R·S·G·B
BULLETIN
JOURNAL OF THE RADIO SOCIETY OF GREAT BRITAIN

May 1946

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CLOSING DATE FOR JUNE ISSUE IS MAY 29TH. REPORTS SHOULD BE POSTED TO REACH D.R.'s & SCRIBES BY MAY 25TH.

DISTRICT 1 (North Western)

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

Ashton-under-Lyne.—Twenty-five members attended the meeting of the local radio society on Sunday, April 14, when a talk on aerials given by Mr. W. P. Green was followed by a discussion. G5PX.

Blackpool and Fylde.—Regular meetings of the Blackpool and Fylde Amateur Radio Society have been resumed, at the "Bellvue Hotel," Whitegate Drive, Blackpool (near Hornby Road), at 7.30 p.m., on the first and third Tuesday of each month. All R.S.G.B. members are invited. Stations active on 1·8 Mc/s. include G2CHP, 4PM, 4PY, 6VQ, 8GG, 8TI, whilst 6VQ has been knocking up lots of DX on 28 Mc/s. G8GG.

Bolton.—The meeting on April 9 was attended by GM2JF, 2DVQ, 3AC, 4HL, ex-2ABF, 2ABT and seven BRS members. G3AC was elected Chairman, in place of Mr. Percy Jones (ex-2ABF), who has resigned after holding the office since 1938. We should like to place on record our appreciation of the services rendered by 2ABF. Further meetings will be held on the first Tuesday of each month, in the B.W.C.A. Rooms, 7A Churchgate, Bolton. 2DVQ recently announced his engagement to Miss Joyce Shanahan. G2DVQ.

Burnley.—G8TD made WAC and WBE within a few hours on 28 Mc/s., with 50 watts to a T20, using a 137 ft. Zepp. G2AYY was heard on 28 Mc/s. whilst home on leave. G2CSG has received his full licence. G5ZN.

Bury.—The following were present at the April Meeting at the Scout Hut, Whitefield: G2GA, 2WQ, 3BN, 3RP, 3YJ, 3ZN, 5CP, 6OM, 8NL, 8QS, 2HCY, 3656, 3688, 4891, 9427, 9678, 11494, Mr. Bates and Mr. Robinson. 5CP gave a very interesting talk on "Some Experiences of a Sea-going W./Op.," followed by a sale of used gear. The meeting arranged for May 18 has been cancelled in view of the fact that the first post-war Manchester meeting is to be held on that date. It is hoped that all Bury members will attend this meeting. BRS4891.

Liverpool.—More than 100 members were present at the two meetings held in April. The exhibition provided by Raymart, aroused great interest, unfortunately due to a last minute breakdown in arrangements, Stratton's were prevented from showing. A full-length technical sound film (loaned by A.T.E. Co., Liverpool), was also displayed. Photographs taken during the meeting will shortly be on sale. G8AZ.

Manchester.—G6OM has made arrangements to hold a meeting at 7 p.m. on Saturday, May 18, at "Reynolds Hall," 1st Floor, Manchester College of Technology, Sackville Street, Manchester, near London Road Station. It is hoped that members in the area will make every effort to be present so that plans can be settled regarding the time and place of future meetings.

Stockport.—At the Annual Meeting on March 25, the following members were elected officers of the local Society: Chairman, Mr. S. A. Mills; Treasurer, Mr. W. H. Banks (G2ARX); Secretary, Mr. Geo. Wood (BRS11,306); Committee, G2AZI, 2ZF, 2BJT and 2DUD. A programme of contests has been organised for the summer months. Mr. C. N. W. Reece delivered a fine lecture on the "Cathode Ray Tube." Mr. G. Wood is shortly to relinquish his association with the Society, as he is moving to Hull, where he is looking forward to meeting District 18 members. Good luck, OM.

West Cumberland.—A very enjoyable meeting was held at 2AUM on April 13, at which those present included 6WR, 8DP, 3SY, 3BW, 4PZ and 2AUM. G3BW.

General.—The D.R. has had a further discussion with G6OM about the proposed P.D.M. and as the result of the latter's determined efforts it is hoped to announce details of the programme in the next issue. G6CX.

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.

Bradford.—The meetings at Cambridge House, 66 Horton Lane, continue to be well attended. The Bradford Short Wave Club has been restarted and information can be obtained from the Hon. Sec., V. W. Sowen, G2BYC, 6 West View, Eldwick, Bingley. G3HA is now stationed near York and hopes for demob. very soon.

Keighley.—G2CPF, 2VO and 8UO are active on 1·8 and would welcome contacts. 2CPF has worked GC8NO in the Channel Isles. 8UO has received visits from 5LH and 2BYC.

Leeds.—G4MC is now back in civvy street and is active on 1·8.

Barnsley.—G6LZ gave a lecture on "The Double Superhet" at a recent meeting of the local club. Those present were 6LZ, 5KM, 5IV, 4JJ, 3PG, 2BH, 2BFJ, 2AHB and Mr. Walker.

Skipton.—Congrats to S/Ldr. H Pain, BRS8676, and his wife on the safe arrival of a junior op. 8676 is now stationed at York.

Selby.—L/Sgt. G. Kelsey is now in MEF. Says the Army ops. are hurt by the fact that under the new licence regs. both Navy and R.A.F. operators are exempt technical and Morse, but the poor old Army op. is exempt only Morse!!

Halifax.—2DUX has now returned from VK and hopes soon to be plain "Mr." His new receiver is a National NC200!! He will be pleased to have contacts with the locals at 39 Fountain Street, Sowerby Bridge.

Sheffield.—At the March meeting we were pleased to welcome G4JJ and 5IV of Barnsley and 3DT, 3MG, 8RQ and 2DDY of Chesterfield. In a letter to H.Q. Lt.-Col. A. C. Dunn, now G2ACD, expresses his appreciation of the assistance given him by local members in respect of Morse practices. We extend our sympathies to G8IO on the death of his father. G8UO.

DISTRICT 3 (West Midlands)

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

Birmingham.—At a meeting of M.A.R.S., held on 16th April, transmitters were discussed. Forty members and visitors were present. South Birmingham members interested in getting together should contact G6KI, 160, Franklin Road, Birmingham, 30.

Kidderminster.—Mr. S. S. Jacobs, BRS 4806, invites local members to contact him at 48, Elderfield Gardens. G2FDR.

Cannock.—Mr. K. R. Boot, G2FZG, 77, Beech Tree Lane (Phone 3175) has been appointed Acting T.R.

DISTRICT 4 (East Midlands)

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

Derby.—Future meetings at Unity Hall are scheduled for May 19th and June 2nd, with lectures on transmitter design followed by general discussion. Junk sale on May 19th, for which members are invited to bring unwanted gear. A letter budget is being circulated for members in outlying districts.

Northampton.—G2AAA in Northampton and 1KS, in Kettering, are in process of getting things going, meetings will be arranged in the near future and members are requested to contact their respective T.R.

Mansfield.—An excellent talk on Aerials by 7362 was a feature of the last meeting at the Swan. Most members are active on 28, particularly 8HX, 2DTQ, 8GO and 8UZ. G8OT is away at Driffield, Yorks, but hopes to be back shortly.

Nottingham.—Notes last month were too late for publication. At a recent meeting a series of ten minute talks given by members was started, and bids fair to bring out useful information. G6CW has contacted London on 5S, and would welcome offers of co-operation from members who are interested in this band. Some ill feeling has come about through frank reports being given on transmissions. If the reports are not to be without bias they are of little value. A watch is being kept on stations suspected of using power in excess of their licence, and these will be reported. G2OC has contacted W8TBD, who was for some time in this area, he sends 73.

Leicester.—Activity is highest on 1·8, on which band most stations are operating, results are satisfactory and several have worked D and LA well within licenced power. The Easter meeting saw a packed house with members sitting on anything from floor to ceiling. Interest in 28 is waning, and it should not be long before we have some 5S transmissions. Don't forget your reservation for the P.D.M., on June 2nd.

G2RI.

DISTRICT 5 (Western)

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

Bristol.—We were pleased to welcome 4CM and 6IC at the April meeting, when an attendance of 32 was recorded. 5KT announced that he could arrange to receive a number of BRS members at his station on Tuesday evenings. In response to an appeal by the TR, 6TO, 6VF, 5KT, 2BAR, and 2BSU, brought along recently constructed gear. It was agreed that a list of local calls and addresses should be sent to the publishers of the Call Book. The DR stated he had sent a letter of sympathy to 6GN in the loss he had sustained by the death of his daughter.

9032, in the R.A.F., reports from near Huntingdon. He is looking forward to meeting the local members when he is demobbed.

Swindon.—G3HS, who has taken over as acting T.R., reports 8VP, 4AP, 3HS, 3JO, and 6ZH, active on 1·8 and 2BUJ active on 28. 3HS, 6NW, and 5LO, are trying phone with some success. A speedy recovery to 3HC now in hospital, at Bath. G8VP gave a very interesting lecture on crystal grinding at a recent meeting of the Swindon and District Short-Wave Society.

Gloucester.—5508 reports that owing to poor attendances, local meetings have been dropped for the time being. He hopes that now more local members have returned from the Forces, a fresh start will soon be made. (Back him up, you fellows, and get things moving again.—D.R.)

Moreton-in-Marsh.—G2FZO reports active on 28, but no luck with contacts so far.

G6RB.

DISTRICT 6 (South Western)

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

Penzance.—The new T.R., Mr. R. Allbright, G2JL, Greenacre Cottage, Penzance, reports that at a meeting held on March 29, G2JL, 2WW (ex BRS79 and G6BJ), 3IV, 4IV, 6LV, 8AW, 2DDR, 2DFH, 2FQD, BRS10083, and BRS10498, were present. As G6ZT (the retiring T.R.), 6LV, 3IV, and the rest of the R. Sigs. contingent were now leaving the area, a vote of thanks was accorded to 6ZT for his strenuous efforts during the past year in building up and maintaining a strong local interest.

G6LV exhibited a collection of new QSL card designs. Also on view were a versatile valve voltmeter made by Mr. Andrews, a battery driven transmitter (3 to 6 Mc/s), and a receiver complete with built-in D.F. section. It is hoped to maintain communication within the area by means of 1·8 schedules.

Future meetings will be held on the first Thursday of each month at the Dolphin, The Quay, Penzance, commencing at 7.30 p.m. As soon as arrangements can be completed however, it is proposed to alternate the monthly meetings between Penzance and Falmouth.

Torquay.—There was an attendance of 21 members at the April meeting held at the Y.M.C.A., when a discussion was opened on Society matters.

Nineteen members were shown over the Torquay 12-channel G.P.O. Station on April 27. They were very ably conducted by Messrs. Stevens, W. H. Smith and W. F. Brown.

G2BMZ has been doing some excellent work on 60Mc/s, and his new rotary beam has resulted in several QSO's with stations in Surrey and Kent. The next meeting is to be held on June 18th, at the Y.M.C.A., at 6.30 p.m. May we appeal to all who have not done so to send in their reservations for the P.D.M. to the D.R. at once.

G5SY.

DISTRICT 7 (Southern)

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

The P.D.M. will be held at Kimbell's Cafe, Osborne Road, Southsea, on Saturday, July 13th. Will all T.R.'s and others, please let G8WC, 65, Ebery Grove, Copnor, Portsmouth, know of the approximate number hoping to attend in order to assist him with the advance arrangements?

Portsmouth.—At the April meeting we were treated to a most interesting lecture by Mr. Maxwell, on Television. Grateful thanks are due to him for travelling so far, and for the considerable time he obviously must have spent in preparation. Congrats to G2DZT on his new call, and welcome to G4QL. Active are: G2XC, 2DZT, 4QL, 5XY, 5UI, 6SS, 8JB, and 8WC.

G8WC.

Reading.—Over 45 members paid a visit to Turner's Electrical Instruments, Ltd., at the invitation of G4NT. Refreshments were liberally provided and the evening wound up with selections from an all-ham dance band (G3FJ, 4NT, 5TP, 8JK, and 8VZ). Very many thanks 4NT for a most enjoyable time.

BRS4573.

Coulsdon.—A meeting will be held at the T.R.'s QRA, on Sunday, June 23rd. Please drop a card to 122, St. Andrew's Road, Coulsdon, if coming. G2DN active with a temporary rig is busily preparing a new job for all bands. 4458, Purley, stationed in Manchester, is in the same unit as 9563, of Ewell.

BRS3003.

Bournemouth.—Mr. J. Squires, G2DBF, 80, Victoria Road, is the new T.R. for Bournemouth. Welcome OM and best of luck. G3BM has now a 28 rotary, a mere forty feet below his eighty feet towers. W2NYW, 2HSY, 2NXM, and G3JX, have been visiting locally. G2HNO, 2NS and 8DL are active on 1·8.

G2NS.

Croydon.—Thirty-four attended the last meeting at the Y.M.C.A. Two and three element beams are gaining favour locally. G2DP and 8JF are having success with them. G2DP, 2YP, 3FP, 4NI, 5BT, 8JF, and 8UG, are active on 28, G2FWA active on 1·8 and 58.

G2DP.

Maidenhead.—G6CU is on his way home from the Cocos Islands. At the last meeting, which was well attended, members enjoyed a lecture by Mr. Humphrey, on his Oscilloscope. It is with regret we say cheerio to G2DBF who is returning to Bournemouth.

Guildford.—Apologies to those searchers in "Forthcoming Events" last month—the venue was not available at the last moment. Try again, chaps—it is still necessary to let G5RS, 20, Hedgeway, Guildford, know before Saturday next, if you are coming.

G5WP.

DISTRICT 8 (Home Counties)

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

A District meeting was held at "The Jolly Waterman," Cambridge, on Friday, April 26th, when there was a good attendance. The main features of the meeting were a talk by Mr. S. Smith, on "The Characteristics of some New Transmitting Valves," and a discussion on the conditions for the award of the "Granfield" District Trophy for 1946.

Cambridge.—G2PU, 2XV, 5JO, 5BQ, 8PB, and 8SY, are active on 28, while 2DT, 2PU, 5JO, 5BQ, and 8FF, are working regularly on 1·8. 5DQ has been on leave from Catterick, where he also operates on this band.

Peterborough.—G2UQ and 3DY have been working regularly on 1·8, while 2NJ is operating on this band from his London QRA, and would welcome contacts with members from this district.

March.—G3BK and 3WW appear to be getting out well when conditions are favourable.

St. Ives.—G5RL has just completed his new transmitter and hopes to be on the air very soon. 5OV takes advantage of his spacious QRA to use a very long wire most effectively. 4AZ, now without mains, is thinking of trying a battery transmitter.

Luton and Dunstable.—G2MD, operating on 1·8, is putting a good signal into Cambridge.

The next District meeting will be held at the usual place, on Friday, May 24th, when Mr. L. Bennett will give a talk on "Frequency Modulation." Items from the station of the late G8ST, who was killed at Singapore, will be offered for sale at this meeting, and a generous response from the membership is asked for on this occasion.

G5BQ.

DISTRICT 9 (East Anglia)

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

Norwich.—Quite a good percentage of the local membership supported a meeting held at the residence of G3QF, who has kindly offered the use of a large room for future meetings.

Yarmouth.—G2BXJ reports that 2FAO/D2DP is hoping to be demobbed in June. 2BXJ would like details of 3UT (Beccles). Please note that as from the middle of May, Mr. Thompson's address will be 45, Blake Road.

King's Lynn.—G2XS has received a very interesting letter, from Capt. Spurrell, who is now back in Kenya, with the K.A.R.

All King's Lynn members are active on 1·8, and the D.R. would be glad to find other members of District 9 on that band, as it is one sure way of keeping in touch.

G2XS.

DISTRICT 10 (South Wales & Monmouthshire)

D.R.: H. H. Phillips (GW4KQ), 80 Cottrell Road, Roath Park, Cardiff. (Cardiff 4700 during business hours.)

Cardiff.—The large attendances at recent meetings again materialised at the April meeting at which the lecturer, Mr. E. J. Woolhouse gave a thoroughly informative talk on the subject of "The Heavyside Layer, with particular reference to Sunspots." Many members now know why their signals go the wrong way.

A cordial invitation is extended to all members to attend the next meeting which will be held on Monday, June 17, at the Park Hotel, Park Place, Cardiff, commencing at 7 p.m. A special programme is to be arranged for this evening.

Congrats to GW2BBO who has now received his licence and who hopes to be active shortly. All other locals are active and much discussion ensues at the nightly "round table" chats on 28.

BRS10374.

Swansea.—Meetings continue to be well supported and 2UL was a recent visitor whilst on leave. The D.R. attended the April meeting and gave a lengthy report to members on the recent Birmingham Conference. Future meetings will take place on May 29, and June 12, each commencing at 7 p.m., at the Hotel Metropole, Wind Street. Society members are cordially invited to support these occasions.

Congrats. to 2FYV, 2HIR and 2HDX all of whom have been granted permits. Two recipients of "bowlers hats" are 6158 and 11181 who expect to be active shortly. Most stations are active on the top band but 3AX and 4CC still seek the elusive DX on 28.

GW4CC.

General.—Will members please reserve the date for the P.D.M. to be held in Swansea, on Saturday, September 14, 1946? Tentative arrangements have been made for this to be held at the Grand Hotel, and a special announcement will appear later. It is hoped to start about 2.30 p.m., and an informal dinner may be held earlier for those who desire to be present.

Crystal Registers are being maintained at both Swansea and Cardiff and those members intending to purchase crystals may obtain details of the frequencies already in use by application to the respective T.R.'s.

GW4KQ.

DISTRICT 11 (North Wales)

D.R.: F. J. E. Starkey (GW6KY), "Endon," Gronant Road, Prestatyn, North Wales. Scribe: C. Spillaine (BRS1060), 14 Queensway, Prestatyn.

Prestatyn and Rhyl.—The April meeting was attended by GW6KY, 5FU, 13CF, 4CX, 2HIY, 2DYZ (Colwyn Bay), 2DAH, 1060, 4444, and Mr. Shipperlee, a new member. 5FU brought along his latest recording gear, and afterwards recorded the voices of all present. 3CF exhibited his R-C bridge and new transmitter.

Future meetings will be held monthly, and the next is fixed to take place at the Savoy Cafe, Prestatyn, on Sunday, May 26th, at 3 p.m.

Rhyl.—GW5FU is busy with recording experiments, but still puts out a call on 28. 2DAH has successfully applied for his licence.

GW3CF, now back in civvies, is spending his leave on the air. 2HIY has been posted to Henlow, Beds. Welcome to BRS. member, John Shardlow, 12298, and to all other new members in the district.

General.—All members join the writer in wishing Dave Mitchell, GW6AA, a speedy recovery. 4410 visited us again during his demob leave to renew acquaintances. ZL2RI reports being demobbed and married (congrats, Bryan).

The P.D.M. arranged to take place in September, will be a week-end affair, beginning on the Saturday, with a social get-together, and a dinner. The meeting proper, will be held on the Sunday, as many can only attend on that day. Full details will be published later, but in the meantime, those who intend to be present, are asked to notify the D.R., so that he can form some idea of catering requirements.

No one has yet offered his services as T.R. for the towns referred to in the last issue. How about it O.M.'s?

BRS1060.

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 (BRS3009). 22 Bramford Court, High St., Southgate, N.14. Palmers Green 0548.

North London.—Nearly 40 members attended a very enjoyable meeting at "Merryhills" Hotel on April 5. In the absence of the D.R. G6CL extended a welcome to all present, after which he gave a brief account of the matters discussed at the recent D.R.s' conference. G5ZJ then described his new rotary beam, and Mr. Marshall, who designed the mechanism, gave some constructional details. During question time, G6OT explained diagrammatically how a matching stub may be used to balance the outer and inner conductors of co-axial feeders.

A comprehensive display of equipment and components arranged by Webbs Radio of Soho Street, W.1, was on show throughout the evening—a feature warmly appreciated by all present. Thanks are recorded to Mr. Pickard and his staff for their co-operation. After the interval radio gear belonging to the late Mr. R. H. Stevens, G3TA, was auctioned by G6CL and the sum of £12 10s. 0d. has been forwarded to his widow.

It is hoped that BRS members will support future meetings as none of the lectures will be highly technical.

St. Albans.—Last month's record attendance of 21 was equalled at the April meeting held for the first time at Jack's Cafe, Verulam Road. Future meetings will be held there once a month and will be preceded by a Morse class. In addition slow Morse transmissions will be given every Sunday from 10.30 a.m. BST by G5UM on 1,900 kc/s. Members using the service are requested to report weekly to G5UM at 9 Windermere Avenue. The T.R. has made contact with 10 new members during the past two months and has received a letter from GC2CNC now on the air in Jersey, C.I. —BRS 3512.

BRS 3009.

DISTRICT 13 (London South)

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

The last District 7 and 13 combined meeting at the Y.M.C.A. Croydon, was well attended.

The next South London meeting will be held at the Brotherhood Hall, West Norwood, at 7.30 p.m., on 14th June, when a junk sale will be held.

3ST is on the look out for an AR88, or Skychampion. From enquiries made by the Scribe, it appears that the G.P.O. are not to issue Portable Licences this year, owing to pressure of business, so it will not be so interesting for our proposed Field Days, at Warlingham.

The Scribe is trying to arrange meetings for the first Friday in the month, at Norwood, so watch "Forthcoming Events."

Letters have been received from many old and new members and we again say, please attend the various meetings in the district. There is plenty of activity on the existing bands in District 13, and several members are putting out some very fine transmissions.

The South-Western area meeting on Sunday, April 28th, at G4CG's home, was again successful, 13 members being present. After general discussion, a chat on BCL interference was found interesting by all. G5PP, of Coventry, up for the Cup Final, paid a visit. 2DP and 2VB represented the District. Thanks to G4CG for making this meeting possible.

G3ST.

DISTRICT 14 (Eastern)

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

Chelmsford.—2AAU now has his G prefix, and is trying out 28. He would like reports. 2KG and 2GN are busy on 1·8, the former with a V.F.O. 6LB has also built one of these "hand-creepers."

Southend.—Local feeling is strongly against poor operating on 1·8, and also the waste of valuable frequency space by 'phone stations. (See Chingford notes.—D.R.) 2KH has returned, and the following are active: G5XI, UK, 4FN and AI.

Chingford.—Enthusiasm on 1·8 is very high, 4GA being one of the stars. 2XG has been on the sick list. Owing to QRM in the locality, local amateurs have agreed, as a trial, to keep off phone one night each week for a month, to give the C.W. men a chance. (A good idea.—D.R.)

Grays.—Field Days and a local transmitter are both exciting interest, and a party is competing in a D.F. Contest arranged by Southend for May. G3LM and 2YH are busy on 1·8, the latter getting amazing reports off an eight foot vertical rod aerial.

Romford.—The Acting T.R. is hearing from lots of BRS members, but says the full-call people are shy. G3FT is building the latest thing in relays and coloured lights. 2QI is having trouble with phone, due to D.C. mains. 2FLK makes a plea for the 'phone people to listen once in a while for the people "condemned" to C.W. for a year. (Why not give Chingford's plan a trial?—D.R.)

G3FT appeals for technical books for F. K. Apenteng (P.O. Box 17, Takoradi, B.W.A.)—a Gold Coast native, and a Society Member—who would also like to contact other Gold Coast members. He is a Radio Mech., who was trained by FT when he was in the Navy, and is in charge of transmitters at a Gold Coast station.

The South West Area Meeting was a huge success with an attendance of over 80. Many points were discussed and grievances aired, and as the result, arrangements were made for much more closely co-ordinated activity in this area, G2CD agreeing to act as T.R. for the area.

General.—G3SI puts out a terrific signal on 1·8. 6AB has had over 50 phone contacts on this band, one with an LA5, "near Oslo," and several with D2 and D4. He plans the erection of eight masts. The D.R. is delighted to hear some of his old East London friends on 1·8, particularly the older Ilford members, vintage '25 and '26. Happy memories, O.M.'s and hope to be with you again before long.

G6LB.

DISTRICT 15 (London West, Middlesex and Buckinghamshire)

D.R.: H. V. Wilkins (G6WN), 539 Oldfield Lane, Sudbury Hill, Greenford, Middlesex. Byron 3369. Scribe: E. Holt (2FZQ), 36 Bulstrode Road, Hounslow, Middlesex.

Hayes.—Future meetings will be held at The Labour Hall Uxbridge Road, Southall on the first Wednesday in each month at 7 p.m. At recent meetings G3SU gave talks on U.F.H. transmitters and receivers and G3NR described the manufacture of quartz crystals.

Slough.—A successful meeting was held on April 18 when many of the younger members were welcomed back from the Forces.

Ashford.—A successful meeting was held on April 13. If permission can be obtained a 60 Mc/s. Field Day will be held on May 26 at St. Ann's Hill, Chertsey, with two portable stations, 5RD and 2FD, in operation. (See "Headquarters Calling."—Ed.)

High Wycombe.—On April 7 a Hamfest was held with 4NT acting as host to the Reading and High Wycombe members. The gathering which numbered 40 were shown 4NT's new rig who was congratulated upon its professional appearance. This was followed by a tour of the Chiltern works where the manufacture of meters was fully explained. Tea at the Works Canteen completed a happy occasion. A hearty vote of thanks to G4NT was proposed by 5TP of Reading.

Ruislip.—Thanks are due to Mr. Fletcher, 2FUX, for taking over the A.T.R.'s duties in this area. He hopes to fix up a meeting at an early date. His address is 11A Ickenham Road.

Edgware.—We regret to announce that, for business reasons, Mr. H. W. Pope (3HT) has been obliged to resign from the Post-War Planning Committee and also as T.R. for this area. We thank him for the many years of hard work he has put in, in the cause of Amateur Radio and wish him every success in his new job. The D.R. will be pleased to hear from any member who is willing to take over the duties of T.R.

General.—We wonder if anything ever happens in the Aylesbury and Harrow areas for we never hear from the A.T.R.'s.

2FZQ.

DISTRICT 16 (South Eastern)

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

Crayford.—Mr. H. L. Overton, G4CW, 6, Lower Station Road, who is anxious to meet local members, reports that EI8M is now living at Barnehurst.

Wrotham.—9318, who has just arrived from District 10, would also like to contact local members.

Gillingham.—The M.A.T.S., meeting held on April 7th, was attended by the D.R., 2UJ, Hon. Editor 2MI, 8IG and visitors from Herne Bay, Sheerness, Maidstone and Tunbridge Wells. It is hoped to hold more meetings in the summer. Mr. S. Howell, 5FN, 28, Rosebery Road, has been appointed A.T.R., for the Medway Towns (Rochester, Chatham, Gillingham, etc.), and local members are asked to send him reports regularly. 5WL, 6FV and 6NU, are active on the "top band."

Maidstone.—G4HG and 8UC (President and Vice-President of the M.A.R.S.), are active on 28. 10997 is building a new superhet. 9445 is building a multi-output power supply unit to drive the whole shack, and is amassing gear ready for a call. Ex-2BMP has built an all-wave superhet. The Society is waiting for the G.P.O. to re-issue their licence (G3WM), and 7387 is building some gear for the club. The latter is getting some good

results on his 28 Mc/s. receiver. Anyone interested in joining the local club should contact the Hon. Secretary, at " Ashmore," Ashford Road (phone, Bearsted 6118).

Sheppey.—G3GW has been working new countries on 28, and is ready to operate on 58. 4OU and 2DCG are doing well on D.C. mains. 2HKU has worked W2 on 28 from H.T. batteries and is also on " top band."

Folkestone.—The Folkestone Radio Amateurs' Club is being revived and it is hoped soon to have the use of the pre-war club house and ground. All old 2FA members are invited to contact 2BGI at 25, Dolphins Road, Folkestone.

Bexley Heath and Welling.—Mr. J. Bowes, 4MB, wishes to get in touch with members in this area with a view to forming a local co-operative and social group. Will those interested please contact him, at 20, Broomfield Road, Bexley Heath (phone 3873).

Brighton and Hove.—Congrats to Harold Lunson (3WR), and his wife, on the birth of a son—David. 3WR is on release leave from the R.A.F., where he was a bomber pilot. He is busy building for 28.

Faversham.—11923, ex-Far East P.O.W., reports that he hopes soon to be released from the R.A.F., and would like to meet local members. The number of individual reports is falling off, and some are arriving too late for publication. We want more reports from more people. What about it, chaps?

G2UJ.

DISTRICT 17 (Mid East)

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

G3OS keeps a ground wave sked with Leeds and works the U.S.A. easily on phone when conditions are good. 4OF is active on low power and waiting his first DX. 3WB has run into receiver trouble and is not yet on the air. 2FT has now made his first U.S.A. contact so should find some real DX soon. 2UK is still in the Army but active at weekends on 28 and 1·8. 2AAS is constructing a 58/60 super and seeks news o flocal 60 Mc/s. activity as does 5BD. 4GX is doing nicely with PK4 and LI contacts. 8KH, active on 1·8, has worked LA and D4. 4GZ is now demobbed and is on with a standby rig whilst rebuilding. 2AJB is active on 28. 2HOJ will be active shortly. 4657 has visited the D.R. and 5LL. 4IF, still waiting for anything except local contacts on 28. 5LL and 5BD have been heard by 8SH (12m.) on 58 Mc/s., both have new receivers which promise well, 'LL has put phone into KA3 and 'BD has added VS3JH for his 135th country. Would you like a visit to GKZ on July 5? Reply please as permission will have to be obtained if sufficient members are interested. P.D.M. details next month. Meanwhile book the date—July 5.

G5BD.

DISTRICT 18 (East Yorkshire)

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

Hull.—The April meeting was well attended and it is hoped members will continue their enthusiasm as it is only in this way that interesting meetings can be arranged for them. A discussion on simple receivers and transmitters was followed by a very interesting talk on station operating and procedure by G2QO, which was much appreciated by all. G5GX and 8IM have offered accommodation on their premises at 30/32 Prince's Avenue for use as a Club Room. Their kind offer has been accepted. The next meeting will be held at the Imperial Hotel on May 20; after that date meetings will be held at the new premises.

G2XA.

York.—BRS10,061 now licensed as G5KC, would like to meet other members in York. His address is 146 Melrosegate, Hull Road.

Hemingbrough.—BRS11,660, spending some of his " demob " leave in the East Riding, is an old comrade of G3PL of the Royal Signals and Militia days.

General.—G6UJ, of Driffield, and G2KO of Garton-on-the-Wolds are very active on 1·8. Acting T.R.'s are required for Bridlington, Scarborough and York. Volunteers, please. Several local stations are now active on 1·8 but no activity has been reported on 60.

G3PL.

DISTRICT 19 (Northern)

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

South Shields.—At the last meeting when 14 members were present, 8VV and 8KK discussed the use of various types of receivers. Will members in the South Shields area please note that meetings are now held every Thursday in St. Paul's Hall, Westloe Lane at 7.30 p.m. 8KK has now WAC on 28.

Catterick Camp.—Meetings of the Catterick Radio Club continue to be well supported. Two of the recent talks were " Signal Generators " by Sigmn. Mall and " Straight versus Superhet " by G8RF and BRS10548. After one meeting all members visited 2TA's shack and several W contacts were made on 28.

West Hartlepool.—Eighteen members are now attending fortnightly meetings at which several interesting talks have recently been given. Several members have bought Government surplus 1155 receivers—some arrived in good working order but other had quite a few components missing. Morse classes are held on those Thursday evenings when there is no meeting.

Tees-Side.—G2FO and 2HMK are active on 1·8. 5QU has worked several choice DX on 28, and is now building for 1·8.

G2FO.

Northern Ireland

D.R.: J. N. Smith (GI5QX), 19 Hawthornden Drive, Belmont, Belfast, N.I. Phone 63323.
T.R.: R. Bar (GI5UR), 4, Dunkeld Gardens, Belfast, N.I.

Arrangements for the P.D.M. having been completed, it now only remains for members to give it their full support. Let all roads lead to the C.P.A. Building on May 18.

As most of the GI stations have now received their licence, there is great activity in the District. Much DX has been worked, and many new countries have fallen to 6YW, 6TK, 5SJ, 6WG, 5UR, 5TK, 5ZY, 5QX and 5NJ.

Stations known to be using 1·8 are 5DX, 5SJ, 5QX, 8LF and 8MI. 5QX has worked GC8NO of Jersey. The contact was almost certainly the first GI/GC on the top band. It was made on April 20, at 2340 B.S.T. G2CN has been home on vacation, and the D.R. had the pleasure of a QSO with him *via* GI6YW. Cecil sends 73 to all his GI friends.

GI5QX.

Scotland

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

Elsewhere in this issue will be found full details of the Scottish Conventionettes—the first to be held since 1938—which will be honoured by the largest official party yet to travel North to attend such a function. If you have still not yet advised GM6ZV or GM6XI of your intention to attend, do so right away. Early advice is vital in these days of difficulty in catering.

" A " Area (Glasgow and surrounding counties).
A.R.: D. R. Macadie (GM6MD), 154 Kingsacre Road, Glasgow, S4.

At the May meeting Mr. J. B. Rimmer will give a talk on " Gear for the Beginner."

" C " Area (Dundee, Forfar, Perthshire, etc.).
A.R.: Jas. Gouck (GM3NH), 4 School Drive, Downfield, Dundee.

The April meeting was attended by some of the old-timers and a general discussion on ham topics took up most of the time. As the Dundee Wireless College is closing down, the May meeting will be held in the Y.M.C.A., on May 15, at 7 p.m. in room 7.

" D " Area (Edinburgh and Midlothian, etc.).
A.R.: J. Wilson (GM6XI), 52 Macdowall Road, Newington, Edinburgh 9. Edinburgh 42153.

Forty enthusiastic members attended the lecture given by GM6LS on " Centimetre Wave Technique." This intricate subject was so handled that the " Message was received and understood." Thanks Ray. G5JB was a welcome visitor to his home town and a valuable acquisition has been made in the person of G6YK who is now resident in the area. Many stations are now active on 1·8 and 28. Members interested in 58 please contact the A.R. VU2JP will shortly return to VU and carries good wishes from all in " D." See separate note re Convention.

GM6XI.

" E " Area (Ayrshire and South West Scotland).
Acting A.R.: D. A. MacQueen (GM4PW), 3 Ayr Road, Prestwick. Prestwick 78375.

At time of writing the response to the appeal last month for members to contact Mr. MacQueen has been small. Congrats. to Bill Stirling, GM6RV, and his wife on arrival of junior " op." GM4HZ has been transferred to Dyce Aerodrome and hopes to continue activity on 1·8 from there before long. 4PW reports continued activity on 28 with satisfactory results. 5DK is back after service in R.A.F. Mr. G. Percy, GM3OL, of Dumfries, is anxious to start meetings in that part of the area. His address is Westland, Pleasance Avenue, Dumfries.

" G " Area (Borders).
A.R.: J. P. Blair, 35 Market Place, Selkirk.

Congrats to GM8NW who has been mentioned in despatches. 6RG gave a very interesting talk at the last meeting on 28 Mc/s aerial systems, illustrating angles of radiation, etc. At the next meeting on May 19, GM8NW will speak on Oscillators. GM3TD leaves for Bermuda next month. We hope for a VP9 contact in the near future and wish him every success.

" H " Area (Fifeshire, etc.).
A.R.: A. W. Lawson, GM2NQ, Makora, Kinghorn, Fifeshire.

Will " H " members who propose attending the Edinburgh or Glasgow Conventionettes (or both), please notify the A.R. at once to enable suitable accommodation and catering to be arranged?

Congrats to GM2DVV and GM2DBX on receiving their full calls. Active stations are GM4AN, 4GK, 4FK, 6JJ, 2NQ and 2DVV. Meetings are now held fortnightly at 4A, Bank Street, Kirkcaldy, the next meeting being on Wednesday, 29th May.

GM2NQ.

Can You Help?

Several years ago QST published a short article describing a method of " hotting up " a Sky-Buddy receiver for operation in the 17-46 Mc/s. band by replacing the 6K8G by another type.

Can any member provide M. G. Shackle, GZDVQ 32, Bromwich Street, Bolton, Lancs., with a reference to this article?

Supplement to May 1946 issue of the R.S.G.B. Bulletin.

NEW MEMBERS

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

British Isles (Licenced Amateurs)

G2DA R. R. PECORINI, 4 Queens Drive, Gt. Malvern, Worcs.
G2DX *W. K. ALFORD, Orchard Cottage, Candhurst, Camberley, Surrey.
G2FM *F. C. McMURRAY, No. 1 (High Speed Wireless) Coy., Mobilisation Centre, R. Signals, Ossett, Yorks.
G2FU *E. T. MANLEY, The Pines, Kearsney, Dover, Kent.
GW2FQY T. W. CHAMBERS, 12 London Road, Neath, Glam.
G2GC W. W. FIELD, 5 Albert Hill, Bishop Auckland, Co. Durham.
G2IQ W. J. CRAWLEY, 44 Tapton Hill Road, Sheffield, 10.
G2JM *H. A. MUSGRAVE, Baymead, North Petherton, Som.
G2KA J. F. A. LAVENDER, 29 Crofts Road, Harrow, Middx.
G2MM M. H. C. LEWIS, 53 St. Nicholas Road, Barry, Glam.
G2PU S. R. R. KHARBANDA, Trudacot, 23 Windsor Road, Cambridge.
G2QV *T. SHANKS, Four Hedges, Hurst Green, Sussex.
G2RH R. C. HARRISON, 1 Springfield Villas, Wood's Lane, Stapenhill, Burton-on-Trent.
G2TK *J. H. WETHERILL, Linewboro, Scarborough, Yorks.
G2UD A. G. L. ACLAND, Kenwell, Walderslade, near Chatham, Kent.
G2UZ C. V. STEAD, 2 Cliff Road Gardens, Leeds, 6.
G2YU R. LOWE, 45 Camp Road, Norwich.
G2ZK C. E. J. JARVIS, 1 Browning Avenue, Southend-on-Sea.
G3CB A. E. ORME, 47 Amesbury Circus, Bells Lane Estate, Cinderhill, Nottingham.
G3CD S. TAYLOR, 98 Dryclough Road, Beaumont Park, Huddersfield.
G3IH A. E. WARD, 81 Wicklow Drive, Leicester.
G3IY J. POLLARD, Southfield, 425 Manchester Road, Burnley, Lancs.
G3KA F. HARRISON, 9 The College, College Rd., Malvern.
G3KW S. E. NEWBY, Carina, Romney Rd., Rottingdean, Sx.
G3OF W. C. CLARK, 71 Suncote Avenue, Dunstable, Beds.
G3PV E. H. RICKETT, 28 Cross Oak Rd., Berkhamsted, Herts.
G3PW B. L. P. TERRY, Harvest Hill, Braywick, near Maidenhead, Berks.
G3QG W. C. GREEN, 3 Moreton Place, Harpenden, Herts.
G3RO A. M. JOHNSON, 2 Broughton Drive, Cressington, Liverpool, 19.
G3TB E. T. BURKITT, 14 Nursery Rd., Swallownest, Sheffield.
G3TF T. GATIS, 38 Wrottesley Rd., Tettenhall, Staffs.
G3UI L. L. COBB, 30 Rugby Gdns., Ovenden, Halifax, Yorks.
G3UW F. FEELEY, 14 Ashley Gardens, West Hartlepool.
G3XZ A. STAPLES, 9 King's Av., Rawtenstall, Rossendale, Lancs.
G3YZ D. G. PRICE, Atlas Cottage, Ryeworth Road, Cheltenham, Glos.
GW3ZT G. R. HIRST, 30 St. Francis Road, Whitchurch, Cardiff, Glam.
G4AD W. RIPLEY, Ridge View Terrace, 436 Meanwood Road, Leeds, 7.
G4BD R. R. PALMER, 57 Thornton St., Rotherham, Yorks.
G4DI J. E. LEBRET TERRY, Harvest Hill, Braywick, Maidenhead, Berks.
G4HH J. WOODHOUSE, 22 Darbishire Rd., Fleetwood, Lancs.
G4HJ H. A. W. JONES, 99 Stanstead Rd., Hoddesdon, Herts.
G4JO W. R. EADIE, 28 Uppingham Road, Liverpool, 13.
G4LL G. LUDKIN, 3 Bk. Delph Street, Leeds, 6, Yorks.
G4OY G. BEAUMONT, 43 Upper Albert Road, Sheffield, 8.
G4PM H. AXON, 11 Kendal Rd., Lytham St. Annes, Lancs.
G4QB H. G. WOOD, 49 Hitchin Rd., Stotfold, Arlesey, Beds.
G5AV *G. W. MELLAND, 15 Albert Prom., Loughborough, Leics.
G5BR *G. L. BROWNSON, 20 Courtlands Avenue, Hayes, Bromley, Kent.
GM5CL *M. SHAW, 12 Knollpark Drive, Clarkston, Renfrewshire.
G5DR *H. W. SCOTT, 20 Hill Road, Cambridge.
G5FW F. WALTON, Rose Villa, Collins Green, Near Warrington, Lancs.
G5OL *B. C. OKELL, Birchleigh, Prescot Road, Hale, Altrincham.
G5PH *B. F. PHILLIPS, Delfryn, Banwen Road, Glynneath, Glam.
GM5RH *D. Q. ALDRIDGE, c/o Mrs. G. B. Lane, 6 Bank Street, Greenock, Renfrewshire.
G5TT T. CALDICOTT, Main St., East Bridgford, Notts.
GM5UT *E. F. FOWLER, Roadside Cottage, Birse By Aboyne, Aberdeenshire.
G5UY *D. B. FRY, 5 Eastover, Bridgwater.
G5XF *J. BUTTERWORTH, 1088 Manchester Rd., Castleton, Rochdale.
G5ZB H. BEARDWOOD, 143 Wakefield Rd., Dewsbury, Yorks.
G5ZG *R. P. HAWKEY, Kebles, Woodford Green, Essex.
G6AK *T. S. BRISTER, Beaumanor Park, Woodhouse, Near Loughborough, Leics.
G6AY *J. H. CHAPMAN, 11 New Way Road, Leicester.
GM6KZ *W. J. MCKENZIE, 38 Warriston Avenue, Edinburgh, 4.
G6NC *C. C. NEWMAN, Senior Meteorological Officer, R.A.F. Aden Command, A., M.E.F.
G6NM *E. G. HOULDSWORTH, 10 The Circuit, Wilmslow, Manchester.
G6OM *I. D. AUCHTERLONIE, 4 Stand Close, Ringley Road, Whitefield, Manchester.
G6PD *P. G. DAY, Flat 3, Larch Hill, Hanley Tree., Malvern, Wells, Worcs.
G6TO *K. H. ARTHUR, 78, Snowdon Rd., Fishponds, Bristol.
G6US *N. E. READ, 24 Church Street, Oswestry, Shropshire.
G6VX *M. D. MASON, 16 Abbotsbury Road, Hayes, Kent.
G6WU *W. E. G. BRIGDEN, 131 Winchmore Hill Road, Southgate, N.14.
G6XD *J. J. G. TAYLOR, 188 Beaumont Rd., Plymouth, Devon.
G6XR *H. V. COOK, Hollyoaks, Tamworth Rd., Keresley, Near Coventry.
G6YS *S. C. BAVEYSTOCK, 30 Crescent Rd., Friern Barnet, N.11.
G8AB *J. M. RAILTON, 35 Priory Road, Loughton, Essex.
G8BL V. WALKER, 8 Thornton Ville, Cleckheaton, Yorks.
G8DC *H. M. TEE, 469 Higher Brunshaw, Burnley, Lancs.
G8DL S. T. PHILLIPS, Emly House, Jumpers Avenue, Christchurch, Hants.
G8FN H. S. HUNTER, 232 Wellington Street, Grimsby, Lincs.
G8HB *L. H. GUNNELL, 30 Gordons Way, Oxted, Surrey.
G8II *H. A. G. SHEPHERD, 2 Titsey Corner, Limpsfield, Oxted, Surrey.
G8JO J. ORR, 22 Pembroke Tree., S. Shields, Co. Durham.
G8KH S. STOCKS, 60 Tunnard Street, Grimsby, Lincs.
GM8KQ *A. DUNSIRE, 6 Sandwell Street, Buckhaven, Fife, Scotland.
G8PO *J. E. IRONMONGER, 15 Prince's Way, London, S.W.19.
G8SJ *J. R. TREADWELL, 108 Sandhall Green, Pellon, Halifax, Yorks.

A CORDIAL WELCOME IS EXTENDED TO THE

550

NEW MEMBERS WHOSE NAMES ARE LISTED

G8SR T. S. HEMMINGS, Devonia, 33 Bull St., Gornal Wood, Dudley, Worcs.
G8SY *K. R. CUSTERSON, 23 Orchard Estate, Cherryhinton, Cambridge.
G8UC *D. W. CARR, 244 Upper Fant Rd., Maidstone, Kent.
G8UZ A. J. MARRIOTT, 29 Columbia Av., Sutton-in-Ashfield, Notts.
2AFB *B. H. DOUTHWAITE, 54 Park View Gardens, Hendon, N.W.4.
2AHH G. HANDLEY, Knolls House, 266 Bury New Road, Salford, 7, Lancs.
2AJF W. J. RIDLEY, Kawila, Beehive Lane, Galleywood, Near Chelmsford.
2APX A. B. MILLER, 38 Musgrave Street, Penrith, Cumb.
2AQV S. R. BENNETT, 47 Foston Avenue, Burton-on-Trent, Staffs.
2AYC S. E. VANSTONE, 11 Holmwood Road, Cheam, Surrey.
2AYX W. B. GREEN, 26 Allendale Road, Barnsley, Yorks.
2AZA H. A. ROTHWELL, 49 Loxham Street, Bolton.
2BCX F. C. JUDD, 111 Mayband Rd., S. Woodford, London, E.18.
2BDG F. SWINDREN, 36 Well House Rd., Gledhow, Leeds, 8.
2BFO D. D. SILVESTER, 8 Carlos Street, Godalming, Surrey.
2BIF R. H. ROBINSON, Myrtle Grove, Nether Kellet, Carnforth.
2BJM A. GARLICK, 26 Oakway, Raynes Park, London, S.W.20.
2BLO H. B. BOLTON, 8 Lyndhurst Av., Castleton, Rochdale, Lancs.
2BON T. BURTON, 147 Clements Rd., Yardley, Birmingham 25.
2BOU W. E. PAGE, 51 Duddenhill Lane, Willesden, London, N.W.10.
2BQQ F. H. BROWN, 4 Ashlyn Grove, Romford, Essex.
2BUF *J. G. PRICE, 23 Powell St., Abertillery, Monmouth.
2BWR S. G. THORPE, 28 Wheatsheaf Close, Woking, Surrey.
2CKB W. C. LIVENS, 43 Moselle St., Tottenham, London, N.17.
2CPT G. F. HEATH, 66 Aire Street, Goole, Yorks.
2CQC W. MCDONNELL, 7 Granville St., Keighley, Yorks.
2CQX P. V. PUGH, 38 Sandringham Rd., Great Barr, Birmingham, 22B.
2DBH M. WATTS, 38 Chapel Avenue, Addlestone, Surrey.
2DCI R. S. J. SMITH, 23 Hale Road, Speke, Liverpool, 19.
2DKN W. R. GILMORE, City Hospital, Belfast, N. Ireland.

2DKV C. S. HEATH, Dunstan, Chapel Rd., Tadworth, Surrey.
2DMN A. K. DAVEY, Leahurst, Stanley Road, Hinckley, Leics.
2DPK E. H. RODWELL, Broom Hill, Holbrook, Ipswich, Suffolk.
2DPY S. G. MERCER, 58 Brighton Rd., Shoreham-by-Sea, Sussex.
2DRM G. R. MARCH, 18 Rose Walk, Purley, Surrey.
2DWQ K. R. ACTON, St. Leonards, Exeter Rd., Honiton, Devon.
2DXJ S. HURST, West Camp, Westmorland Sanatorium, Grange-over-Sands, Lancs.
2FBX W. J. HORNE, 73 Parkfield Road, Stourbridge, Worcs.
2FDC N. F. UNDERHILL, 140 Outermarch Road, Radford, Coventry.
2FFQ T. READ, 41 Yoxall Av., Hartshill, Stoke-on-Trent.
2FJY W. A. DAVIS, 27 Wyndham Road, Moss Estate, Bridgwater, Somerset.
2FKZ C. E. NEWTON, 105 Underhill Rd., London, S.E.22.
2FMT C. R. KING, 2 Moorend Crescent, Leckampton, Cheltenham.
2FMW E. A. BAKER, 292 W. Barnes Lane, New Malden, Sy.
2FNV T. TAYLOR, 57 Maryon Road, Charlton, London, S.E.7.
2FTK F. A. NOAKES, 4 Barons Field Rd., Cheylesmore, Coventry.
2FVA D. H. MCCLELLAND, 65 Devonshire Road, Upton, Wirral.
2FVR J. W. GRANT, 46 West High Street, Forfar, Angus.
2FXB F. S. BRIGHAM, 47A Northumberland Road, Tweedmouth, Berwick-on-Tweed.
2FXG A. S. GREEN, 12 Meadow Walk, Hackbridge, Surrey.
2HDF F. WESTWOOD, 110 Cemetery Rd., Lye, Stourbridge, Worcs.
2HJF C. J. POTTER, 183 Dale Street, Chatham, Kent.
2HJJ J. C. BLAND, 22 Hurst Avenue, Horsham, Sussex.
2HJN A. F. DREWETT, 18 Wimborne Drive, Kingsbury, London, N.W.9.

British Empire (Licenced Amateurs)

AC3GG R. W. FORD, The Residency, Gangtok, Sikkim, *via* Calcutta, India.
VK2DI G. F. COLE, Central Av., Miranda, N.S.W. Australia.
VQ4ERR E. R. ROBSON, Box 1313, Nairobi, Kenya.
VS6AO A. HARBOTTLE, 175 Caerphilly Rd., Cardiff (P.O. Eng., Dept. Hong Kong).
VU2FX L. J. THOMAS, 6 Russell Place, Willington, Co. Durham.
XZ2DY *F. J. MUSTILL, c/o A. Scott & Co., Rangoon, Burma.

Foreign (Licenced Amateurs)

EI3L A. C. WOODS, 17 Butterfield Crescent, Rathfarnham, Co. Dublin.
EI8M R. J. NEWMAN, 11 Merewood Rd., Barnehurst, Kent.
HBJDO FRITZ FREY, Adligenswilerstrasse 26, Lucerne, Switzerland.
OK2GO K. GOLDBERGER, 19 Chepstow Court, London, W.11.
ON4JW J. M. A. ELIAS, 2 Avenue Jean Linden, Brussels, Belgium.
ON4UM V. CLAEYS, Vooruitgangstraat, Assebrouck, Bruges, Belgium.
PAOFLX L. H. NIJHOF, 20 Willem de Zwijgerstraat, Delft-Holland.
SP2HH M. J. KASIA, c/o Lloyds Bank House, Draycott Avenue, Henton, Middx.
SU1GP G. PERAKIS, 4 Haret El Chawarby, Cairo, Egypt.
SV1RX N. F. JOLY, 16 Hereford Road, Southsea, Hants.
W8SGJ T. W. RONEY, Box 384, Beaver Falls, Pa. U.S.A.
W8WGT J. R. WINE, 2728 E. Colarado St., Pasadene, Calif., U.S.A.
YI1CD C. J. CURTIS, R.A.F., Moreton-in-Marsh, Glos.

British Receiving Stations (B.R.S.)

1620 *J. G. HAMPSHIRE, 7 Grosvenor Hill, Wimbledon, London, S.W.19.
2072 *J. C. WILSON, 28 Silverdale Rd., Beverley High Rd., Hull.
3047 *C. E. GREEN, 2 Trevor Close, Hayes, Kent.
3649 *C. E. THORNTON, 6 Pendreth Place, Cleethorpes.
3793 *M. STEED, 14 Crescent Rd., Bognor Regis, Sussex.
3871 *R. WATSON, 6 Milton Avenue, London, N.W.9.
4428 *C. M. SMITH, 57 Dura Street, Dundee, Scotland.
4485 *J. MACDONOUGH, 24 Brooklyn Drive, Whitby, Wirral, Cheshire.
4636 *S. E. SMITH, 2 Lockram Lane, Witham, Essex.
5788 *E. W. J. EVERETT, 8 Ditchling Rd., Brighton, 7, Sussex.
6381 *G. B. L. WOODBURN, King's Chambers, Park Street, Blackheath, Staffs.
6693 *F. A. HERON, Mill House, Esher, Surrey.
11,911 W. H. G. SHEARD, 165 Kenmure St., Pollokshields, Glasgow, S.W.
11,912 R. A. WALKER, 72 Oak Hill Crescent, Woodford Green, Essex.
11,913 G. R. WILKINSON, 4 Elmhurst Road, Tottenham, N.17.
11,914 R. D. LISSETER, 3 Chanters Ave., Bideford, Devon.
11,915 R. H. ACKERLEY, 42 Woodlands Rd., Handforth, Wilmslow, Manchester.
11,916 D. B. O'DONOGHUE, 28 Shelley Rd., St. Marks, Cheltenham, Glos.
11,917 P. A. LONG, 21 Tennyson St., West Parade, Lincoln.
11,918 E. A. MERRYFIELD, 25 Trevor Rd., Edgware, Middlesex.
11,919 L. CHAPMAN, 388 Dewsbury Road, Leeds.
11,920 H. J. CATT, "St. Margarets," Seaway, Stone, Southminster, Essex.
11,921 R. G. WEBSTER, 12 Mill Street, Sidmouth, Devon.
11,922 W. H. LLOYD, 15 Friars Lane, Barrow-in-Furness, Lancs.
11,923 S. J. COE, 20 Makenade Avenue, Faversham, Kent.
11,924 J. H. GROVER, Down House, Alton, Hants.
11,925 D. B. CHAMBERS, Clytha, 9 Mortimer Rd., Hereford.
11,926 G. R. WILSON, 5 Mays Road, Bankfoot, Bradford, Yorks.
11,927 S. E. YOUNG, 61 St. Catherines Rd., Bitterne Park, Southampton, Hants.
11,928 S. J. B. WORROLL, 82 Highbury Gdns, Seven Kings, Essex.
11,929 P. C. GANTHONY, 156 Sheen Rd., Richmond, Surrey.
11,930 R. J. FUSSEY, 31 Oldborough Rd., North Wembley, Middlesex.
11,931 R. H. NORTON-DAWSON, 30 Wildwood Rd., Hampstead Garden Suburb, N.W.11.
11,932 R. G. PEARCE, 102 Kingshill Rd., Swindon, Wilts.
11,933 K. L. BROWN, 7 Sandersons Yard, Loftus, Saltburn.
11,934 R. N. CLARK, 61 Guibal Rd., Lee, London, S.E.12.
11,935 G. A. LOOKER, 38 Drayton Grove, West Ealing, London, N.13.
11,936 T. G. BOWIE, 53 Hareburn Rd., Tillicoultry, Clackmannanshire, Scotland.
11,937 H. N. DU FRESNE, By Ways, Gover Road, Redbridge, Hants.
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11,940 W. R. PEASE, 78 South Street, Hyde Park, Doncaster, Yorks.
11,941 K. M. BEARCROFT, 1 Buxton Cottage, The Colony, Lingfield, Surrey.
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11,943 A. N. NELSON, 49 Manor Rd., Willerby Rd., Hull, East Yorks.
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11,951 P. WELCH, 18 Landsdowne Road, Sidcup, Kent.
11,952 J. M. RIDDELL, Hill Of Orbliston, Fochabers, Moray.
11,953 A. GIDDINGS, 5 Chamberlain Rd., Hillmorton, Rugby, Warwickshire.
11,954 R. P. LIDDELL, 134 Glasgow Rd., Dennyloanhead, Stirlingshire.
11,955 S. D. SHURMAN, 7 Star Lane, Hooley, Coulsdon, Surrey.
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11,959 J. B. HARRIS, 65 Gurney Court Rd., St. Albans, Herts.
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11,974 W. H. BURBERRY, 47 Marion Rd., Norwich, Norfolk.
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12,081 D. W. WARNER, 72 Munster Avenue, Hounslow, Mdx.
12,082 J. W. SCRASE, Mona, Palmarsh Crescent, Hythe, Kent.
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BAND PLANNING

NOW that the resumption of amateur activity on the DX bands is only a matter of days away it seems highly desirable to do a little careful band planning.

It is unfortunate that the bands are being returned piecemeal but as half a loaf is decidedly better than no bread, it behoves us to make the most of what we have.

Considerable criticism has been levelled against the A.R.R.L. and the Federal Communications Commission for agreeing to a condition which crowds all U.S. telegraphy stations into the first 100 kc/s. of the 28 Mc/s. band. In fairness to all concerned, it should be pointed out that this arrangement was made in July, 1941—not in November 1945, as most people imagine—at the request of the A.R.R.L. board of directors. At that time U.S. amateurs were still active, whilst those in most other countries had been closed down. The decision was made in order to increase 'phone occupancy when 28 Mc/s. was purely a domestic band. Obviously, the A.R.R.L. could not know that for nine months after the war 28 Mc/s. would become our one and only international DX band.

The early return of parts of the 7 and 14 Mc/s. bands will cause similar difficulties unless a plan is adopted promptly. Any new scheme must inevitably depend for its success upon the amateurs of the U.S.A. and it is for that reason that the suggestions given below have been passed on to the A.R.R.L. for their comments.

It should be understood however that the G.P.O. regard the division of our bands as a matter for the amateurs to agree amongst themselves. On the other hand the A.R.R.L. can ask the F.C.C. to sanction any plan dividing the bands into telephony and telegraphy channels, and if the Commission agrees, the plan can be enforced officially. On the face of it, this might look like restricting the U.S. amateurs unfairly, but in practice, we, and the amateurs of other countries outside the U.S., would be forced to conform to the arrangement, because very few stations outside the U.S. would waste their time in one of the American 'phone bands when the W's are coming through. On the other hand there is no practical objection to the amateurs of other countries working within the American 'phone bands when Americans are not audible.

For these reasons the Society could not support any scheme which would restrict all 'phone operation to one part of a particular band, but in view of the preponderant number of U.S. 'phone stations it appears to us that a definite section of the 7 and 14 Mc/s. bands should be set aside for U.S. 'phones, the whole of each band being open to the rest of the world. This scheme worked very well before the war when the only objection we heard voiced was the presence of the U.S. 'phones in the *middle* of the 14 Mc/s. band. This had the undesirable effect of dividing the band into three distinct and almost self-contained sections.

Our suggestion, therefore, is that when the first part of the 7 Mc/s. band is released, that portion between 7,200 and 7,300 kc/s. should be made a U.S. 'phone band, which will remain when the whole band is handed back. We further suggest that the channel 14,250 to 14,300 kc/s. should become temporarily a U.S. 'phone band, to be changed when the full band is released, to 14,300 to 14,400 kc/s.

In regard to the 28 Mc/s. band, we suggest a return to the pre-war arrangement, *i.e.*, no U.S. 'phone below 28,500 kc/s. There was a tendency before the war for the European 'phones to operate within the channel 28,250 to 28,500 kc/s., and in effect this was a European 'phone band by tacit agreement; leaving ample space for telegraphy operation.

Although under the main plan suggested here two-thirds of the new 7 Mc/s. band would be assigned to U.S. 'phone, this would not embarrass European amateurs during the coming summer. By the time the DX comes through again on 7 Mc/s. we should have secured the use of the whole band, which would then mean that 7,000 to 7,200 kc/s. could be used by the U.S. for telegraphy and by the rest of the world for telegraphy and telephony, leaving 7,200 to 7,300 kc/s. clear for U.S. 'phone.

These suggestions have been forwarded to the A.R.R.L. What do you think about them ?

J.C.

AT LAST !

We are informed by the G.P.O., that the bands 7,150–7,300 kc/s, and 14,100–14,300 kc/s will become available for use by amateurs as from June 30, 1946. Power :- Class " A," 25 watts ; Class " B," 150 watts. Licences will not be amended for the time being. We are further informed by the G.P.O., that the use of the band 1,800–2,000 kc/s by amateurs will continue on a trial basis for a further period of two months.

RECENT ADVANCES IN THE MEASUREMENT OF FREQUENCY*

By L. Essen, Ph.D., A.M.I.E.E. (*Radio Division, National Physical Laboratory*)

PART I

Introduction

I HAVE no doubt that some of you have in the past made apparatus for measuring the frequency of your transmitters, but the majority have probably relied on the calibration of the quartz oscillators used for controlling the frequency. In the future you may be experimenting at higher frequencies which cannot be so readily controlled by quartz oscillators, and the problem of frequency measurement may therefore become of greater practical importance to the amateur radio experimenter. In this lecture I shall describe the present state of this technique and the advances that have been made during the last few years. Some of the advances tend to make the apparatus more complex and costly and, from the experimenters' point of view, perhaps less interesting. On the other hand the usual heterodyne methods of measurement can still be used at the highest frequencies likely to be employed for communication purposes, and a high accuracy can be obtained with comparatively simple apparatus.

Although, to attain the highest accuracy, it is necessary to use some form of heterodyne method of measurement, it is often more convenient to use a resonant wavemeter which has been previously calibrated by the heterodyne measurements. I shall therefore conclude the lecture with a short account of these wave meters, particularly those used at very high frequencies.

Procedure of Measurement

It is, I think, important to have a clear understanding of the fundamental processes involved, as well as a knowledge of the technical details of certain parts of the apparatus used, and I propose therefore to describe briefly the complete procedure of a frequency measurement before discussing the improvements that have been made in the various different stages. This procedure is represented in Fig. 1. The fundamental standard is the period of rotation of the earth about its axis. The unit is 1 cycle per mean solar day or, as it might be expressed, 0·000016 c/s. Now we are to-day concerned with the measurement of frequencies as high as 10,000 Mc/s. and these frequencies must be measured by comparison with that of the fundamental standard. It is fairly obvious that the comparison must be effected in a number of stages. The first of these is carried out at the Observatory, where the mean solar day is divided by 86,400 to give the mean solar second. For this purpose pendulum, or quartz clocks, are used, their rates being checked by stellar observations. These clocks provide the working unit of time, the mean solar second and enable time signals to be transmitted by radio—in this country from the Rugby and Leafield stations, so that other clocks can be regulated. Among these is the quartz clock, which serves as the national frequency standard. It is called a clock, because in order that it can be regulated by means of the time signals, its frequency must be divided to a value of the order of 1 c/s. The frequency of the standard is 100,000 c/s. It is divided electrically to 10,000 c/s. and 1,000 c/s., and an amplified output at this frequency drives a synchronous clock which gives a further 1,000 fold division. The clock gives one impulse for every 100,000 vibrations of the crystal, i.e., if the frequency is exactly 100,000 c/s., one impulse per second. The clock also operates the minute and hour hands of a dial. The seconds impulses are compared with the observatory time signals on a chronograph tape, and if the observations are made daily, the average frequency from day to day is measured. The frequency standard provides a unit of frequency of 100,000 c/s., and for purposes of frequency measurement this can be readily multiplied or divided to almost any convenient value. It is used in two ways, as illustrated in Fig. 1. The standard radio frequency is transmitted as the carrier frequency of a transmitting station and the signal received anywhere in the range of the station is used to measure substandard oscillators; and it is also used in the national standardising laboratory to calibrate substandard oscillators and wavemeters.

The next stage in the frequency measurement is the measurement of a transmitter frequency in terms of a substandard, and this is the only part of the procedure with which a radio engineer is normally concerned. The simplest method is shown in the diagram. The quartz substandard oscillator controls harmonic generators at frequencies of 1 Mc/s., 100 kc/s., 10 kc/s., and if necessary, also at 1 kc/s. The signal to be measured and an auxiliary oscillator are coupled to a receiver, and the oscillator is adjusted to have the same frequency as the signal. It is then adjusted in turn to have the same frequency as the nearest harmonics of the quartz controlled oscillators, one on each side of the signal frequency. The value of the latter is then found by interpolation between the two calibration points on the scale of the auxiliary oscillator.

That, in bare outline, is a description of the measurement of a frequency in terms of the period of rotation

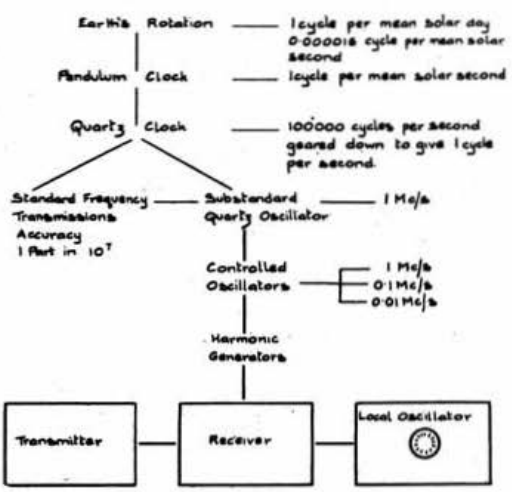


Fig. 1.
The complete procedure for measuring the frequency of a transmitter.

* A Lecture delivered to the Society on March 15th, 1946.

of the earth. We will now consider the stages in detail and the recent improvements that have been made.

The Rotation of the Earth

The rotation of the earth does not form an ideal standard. For example, as a result of tidal friction the time of rotation is believed to be increasing at the rate of a thousandth of a second per day in the course of a hundred years. This is not very serious, but it is also subject to much larger erratic variations which can be detected by modern timekeepers. These variations were known to exist from the results of astronomical observations of other periodic events, but in 1934 a sudden change was detected by man-made timekeepers. The rates of three quartz clocks, made by Scheibe and Adelsberger[1], all experienced a sudden change in rate of about 0·005 second per day. Now since the clocks were entirely independent such a change in their rates was difficult to account for, and it was assumed that it was the time of rotation of the earth that

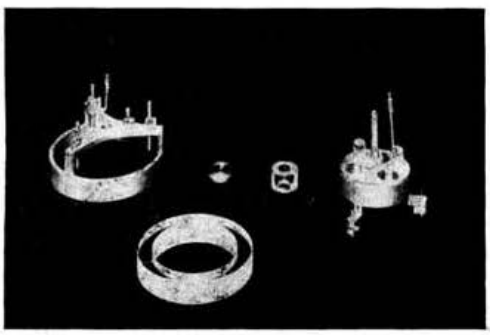


Fig. 2.
The quartz ring oscillator and electrodes.

had changed. At a recent meeting of the Institution of Electrical Engineers, the Astronomer Royal announced that he had recently detected a similar change. Another disadvantage of using the rotation of the earth as a standard, is that other standards cannot be compared with it very accurately. A single determination of time from astronomical observations cannot at present be made with a precision greater than $\pm 0{\cdot}01$ second[2] although attempts are now being made to improve on this figure. In spite of these drawbacks, however, it is likely to remain for many years yet, the most reliable and convenient standard.

Observatory Clocks

In the next stage of time and frequency measurements, the division of the day into mean solar seconds, some big advances have been made. Schuler[3], in Germany has carried out an intensive investigation on pendulum clocks in order to improve their stability of rate and he has met with some success. It is doubtful, however, whether this work will be of much practical significance, because the quartz clock is now accepted as being superior to any pendulum clock. It may be added that it is not yet so convenient to maintain in operation for long uninterrupted periods. The quartz clock is simply a quartz oscillator having some convenient round number value of frequency, mounted with exceptional care and operated under very stable conditions. As I have explained already, the frequency is divided so that the clock gives seconds impulses. The frequency of a quartz clock is constant to 1 part in 10^8 over monthly intervals which corresponds to a clock rate constant to 0·001 second per day over this period. This is of the order of ten times better than the pendulum clock, and it enables the intervals between stellar observations to be subdivided with a correspondingly greater accuracy.

The quartz clock at the National Physical Laboratory has been used by the Observatory since 1941 to assist in the time measurements and more recently the Post Office has supplied the Observatory with a number of quartz clocks of their design. At the meeting to which I have already referred, the Astronomer Royal announced that he had discontinued the use of pendulum clocks and was now relying entirely on quartz clocks. The tool developed for the measurement of transmitter frequencies has thus become our standard of time. As an example of this kind of clock I can give a few details of the one now used at the National Physical Laboratory[4] as the National Standard of Frequency. The oscillator (Fig. 2), is a ring of quartz of about 6 cm. diameter. On its lower face three small V-shaped grooves are ground. The electrodes consist of metal rings inside and outside of the quartz ring. Three finely pointed metal feet are fixed to the inner electrode, and the quartz ring rests with these feet located in the grooves on its lower face. The quartz is thus accurately located without being under any firm restraint. The outer electrode is fixed in a similar way, the assembly being shown in Fig. 3. The three screws in the upper electrode do not touch the quartz ring, but are sufficiently near to prevent the supporting feet from leaving the grooves in the quartz. They thus make the equipment portable. The oscillator is mounted in an enclosure which can be evacuated and sealed. The container is mounted in a double walled oven which is regulated in temperature to 0·01°C. The driving circuit is an outer compartment of the oven, and the dividing and amplifying circuits are on a separate panel. A second rack contains the mains power supplies which are used for trickle charging the batteries which drive the equipment. In this way very stable supplies are obtained.

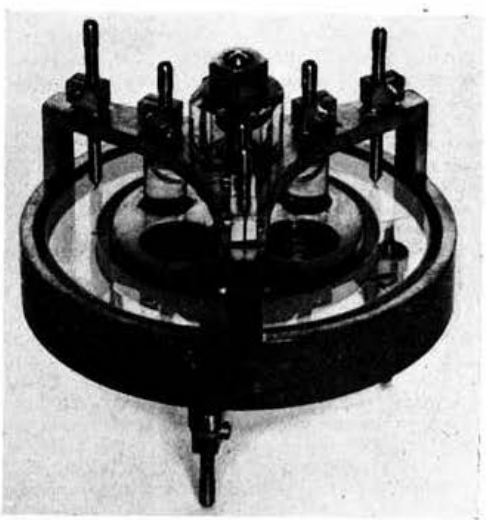


Fig. 3.
The quartz ring and electrodes assembled.

The Frequency Standard

The frequency standard is, as we have seen, identical with the quartz clock described in the previous section. It is calibrated by reference to the Observatory time signals and a little additional uncertainty is thereby introduced. The methods of transmission and reception of the signals have been improved during recent years, and the error due to these causes is now less than 0·005 second. The errors are random ones and by averaging the results over a few days, the frequency of the standard can be measured with a precision of 1 part in 10^8. As mentioned earlier, the standard is used in two ways, and I will consider first the transmission of the standard signals by radio.

NOMINAL FREQUENCY 5,000,000 c/s

Date	N.P.L. measurements: Frequency cycles per second	N.P.L. measurements: Number of measurements	N.P.L. measurements: Mean deviation from the mean: cycles per second	Bureau of Standards values cycles per second: Maximum	Bureau of Standards values cycles per second: Minimum
7.3.34	4,999,999·7	80	±0·05	5,000,000·1_8	5,000,000·1_1
14.3.34	5,000,000·4	130	±0·05	5,000,000·9_8	5,000,000·8_1
9.5.34	5,000,000·4	130	±0·07	5,000,000·5_8	5,000,000·4_1
30.5.34	4,999,999·4	150	±0·05	5,000,000·1_8	5,000,000·0_1
6.6.34	5,000,000·9	120	±0·15	5,000,000·4_8	5,000,000·3_1
13.6.34	5,000,000·6	130	±0·10	5,000,000·5_8	5,000,000·4_1

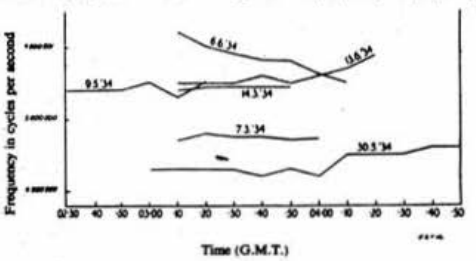


Fig. 4.
Measurements of the standard transmissions from WWV.

Standard Transmissions

As you will remember such transmissions were made in this country before the war from the National Physical Laboratory; but they had to be suspended during the war, and the service has not yet been renewed. You will also be aware of the comprehensive programme of transmissions from the American station WWV. In 1934, a series of measurements of the frequency of the signals received from WWV, was made at the N.P.L.[5] to establish the accuracy with which such transmissions could be used. The results of these measurements are shown in Fig. 4. It should be mentioned that the power of the station was then very much smaller than it is now, and that the frequency of the transmitted signal was 5 Mc/s. It is seen from the table at the top of the sketch that the measured values of frequency agree to 2 parts in 10^8 with those supplied later by the Bureau of Standards where the frequency of the standard was measured at the time of the transmissions. It was observed during the reception of the signal that there were sudden, short-lived, changes of frequency amounting to several cycles per second. These must have been caused by a variation in the length of the transmitted path, resulting from a variation in the height of the reflecting layers. During such a change there would be a change in the frequency of the received signal in accordance with the Doppler principle. The movements of the reflecting layers could thus be studied by such frequency measurements although no work along these lines has yet been carried out.

Standard frequencies have also been transmitted as a modulation of the carrier wave of a station. The modulation frequency is usually 1,000 c/s. obtained by division from the frequency standard and this type of transmission was particularly useful when 1,000 c/s. tuning forks were widely used as substandards of frequency. An experiment[6] was made at the National Physical Laboratory to check the accuracy of this method of frequency comparison. A harmonic of the standard note before transmission was measured in terms of a 20 kc/s. quartz standard (Fig. 5). The note was sent by land line to Daventry and transmitted as a modulation frequency. The signal was received again at the National Physical Laboratory and used to control a multivibrator, and the twentieth harmonic of this was then measured in terms of the quartz standard. The results show that although the frequency of the fork varied slightly during the transmission the frequencies of the transmitted and received signals agreed to 1 part in 10^8.

It is clear from these two experiments that it is now possible to compare frequency standards—and therefore to measure substandards—at great distances with an accuracy of 1 part in 10^8.

Although standard frequency transmissions are very convenient for the checking and adjusting of substandards, any closely controlled transmitter of a suitable frequency can be used. At present the frequencies of the Droitwich station (200 kc/s.) and the stations operating at frequencies of 6180 kc/s., 9510 kc/s. and 17810 kc/s., are all controlled to within 1 part in 10^6. The fact that they may be modulated at a varying amplitude and frequency does not prevent the frequency comparisons from being made.

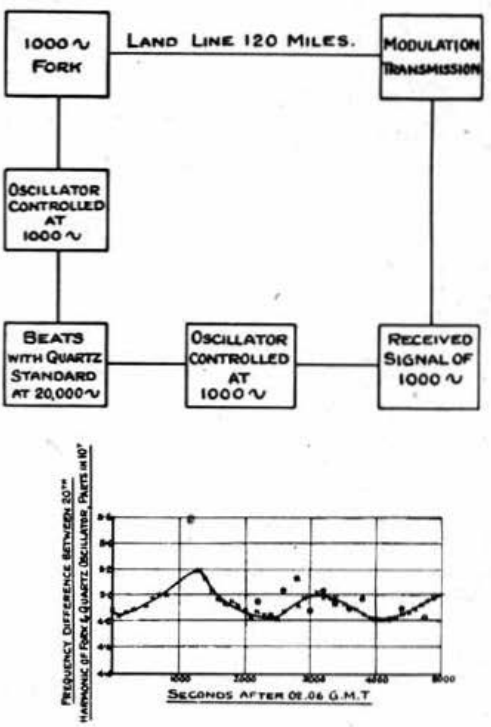
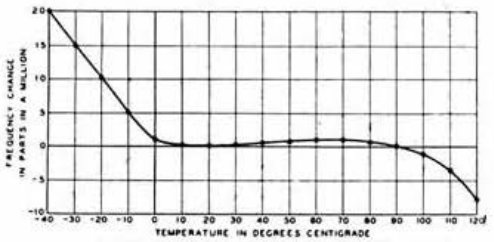


Fig. 5.
Measurements of a standard modulation (1,000 c/s) transmission, December, 1932.

Substandard Quartz Oscillators

During the last ten years there have also been some striking improvements in the design of substandard oscillators, due largely to some pioneer work by Mason[7]. You are familiar with the old type of quartz plate fitting loosely between its electrodes. The frequency of such an oscillator is sufficiently constant for many purposes, but it is subject to variations due to the movement of the plate, to variations of temperature and humidity and to the gradual contamination of the surface of the quartz. All of these effects have been greatly reduced in the modern oscillator.



Frequency-temperature curve for GT crystal.

Fig. 6.

It has been known for many years that oscillators having low temperature coefficients of frequency can be made by cutting the plates in a suitable direction from the quartz crystal. Various directions of cut have been used and are often designated as the AT, BT, CT and DT cuts. The variation of the frequency of these plates with temperature is usually parabolic, the coefficient being very small over a small temperature range near the peak of the parabola. Mason[8] found that if the CT cut plate was rotated through 45° in the plane of its major surfaces, the parabola could be flattened. To find the best angle of cut, the angle in this case being the inclination of the face of the plate to the optical axis of the crystal, Mason cut a number of these GT plates, with different angles of inclination. The results showed that the best angle is approximately 51°. The results obtained with a GT cut plate having an angle of 51° 30′ are given in Fig. 6. The change of frequency was less than 1 part in 10^6 for a temperature change of 100°C. It should be emphasised, however, that it is not so easy to obtain such low coefficients as might appear from some of the publications on the subject, but that a considerable amount of individual treatment by hand is required. The use of GT cut plates is, therefore, restricted in general to special applications with very exacting requirements.

A useful feature of many of these low temperature coefficient plates is that they can be clamped in position and thus prevented from moving about between the electrodes. They oscillate in a shear mode and there is a nodal line perpendicular to the face of the plate. A considerable amount of pressure can be applied on this line without stopping the oscillations of the plate. Improved forms of mounting have recently been devised by Rohde[9] and Ziegler[10]. In the latter form at the ends of the nodal line a spot of silver is fired to the quartz surface, and thin mounting wires are soldered to the silver (Fig. 7). The faces of the plate are then coated with a metallic film by an evaporation or sputtering process

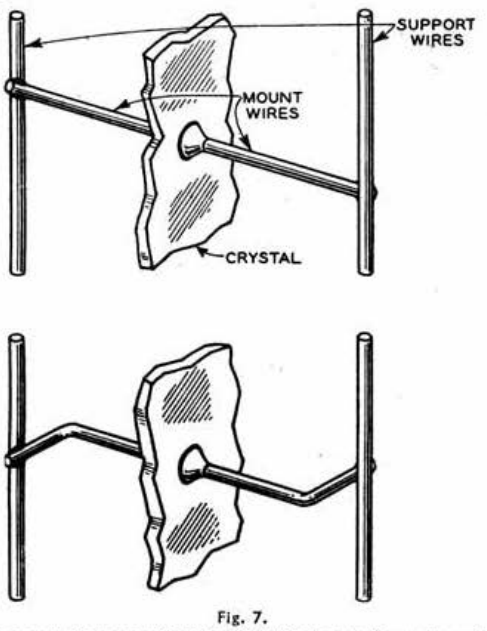


Fig. 7.
The mount-wires are soldered to silver fired on to the quartz surface.

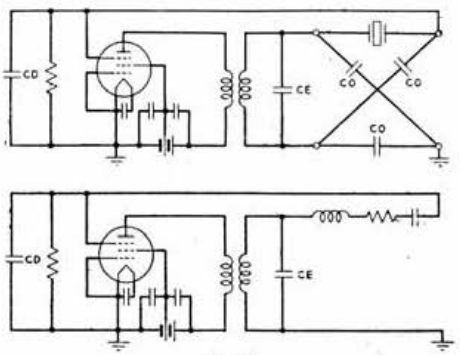


Fig. 8.
Oscillator for exciting quartz plate in high overtone modes. Top; actual circuit, bottom; equivalent circuit.

and these films constitute the electrodes. The mounting wires are soldered to stronger supporting wires, and the assembly is mounted in a glass tube which is evacuated and sealed. Although this process may appear to be rather complicated, it can be carried out by mass production methods when the appropriate tools have been made. Such plates have, in fact, already been made in their millions.

At the British Post Office GT cut crystals mounted in the way just described, constitute the standards of frequency, and give a performance probably as good as that of any other standards.

Frequency substandards have also been improved in another direction. The frequency of oscillation of a high frequency plate is a function of its thickness and the thinnest plate that can be manufactured satisfactorily is about 0·006 in. which corresponds to a frequency of oscillation of about 10 Mc/s. Even this is rather too near the limit and manufacturers do not like making plates having a frequency higher than 7 Mc/s. It has been the practice to control higher frequencies by using frequency doubling or trebling stages, and this naturally makes the equipment much more bulky. Fair[11] has very recently described a plate which can be made to vibrate in an overtone mode at frequencies as high as 150 Mc/s. It is difficult to excite these modes in an ordinary

(*Continued on page* 172)

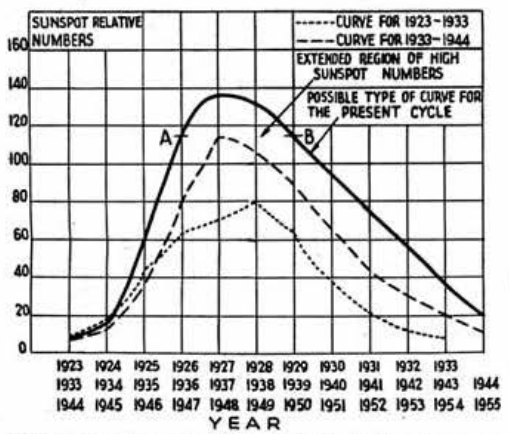
DX AND THE PRESENT SUNSPOT CYCLE —A PROPHECY

By Edwin H. P. Young, M.Sc., Ph.D., A.R.I.C. (BRS10,982).*

THE purpose of this article is to draw the attention of all those interested in Amateur Radio whether they be licensed for transmission or for reception only, to a letter from Dr. W. Gleissberg of the University Observatory, Bayazit, Istanbul, published comparatively recently in the journal *Nature* (November 3, 1945, p. 539). In this letter Dr. Gleissberg makes the following predictions concerning the new sunspot cycle which commenced just over a year ago :—

(1) The maximum number of sunspots will probably be higher than the last maximum which occurred in 1937 and higher than those of 1883, 1894, 1906–7, 1917 and 1928. That is to say, higher than any other maximum within living memory.

(2) The maximum number of sunspots will probably occur before May 1948. (It is well known that the maximum occurs as a rule 3½ to 4 years following a minimum in the sunspot cycle and the last minimum occurred in April 1944). The ascent from low to high sunspot numbers will therefore be steep during the next few years.



(3) There will probably be a slow decline in sunspot numbers over a period of about 5 years, at the end of which time the number of sunspots will be approximately one quarter of the number present at the sunspot maximum.

It will be noted that in all cases the statements are qualified by the word "probably." In his letter Dr. Gleissberg gives the mathematical probability on which he has based his forecast, that is, the chance or odds of his estimation being right or wrong. It is important to bear this point in mind and to remember that this is not a statement of facts as they will definitely be, but facts as they have a good chance of being—in other words, it is a prophecy.

If we make a rough guess at the maximum then we should expect a curve for the present sunspot cycle similar to the one shown, where it is compared with the actual curve for the previous two cycles. Points to note are, firstly, the steep rise from low to high sunspot numbers from this year, (1946), up to 1948, and the more gradual fall in numbers after 1948, and secondly, the extended period of high sunspot numbers. With regard to the second point, it will be seen that for a period of time, represented on the graph by the distance A B, the number of sunspots is equal to or higher than the number prevailing during the maximum of 1937.

How then do these predictions affect those of us who are interested in Amateur Radio ? Most readers will already be acquainted with the fact that high sunspot numbers mean high ionisation levels in the layers which refract radio waves and return them to earth, and hence are responsible for long distance transmission on the short waves. Being thus acquainted we can make the following optimistic speculations :—

(1) That as the rise from minimum to maximum will be steep (it will be noticed that we are now entering the steep part of the curve) we should expect a rapid increase in the ionisation of the ionosphere layers and consequently a great improvement in the next year or two in long distance transmission and reception. This improvement should be particularly noticeable on the shorter wavelengths because the ionisation will be sufficient to refract the shorter radio waves over considerable periods of time and will be continuously increasing until 1948.

(2) From the shape of the curve and the gradual diminution of sunspot numbers forecast, this " period of usefulness " of the short waves should be longer than any hitherto known. Good conditions can be expected for a number of years.

(3) If the maximum attained is indeed greater than any previously recorded, then there are reasonable hopes that the maximum usable frequency will be higher than ever. In other words, the intense ionisation produced may be sufficient to refract waves down to about 5 metres which normally are not returned earthwards. The prospects of DX on 5 metres are therefore good, particularly during the period 1947–1949. It must be remembered that prior to 1939 many good signals were reported over long distances on 56 Mc/s. With improved apparatus at the transmitting and receiving ends, and a greater number of stations in operation, and higher power in use we can regard the prospects with optimism. We can feel equally hopeful of good results on the 28 and 14 Mc/s bands and the proposed additional amateur band on 21 Mc/s becomes increasingly desirable as its probable usefulness increases.

* 19, Chandos Rd. South, Chorlton-cum-Hardy, Manchester 21

Jersey Radio Society

The above Society has been formed amongst the radio enthusiasts in Jersey, Channel Islands. Three sub-sections have commenced operations. These are (*a*) Propagation and Aerials—led by R. Postill, GC8NO ; (*b*) Transmitters—led by A. G. Cole, GC3GS ; and (*c*) Receivers—led by E. Banks, GC2CNC.

The following officers have been elected : Chairman, GC4LI ; Vice-Chairman, GC8NO ; Hon. Sec., GC2CNC; Hon. Treas., D. Langlors.

Other licenced amateurs in the society are GC5OU, 3GJ and 2FMV. The total membership is now 43.

Morse classes have begun in a room kindly lent by one of the members. GC3GS, 3GJ and 2CNC are instructors.

Any member interested is requested to contact the Hon. Sec. at " Fort Rock," Tabor Lane, Ronte des Genets, St. Brelade, Jersey, C.I. Visitors to the island are also welcomed.

28 Mc/s activity is confined to GC4LI and 3GS. The latter is working good DX on four watts, using a 6L6G, with 250 volts only. 8NO and 2CNC are on 1.8 Mc/s.

DIRECT READING FREQUENCY SCALES FOR AMATEUR APPARATUS

By PATRICK F. CUNDY, A.M.I.E.E. (G2MQ)*

Introduction

ONE of the obvious advantages of commercially-made gear is the possibility of supplying the apparatus with direct-reading frequency scales. The amateur constructor usually has to rely upon component manufacturers for his dials and scales which are provided with plain 100° or 180° markings. A graph is then necessary to obtain frequency readings.

This article outlines one method of constructing direct-reading scales. It refers to the case when a fixed scale is traversed by a pointer; only minor modifications would be needed for the case where the scale moves behind a fixed line.

The case of two independent scales is envisaged which, for reference purposes are assumed to be for the 3·5 Mc/s. and 7 Mc/s. bands. The technique may be extended to any number of scales; limitation only occurs when the innermost scale becomes too cramped.

The method has the following advantages :—

(1) The calibraitng operation is simple and is carried out on the gear itself, while the actual scale drawing is done in comfort on a drawing board.

(2) Provision is made to compensate for errors that may be introduced if the pointer line is not a truly radial line, and to reduce parallax error to a minimum.

(3) Slips and errors made during the drawing stage can be easily erased.

(4) The final scale is very durable and protection by a glass cover is not essential.

Constructional Details

(*a*) *The Pointer.*

The pointer may be made from a strip of "Distrene," "Perspex," or other transparent plastic material and mounted so as to run close to the scale, a fine line scribed down the underside serves as the actual reference line. Using this line as a centering guide, holes should be drilled through the pointer using a No. 75 drill in a pin chuck, the position of these holes corresponding to the outer edge of the outermost scale, the outer edge of the other scales, and to a point near the inner edge of the dial itself. In the two-scale case under consideration three holes are required as shown in Fig. 1.

(*b*) *The Scale.*

It is probable that the reverse side of an existing scale can be used but if a new one is necessary it should be made from opaque white or off-white "celluloide" sheet and left slightly oversize if possible, so that one edge at least may be trimmed off as a last operation.

Fixing holes should be marked out carefully on the "celluloide." Using a smooth piece of ply-wood (somewhat larger than the scale) as a support, the holes should be drilled and the drill allowed to enter the wood in every case except the centre hole, which must be made in the "celluloide" only.

If an existing scale is to be used, a piece of ply-wood must still be prepared by drilling holes to suit the fixing arrangements. It will be needed later as a drawing board.

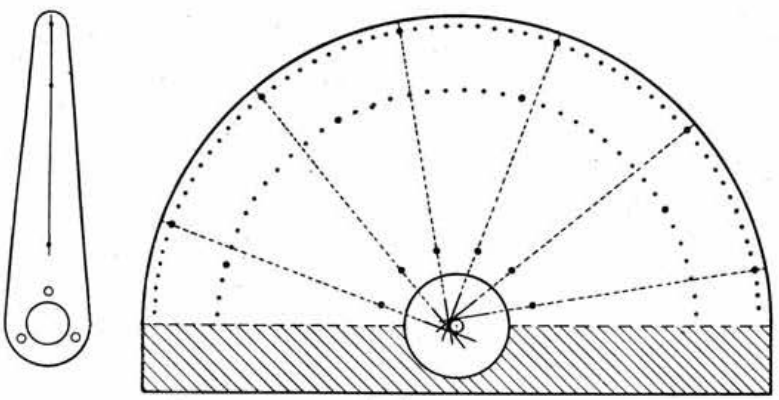


Fig. 1.

At left, pointer, showing holes used to guide scriber during calibration. At right, scale after calibration, showing 0·1 Mc/s. points (heavy), 10 kc/s. points (light) and lines drawn to locate the centre.

Calibration

The scale is mounted in its final position on the gear for calibration. The actual marking operation is carried out with a scriber made from a No. 75 drill-

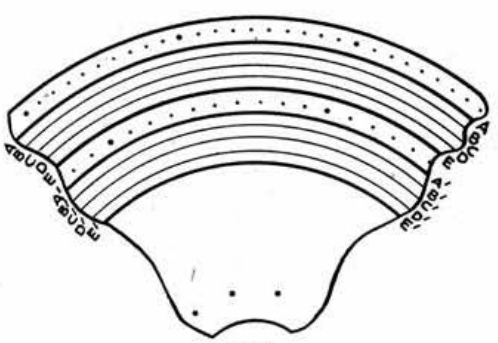


Fig. 2.

Section of scale, with guide circles drawn in. A–A': outer limit of scale (ink). B–B': guide for height of 0·1 Mc/s. lines (pencil). C–C': guide for height of ·05 Mc/s. lines (pencil). D–D: guide for height of 10 kc/s. lines (pencil). E–E': inner limit of scale (ink).

* 10 Moor Street, Shaw, nr. Oldham, Lancs.

shank, ground to a point and held in a pin chuck. The scriber is passed through the holes in the pointer, and caused to make a slight indentation in the surface of the scale. The various points can be identified by smearing coloured wax pencil over the indentation (after advancing the pointer). When the smear is cleaned off with a piece of cloth, sufficient colour will have lodged in the depression to identify it. For example, red dots may indicate the 0·1 Mc/s. points and blue dots the 10 kc/s. points.

At about six equally-spaced points the innermost hole in the pointer should be also pricked through. For the case under consideration this may be done conveniently at the 0·1 Mc/s. points, but should only be done in conjunction with the outermost scale.

When all other scales have been marked off, the "celluloide" may be removed from the apparatus and fixed down on the ply-wood already prepared.

Scale Drawing

Using a finely pointed pencil and a ruler, draw lines passing through each innermost dot and its corresponding dot on the outer scale; only the portion of the line near the centre of the scale need be pencilled in however.

Unless the line scribed on the pointer exactly cuts

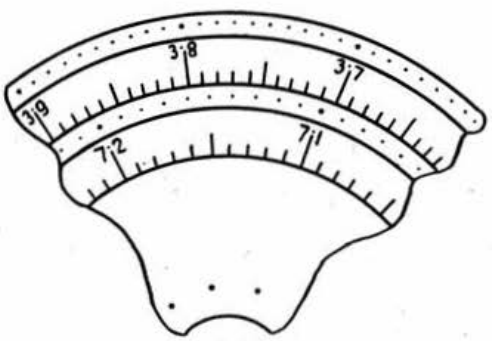


Fig. 3.
A section of the finished scale. Pencil guide lines have been erased.

the axis of rotation, these pencil lines will not meet at a point, but will form a small circle, as shown in Fig. 1. The centre of this circle is the point at which to locate one leg of the compasses while drawing in the guide lines. Concentric semi-circles in Indian ink are needed for separation of the scales, and in pencil as a guide to equalise the heights of the calibration lines. A small section of the example scale is shown at this stage in Fig. 2. To insure that the ruler is always parallel to the pointer line while drawing the final calibration lines it is convenient to provide a positive stop in the centre. This may take the form of any circular device of diameter equal to that of the small circle shown in Fig. 1 and fixed concentrically with it. This "device" may vary between a needle and a short section of tube, depending upon the departure from a true radius of the pointer line.

The actual drawing operation may now be undertaken. Indian ink should be used and it will be found that slips and errors can be easily obliterated with a fine paint brush damped with water.

A section of the finished scale is shown in Fig. 3. In practice, the calibrating dots are so faint as to be barely noticeable when compared with the definite Indian ink markings of the scale proper.

Fixing

When the scale is satisfactorily marked out, fixing may be carried out by flooding the scale with a transparent lacquer and allowing it to drain off and dry. Where an edge has been left for final trimming the scale should be drained towards this edge. After drying, the trimming operation will also remove the blobs of lacquer which collect at the draining edge. When no extra edge is available the scale should be drained towards the least important part and the blobs removed when dry with fine sand-paper. "Distrene" dissolved in benzene, or "Diakon" dissolved in trichylorethylene, are very suitable lacquers.

This is the first method tried by the author and it has proved successful. It is not claimed that it is the best or only method.

Slow Morse Transmissions

Schedule effective immediately :—

Mondays	21.30 B.S.T. . .	G2CPF, G2BJY, G6GD.
Wednesdays	21.30 ,, . .	G2CPF, G3LP, G6GD.
Saturdays	21.30 ,, . .	G2BJY, G6GD.
Sundays	09.00 ,, . .	G3LP, G3JK.

FREQUENCIES :—

G2CPF (Yorks.)	. .	1,892 kc/s.
G2BJY (Staffs.)	. .	1,930 ,,
G3JK (Notts.)	. .	1,865 ,,
G3LP (Glos.)	. .	1,865 ,,
G6GD (Ches.)	. .	1,885 ,,

B.R.S. members who make use of this service are requested to advise the organiser, Mr. D. Rock, G8PR, "Sandhurst," Vicarage Road, Amblecote, Stourbridge, Worcs.

Further offers of co-operation from licenced amateurs will be appreciated by the organiser.

Subscription Accounts

Members are please urged to return their Statement of Account *intact* to Headquarters.

At the present time some two dozen statements, with remittances attached, are held at Headquarters but nothing can be done with them as the members concerned have carefully cut off the top portion of the notice which contained their name and address!

It is difficult to appreciate why such members are so lax because they are among the first to write indignantly to Headquarters when they receive a Final Demand notice.

GC Prefix for Channel Islands

As the result of representations made by the Society, the G.P.O. has agreed to the use of the prefix GC by transmitting amateurs living in the Channel Islands.

RECENT ADVANCES IN THE MEASUREMENT OF FREQUENCY—(*continued from page* 169).

valve circuit however, because the capacitance of the crystal has an increasing shunting effect as the frequency is raised, and finally prevents the conditions of oscillation from being established. Fair overcame this difficulty by connecting the crystal in a capacitance network shown in Fig. 8, which eliminates the effect of the capacitance of the plate itself and enables the conditions for oscillation to be obtained. The actual circuit used is shown in the upper diagram and in the lower diagram the equivalent circuit of the crystal plate is shown as a series combination of inductance, resistance and capacitance. The capacitance of the plate which would shunt this combination has now been removed. A word of caution is necessary. Although these oscillators would appear to have an important part to play in the future, they have not as far as I know, been used at all extensively so far, and little work on them has been done in this country.

(*To be concluded*).

RADIO "N B G"

By Sergt. Eric Williams, R.E.M.E. (BRS5883).

THIS is the story of one man's idea which, plus 1,800 rupees, and the unstinted devotion of much spare time, became a camp broadcasting system, giving entertainment for three years in various locations in SEAC and now continues its good work in an Indian Base Hospital.

In June, 1942, 22 Squadron, R.A.F., arrived in Ceylon from England. Once settled there, F/Sergeant Henry Hobday proceeded to put into effect the plan which he had formulated on the trip out, for the entertainment of the squadron. This idea became "Radio NBG." From voluntary subscriptions ranging from Rs.3 for airmen, and Rs.5 for NCO's to Rs.10 for officers, the original amplifier and twenty speakers were purchased and radio programmes and records were relayed through the camp.

Control desk, receivers and amplifiers of Radio "N B G." The author is standing behind the 1155 Receiver.

Enthusiasm for "Flight" Hobday's idea was so great, however, that within a fortnight plans had matured for NBG's first studio. The squadron carpenter built a magnificent control desk and from material salvaged from the scrap-heap Hobday and his helpers constructed microphones, improved the amplifier and created facilities similar to those available in a regular broadcasting studio. "Live" broadcasts from talent available in the squadron, some of which were also carried by Colombo Radio, were now put out twice weekly, and were a highlight of NBG's programmes. A regular daily schedule was now in operation, using re-broadcasts of B.B.C. features, studio shows and record programmes from the rapidly growing library of discs.

All this was packed into four hectic months, and when, in October, 1942, 22 Squadron moved out into the jungle, NBG travelled with it in a three-ton wagon. Now the exclusive source of entertainment for the squadron, NBG's programmes steadily improved in quality and "plays specially adapted for broadcasting" were put on by members of the squadron. It was during the four months at Minneriya that the present "transmitter" was designed and built, and plans drawn up for a "super" studio, which materialised when the Squadron and NBG returned to Vavuniya in February, 1943.

It was from this studio, which was one of the finest buildings, and certainly the finest broadcasting studio to be found in any jungle, that NBG recorded a programme in April, 1944, for the B.B.C. Home Service. Soundproof walls, 8 foot plate glass windows for the control room, and separate studios for various programmes were amongst the features of NBG's new home. NBG's "service area" now covered 22's billets, the SHQ, and also served the billets of another squadron, using forty, speakers. Nearly 11,000 R.A.F. personnel were regular listeners to NBG. Each Christmas of the two years NBG was located at Vavuniya, "outside broadcasts" were made from two small transmitters relaying greetings from various parts of the camp. ENSA now helped by supplying the Overseas Recorded Broadcast Service to the station.

December, 1944, found 22 and NBG on the move again, this time to the Burma theatre. After much bouncing about down the Arakan Road, the station was finally set up at Johari under somewhat primitive conditions. A small lighting set was "scrounged" from the Army, and despite the hammering it had endured at the hands of the India Railways, NBG was soon back on the air with a daily schedule of 1–2 p.m. and 7.30–10.15 p.m. Until the fall of Rangoon schedules were maintained and comprised the usual studio shows, selections from the 1000-record library and the pick of the B.B.C. programmes.

June, 1945, and NBG once more entrained for its last journey with 22 Squadron. At Gannarvoram, the new location, programmes were put out up to October last and it was over NBG that 22 Squadron heard on August 14th, the news for which they had waited for six years to hear. During this time, the expenses of the station had been defrayed by a voluntary subscription of two annas per week from each member of the squadron.

In October last, 22 Squadron was disbanded, and NBG, its work with them over, was presented by them to 3 I.B.G.H. at Poona. Three members of the Squadron travelled down with it to fit up and hand over NBG to the Hospital with the good wishes of the four hundred officers and men of "22." NBG's escort was Jimmy Coverdale of Cricklewood, Ted Southall of Birmingham, and Tony Sarjent of Reading.

The equipment installed at 3 I.B.G.H. includes the "voice" of NBG (two 807's in push-pull Class AB2), the control desk, twin turntables with Marconi pick-ups and the associated mikes and preamplifiers, and two receivers, one of which is seen on the control desk in the accompanying photograph. The other is located in the main transmitter rack above the main amplifier.

That is the story of Radio NBG, and may it continue to provide entertainment at 3 I.B.G.H. for as long as there is need for it, and may the high standard of its programmes be maintained and even improved as time goes by.

Wedding Bells at Six Ciel

On Easter Monday, at Christ Church, Southgate, Miss Joan Clarricoats, BRS6888, elder daughter of the General Secretary and Mrs. Clarricoats, was married to Mr. Peter J. H. Matthews, BRS7645, of Leicester. Among those present were Mr. E. Dawson Ostermeyer, G5AR (Past President) and Mrs. Ostermeyer, Mr. Sidney Howard (G8TY) and Mrs. Howard, Mrs. Seymour Buckingham, wife of G5QF who was prevented by illness from attending and Miss May Gadsden (Assistant Secretary). The bridal couple received many expressions of goodwill from their friends in the Society. The honeymoon was spent at the home of Mr. Harold Merriman, G6GM, in Holsworthy, North Devon.

Bolton and District Radio Society

The Bolton and District Radio Society is resuming its activities after a quiescent spell during the war years.

A meeting was held on April 30, at Gaskell House, 7A Churchgate, Bolton, at 7.30 p.m., when Mr. Stan Bayliss (G4IA) demonstrated modern communications receivers.

Subsequent meetings will be held on the first Tuesday of each month, at the same time and place.

Details of the Society will be gladly given by the Hon. Sec., Mr. N. Moorcroft, 3 Beaconsfield Street, Bolton, on application.

ADMIRALTY ELECTRONIC SCRAP

AS the result of negotiations which have taken place between the Society and the Admiralty; arrangements have been concluded for members to purchase scrap naval electronic equipment direct from Admiralty Stores and Depots in minimum lots of one cwt., at a price of 50s. per cwt. (loaded into the purchaser's own conveyance). It is a condition that the material so purchased shall not be offered for re-sale.

Sales will be effected through the Society's District Representatives, who will shortly be put in possession of a letter from Headquarters (signed by the General Secretary), authorising them, or their representatives, to negotiate direct with the Naval Store Officer at any of the Depots listed below. In order to affect economies, particularly in connection with transport, it is suggested that groups of members in a particular town or area, arrange among themselves for one or more of their number to visit the nearest depot or stores, and negotiate on the spot for the purchase of a quantity of the material *which they will be entitled to pre-select from the bulk.* The representatives must take with them the letter of authority referred to above, which they will obtain from their D.R. The letter must be returned to the D.R. after the sale has been completed, together with a statement that none of material will be offered for re-sale outside the group.

Payment will be made at the time of purchase.

It is not possible to publish a detailed list of the material which will be available under this scheme, but in general it will consist of useful items commonly associated with radio, including certain used sets removed from ships.

We have every reason to believe that many bargains will be acquired.

The following is a list of the Depots and Stores from which electronic scrap may be purchased :—

ADDRESSES	PHONE
Superintending Naval Store Officer, Admiralty Storage Depot, Risley, Nr. Warrington. (Responsible also for Glossop and Oldham Area).	*Warrington* 2121 *Ext.* 144
Superintending Naval Store Officer, H.M. Dockyard, Chatham.	*Chatham* 3221
Superintending Naval Store Officer, H.M. Dockyard, Devonport.	*Devonport* 740
Superintending Naval Store Officer, H.M. Dockyard, Portsmouth.	*Portsmouth* 74571
Superintending Naval Store Officer, H.M. Dockyard, Rosyth.	*Dunfermline* 1301
Superintending Naval Store Officer, Mersey Area, Royal Liver Buildings, Liverpool.	*Liverpool Central* 8060
Superintending Naval Store Officer, Clyde Area, 40, St. Enoch Square, Glasgow, C.1.	*Glasgow Central* 3475
Naval Store Officer, Queen's Road, East, Belfast.	*Belfast* 58041
Naval Store Officer, Navy Offices, Clarence Street, Greenock.	*Greenock* 2280
Naval Store Officer, 8, Foyle Street, Londonderry.	*Londonderry* 3211
Naval Store Officer, Central Exchange Hotel, Grey Street, Newcastle.	*Newcastle* 25171
Naval Store Officer, H.M. Naval Base, Portland.	*Weymouth* 340
Naval Store Officer, H.M. Dockyard, Sheerness.	*Sheerness* 60
Deputy Naval Store Officer, Bonded Vaults, Lime Kilne Street, Dover.	*Dover* 1250
Deputy Naval Store Officer, Imperial Buildings, Mount Stuart Square, Cardiff.	*Cardiff* 7924

Presentation to Mr. John Ockleshaw

A pleasing little ceremony took place on April 2 last, at the Myllett Arms, Western Avenue, London, W., when the President (Mr. E. L. Gardiner, B.Sc., G6GR) on behalf of the Council presented to Mr. John Ockleshaw, F.C.A.. a pedestal type broadcast receiver in appreciation of his past services as Honorary Auditor to the Society.

Also present were Mr. Frank Hope-Jones (Chairman of the Wireless Society of London from 1913 to 1920), Mr. H. A. M. Clark, B.Sc. (Eng.) (Hon. Secretary), and Mr. John Clarricoats (General Secretary).

In making the presentation Mr. Gardiner referred to Mr. Ockleshaw's long association with the Society, an association which commenced in 1913 and did not cease officially until last year. Mr. Ockleshaw in returning thanks spoke of the pioneer work of the Society, and congratulated the President and Council on the tremendous progress which had been recorded during recent years.

FORTHCOMING EVENTS

May 16	District 14 (Chingford), 8 p.m. at G3YF, 25 Moreland Way, E.4.
May 16	District 15 (Slough), 7 p.m. at 152 Stoke Poges Lane, Slough.
May 17	District 14 (Chelmsford), 7 p.m. at 184 Moulsham Street.
May 18	**BELFAST P.D.M.,** 2.30 p.m. C.P.A. Building, Howard Street.
May 18	District 2 (Huddersfield), 7 p.m. at 12 Langley Terrace, Crosland Road, Oakes.
May 19	District 7 (Guildford), 3 p.m. The Cinema Cafe, Woodbridge Road.
May 20	District 18 (Hull), 7.30 p.m. at Imperial Hotel, Paragon Street.
May 21	District 14 (Southend), 7.30 p.m. at G2KH, 108 Oakleigh Park Drive, Leigh-on-Sea.
May 23	District 7 (Reading), 6.30 p.m. Palmer Hall, West Street.
May 23	District 12 (St. Albans), 7 p.m. at Jack's Cafe, Verulam Road.
May 24	District 5 (Bristol), 7 p.m. at Keen's Cafe, Park Row, Bristol.
May 24	District 8 (Cambridge), 7 p.m. at "The Jolly Waterman," Chesterton Road, Cambridge. Lecture, "Frequency Modulation," by Mr. L. Bennett, 2 CAM.
May 25	District 1 (Liverpool), 2.30 p.m. at Stork Hotel.
May 26	**SOUTH WESTERN P.D.M.,** 12 noon at the Strathmore Hotel, Belgrave Crescent.
May 29	Scottish "A" Area, 7 p.m. in the Institute of Engineers and Shipbuilders, 39 Elmbank Crescent, Glasgow.
May 30	Scottish "D" Area, 7.30 p.m. in Chamber of Commerce Rooms, 25 Charlotte Square, Edinburgh. "Questions Answered."
May 31	**LONDON MEETING,** 5.30 p.m. I.E.E. Savoy Place, W.C.2.
June 2	**EAST MIDLANDS P.D.M.,** 11 a.m. Little Theatre, Leicester.
June 2	District 14 (East London), 2.30 p.m. at venue to be announced locally.
June 5	District 15 (Hayes), 7 p.m. at the Labour Hall, Uxbridge Road, Southall.
June 6	District 6 (Penzance), 7.30 p.m. at The Dolphin, The Quay, Penzance.
June 7	District 12 (North London), 7.30 p.m. at Merryhills Hotel, Bramley Road, Enfield West. (Near Enfield West Tube Station; 107 bus passes the door).
June 7	District 15 (Hounslow), 7 p.m. at the Scout's Hall, Sutton Estate, Great West Road, (30 yards East of Vicarage Farm Road).
June 8	District 7 (Reading), 6.30 p.m. Palmer Hall, West Street.
June 12	District 1 (Liverpool), 7 p.m. at Stork Hotel.
June 14	District 7 and 13, 7 p.m. Brotherhood Hall, West Norwood, S.E.27.
June 14	District 15 (Harrow), 7 p.m. at 153 Belmont Road, Harrow.
June 17	District 18 (Hull), 7.30 p.m. at 30 Princes Ave.
June 18	District 6 (Torquay), 6.30 p.m. at the Y.M.C.A.
June 18	Midland Amateur Radio Society, 6.30 p.m. Chamber of Commerce, New Street, Birmingham.

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

THE MONTH ON THE AIR

By A. O. Milne (G2MI.)*

60 Mc/s.

WITHOUT doubt the most interesting and significant happening during April was the opening up of the 58·5–60 Mc/s. band for relatively long distance work. G6CW, of Nottingham, started the ball rolling with several good contacts with London stations. This feat fired up the enthusiasm of many other amateurs with the result that the band has afforded good contacts over most of the British Isles. Some of the best and most consistent work has been done by G6CW and G6VX, of Hayes, Kent. This latter station, using a four element rotary aerial, has maintained daily contact with G6CW, G5BY, of Start Point, G5LJ, of Sutton Coldfield, G2AK, of Birmingham, and many others. He has also heard GM5YX and unidentified F and SU stations. The latter was probably SU1RD, but this is not yet confirmed. A total of 43 stations, scattered over the country have been heard and most of them worked. Curiously enough the conditions on 60 Mc/s. have coincided with remarkable DX on 1·8 Mc/s. A number of stations, using very low power have contacted G6HB/I and G6ZO/I and a station in Oslo, LA5XY, who says QSL *via* G5PJ. Many D2's and D4's have also been worked.

28 Mc/s.

Still our main long distance band ; started off well by providing some good DX conditions, but towards the end of the month only those stations putting out fairly low angle radiation succeeded in making regular DX contacts. The " meteor " effect has been noticed many times whereby just one letter or even part of a letter in a ground wave signal is suddenly emphasised by a considerable jump in signal strength. On the evening of the 23rd, all 28 Mc/s. signals became subject to rapid flutter-fade giving the impression of a T6 note. The most extraordinary occurrence was, however, recorded between 2300 and 0200 B.S.T. of the night of April 23/24 when the band opened up for contacts all over the British Isles. Background noise practically disappeared and G6CL one of the few London stations on the air at the time, worked 100 per cent. contacts at 529 with G2QO, of Hull, and G5BD, of Mablethorpe. G6RB, 5QU and many other provincial stations were heard in some parts of the U.K. G6CJ worked SM3ZF during the evening. At the same time Scandinavians were S9+. All these strange happenings coincided with a display of Aurora Borealis and a violent ionospheric storm.

Some of the star stations of the month are listed below. In order to save space, individual acknowledgement is not in most cases given to the many loyal supporters of this column, but please accept the writer's thanks for all the dope.

Perhaps the best one was VE5AJV/VP8—VE4AFT on board the cruiser " Uganda " at Port Talbot, Falkland Is. 5AJV used the ship's transmitter, 4AFT used 80 watts to an 809. QSL's should be sent *via* 320 Moss Street, Victoria, B.C. A new station already QSL'ing 100 per cent. is VQ6MI, Sgt. N. Norman, c/o E. Somaliland Signals, British Somaliland. YI2XG is G5CW, Ft./Lt. D. Coombes, S.H.Q. Officers' Mess, Habbaniya, Iraq. XZ3TS (28150) is G3TS. Our old friend VU7BR is also active on 28120. VS5JH is still in Labuan but now signs VS3JH. Cards are coming in from him. YR5X on 28080 and YR5A, 28040, both claim to be in Bucharest. XU1YO is Lt. Veregge, U.S.M.C., Co. B, 6 Tank Batt., 6th Marine Division, F.M.F., F.P.O., San Francisco. G2DP claims to have worked the first ever G–ZL two-way 'phone contact on the 7th when he raised ZL3KZ using 25 watts. Several ZL's were worked during the early part of the month.

Here are a few more to look for, thanks to G6ZO/I and others.

W7IYW 28200, W5JZQ portable in Arizona 28050, W7IYG 28800, VP9F 28180, VP6YB 28180, VP9R 28250, VP3LF 28200, HK4AX 28200, HH5A 28130, VK7LJ 28040, VK7CW 28020, ZE1JM 28380 (Box 587 Bulawayo), W6PKP/KB6 28060, CK1FY 28040, OA4AB 28060, OA4AS 28040, VP6LN 28150, CP3B 28400 VQ6GH 28020 (Lt. Hillier, Somaliland Signals). EP1C QSL's. BRS11160 sends us a little warning in mentioning that he hears a number of 3·6 Mc/s. harmonics from 1·8 Mc/s. transmissions coming from considerable distances.

News

VQ4ERR's address is Box 1313 Nairobi, not Box 13. CR9AG is J. J. Alvares, P.O. Macao, South China. VS1MO is at Singapore. GI6TK tells us that W9OLD/TA is at Istanbul on 28060. QRA of OQ5BQ is Box 222 Leopoldville. C4AZO uses 1kW in the Azores. Operators are obviously not amateurs.

Round and About

Belgian amateurs should be back by now on 28 and 56 Mc/s. Regulations similar to ours. Licences are also being issued in Burma. G4JG is in Turkey and is trying to get permission to operate a station. He hears G stations at terrific strength when said G's are complaining about a dead band. He says that pre-war TA1AA and AB definitely were not genuine. BERS577 is in Cyprus and has heard a number of G's. He makes no comment upon ZC4C.

Eric Trebilcock sends his usual " meaty " air letter. He says W6RMB is on a pontoon barge moored in Sea Adler Harbour, Admiralty Is., W3AC is on a ship in the Pacific, KV4AA is on a ship off New Guinea, W6RJG/J9 is genuine in the Marshall Is., W7ELL is on Iwojima. TG9PB, Paul Boyer, c/o P.A.A., Guatemala City.

New Prefix Areas

The following are now official : KB6, Baker, Howland, American Phœnix Is. ; KG6, Guam ; KH6, Hawaii ; KJ6, Johnston ; KL7, Alaska ; KM6, Midway ; KP4, Puerto Rico ; KP6, Palmyra Group, Jarvis ; KS6, Samoa ; KV4 Virgin Is. ; KW6 Wake Group ; KZ5, Canal Zone.

New prefix areas have been assigned to Canada. VE1, 2 and 3 remain as before. VE4 is now Manitoba only. VE5 Saskatchewan, VE6 Alberta, VE7 British Columbia, VE8A–L Yukon, VE8M–Z North West Territory.

This Month's Thought

It's hard luck on the C.C. 25 watter who works a bit of rare DX when all the 100 watt V.F.O.'s pile up on his frequency to try and " snaffle " it. Whatsa Uncle Tom ?

Many thanks for several more pairs of headphones.

Can you Help ?

Capt. T. W. Robertson, R.E., BRS10,800, 23 Portway, Ewell, Surrey, seeks particulars of the American " Sportsman " broadcast receiver. The set is a universal mains/battery portable operating in the medium waveband only.

* 29 Kechill Gardens, Hayes, Bromley, Kent.

How Not to Work DX

By UNCLE TOM

THIS little lecture is the result of a month's intensive study of methods and details as employed by the more active amateur stations of to-day. It should prove a valuable guide to all those wishing to attain proficiency in the subject.

(1) It is an advantage not to know, or to have forgotten, the Morse Code. It is much easier *not* to work DX if you stick faithfully to telephony. If, however, you persist in using C.W., remember:

(2) Always wait a while before changing over after you have heard a DX station finish a CQ call. Then start up with "dah-de-dah-de-dah" at least five times. This gives him ample time to look for someone else.

(3) Give your station a very long call. Then, when he sighs with relief, sign your own call once (preferably with a slip in it) and start all over again. This will ensure that he looks around and probably finds someone just going over.

(4) On no account ever listen for weak stations. Always call the strongest one you can hear. Thus you will be assured of plenty of competition, everyone else having heard him too.

(5) Get a chirp or a wobble into your transmission somehow, if you can; then send very slowly and with one finger lightly resting on the key. This will make the DX chap think "What a Lid!" (in case you aren't).

(6) When you have unsuccessfully called someone, never wait while he finishes a QSO with the unfortunate one that he did come back to. Go straight off and call CQ so that you stand a good chance of missing him next time. This applies especially if he is the only representative of a rare country.

(7) Choose a crystal frequency in the most thickly populated part of the band, preferably under the wing of a commercial.

(8) Always assume that conditions are good when the whole band is full of East Coast Americans. Don't listen when the band seems free of them, or you might hear something from further afield and accidentally get a QSO.

(9) If you work 'phone, never listen and call an individual station. Always call CQ, and reply to the strongest station that comes back. Don't be content with the first one you hear—he might be DX. Look around and pick out the loudest one.

(10) If you ever hear the band full of strange weak signals (*i.e.* lousy with DX) don't listen to it, but come on 'phone and work a local, and spend an hour or two telling him how dead the band is. This will not only help you not to work DX, but will annoy everyone else on the band. This scores two points.

If you always follow these ten simple rules, you can be sure of achieving your object. But perhaps, on the whole, there's a better and easier way:—work on the "top band" and stay there!

QSL BUREAU

THE intelligent observation of the following points will greatly assist those members who have volunteered to run the QSL Bureau, which is NOW OPEN.

NOTICE.

1. *Outgoing Cards.*—Please send cards for transmission abroad to Mr. A. O. Milne (G2MI), 29 Kechill Gardens, Hayes, Bromley, Kent.

2. Don't send cards to Headquarters.

3. Only cards for G., GC, GI, GM, GW, VE and W can be accepted at present. Please don't send any others until advised of additions to this list.

4. *Incoming Cards.*—If you expect cards please send stamped (2½d. only) addressed envelopes to G2MI. Don't send them to Headquarters. Envelopes should be as nearly as possible 9" x 6". Mark your call sign clearly in the top left hand corner of each envelope.

5. If you don't want your cards please advise G2MI so that any which arrive for you can be destroyed right away.

6. Don't send any money.

7. Don't put cards or envelopes in with other communications to Headquarters.

8. QSL direct wherever possible; that is why we print addresses in M.O.T.A.

9. Please do as we ask. It will help enormously.

Finally don't ring G2MI up to ask if there are any cards for you! He won't know.

A. O. M.

Another Magnetic Storm

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

ANOTHER excellent opportunity occurred on April 23 of observing the "freak" conditions on 28 Mc/s. reported by the writer in last month's BULLETIN under the title "Storm over Britain."

The storm on April 23, accompanied by displays of the Aurora visible in all parts of England, was apparently of even greater intensity than those which occurred in March. A considerable number of British stations were on the air when as usual the abnormal conditions appeared at about 1500 G.M.T. This time there was no doubt that reflections were occurring in all directions and many QSO's were obtained not only between G's at a distance but between GI's, GM's and G's. Several Continental stations were also audible and may have been contacted.

The writer, in Beckenham, Kent, contacted G8QZ (Long Eaton, Derbys.) and G5LL (Mablethorpe, Lincs.). Others heard included 2ZV, 2XC, 3DO, 3LL, 4GX, 5BJ, 5XY, 6TD, 8KP, 8RL, 8UT, 2AGX, 2AMG and 2COP.

An interesting characteristic of signals received under these conditions is that their strength is practically uniform irrespective of ground distance All but very local signals have the characteristic T6 "hollow" quality and reports are nearly always RST 566.

On April 23 the abnormal conditions continued for longer than in March and some signals still showed the "flutter" as late as 1830 G.M.T. Future research may show why the late afternoon gives us these special effects, normal conditions being restored later though the magnetic storm continues to affect the lower frequencies.

Several calls were put out on frequencies in the 60 Mc/s. band during the abnormal period but no other signals were heard on this band.

* 8 Beckenham Grove, Shortlands, Kent.

Book Reviews

THE CATHODE-RAY TUBE HANDBOOK. By S. K. Lewer, B.Sc. 100 pages and 35 illustrations. Published by Sir Isaac Pitman & Sons, Ltd., London. Price 6s. net.

The author, who is Executive Vice-President of the R.S.G.B., has endeavoured to set out the basic principles of the C.R.O., and to explain in simple language the "how" and "why." He has succeeded in producing a very useful introduction to C.R.O. work, which will be welcomed by the amateur or radio-mechanic who wants to know how to use intelligently this invaluable tool, but who hesitates before the heavier treatments.

The author first describes the general construction of the tube, and the idea of drawing traces with a moving spot of light. Then follows an explanation of the electron, and the currents which electron movements constitute. An elementary treatment of valve theory, and the sine wave, forms a basis on which a more detailed description of the tube construction and operation is built, and the two methods of deflection are clearly explained. The power supplies for the tube are described, and the author rightly emphasises the safety precautions which should be observed. A brief treatment of Lissajous figures precedes that of valve amplifiers and thyratrons.

A clear description of the linear time-base operation is given, and both thyratron and hard-valve types are shown in detail with circuit values. Synchronisation and elimination of fly-back are included.

Having dealt with the fundamentals of the various parts, the reader is shown a complete typical circuit, and the controls and operating procedure are explained. The last chapter gives a brief treatment of a number of applications such as audio-frequency comparison, tuned-circuit alignment, modulation checking, etc. A list of references is a useful appendix.

As an introduction to the principles and operation of one of the best tools in the radio and electrical field, this book is praiseworthy. It is simple, clear, and helpfully illustrated.

T.P.A.

TELEVISION, TO-DAY AND TO-MORROW. By Lee de Forest. Hutchinson, 16s.

This American book by a world-famous engineer and author, has been published by an English firm to meet the present demand by the lay reader for a comprehensive account of the history and modern technique of television.

The author deals with the technicalities of television transmitters and receivers, aerial systems and studio technique in a very readable manner. A whole chapter deals with television for amateurs, in which a receiver circuit suitable for amateur construction is analysed in detail.

The operation of studio cameras and film scanners is discussed at considerable length and illustrations are drawn from the most recent developments in this field. Other chapters deal with subsidiary subjects such as the economic status and the profession of television, and its effect upon the world's society.

In reading the book it must be borne in mind that it concerns, primarily the American systems using negative modulation and that in several ways the circuits described are unsuitable for use with the British system which uses positive modulation.

There is one criticism which we feel must be made and that is with regard to the illustrations. Most of these are very crudely drawn, indeed many appear to be free-hand sketches accompanied by very rough lettering. It is a great pity that an author's work should be handicapped by such poor draughtsmanship.

H.A.M.C.

EXPERIMENTAL ELECTRONICS. By R. H. Muller, R. L. Garman, and M. E. Droz. 330 pages with many illustrations. Published by George Allen & Unwin, Ltd., London. Price 21s. net.

This book is one of the Prentice-Hall Chemistry Series and, strangely enough, the authors are, respectively, a professor and two assistant professors of chemistry at New York University. Its object is to present practical information on the "characteristics and non-communication applications of electron tubes." Its approach is along experimental lines, and it contains much information about circuits and characteristics which must immediately appeal to anyone with a wider interest in electronics than that covered by the more usual communications book. Nor is it merely the outlines of experiments which are described; circuits for stated apparatus are given with component details and actual performance figures and curves.

The chapter headings give a view of the field covered: Introduction, Triodes, Characteristics of Photoelectric Cells, Power Supplies, Multigrid Tubes, Characteristics of Gaseous Tubes, D.C. Electron-tube Voltmeters, A.C. Electron-tube Voltmeters, Applications of Phototubes, Untuned Amplifiers, Vacuum-tube Oscillators, and the Cathode-ray Tube.

It should not be thought that this book is a mere manual for a laboratory course. The information supplied in the form of performance experiments, and the explanatory material in the text, provides a wealth of practical information which will be of great interest and use to those readers who have to deal with electronic devices of all sorts. The applications in the chemical field are not stressed unduly.

Each chapter is concluded with a list of "Supplementary Literature" and a series of problems which, though not always impressive, direct the reader's thoughts to further applications, e.g. "Show how a gaseous triode may be used as a water-level indicator; Design a circuit which can be used to measure the concentration of coal dust in the atmosphere; Design a triode relay circuit for the control of an electric stop-clock to determine small time intervals."

The book is recommended as useful, interesting and up-to-date in the material presented, and a really practical help to those interested in the wider field.

T. P. A.

Royal Air Force Amateur Radio Society

On March 26 this year, a General Meeting was called at Cranwell to mark the resumption of normal activities of the R.A.F. Amateur Radio Society, and to elect an interim committee.

The Society, founded in 1938, is primarily intended to meet the needs of radio amateurs serving in the R.A.F., but Associate membership is open to ex-R.A.F., Dominion and Colonial Air Force personnel.

It is hoped that the Society's H.Q. transmitting station will be on the air again shortly under its old call-sign, G8FC, on all licenced frequency bands.

The Society's magazine, published half-yearly under the title *QRV*, is supplied free to all classes of member, and contains, in addition to technical articles, information on the activities of members at home and abroad.

All old members are advised to notify the Hon. Secretary of their present addresses, in order to ensure delivery of the first post-war issue of *QRV*.

Annual subscription rates remain as follows:

Corporate Members stationed at No. 1 Radio School	12s.
Corporate Members stationed elsewhere	6s.
Associate Members	3s.

Subscriptions are not payable for the period October 1, 1939, to April 1, 1946.

New applications and other correspondence should be addressed to: The Hon. Secretary, R.A.F. Amateur Radio Society, No. 1 Radio School, R.A.F., Cranwell, Lincs.

McElroy—Adams Group

Pre-war members will be interested to learn that Mr. H. R. Adams, G2NO, has joined forces with Mr. Ted McElroy (the high speed Morse champion, and the largest manufacturer of telegraphic high speed equipment), in creating an Anglo-American radio company in this country.

Mr. McElroy recently visited Mr. Adams, and together they brought to fruition their pre-war plans for a British manufacturing unit which would use American methods and design, and offer a full range of communication equipment. Some models are already nearly ready for marketing. These include an amateur band exciter-transmitter, covering the 28 and 56 Mc/s. bands, a V.H.F. converter, and an extremely wide range of power packs.

The McElroy Adams Group holds the sole United Kingdom Concessions for Hallicrafters.

Crackle Finish

Mr. L. B. Pentelow, BRS5613, 23a Wellingborough Road, Finedon, Northants, has obtained satisfactory results by using crackle enamel. The enamel should be brushed on evenly and baked in a gas oven for one hour at a temperature of about 120°F.

Mr. Pentelow suggests that the process is much easier than straight enamelling and is limited in its application only by the size of the oven available and by the present difficulty of obtaining crackle enamel. The great advantage of the process is that dust spots and brush marks do not matter. He recommends readers who wish to try out the process to experiment once or twice on odd pieces of metal.

Specification for Ceramic Insulators

The Inter-Service Components Manufacturers' Council, have recently issued a Specification for Ceramic Insulators which is intended to serve as a Working Specification and Guide for Designers. Requests for copies of the Specification should be addressed to the Secretary, Radio Technical Panels, R.C.M.F. Officer, 22 Surrey Street, London, W.C.2.

Call Sign Badges

Headquarters can now accept orders for Call Sign Badges (price 3s. 6d. each post free) embodying the Society's emblem. Delivery dates cannot be guaranteed but it is expected that a period of three to four weeks will elapse between date of order and delivery. Call signs or BRS numbers should be written clearly when forwarding an order.

OUR FRONT COVER

OUR front cover illustrates the new Mullard Double Beam Tetrode, a valve with ideal characteristics for amateur transmitters. Low anode voltage and high frequency of operation are outstanding features. It will give an output of 44 watts in C.W. conditions with a drive of approximately a quarter of a watt, and may be operated at full ratings up to a frequency of 125 Mc/s. While the QVO4T20 will fulfil many amateur requirements, it is only one of a complete range of Mullard Transmitting Valves of particular interest to the amateur.

Letters to the Editor

The 28 Mc/s. Band

DEAR SIR,—Listening in the 28 Mc/s. band on a war-time H.R.O. receiver, I noticed that all signals were modulated by A.C. ripple. Another similar receiver operated by a friend of mine shows the same effect. I have cured the trouble in my set by connecting a condenser (any capacity from ·001 to ·01μF) between chassis and one side of heater of the first R.F. valve. Without this modification misleading tone reports might have been given to operators sending T9 signals.

Yours faithfully,
A. E. J. COOPER (G5VT).

V.F. Oscillator

DEAR SIR,—Many amateurs will be building the V.F. Oscillator described by G6LL in the October, 1945, BULLETIN and many will also be modifying it to their own ideas. In this connection I should like to point out that the coil sizes will differ from those specified when an open coil is used or when the size of coil cans vary.

In my case, for the sake of efficiency, I have used separate screened compartments and open coils and the number of turns on the oscillator coil (all other factors being equal) has been reduced to 32. A *pro rata* reduction on the output coils is also necessary.

A crystal check has been added, employing a 3·5 Mc/s. crystal in a Pierce circuit, thereby obviating any tendency of the two oscillators to lock. A DH63 valve combines the functions of rectification and resulting beat note amplification.

The main tuning condenser is controlled by a slow motion head on which has been fitted a long pointer. The scale then becomes a long open one and it is intended to calibrate this directly in frequency.

Yours truly,
J. N. WALKER (G5JU).

Every Kilocycle will Count

DEAR SIR,—I read with much interest the editorial in the August, 1945, issue and I agree that the future of the 7 Mc/s. band is something which will need discussion, action and co-operation on the part of all of us.

Almost everyone has a sneaking regard for 7 Mc/s. especially at week-ends—I know I have. It was the one band where one could be almost certain of having a chat, exchanging ideas and carrying out useful work with one's pals and fellow amateurs. I used to get a lot of useful information by just listening to the various " discussion groups " going on and I am quite sure that when we are back at the key or mike there *will* be a very heavy run on the 300 kc/s. available to us there.

In order to preserve its usefulness as a working band there will have to be some regulation on it, either official (R.S.G.B.) or unofficial and I would offer the following as possible solutions :

(1) Reduction of power used during peak periods and for local working.
(2) Use of very short calls and " break-in."
(3) Increase in the number of pre-arranged schedules to avoid innumerable long calls.
(4) Regional monitors to check on channel widths, over-modulation, splatter and general bad operational practices.

The last suggestion is I think the only one that needs a little amplification. I would suggest that the D.R.'s obtain a list of amateurs in their district who would be willing *and* able to carry out monitoring duties. The D.R. would select suitable people, and this I think is important as the monitors would (*a*) have to be some of the luckier ones equipped with decent test gear, an oscilloscope perhaps and wave meters and (*b*) have to be tactful and firm without being officious. A rota could then be drawn up to cover the daylight hours of Saturday and Sunday and each person would thus carry out a monitor check for a short period, say two hours.

The monitor should be empowered to put in a check call to any offender, to tell him or her the nature of the complaint and should endeavour to make sure that steps are taken to rectify the error. The check call could be direct by R.T., W.T. or land line, or where conditions warranted such a step, by liaison with a third party who would relay messages or arrange a contact.

I would suggest that some form of record be kept by the monitor stations so that, periodically, a return of check calls could be made to the D.R. or to the R.S.G.B. Where it is obvious from the records that there is a persistent offender it would then be possible for action to be taken by a governing body, such as the R.S.G.B., armed with the evidence of malpractices. I do not suggest that such instances would be numerous, but there might be one or two people who would not know that they were continually splashing over about 50 kc/s. and wouldn't dream of doing so wittingly.

This may sound rather harsh, and suggestive of a listening Gestapo, but I think it would be preferable to have some such check on our precious little 7 Mc/s. band at week-ends, rather than endure a state of affairs where only the powerful stations could get a look in.

Yours faithfully,
G. S. WOOLLATT (G3ZI).

Micro-Wave Work

DEAR SIR,—Capt. Ray's letter headed " DX on Micro-Waves," published in the April BULLETIN, prompts me to one or two observations.

Micro-wave *communication* has not been a neglected field, on the contrary much of the present known knowledge regarding " DX " was compiled for certain Service Departments *by amateurs*. The fact that this experience was gained during war-time necessitates close secrecy regarding the results, but speaking for myself (and others who have worked with me, will no doubt agree), I feel that the knowledge that *there is* DX to be had on micro-waves is sufficient spur to amateurs concerned to emulate these results in the near future.

I welcome your note that UHF allocations have been requested; might I finally put in a plea that amateurs interested in these frequencies concentrate on receiver design as a primary necessity —there is no DX to be had unless the receiver is as good as it can possibly be, the transmitter is of secondary importance.

Yours faithfully,
I. B. CLARK, Assoc. Brit., I.R.E.
(Late F/Lt., R.A.F., V.R.)

'Phone on 1·8 Mc/s

DEAR SIR,—The 1.8–2 Mc/s. band is very much alive and I have personally worked over 100 stations and logged more than 50 others in the past fortnight. This is a healthy sign and in marked contrast to the lack of activity on the band before the war. The standard of operating, too, is good.

An increasing number of stations are using 'phone and interference from that cause is increasing rapidly. I wonder whether there might be an unwritten law that, for two hours during daylight and two hours during darkness no 'phone is used on that band (say 1200 G.M.T. to 1400 G.M.T. and 0001 G.M.T. to 0200 G.M.T.) ?

Yours faithfully,
W. H. WINCHCOMBE (G6ZH).

(Editorial Note: As an alternative suggestion would it not be practicable to divide the band into 'phone and telegraphy channels? Readers' views are invited).

Congrats

● To Mr. E. J. Rose, **G3NC**, of Swindon, and his wife on the birth of a son—Mervyn Allan.

HEADQUARTERS CALLING

March 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, March 11, 1946.

Present.—The President (Mr. E. L. Gardiner, in the Chair), Messrs. S. K. Lewer, H. A. M. Clark, A. J. H. Watson, A. O. Milne, A. D. Gay, A. E. Watts, C. G. Bradley, C. H. L. Edwards, F. G. Hoare, R. H. Hammans, J. W. Mathews and J. Clarricoats (General Secretary).

Apologies.—The Secretary presented apologies for the absence of Messrs. K. Morton Evans and S. E. Langley.

1. It was resolved to elect two Life Members (Messrs. Coulborn, BRS6858, and I. J. P. James, G5IJ), 304 Corporate Members, 21 Associates and 8 Junior Associates. Five Junior Associates were granted Corporate Membership. Total elected 340.

2. The following Societies applied for and were granted affiliation: Maidstone Amateur Radio Society; South Hants Radio Transmitters Society; Grays and District Radio Society.

3. The Cash Account for the month ended 28th February, 1946, was submitted and approved.

4. It was resolved to publish 10,000 copies of a 40 pp. non-technical booklet entitled "Amateur Radio—The Transmitting Licence." It was agreed to offer the booklet to the trade at the usual trade terms and to fix the retail selling price as low as possible.

5. Mr. Rock, G8PR, wrote offering to organise Slow Morse Practices on 1.8 Mc/s. The offer was accepted.

6. A letter was read from the Secretary of the Radio Industry Council stating that in general his Committee felt that there should be no difficulty in meeting the needs of members through normal trade channels. The Secretary was instructed to communicate further with the M.A.P. asking whether arrangements can now be made for members to purchase certain types of radio equipment direct from the Ministry.

7. Messrs. Watts and Clarricoats were nominated to attend a meeting of the Wireless Personnel Committee to discuss the question of Wireless Reserves.

8. The Secretary submitted a memo addressed to Council dealing with the disposal of surplus Admiralty radio equipment. After discussion it was agreed that the President, Executive Vice-President, and Mr. C. H. L. Edwards, should interview the Admiralty officers concerned with the disposal of the equipment, and later visit depots in which the equipment is stored, with a view to preparing a detailed list of the items likely to be of interest to members.

9. Mr. A. G. Dunn, G3PL, was appointed Representative for District 18.

10. Mr. Watts formally reported that (*a*) British amateurs are now authorised to operate within the band 28–30 Mc/s (the previous allocation was 28–29 Mc/s); (*b*) as from March 15, 1946, British amateurs would be permitted to operate within the band 1·8–2 Mc/s (power limited to 10 watts); (*c*) the G.P.O. and W/T Board are unable at present to release any portion of the 3·5–4 Mc/s band to British amateurs; (*d*) the W/T Board hope shortly to announce the target date for the release of some portion of the 14 Mc/s band; (*e*) the G.P.O. are taking steps to prevent the continued operation of meterological balloons within the 28–30 Mc/s band; (*f*) the French authorities have withdrawn the permission previously given to French amateurs to use frequencies within the 14–14·4 Mc/s band.

11. Mr. Milne presented a report of the QSL Management Committee which met on March 7, 1946. Mr. Milne stated that due to staff and accommodation difficulties, it was not yet possible to institute a full QSL Service of the type visualised by Council in Octobef, 1945. His Committee recommended that the Council should authorise the introduction of a stop-gap service operated on pre-war lines by voluntary helpers. Council approved the recommendation and requested Mr. Milne to take such steps as he and his Committee consider to be desirable to bring the service into operation at the earliest possible moment.

The meeting closed at 9.20 p.m.

Proposed Radio Society of India

As the result of informal discussions which have taken place between representatives of the Society and prominent members who are normally resident in India, it has been decided to explore the possibilities of forming a Radio Society of India.

The chances of the project succeeding are enhanced by the presence in India at the present time of many well-known United Kingdom amateurs who it is believed will be willing to assist in the task of establishing the Society on a firm basis.

Mr. J. S. Nicholson, VU2JP, Munnar P.O., Travancore, has agreed to act as organiser for the South, whilst Mr. J. McIntosh, VU2LJ, will act for the North. These two members were the B.E.R.U. Representatives for India prior to the war.

Members interested in this proposal are asked to contact either Mr. Nicholson or Mr. McIntosh without delay. As it is planned to operate the Society through Branch Managers, one for each of the main centres of activity, offers of co-operation will be warmly appreciated.

India is the only part of the British Commonwealth which lacks a National Radio Society. The formation of such a Society should go a long way towards helping the amateurs of India to obtain improved licence facilities.

The 60 Mc/s Band

Mr. W. A. Scarr, M.A., G2WS, has agreed to prepare a monthly commentary dealing with 58·5-60 Mc/s. activities. Members operating in this band are asked to forward items of interest to Mr. Scarr, 8 Beckenham Grove, Shortlands, Bromley, Kent, by not later than the 25th of each month. It is hoped to publish the first commentary in the June issue.

JUNE ISSUE

In view of Whitsun and Victory Day it will be necessary to close the June issue for press on

Wednesday, May 29th, 1946

Copy received after that date cannot be accepted

Portable Facilities

We are informed by the G.P.O. that permission cannot be granted at present for the operation of portable stations on any amateur frequency. It is hoped to make a further announcement next month.

The B.B.C. Quarterly

This new journal is intended for those who are either professionally engaged in broadcasting and its organisation or who are interested in the medium.

It will contain articles dealing with the preparation and purpose of broadcast programmes; administration of broadcasting; the law as it relates to broadcasting and developments in broadcast engineering, written by those who are themselves doing the work or who have special knowledge of the subject.

It will be priced at 5*s.*, and can be obtained through newsagents and booksellers or direct from B.B.C. Publications, Scarle Road, Wembley, Middlesex. The subscription rate is £1 for four issues, post free. Orders will be executed in rotation.

LONDON MEETING

A Meeting of the Society will be held
on FRIDAY, MAY 31st, 1946
at
The Institution of Electrical Engineers
Savoy Place, Victoria Embankment, W.C.2

LECTURE

"CENTIMETRIC RADAR FOR PRECISION GUN-LAYING"

by

H. A. M. Clark, B.Sc. (Eng.), A.M.I.E.E. (G6OT)

Tea 5.30 p.m. Commence 6.30 p.m.

EXCHANGE AND MART SECTION

MEMBERS PRIVATE ADVERTISEMENTS. Due to pressure on our limited space no guarantee can be given that publication will be made in the issue following receipt of order. Announcements must be restricted to the advertising of radio apparatus WANTED or FOR SALE. RATES. 18 words or less 3/-. Maximum number of words accepted 50, at 2d. per word. TRADE ADVERTISEMENTS cannot be accepted until further notice. TERMS. Cash with order to Parrs Advertising Ltd., 121 Kingsway, London, W.C.2.

AMATEUR has following pre-war unused valves for sale.—One each, 6F6G, 6SJ7, four each, 6SK7, 6SA7, 6H6, 6K6GT/G five 6B8, 10s. Three each EF39, EBC33, ML4, 7s. 6d; Four D41, 5s. Three 6SG7, 15s. I want auto-gram or parts, 6K8's. Exchange? S.A.E.—Write Box A/57, PARRS, 121 Kingsway, London, W.C.2.

AMATUER selling out.—Large stock modern valves, meters, components, etc., for third cost price, £90 to clear, or, exchange photographic equipment. S.A.E. full particulars.—Box A/54, PARRS, 121 Kingsway, London, W.C.2.

APPLICATIONS required by short wave stockists for agencies of experimental amateur components and equipment.—LABGEAR, Cambridge.

COMMUNICATION receiver by Marconi W.T. Co., 8 valves, 150kcs. to 25 Mcs. 9 in. calibrated dial, B.F.O., A.V.C. switch, etc.; superbly made, in steel cabinet, excellent order.—G6YR, 72 Sandon Road, Southport.

CPL. W.O.M. 24; release group 44, 4 years R.A.F., married. holds P.M.G. Special; B.I.E.T. student C. & G. Radio communication, 18 months radio servicing prior to call up, desires progressive post radio industry, Maidenhead or Home Counties preferred.—Box A/40, PARRS, 121 Kingsway, London, W.C.2.

ENGRAVING.—Amateurs, why not give a professional finish to that new rig? Precision Instrument firm in West London can undertake specialised machine engraving of knobs, dials, panels or sundry components, excellent delivery on small quantities.—Box A/28, PARRS, 121 Kingsway, London, W.C.2.

FOR Sale.—Hallicrafters S10 communication receiver, 10 valves, 75 to 5·5 megs., perfect condition. — LAYLAND, 2 Beachbrough Villas, Shorncliffe Road, Folkestone, Kent.

FOR Sale.—One D.C. Avo minor and case. Price £3 10s. 0d.—BRS8951, LAWTON, Woodleigh, Lower Dolcliffe Road, Mexboro.

FOR the convenience of those clients residing outside the Leeds district, Grand Arcade Radio will open on Whit Monday and Tuesday between 9 a.m. and 6 p.m. each day.—G8OG for transmitting gear. 6 Grand Arcade, Leeds, 1. Tel: 22175.

GUARANTEED Ham supplies. Large range Crystals 7 and 1·8 Mc. meters and full range all gear ex stock. Lists. See previous adverts.—STUCK'S RADIO, North Street, Sudbury, Suffolk.

HARMONY House (Prop: G2IN), offers the radio frequency cable you have been waiting for. Solid Polethylene Dielectric. Impedance 67 to 77 ohms. 1s. per yard, plus postage. Send 6d. in stamps for sample. Eddystone and Raymart components in stock.—116 Cambridge Road, Southport, Lancs.

H.R.O. Senior coils, bandspread: 50-100kcs, 100-200kcs, 180-430kcs, as new; post paid, £20.—D. G. HARDCASTLE, Shrubbery Street, Kidderminster.

INSURE your Radio Equipment. Special terms to cover Fire, Burglary, Damage and Legal Liability of Members of Radio Society of Great Britain are quoted by the Edinburgh Assurance Company Limited.—Apply for particulars to: 1-2 Royal Exchange Buildings, London, E.C.3.

INTERNATIONAL relay rack assemblies 31½ in. panel space rack 37s. 6d. crg. 2s. 6d.; 14 gauge Alclad black crackle panels, 4s. to 7s. 6d.; 16 gauge aluminium chassis with two panel fixing brackets and screws, 10s.; S.A.E. lists transmitters, modulators, amplifiers, etc.—AMATEUR RADIO SERVICE, G6HP, 17-29 Canning Street, Burnley.

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.

NATIONAL one-ten complete with power pack and coils, as new, unmarked, used only two hours.; instruction book, £25. —BRS4144, 14 Common Road, Evesham. 'Phone: 6549.

NATIONAL Senior H.R.O., 9 coils and power pack for 250v A.C. Spare tubes, minus speaker; £65. Part exchange reliable mains signal generator.—PARKS, 21 Golders Gardens, London, N.W.11.

NATIONAL 1-10 receiver and power pack for same, £25. One Bliley ten metre crystal, £3. First cheque secures. G3DH, Greylands, Bramhall Park Road, Bramhall, Cheshire.

OBTAIN frequency stability on the amateur bands by using Hamrad Type MC crystal control units. New design, high quality plastic dustproof holder, calibration accuracy within ·02% at 25° cent. Available in 7 Mc/s range: from stock 30s.; to your specification 35s.—HAMRAD WHOLESALE LTD., 348 Portobello Road, London, W.10.

OFFERS wanted for Cossor double beam oscillograph Model 339, used only 10 hours. Furzehill Beat frequency oscillator, as new. Avo Signal generator, as new.—TALBOT-PONSONBY, Langrish, Nr. Petersfield, Hants.

QSL's and Log Books. Samples free. State whether BRS, or G patterns required.—ATKINSON BROS, Printers, Elland.

REOPENED, on the return of the technical staff from war service, Radiograph Ltd., of Glasgow (BRS12040) have now the opportunity of offering much in radio equipment of vital interest to the Amatuer and constructor. Write or call for full particulars.—RADIOGRAPHIC LTD, 66 Osborne Street, Glasgow, C.1.

R.F.60 components, L.F. chokes, mains and modulation transformers. New valves in carton 46's, 76, 10s. each. R & B massive 450 volt mains transformer with 4 volt heater windings Magnavox 66, as new, £4 10s. 0d. Stamp reply.—G2UZ, 2 Cliff Road Gardens, Leeds, 6.

RME69, DB20, speaker, £50. Fox modulator 20 watts £12; like new. Valves: P625, 40,4, VP215, Acorn 955, Pen 36C.—G2AT, Vicarage, Exminster, Devon.

ROGERS Radio (G6YR) for short wave supplies. 4uF 1000v wkg condensers, 9s. 6d. Low-loss co-axial cable, 1s. yard.—Raymart and Hamrad agents, 72 Sandon Road, Southport.

SALE.—Milliameters Weston, Sifam, 0-50, £2 10s. and £2. Avominor, £4. Q.C.C. crystals in holders 7098kc. 14274kc., 35s. each. Ferranti Bl and B2 chokes, 10s. Fil trans 4v, 1 amp, 6v. 1 1 amp.—G2RM, Quisisana, Inholmes Park Road, Burgess Hill, Sussex.

SALE.—High quality dials, knobs, extension spindles (¼ in.), brackets, flexible shaft couplings (¼ in.), 7 in. and smaller Pyrex aerial insulators, ½ in. and smaller stand-off insulators, copper tube transmitting inductances, S/W var condensers and components (Eddystone). Ward Leonard D.P.D.T. relays 15s. Browns "A"type 8,000 ohm phones 30s., etc., etc.—Box ME/90, PARRS, 121 Kingsway, London, W.C.2.

SALE or Exchange.—Complete 3 in. oscilloscope, multi-range meter, 1000 ohms/volt, AC/DC, 5 in. mirror scale. Valves: 807, metal 6L6, 6SN7, 4671, 4672, (Acorns), 316A (U.H.F. Door knob). Crystals: 7Mc/s., 100kc, in holders. 100 microamp meter. Wanted: Receiver, signal generator, valve tester, etc.—2AGH, 26 Cunningham Road, Doncaster.

SALE.—Taylor-meter model 500 F.S.D. 100 microamperes, 5 in. scale, new and unused, £7. Zeiss Ikon "Netter" folding camera, compor rapid shutter, F4.5 lens, 1 filter; new condition. Offers—233 Welholme Road, Grimsby, Lincs.

SALE.—Tobe communication receiver (Ham bands only 20-160M inclusive) and speaker. Little used. Offers?—G2YS, 118 Moor Street, Coventry.

SALE.—Universal multi-range meter, also many valves and high grade components. S.A.E. list.—G2DVQ, 32 Bromwich Street, Bolton.

SALE.—(2) 8uF 1500v block condensers, 10s. each. (3) MU1 Mercury vapour rectifiers 1500v 300mA with 2 in full wave, 7s. 6d. each. (2) W.E. 4211E 1000v plate T.X. valves, 10s. each. (2) ESW501 250 watt TX valves suitable down to 112mc, 30s. each.—G6IF, 1 Squirrel Lane, Booker, High Wycombe, Bucks.

SALE.—955 (1), 954 (1), 4671 (1), 4672 (2), 20s. each.—TAYLOR, 134 High Street, Barnet, Herts.

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

TAYLORMETER, model 90, offers wanted; 2-inch meter scaled 0/600 and 0/15, full scale deflection 600 microamps with shunts and multipliers; 6, 15, 60, 150, 300 and 600 volts, 0·6, 6,15,60, and 150mA; 35s. the lot.—MASSEY, 58 Wakefield Avenue, Hull.

TRANSMITTING aerial wire 12 swg. hard-drawn copper, plastic covered 7s. 6d. 100 ft. Pyrex insulators 9d. Aerovox paper condensers can type 4uF 1,000v, 8s 6d., 10uF 600v, 7s. Reslo and Meico moving coil mikes £5 5s. 0d. 7 mc. Crystals 22s. 6d. Send S.A.E. for list.—DRURY & BEARDOW, 45 Wangey Road, Chadwell Heath, Essex.

UNUSUAL Bargain.—Midget 10 watt Tx (co-pa) and Rx (4 valve) factory built in steel rack 1 ft. square, A.C. mains or 6v. D.C., 3·5 and 7 Mc (or driver for higher bands) will be sold to licensed ham for £25. Complete with spare valves, key, phones, etc.—CAPT. INGRAM, G6ZY, 47 Putney Hill, London, S.W.15.

WANTED.—DB20 preselector, also H.R.O. receiver and Vibroplex bug key.—SOANS, 188 Cubbington Road, Leamington Spa.

WANTED.—Hallicrafters HT-6 complete unit. Must be perfect, as new. Fully guaranteed. Details, price.—Box A/37A, PARRS, 121 Kingsway, London, W.C.2.

WANTED.—Hallicrafters "Sky-Traveller" in good condition. —CAPT. CHAKRAVARTI, H.Q. Mess, Royal Signals, Catterick Camp, Yorks. BERS632.

WANTED.—National N.C2.A., R.C.A. A.R.88E., or Hallicrafter SX28A.—G2SY, WILL ROGERS, Drayton, Daventry.

WANTED.—Small communications type receiver.—Details to J. B. ROSCOE, 74 Walton Street, Oxford.

WANTED.—Trophy pre-selector or similar type.—2CDT, 22 Walders Avenue, Wadsley, Sheffield, 6.

WANTED urgently. Back issues "QST," "Radio," "R.9" "Radio News," "Radio Craft." Details and prices to Box A/41, PARRS, 121 Kingsway, London, W.C.2.

WANTED.—1·8 Mc band crystal in exchange for one in 7 Mc band.—G2YS, 118 Moor Street, Coventry.

YORKSHIRE'S Ham Specialists.—All Ham components—valves—crystals and service available from Fairbank's, 6a Lowton, Pudsey, technical department: G5PW. Special facilities for check and realignment of communication receivers. Send your problems and requirements for attention of G5PW. Special—now available 35T, 83, 6L6m. Equivalents 807, 866, TZ40, RK34, RK25, etc.

1R5, 1S5 and 1T4 valves, 17s. 6d. each. S.A.E. brings you latest summer price list.—M.O.S. 24 New Road, London, E.1.