEESON, Gainsborough House, Congleton Road, Macclesfield.

**ELECTRIC** are engraving pen and 6v. 10a transformer to suit: hardly used £2 10s. 0d. Two L63's boxed. Electrostatic Voltmeter by Ferranti 0-2500v. Mullard 4-valve Portable type MB57. E-Z wire stripper, new (cost 25s.) offers.—S.A.E. with all enquiries please. D. B. Kerslake, 73 High Street, Barry, Glam.

**E.M.I.** 30 watt rack mounting amplifier, type P-A-150, output impedance 50 or 100 ohms, £18 10s. Voigt speaker cone and back plate, latest twin type, (new) £4. R.K.25, new, £1 5s. "Radio Interference Suppression" Ingram, 4s. Ham built A.C. receiver, 8-valve, 7 to 50 metres, coil turret, band spread tuning, £15. Oscilloscope parts, C.R. tubes, etc. Valves old and new types. Enquiries S.A.E. please.—F/L BROWN, No. 1 Carno Road, Caersws, Montgomeryshire.

**FOR SALE.**—Dynamo 35v 7.5 amps, £5. Genemotor 12v input 120v D.C. output, £3.—G3RC, Robin Hood, Battle, Sussex. (Tel: 145).

**FOR SALE.**—HalliCrafter SX16, 550kc to 61Mc, just expertly overhauled. Surplus to requirements. One owner only. What offers? Offer open until November 23rd.—WRIGHT, G3SI, Mill End House, Thaxted, Essex.

**FOR SALE,** either Senior H.R.O., 5 coils, special power pack; or, HalliCrafter's new SX28; both guaranteed. Offers!—Box 764, PARRS, 121 Kingsway, London, W.C.2.

**FOR SALE.**—Communication receiver, RME 69, grey crackle finish, practically new, £55 or nearest.—WILKINSON, Cinema, Bentham, Nr. Lancaster.

**G8FP.**—Exchange 20 watt portable public address amplifier (A.C.mains) by Farnell, Ltd. (new) cost £22. Wanted: Communications receiver.—KIRKLAND, 31c Middle Street, Yeovil.

**GW3GL** has just been released from the R.A.F., having served five years as a Cpl. Wireless Mechanic, is now restarting his business in dealing in radio gear, and, until premises are secured, is carrying on at the pre-war address.—J. W. B. EVANS, The Adyary, Conway, N. Wales.

**HAMRAD Wholesale, Ltd.,** 348 Portobello Road, Ladbroke Grove, London, W.10, Phone LADBROKE 3143. G8KZ, G8ZD and G3SH announce that their Company has now resumed business. Pre-war Hamrad agents and other amateurs who desire to co-operate are invited to communicate to the above address. Suggestions and enquiries welcomed. Lists being prepared.

**HUNTS** combined M.C. Meter, volts 0-7½, 150, 300 at 333.3 ohms per volt., mA 3. 15. 75, amps 2., 65s. Weston A.C. M.I.476. 0-3 volts, 17s. 6d.—RIX, 2 Mitchell Road, Palmers Green, London, N.13.

**H.T. TRANSFORMER.**—1000v 250/300mA (half wave) Primary 200/240v, £3 10s. 0d. 0-2000 Voltmeter, 6in. scale, £4. 0-160mA meter, 3in. scale, £1. 350-0-350v 100mA transformer three 4v heater windings, £1. Ferranti 0-2mA meter, 2½in. scale, £2. Hunts 0-500mA meter, 2in. scale, £1. Pye low power fully shrouded filter choke, 7s. 6d. Massive 10 ohm L.T. filter choke, 7s. 6d. New valves—TH4B. 53. 10s. each. All meters are moving coil.—G2XV, 89 Perne Road, Cambridge.

**HALLICRAFTER** Sky Champion for sale. Excellent condition. Best offer secures.—SADLER, Warren Farm, South Wootton, Kings Lynn.

**"HAM."**—Royal Signals: Demob. 23; age 30, seeks admin. or clerical situation with radio or electrical establishment in North East England (Tyneside preferred); available January.—Write, Box 766, PARRS, 121 Kingsway, London, W.C.2.

**H.R.O.** Senior components. P.W.D.O. micrometer dial only. Crystal filter unit complete. 3in. 0-100 microammeter with panel. Reasonable offers. All brand new. Wanted: National N.C.200. G2SY.—WILL ROGERS, Drayton, Daventry.

**METERS.**—(a) British flush 0-1mA, 3½in. dia. (b) Simpson, Chicago, flush 0-1mA., 2½in. square approx. (c) 0-50mA do; (d) Triplett type 5-range output-V-meter, 4 K ohm load, 0 to 1.5v., 6v., 15v., 60v., 150v., altern terms provide Intern series 0.5uF. (e) do. d.c.-V- and Ohm meter, 1Kohm/v., 0 to 3v., 30v., 60v., 600v., 1.5KV., 0 to 1K ohm, 10K ohm. 0.1 M ohm, takes 6v. int. batt. (f) Wanted: Mod 7 "Avo."—Write, offers only, with S. & S.A.E., 2COT 17 Sylvan Avenue, London, N.W.7. Don't send money; offers will be considered 7 days after publication. All are perfect and checked.

**MONOMARK** service.—Permanent London address. Letters redirected. Confidential. 5s. p.a. Royal patronage. Key tag 9d.—Write BMM/ONO7A, W.C.1.

**NATIONAL H.R.O.** Senior, 9 coils, speaker, Browns "A" type phones, voltage controlled power pack, good working order, £60. Vibrator power pack case) 6v. input 230v. output, s/w filters, £5. E.M.I. lightw (ght P.U. transformer, Collaro motor, built into good oak carrying case, £10. E.M.I. Hysteresis gram-motor, auto shaft, 25s. Secondhand tubes, emission as new: 57, 58, 2B7, 12SK7GT, 6AB7, 6AC7, Z62, 6SK7, 6B37, 6BQ7, 7s. 6d. each. 954, 956, £1 each. 955, 15s.—Box 761, PARRS, 121, Kingsway, London, W.C.2.

**NATIONAL H.R.O.** with nine coils. Latest table model. Less power supply, £75.—Box 755, PARRS, 121 Kingsway, London, W.C.2.

**QST** September, 1942 wanted to complete volume. State price.—2BYP, Caledonian Hotel, Callander, Perthshire.

**RUNNING** a Radio Repair Business. No matter whether you are a newcomer or an oldtimer, you will find this manuscript full of useful ideas. Price 5s. 6d.—V.E.S.(B) Radio House, Ruislip, Middlesex.

**RME 70.**—Receiver and DB 20 preselector for sale. Two units, but not to be sold separately. Perfect condition. £69.—Box 757, PARRS, 121 Kingsway, London, W.C.2.

**STURDY** Rewind. Mains transformers, chokes and fields. We give prompt delivery and guarantee satisfaction. Fourteen years experience. Prices on request.—STURDY ELECTRIC CO., LTD., Dipton, Newcastle-on-Tyne.

**SALE.**—National H.R.O. Senior with speaker, pack and coils, perfect condition; no reasonable offer refused.—Box 778, PARRS, 121 Kingsway, London, W.C.2.

**SALE.**—Premier "Match-Maker" 25 watt output transformer. Acorn and midget s.w. valves, also quantity of radio gear.—G3SN, 7 Sidwell Terrace, Exeter.

**SALE.**—Rotary converter 220v D.C. to 230v A.C. 100 watts; by Electric Dynamic Construction Co. Fitted with suppressor unit; cost £11, new 1942. First reasonable offer accepted. 2FXM, Oaklands, Groombridge (Tel: 88), Nr. Tunbridge Wells, Sussex.

**SERVICE** sheets supplied. Over 4,000 American and 5,000 British available. Quotations on receipt of requirements. S.A.E.—ARMSTRONG, 136 Bickenhall Mansions, London, W.1.

**SELL.**—G5NI Oscilloscope; offers. Black crackle finished cabinet with panel 10 x 10 x 9, £2. Double button mike on stand, 25s. Boxed brand new Thordarson auto transformer; offers! another, make not known, 30s. G5T's 1932 to 1944 incomplete, 80 copies, 1s. each. 100 "Bulls" 1933 to 1944 incomplete, 9d. each. Wanted new phasing control knob for H.R.O. HalliCrafter's, freq. standard.—Box 765, PARRS, 121 Kingsway, London, W.C.2.

**THORDARSON** T8470 and T8459 modulation and driver transformers, 75 watts, max. audio., £6 pair. Set 6 Aladdin 1600kc I.F.s with air trimmers, Valpey crystal, B.F.O. and crystal phasing condensers; circuit details, £6. 954 Acorn with ceramic holder, £2.—Box 758, PARRS, 121 Kingsway, London, W.C.2.

**URGENTLY** wanted: Weston analyser or Avo Universal, state price and condition.—W. GREENWOOD (BRS 10120), 34 Beardsmore Grove, Linby, Notts.

**UNUSED** Valves.—524, 637, 6V6G, 6K8, 6K8G, 6Q7G, 6Z5G, 1H5G, 55, 7s. 6d. each. 6L6, 9s. 6d. R.S.G.B. Bulletins: Jan. 43 to Dec. 44, 12s. 6d. *Wireless World*, Jan. 43 to Dec. 44, 12s. 6d. Two-gang condenser .0005, 5s. Pair Browns' lightweight headphones, 10s. Toggle switches D.P. 2-way, 1s. 6d. Two I.F. transformers 465kc, 10s.; postage extra.—2DJA, 137 Randall Avenue, Crielewood, London, N.W.2.

**VALVES.**—12C8, 12SG7, 12A7, 12AH7, 6AC7, 6SN7, 7s 6d. each. 9002, 9003, EF50, 10s. each. CO-AX Cable, ¼in. diam., 18 and 21 foot lengths, 8d. ft. ¼in. 2-core, 1s. yd. 100ft. 2 amp. twin flex, 4s. 1000 small ceramic beads, 5s. 6d. 3 charging rheostats, 2-5-10 amps, 4s each. 150ft. twin feeder spaced ¼ 1s. yard. 5000v 0.1µF, 5s.—H. ENGLISH, The Maltings, Rayleigh Road, Hutton, Essex.

**WANTED.**—Jones handbook, 1937 edition, Eddystone components USW Coils 1020, Bases 1051, adjustable brackets 1007, insulated coupling shafts, etc.—G8UB, "Four Ways," Llynelys, Oswestry.

**WANTED.**—D. C. valves: VDS, DSB, DPT, DH, DC2Pen, DHD. Must be in good condition.—ARMSTRONG, 136 Bickenhall Mansions, London, W.1.

**WANTED.**—Hire, loan or purchase: Rider's Manuals, Vols. 1 to 13. Return guaranteed in condition received.—ARMSTRONG, 136 Bickenhall Mansions, London, W.1.

**WANTED.**—Bulletins No. 6, Vol. 17. First 6 numbers, Vol. 15. *Practical Wireless*, last 6 issues, 1943; first 6 issues, 1944; 1942 complete. *Modern Wonder*, No. 42, Vol. 2. *Modern World*, No. 22, Vol. 1.—BRS9002, 7 Lucas Avenue, Exeter.

**WANTED.**—Urgently: two American valves, type 6AC5G, new or slightly used.—2ACG, 9 Wood Street, Calne, Wilts.

**WANTED.**—Ferranti AF8 transformer, also following T.C.C. condensers, type LSA 400volt working: one ¼µF, five 2µF, three 4µF.—BRS3852, 99 Woodfield Drive, Romford, Essex.

**WANTED.**—Urgently. Universal receiver midget or of similar small construction. Must be reliable.—BM/HWMO, London, W.C.1.

**15,000** Radio Amateurs all over the World take advantage of the real service offered by Couplphone Radio! Do You? If not, write for most comprehensive list of new goods at really competitive prices. Please enclose S.A.E.—Couplphone Radio, Station Road, New London, Nr. Preston.

3½in. Goodman P.M. and transformer, 25s. (1) G6G, 9s. 6d. (1) C5G, 8s. Copper cabinet, 11½in. x 9½in. x 9½in., fitted Eddystone SMD, 30s.—Trout rod, 190 files in case.—Box 762, PARRS, 121 Kingsway, London, W.C.2.

#### PATENTS AND TRADE MARKS

**KING'S** Patent Agency Ltd. (B. T. King, G5TA, Mem. R.S.G.B. Reg. Pat. Agent), 146a Queen Victoria Street, London, E.C.4. Handbook and Advice on Patents and Trade Marks free. Phone: City 6161. 50 years' refs.