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

September 1945

The original front cover for this edition was not available.

The original front cover for this edition was not available.

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

AROUND THE DISTRICTS

Forthcoming Events

Sept. 17	District 18 (Hull), 7.30 p.m., at the Imperial Hotel, Paragon Street.
Sept. 18	District 15 (Hayes and R.A.F.), 7.30 p.m., at West Drayton R.A.F. Camp.
Sept. 20	District 4 (Nottingham), 7 p.m., at The Foresters' Hall, Peachey Street.
Sept. 21	District 15 (Harrow), 7 p.m., at BRS6527, 153 Belmont Road.
Sept. 22	Provincial District Meeting, Cardiff (see announcement last month).
Sept. 22	District 15 (Slough), 4 p.m., at Mr. Houchin, G3GZ, 90 Shaggy Calf Lane.
Sept. 23	District 1, 6.30 p.m., at 10 Moor Street, Shaw, near Oldham, Lancs.
Sept. 23	District 12, 3 p.m., at BRS7285, 55 Salisbury Road, Barnet (opposite Salisbury Hotel).
Sept. 24	District 3 (Coventry), 7 p.m., at the John Hough Mission.
Sept. 26	District 2 (Sheffield), 8 p.m., at the " Dog and Partridge," Trippet Lane. " Low Power Electron Coupled Oscillators," by Messrs. A. Pugh and E. Winter.
Sept. 26	Scotland " A " District, 7 p.m., in the Institution of Engineers and Shipbuilders, 39 Elmbank Crescent, Glasgow.
Sept. 29	District 1 (Liverpool), 3 p.m., at The Stork Hotel, Queens Square. Lecture on " Valve Oscillators," by Mr. J. Anthony.
Sept. 29	District 7 (Reading), 6.30 p.m., at Palmer Hall, West Street. Equipment in competition for the Lewis Cup.
Sept. 29	District 15, 3 p.m., at The Excelsior Hotel, 1 Ladbroke Gardens, Ladbroke Grove, Notting Hill, W.11.
Sept. 30	District 7 (Guildford), 3 p.m., at G2ZC, " Three-ways," Churt, Farnham, Surrey.
Sept. 30	District 12, 3 p.m., at BRS3412, 18 Sandfield Road, St. Albans (turning off main Hatfield Road, near Cemetery 'bus stop).
Sept. 30	District 14 (Chingford), 3 p.m., at the A.T.C. Squadron H.Q., Pretoria Road, North Chingford. (102 bus or 38 bus to Bull and Crown.)
Oct. 1	District 14, Special Victory Meeting, 7.15 p.m., at The School Hall, St. Edward's School, Market Place, Romford.
Oct. 4	District 4 (Nottingham), 7 p.m., at The Foresters' Hall, Peachey Street.
Oct. 5	District 4 (Northampton) at 2HDK, 161 Broadway East.
Oct. 5	District 15 (Harrow), 7 p.m., at BRS6527, 153 Belmont Road.
Oct. 7	Districts 7 and 13, 3 p.m., at Y.M.C.A., North End, West Croydon.
Oct. 7	District 15 (West London), 5.30 p.m., at BRS6275, 51 Rusthall Avenue, Bedford Park, Chiswick, W.5.
Oct. 13	District 7 (Reading), 6.30 p.m., at Palmer Hall, West Street.
Oct. 13	~~District 15 (Ashford)~~, 6.30 p.m., at BRS5056, 9 St. Hilda's Avenue. Southern Railway, bus 117, alight St. Hilda's Avenue, or bus 90, alight Fordbridge Road.
Oct. 16	Midland Amateur Radio Society, 6.30 p.m., at Chamber of Commerce, New Street. Talk on " Cathode Oscillograph," by Mr. B. George.
Oct. 19	London Meeting, 6.30 p.m., at The Institution of Electrical Engineers, Savoy Place, Victoria Embankment, W.C.2. Tea, 5.30 p.m. Display of Technical Films including Radar, by Ft./Lt. P. Thorogood, G4KD.
Oct. 20	District 15, Dinner and Dance, 6 p.m. (see separate announcement).
Oct. 22	District 18 (Hull), 7.30 p.m., at the Imperial Hotel, Paragon Street.

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

DISTRICT 1 (North Western)

D.R.: H. W. Stacey (G6CX), " Sandleas," Eddisbury Road, West Kirby, Cheshire. Hoylake 337.

Liverpool.—Only 14 members attended the July meeting—rather disappointing after the record attendance of 50 at the June meeting. No doubt holiday attractions were partly responsible and for this reason it was decided not to hold a meeting during August. Failing reasonable support at the September meeting it is probable that the T.R. will revert to bi-monthly meetings—it has been noted that most of those members who asked for meetings every month have been absent ever since! Morse classes are now in being and are held twice each week. At the July meeting a short address on micro-waves was followed by a discussion on the need for special lectures for the benefit of beginners and the first of these will be given at the September meeting.

Will members please advise Mr. Williams, of 52 Church Road, West Kirby, what components they have for sale and the prices required? So far only one member has taken the trouble to do this. 2FHB.

Oldham.—A discussion on the " Selsyn " system and its application to rotary aerial arrays occupied the six members who attended the July meeting. Please see " Forthcoming Events " for details of the next meeting. G2MQ.

Whitehaven and District.—A very enjoyable meeting was held at the home of G8RZ on August 10 when those present included 6JZ, 8RZ, 3BY, 3BW, 8DP and 2DWG. It is hoped that the many new members living in the locality will support future local meetings; details can be had from 3BW of 53 Hill Top Road, Whitehaven, who will be glad to hear from or see any new or old member in the area. G3BW.

Bury.—G8NL was pleased to receive a surprise visit from G2GA early in August. 2GA has been stationed near Cairo for a year and was on embarkation leave before leaving again for the Far East. He wished to be remembered to old friends. 8QS, 8UN and 8NL are all planning for the time when licenses are re-issued.

Any members, new or old, who are interested in reviving Bury group meetings are requested to write to G8NL at his home address 4 Moreton Avenue, Whitefield, Manchester; if the response is satisfactory meetings will be renewed.

Preston.—There is no further news from this area but interested members should contact Mr. A. Adams (G5AD) of 11 Priory Crescent, Penwortham Hill, Preston.

Manchester.—For what reason do the many keen members in this fair city remain in their burrows! The D.R. has received a letter from Mr. G. Sykes (G2JC) of 13 Longford Square, Gorton, inquiring about the situation and suggests that members wishing to attend regular meetings should contact him to see what can be done pending the return of the T.R., Mr. Lucas.

General.—The D.R. was pleased to receive a visit last month from Ft./Sgt. R. F. Russell, of North Chingford, Essex, who was at a local R.A.F. establishment during part of August. Letters have been received from a considerable number of new members, most of them overseas, inquiring about R.S.G.B. meetings in their home towns and replies have now been sent to all concerned. Unfortunately there is as yet no organised activity in many of the places mentioned and an appeal is hereby made to those who are at home to get together and arrange a programme of regular meetings.

The D.R. would appreciate the help of a District Scribe to take over the preparation of these notes—any offers please? G6CX.

DISTRICT 2 (North Eastern)

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

Barnsley.—G5IV is at present with the C.M.F. but hopes to be home next month. He has met 6SH, 6UX and 6LZ. 4JJ gives high praise to the hospitality meted out to him in the U.S.A.

Bradford.—G6KU would like to hear from members of the former Bradford Radio Society with a view towards making a new start. Other interested members are also invited to write in. A successful meeting was recently held at the home of 3MQ when items from pre-war transmitting days and field days to QSL cards were discussed. The following were present, 3MQ, 4GJ, 6KU, 8UO, 5842, 6807, and 8293. Mrs. Dennison is thanked for providing refreshments. 8UO was pleased to receive a visit from 3KF and wife. KF is now building a six valve super. 3HA is still awaiting that time-expired boat and sends 73 to all who knew him. 4GJ is welcomed back to District 2.

Doncaster.—Will all members who have not already done so please contact BRS193 who sends 73 to 3NJ and 4DP. 2AGH nearly had a personal contact with a D4.

Sheffield.—G2JI is now " mine host " of the " Anglers Rest " Bamford. We were pleased to welcome Mr. Hawke and friend of Rotherham, at our August meeting.

Skipton.—8676 is now with R.N.A.S. 4RX is all set for a "Cook's Tour."

General.—2AGP (R.A.F.) is thinking of settling in the South of England. News from 2VO and 3RY would be welcomed.

G8UO.

DISTRICT 3 (West Midlands)

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

District 3 sends heartiest congratulations to all those concerned in the defeat of the Jap, and greetings to all P.O.W.'s now liberated.

Evesham.—4736 who has been on leave from Italy has been working on high-speed sending gear. 2FQP has constructed a frequency meter. 4144 is learning to drive in readiness for GW6AA's new venture with kites so that reports can be observed from this District.

Coventry.—The T.R. has received a letter from G2YS who wishes to be remembered to all in Coventry. 2FDR.

DISTRICT 6 (South Western)

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

Penzance.—A recent very successful meeting was attended by G3IV, 3KO, 6LV, 8NA, 8OM, 2BCL, 2FZV, BRS9063, 9894, and another BRS member (number not taken), who brought along a number of interested R.A.F. personnel. G8OM gave an interesting talk on the use of very high power at very high frequency.

Another meeting held on August 7 was attended by G3IV, 3SJ, 6LV, 6ZT, 8NA, 2BCL and BRS9894. New member G3SJ was given a hearty welcome. G8NA gave a demonstration on a 15 in. cathode ray tube.

Torquay.—There is very little to report beyond the permanent or temporary return of sundry wanderers. 2CWR and BRS3171 have been home on leave. The former was at one time the T.R. for Torquay. 2BMZ reports that he is now out of the Service for good, and anxious to get going.

The D.R. thanks very sincerely all those who contributed in any way towards making the recent P.D.M. at Exeter a success.

G5SY.

IN THE SUNNY SOUTH-WEST

The first P.D.M. held in the South-West since 1939 took place in Exeter on Sunday, July 22, 1945. *Front row left to right*: 2BAR (Bristol T.R.), G6RB (District 5 Representative), G6OT (Hon. Secretary), G5QA (Exeter T.R.), G6GR (President), G5SY (District 6 Representative), G6LJ (Executive Vice-President), G2GK (Torquay T.R.), 2DRW (Exeter), G6CL (General Secretary) *fifth from left second row.*

DISTRICT 4 (East Midlands)

Deputy D.R.: Albert E. Clipstone (G8DZ), 77 Julian Rd., West Bridgford, Nottingham. Scribe: H. Ratcliffe (2AOO), 78 Henry Rd., West Bridgford, Nottingham. (Phone 84150.)

Derby.—There is very little to report this month except that G2OU has given up his post as T.R. Having carried on through the war years he would like to pass on the job to another member. We thank him for all the time he has devoted to the interests of Derby members.

The D.D.R. would appreciate an offer from a member who is willing to act as T.R.

Northampton.—Meetings have been started by the T.R., BRS7888. The first was held on August 24 and another has been arranged for October 5. It is hoped that members will give their support to this effort to get things going.

Nottingham.—At the meeting held on VJ plus 1, which was attended by eight members, G6CW gave an interesting and enlightening illustrated talk on valve voltmeters. He has promised to continue the talk at a further meeting.

It has been decided to suspend Sunday meetings and to hold meetings fortnightly at the Foresters' Hall (see "Forthcoming Events"). This meeting place is central and it is hoped that good attendances will be recorded.

Letter Budgets are being completed and the "Receiver section" is being sent on rota to members who have signed for same. There are vacancies for members interested in serious experimental work in the following subjects: V.H.F., Aerials, Transmitting Equipment, Amplifiers and Modulators, and Measuring Instruments. The D.D.R. would appreciate the views of members on subjects they would like discussed at meetings. Those who met W8TBD whilst he was in this area will be pleased to know that he is now in Brazil. He is fit and well and sends his kind regards to members here in District 4.

Members are asked to note the D.D.R.'s new address. G8DZ.

DISTRICT 7 (Southern)

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

Bournemouth.—Meetings are still held at 45 Parkwood Road, on the last Saturday of each month at 3 p.m. The next will be on September 29. 8BR hopes to be demobilised shortly. BRS2692 is a new visitor to our meetings. 5RS of Guildford has been here on holiday. 2HNO.

Nearly forty members attended the meeting at G2YL on August 26 and thoroughly enjoyed a pleasant afternoon. Our thanks are recorded to Miss Corry and her mother.

Croydon.—The August meeting at G2VB saw an attendance of twenty-two, including: G2DP, 2HP, 2LW, 2UA, 2VB, 3DF, 3ST, 8RN, 1545, 3003, 4324, 4584, 6894, 8417, 8996, 9110, 9281, 9563, 9961, 10476, and Messrs. Graves and Ulrick. A fund for future field days was started with £1 1s. A sale of apparatus was also held. See "Forthcoming Events" for details of the next meeting.

Welcome to 10,476, a new lady member. The T.R. has received a letter from 6RF who was in hospital at the time. 5UN recently visited 2DP. G2DP.

Coulsdon.—The combined Districts 7 and 13 Field Day held at Upper Warlingham was a complete success. Present were: G2DP, 2VB, 2VZ, 3ST, 3TV, 8RN, 2CBB, 1545, 3003, 4324, 4584, 6894, 7943, 8996, 9110, 9287, 9563, 10476, and Mr. Graves. Thanks are due to 2VB who made arrangements for the site. Numerous receivers were in operation on frequencies ranging from 35 Mc/s. to 300 Mc/s. Checking was performed with apparatus provided by 2DP and Aerial experiments were carried out with the aid of 3ST's kite. We are already looking forward to the next Field Day when perhaps we shall not be restricted to reception. Earlier in the month the T.R. was glad to meet 2FRM and his wife, and 2FWA. The former has recently returned to this country after several years in Southern Rhodesia.

BRS3003.

Reading.—The July and August meetings were well attended, and interesting discussions held on technical subjects. Various

gifts have been made for the club room and thanks are due to Messrs. Horsnell and Howe. Returning members are requested to get in contact with the T.R. at 9 Holybrook Road, Reading.

See " Forthcoming Events " for details of the next meeting.

BRS4573.

Guildford.—The next meeting will be held at G2ZC, " Threeways," Churt, Surrey, on September 30, at 3 p.m. An exhilarating programme will no doubt be arranged for us by 'ZC. Should you get lost en route ring Headley Down 2181! Please do not fail to inform 'ZC if it is your intention of attending.

Hearty congratulations to Ted Laker, G6LK, who returned to this country at the end of August and was married at Cranleigh on September 4. Ted expects to be at West Drayton for the remaining period of his stay with the R.A.F.

General.—VE1FQ has now transferred to duty with the entertainment section and has started on a long tour of the British Isles and the Continent. G3MF has returned to this country and has been making some local contacts. G5WP.

DISTRICT 9 (East Anglia)

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

King's Lynn.—We are pleased to welcome back to the town Mr. C. D. Underwood, G5UD, after six years of active service.

Ipswich.—Mr. L. H. Pepler, 2JD, of 162 Sidegate Lane, Ipswich, is anxious to revive interest now that some members are coming home. Local members are asked to contact him. The D.R. would be glad to hear from members in Norwich, Yarmouth and Lowestoft, who would be willing to act as T.R.'s and so help in the revival of these areas. G2XS.

DISTRICT 11 (North Wales)

Deputy D.R.: C. Spillaine (BRS1060), 14 Queensway, Prestatyn, North Wales.

Caernarvon.—2FUD (Radio Officer, M.N.) recently visited Radio City, New York.

Wrexham.—Len Jones, 6071, reports well but is still not working on doctors orders. He is spending his time studying at a local Tech. and planning a new garden shack.

Bethesda.—Cpl. Fish, 2HCZ, after a long silence reports that he is still on the job. His associates include 1066, 2DWB, G3NL, G6CY, G6QM, etc. Ed. was married on July 6 (congrats O.M.) and may settle in Woodford after the war.

Rhyl.—A. C. Mills, R.A.F., 9913, who reports *via* G2GZ, from Winterton, Norfolk, is building a 25 watt amplifier using a pair of KT66's ready for post-war activity. He has also built a midget 3 valve push button receiver.

Prestatyn.—GW4CK reports meeting G8GI at No. 1 R.S., and 2HFL of Wolverhampton in a bus queue at Grantham. He has visited 2FXI at Chatham.

General.—As soon as practical we hope to stage a District meeting and dinner. No dates can yet be given as most of us are still in the Forces, but the spring 1946 is probable. Suggestions are wanted so that we can start serious planning now. Will members on active service let the D.D.R. know their demob. groups, so that a list can be compiled?

BRS1060.

DISTRICT 12 (London North and Herts)

Acting D.R.: P. R. Solder (G5FA), 35 Torrington Gardens, New Southgate, N.11. Enterprise 4347. District Scribe: C. R. Stevens (2DHF), 22 Bramford Court, Southgate, N.14. Palmers Green 0548.

A meeting will be held on Sunday, September 23, at the home of Mr. G. Mansell (see Forthcoming Events). The subject to be discussed is " Looking Ahead " and as there has not been a meeting since June there should be a number of matters to consider.

The scribe has received a letter from L/Sgt. Wadham, BRS89857, who has recently joined the Society, although he has been interested in radio since the early 1920's. He is at present in Austria and would like to work with others in the Welwyn Garden City area on some definite line of experiments as soon as he is demobilised. In the meantime he would welcome suggestions as to a suitable line of study.

W./Cmdr. Kenneth Jowers, G5ZJ, after five years overseas is now home and wishes to contact old friends; his address is 4 Lyonsdown House, Lyonsdown Road, New Barnet. Telephone: Bar. 2915.

G5FA spent VJ day cleaning a six-years accumulation of dust from his power pack, modulator, etc. The D.R. (G5QF), who hopes to be out of hospital in about a month's time, wishes to thank the members who contributed towards the parcel of technical books which were much appreciated.

Members who know Capt. (" Bunny ") Phillips will be sorry to hear that he has had two operations and that he is now in Ward 6, St. Mary's Hospital, Highgate, where he will be very glad to welcome visitors at any time. 2DHF.

St. Albans.—The second meeting of the new session will be held on Sunday, September 30, at the home of the T.R. (see Forthcoming Events) when there will be an inquest on 3412's new superhet. It is hoped the third meeting will take the form of a Victory Celebration and will include G6OT's promised talk on Amateur Radio—more details next month. Letters have been received from 5QF whom we are pleased to hear is making progress and 9265. Visitors have included 4477 and 8569.

BRS3412.

DISTRICT 13 (London South)

Acting D.R.: S. E. Langley (G3ST), 52 Dumbarton Road, S.W.2.

The August meeting held at G2VB's home in South Norwood, was very well attended. Our host in his usual generous manner provided a very nice tea which was taken in the garden. The general topic of conversation was centred on the proposed field-day for the following weekend, several members agreeing to take part. A committee of four has been formed to look after this section of our activities and a fund has also been started to provide comforts and other essential equipment for field-day uses. It has been agreed to subscribe 6d. per month per member for this purpose. A sale of surplus gear followed, which further increased the first subscription by several shillings.

The field-day which was probably the first to be held in this country since the war, duly took place and was a great success, although the weather was not too kind. 3ST and junior op had to move into 2VB's tent at 3 a.m. owing to leaks in their own! " Funf " arrived at 2 a.m. Sunday morning with his radio trailer and promptly got himself caught in the tent ropes, causing much damage!

There were five receivers in operation covering the usual amateur bands and two others on the U.H.F. bands. Several aerials were erected and 3ST's kite was flying steadily for several hours, supporting two aerials which were in use on most receivers. This method although very useful is only possible in a good steady wind and owing to low cloud and low flying aircraft it was only possible to let the kite out to 800 feet, in fact at one time a Dakota just missed the loop about half-way up, whilst everyone held their breath, but all was well. It is possible that other members may be interested in this method of supporting aerials and U.H.F. Dipoles, in which case 3ST will give particulars.

G8TN, who recently visited 3ST, sends kind regards to all old friends. G3ST.

DISTRICT 14 (Eastern)

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

Chelmsford.—Local meetings will be resumed during the coming autumn, but first there will be a " Victory " meeting, at Romford, on October 1 (see Forthcoming Events). Romford has been chosen as being the most central venue convenient for country and East London members. Roll up, and make it a success.

Romford.—The meeting on August 12 was attended by G3CQ, G3WS, G3XY, 2DXL, 2DXI, 2FXM, and Mr. Lowlings. Post-war activity was the main item of interest. Regular meetings will take place at the Y.M.C.A. on the 2nd and 4th Tuesday in each month, at 7 p.m.

Chingford.—The August meeting was attended by G2HR, G2XG, G3YF, BRS5684, 6599 and Mr. Hodgson. BRS5726 who is now in East Africa will welcome letters, and says that he hopes to persuade his C.O. to let him go on the air when permits are restored. G6LB.

DISTRICT 15 (London West, Middlesex and Buckinghamshire)

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

A report of the District Social Outing will be found elsewhere in this issue.

The first World-Victory Dinner and Dance is being held on October 20, 1945. See separate announcement for details.

Hayes.—Mr. Birt (3NR) gave a very interesting lecture and demonstration of crystals in their various stages of manufacture to 19 members at the Uxbridge meeting. 3HS, who is on special duties in Berlin, was a welcome visitor. The A.T.R. apologises for the tour of Uxbridge.

Ashford.—Four members attended the Sunbury meeting and held a rag-chew. If attendances do not improve the A.T.R. will be compelled to make other arrangements. If you want these meetings to continue, please support them.

Harrow.—Two meetings were held here, each attended by 10 members, who discussed receiver design at the first and signal generators at the second.

West London.—Five present talked over the quality of modern radio components and broadcast receivers at the August meeting. Items under construction by members were also discussed.

Slough.—A meeting has been arranged for September. (See Forthcoming Events.) If you want meetings in this locality please attend and express your willingness to support them.

West Drayton R.A.F.—A successful meeting was held in the camp when a discussion took place.

District Meeting.—Will members please note change of date.

Certain members in the District view with considerable concern the recent remarks made by the General Secretary at a Provincial District Meeting concerning QSL cards. It is felt here that this is one of the assets of being a member. (A full statement dealing with the future of the QSL section will be published later.—J.C.)

Many members will be interested to learn that 6YK has recently written to the D.R. and asks to be remembered to his many friends. We are sorry to lose 1225 who is leaving us for District 13. Letters have been received from 4IH and 2BMY (India) 7250 (Europe) and 4994.

It is with deep regret that we learn that Wing-Commander John Hunter (G2ZC) died recently in hospital, while on Active Service. He was well-known in this District particularly to the D.R. who introduced him to the Society. G6WN.

DISTRICT 16 (South Eastern)

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

Due to letters being lost in the post, Fl./Lt. Jennings (R.A.F.), G4BY, now serving in Germany, apologises for not answering mail. He requests the Service address of 5CI. He reports that 84 Disarm. Group are starting a club and that Fl./Lt. Fowler (R.C.A.F.), VE5VO, is representing his Wing which includes Sq./Ldr. Beck (R.C.A.F.), VE3PF, and Fl./Sgt. Evans, VE3NR., P.O. E. G. Cocks, R.N. (7412), in the Pacific theatre has built a four-valve superhet and has met Fred Orvad, VK2AHK, who would like to hear from pre-war G contacts, c/o The Control Room, G.P.O., Sydney, N.S.W., Cpl. W. E. Atkinson (R.A.F.), 7146, would like a club in Sittingbourne. (Any members interested please contact 2HKU.) He meets 3MV and 10126 occasionally.

Gillingham.—M.A.T.S. meetings are still being held every Monday evening at 7 p.m. in the Foresters Hall, King Street. On August 20, 2FXI gave an interesting talk on superhets and on the 27th a heterodyne wavemeter contest was held with the Moffat Cup as the prize. This was won by Mr. Hadaway. Cpl. Lane (R.A.F.), 3GW, who was a welcome visitor, gave an informal lecture on Cathode Ray Tubes during the interval.

Sheppey.—Cpl. Janes (R. Sigs.), 2FWA, visited 2HKU (who regrets he was out) whilst stationed nearby. 2HKU enjoyed a visit to 3PC and is building a multi-meter. 2HKU.

DISTRICT 17 (Mid East)

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

Old timers will welcome the news that W./C. W. Dunn, G2LR, is back in this District and as keen as ever. Wally has been awarded the O.B.E. for special Signal services with Bomber Command, whilst 5LL has been mentioned in Despatches for special radio work with C.M.F. G3WB, 4315, G3OS, 8SH, 5MT and 8BQ have paid visits to the D.R. and much discussion has taken place. G8BQ appears to be the first in the District to be demobbed, incidentally his HRO has been kept warm during the war by G5BD, who has appreciated it very much. 2DRT, now stationed near Carlisle has tuned up his NC 81 X and has got himself engaged. 2FT has not yet made any "ham" contacts in Birmingham. G4GX has recently married but still finds time to make a few transmitter preparations. 5FY sends 73 to G6GH and puts forward the request that personalities are kept out of the correspondence columns of THE BULLETIN. G5BD.

DISTRICT 18 (East Yorkshire)

District Scribe: S. Davison (G6SO) 10 Sydney Street, Scarborough.

Hull.—Ten members were present at the July meeting at which 4LH demonstrated his battery-operated head amplifier and high-fidelity sound cell "mike." Weekly Morse practices were decided upon, details of which may be obtained from 8UL or 3PL. The usual "Brains Trust" discussions were held, covering crystal gates, crystal control of transmitters and the advantages of using a separate oscillator in superhet receivers.

The meeting held on August 20 was attended by sixteen members and friends including VK3EZ (R.A.A.F.), G2KO and Mr. Hyslop (second op. of GM2MP) who is working in Hull. 7345 who was on leave from the B.L.A. gave a lucid explanation of the cathode ray oscilloscope. The atomic bomb received mention, 4LH wondering if it emits radio waves as well as waves of other sorts. 3PL tried to demonstrate his midget BCL receiver but the B.B.C.'s European service caused trouble. He is enquiring if the B.B.C. fits free wavetraps when *they* cause "BCL QRM" in the way amateurs used to do! 4530 and 4590 were recently on leave. 1948 is stationed in Kent and able to get home to London every weekend. G6SO (*via* G3PL).

Scotland

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

"A" District.

District Officer: D. R. Macadie (GM6MD), 154 Kingsacre Road Glasgow, S.4. Scribe: J. D. Gillies (2FZT), 3 Berridale Avenue, Glasgow, S.3. Merrylee 4060.

The August meeting had an attendance of 26 who listened to a most comprehensive talk by Mr. Ian Jamieson on the R.S.C. bridge illustrated by his own instrument which exhibited great skill in construction. Local members won't be seen near the Caledonian market after hearing of the discrepancies found in second-hand condensers and resistances! The meeting discussed financial affairs and the affiliation of the Glasgow Amateur Radio Club to the Society was announced. Mr. McMichael informs the Scribe that he met Gilbert Pollock, VK2XU, of New South Wales, recently and that VK2XU is now in business in Scotland after leaving the B.B.C. The return of old-timers to the fold includes Guy Reston, GM8CH, George Troy, GM3YS, and Archie Graham, 2DAB. A visitor from the R.A.F. was G5OI. The winter programme of lectures is being arranged and the lecture convener Alf Janes would appreciate offers of talks, demonstrations, etc. Don't be shy to come forward, every little helps. 2FZT.

"C" District.

D.O.: J. Gouck (GM3NH), 4 School Drive, Downfield, Dundee.

The August meeting was attended by nine members which was satisfactory considering that a few regulars were on holiday. The D.O. gave a talk on V.H.F. receivers, outlining the disadvantages of normal B.C.L. gear at these frequencies, the theory of super-regeneration, basic sup-regen circuits and mixer circuits for superhets. All of which was of great interest in view of the hoped for allocations to amateurs for their use.

A Field Day Without Radio

It was a worried man (BRS9746) who telephoned the District 15 representative on Thursday, August 23, to say that only 14 members had signified their intention to date of supporting the country run which had been planned. He had booked a coach for 25 and wondered who would stand the expense. However, with the assistance of a few stalwarts who did a little touting, 25 members and friends *did* fill the said coach on the only sunny Sunday in August, which proceeded then to a rendezvous with the High Wycombe group at Speen. It was a quiet and pleasant journey down with quite a few strangers to each other especially among the ladies.

Outside the old-world "Plough Inn" where the meeting was to be held, the coach was met by 2RL and 6JK. BRS4781 who had arranged to meet the party at the top of the "most dangerous" hairpin bend on a steep hill was not there to greet us and in spite of his previous warning that the coach would not be able to negotiate it we managed somehow. 4781 caught up on us later looking rather worried.

An enjoyable afternoon was spent viewing the old N.F.D. site and the countryside around, but well before 5 p.m. everyone was back at the "Plough" ready for tea. This proved to be just as much a pleasant surprise as anything else with no less than 37 members and visitors thoroughly enjoying the bounteous spread.

After tea the males got together in the coach for a rag-chew while the ladies made a bold bid to secure mushrooms and blackberries. It was a pity the day was marred with a torn pair of stockings and an accident to 9094's son who badly grazed his face. We hope that he has now recovered.

Finally, after a visit to the "local," farewells were taken and a happy party boarded the coach for the homeward trip. There was a noticeably different atmosphere from that going down with much hilarity from the back of the coach, particularly when the D.R.'s wife turned 8KZ into a typical Cockney complete with a coloured handkerchief for a choker and cap!

Everyone voted it a splendid outing and all who attended look forward to the next. In passing we must not forget those who made it possible. BRS9746 planned and organised the coach trip and was responsible for getting everyone picked up and returned home whilst BRS4781, the acting T.R. for High Wycombe, arranged the venue and the tea. We do not know if it was he who managed to have them "open" that evening, but it was a grand show and we thank them both. G6WN.

The Racket Continues

Last month Mr. Gerald Jeapes, G2XV, of Cambridge, advertised for a communications type receiver. He had one reply offering an R.M.E. 70 with DB 20 housed in crackle cabinet with matched R.M.E. speaker, crystal gate, full data book, etc., "hardley" used, as new for £120.

Mr. Jeapes states that the pre-war price was £51 15s. 0d. Seemingly the data book is valued at approximately £70!

FLASH! Just before closing for press information was received that U.S.A. Amateurs are now authorised to operate on 112—115·5 Mc/s. This is a provisional arrangement effective until 15th November next when the F.C.C. will announce a further policy on Amateur operation.

R.S.G.B. BULLETIN

OFFICIAL JOURNAL OF THE INCORPORATED RADIO SOCIETY OF GREAT BRITAIN

Published on or about the 15th of each month. Issued free to members.

General Editor: JOHN CLARRICOATS.

Editorial Office:
NEW RUSKIN HOUSE,
LITTLE RUSSELL STREET, LONDON, W.C.1
Telephone: Holborn 7373.

Advertisement Manager: HORACE FREEMAN

Advertising Office:
PARRS ADVERTISING LTD.,
121 KINGSWAY, LONDON, W.C.2
Telephone: Holborn 2494

Honorary Editor: ARTHUR O. MILNE.

VOL. XXI **SEPTEMBER, 1945** **No. 3**

A JOB WELL DONE

AS we sit quietly writing these words in the last days of August, 1945, it seems natural to cast back to this time a year ago when life was far from quiet, when producing this magazine, like many other activities in London, was fraught with hazard and threat of sudden death. Could we then have thought it possible, as the flying bombs droned their way over our heads and the first V2 was still a month ahead, that in a year both the European and Japanese wars would be over and that we should be giving serious thought to renewing our activities on the air ?

Had we forecast in these pages even a fraction of what has actually happened, we should have been strongly criticised for over-optimism and wishful thinking. We do feel, however, that events have justified Council's action in tackling when they did the problems involved in the resumption of transmitting facilities. Far be it to suggest that we had any prophetic gifts in this connection, but it is true to say that the sudden and unexpected end to the war finds us with much of the preliminary work complete and the initiative with a licensing Authority who thoroughly understands and welcomes our point of view.

As this is, so to speak a period of waiting, it may be opportune to review the past years and to note the contribution made by the radio amateur in the achievement of final Victory. The task is not an easy one because, however hard we may have tried to keep abreast with the times, circumstances narrowed our knowledge considerably.

It would be impossible, if not invidious, to select any particular Service as being the one which produced the highlights in what has been described as "this radio war," similarly it would be wrong to attempt to assign credit to particular aspects of the civilian war effort. Suffice it is to say that practically *every* member has made a full contribution of his or her radio knowledge to the service of King and Country. Pride of place, however, cannot be denied in this review to those who volunteered in pre-war days for service in the Royal Naval Volunteer (Wireless) Reserve and the Royal Air Force, Civilian Wireless Reserve (later a part of the R.A.F.V.R.). It is of special interest to record that of the twelve pre-war District Controllers of the C.W.R. no less than eleven were R.S.G.B. nominees all of whom were granted commissions prior to the outbreak of war. One has attained the rank of Group Captain, and the remainder are now either Wing Commanders or Squadron Leaders. It was from the ranks of the original District Controllers that appointments were made which led up to the formation of the Wireless Intelligence Screen (W.I.S.) and the original Emergency Fitting Parties (E.F.P.).

It has already been recorded that the first 50 Civilian Wireless Reservists were on their way to France on the morning war broke out. These men (nearly all R.S.G.B. members) formed the original W.I.S. and later became known as "The Early Birds." "The Second Earlies" followed them overseas a few days later. We hope the day may not be far distant when the full story of W.I.S. can be told. It can but be a glowing tribute to the radio amateurs of this country.

The sterling work achieved by the E.F.P.'s has not yet been recorded in these pages, but no doubt the time will come when we shall learn at first hand how invaluable was the experience brought into the Service by the "hams" who formed the backbone of the parties.

The early days of the war were also busy days for those members who had joined the R.N.V.(W.)R. Pressed into service as Telegraphists at ship and shore stations they quickly took over duties of a highly important nature and like their colleagues in the R.A.F. many quickly jumped up the ladder of promotion and ultimately attained commissioned rank.

Although the War Office had not at any time prior to the war consulted the Society regarding the formation of an Army Wireless Reserve, it soon became apparent that a considerable number of trained operators would be required by the Royal Corps of Signals (now Royal Signals). Radio amateurs proved their worth long before the downfall of France and the evacuation from Dunkirk. How well they carried out their duties will not be known until official records become available. It is a fact, however, that of the 30 odd members who were held prisoner of war in Germany, many were serving with Royal Signals at the time of their capture.

It is convenient and appropriate to refer here to the part played by those members who were P.O.W. in Germany. Possessing specialised knowledge it was natural that upon them should fall the responsibility of devising ways and means for the reception of news and special instructions. Would that we were permitted to tell of the exploits of G6. . . and others like him. Their story will come eventually, but for the moment we must be content with the knowledge that "ham radio" experience helped to save many lives during those gruelling marches last springtime.

The Battle of Britain we now know was won, not on the playing fields of Eton or Harrow, but in the Radio Location stations scattered around the coast line of

England. The men behind the C.H. stations were, in many cases, Society members who had been specially recommended by R.S.G.B. Headquarters, men who prior to the war had shown a marked aptitude for the specialised type of work demanded for the duties involved. How well they did their job history will show. So, too, will posterity pay high tribute to the "hams" of this country who, because of their training, were able to pass out with flying colours from the special schools established to train Radio Mechanics. No one, unless he has had an opportunity of operating or installing R.L. equipment can begin to appreciate its complexities. The fact that hundreds of R.S.G.B. members mastered its intricacies in a matter of weeks, convinced the authorities that the radio amateur was worth cultivating!

The German air attacks also brought a strengthening of our defences. To counter the attacks R.L. was brought to bear and as has recently been recorded it was the efficiency of G.L. equipment that helped to render the attacks much less successful than the enemy had anticipated. Society members (civilian as well as service) not only operated G.L. but many of the earlier equipments were installed by them.

At sea many things were happening. It is well known that Degaussing provided an answer to the magnetic mine, but it is not so well known that radio amateurs were associated with much of the pioneer work in beating the menace.

The part played by Radio Location in overcoming the U Boat attacks and in seeking out and destroying the Nazi convoy raiders will, no doubt, occupy many pages of official history, but it is only right and proper that it should here be recorded that radio amateurs were "in from the birth" of many amazing devices which helped to defeat the enemy at sea. It has been said that during the interrogation of U Boat crews the information volunteered contained statements to the effect that the German naval authorities attributed the loss of the war to be directly due to the fact that

IMPORTANT ANNOUNCEMENT

Regarding the Issue of Radiating Licences to Pre-War Holders of Artificial Aerial Licences

FURTHER to the statement published in the June 1945 issue of this Journal, the Council has pleasure in announcing that the G.P.O. has now agreed to accept applications for radiating licences from those who held an artificial aerial licence at the outbreak of war.

It must be clearly understood that the formality of applying for a radiating licence does not in any way imply that a licence will be issued automatically. Members who held an artificial aerial licence and who wish to apply for a radiating licence are reminded that they will be required to submit proof of their ability to send and receive the Morse Code. In many cases this proof may take the form of a Discharge Leave Certificate carrying testimony that the applicant has served in a recognised Radio Service Trade. A list of trades which may carry exemption from the Morse test appeared in the April 1945 issue. A revised list based on later information will be published as soon as possible.

For the purposes of the present application members are requested to state their Morse qualifications if any. In the case of a Service or an ex-Service member this can best be done by quoting his or her Radio Service Trade. *No documents should be submitted.*

HOW TO APPLY

Those who wish to make application should address a letter in the following terms to :—

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

Dear Sir,—I shall be glad if you will regard this as my formal application for the issue of a licence to permit me to conduct experiments in wireless using a radiating aerial.

The particulars of my former artificial aerial licence, determined at the outbreak of war, were :—

(1) *Name of Licensee*.....

(2) *Address of Licenced Station*.....

(3) *Call Sign* .....

(4) *I shall be glad if I may be permitted to retain this call sign (with the addition of the International prefix) if my application is successful. (This paragraph should be omitted from the letter if the applicant does not wish to retain his or her old call sign.)*

(5) *I wish to claim exemption from the Morse Test on the following grounds*.....

.....

(Here state concisely the grounds for exemption, e.g. Wireless Operator, R.A.F., 1939–45.)

(This paragraph should be omitted from the letter if the applicant cannot produce evidence of his or her Morse qualifications.)

(6) *The address to which all future correspondence should be sent is*.....

Yours faithfully

The purpose of the arrangement set out above is to assist the G.P.O. by giving them as much time as possible for the detailed work involved in preparing for the issue of new licences. For this reason *no questions of any kind should be included with the application.* It must be appreciated that some considerable time may elapse before licences can be issued.

NEW APPLICANTS

Members who have not previously held a transmitting licence are particularly requested not to apply at the moment as such applications will be dealt with in a different manner. An announcement covering such cases will be published later.

Germany had not encouraged " ham " radio. Whatever the true facts may be, there can be no doubt that by building up a pool of skilled and semi-skilled radio men Great Britain was able to develop more quickly such devices as Radio Location than would otherwise have been the case if Amateur Radio had never existed.

The contribution made by radio amateurs to such intriguing problems as " beam-bending " and the development of V.H.F. fighter equipment will, no doubt, be fully described in future issues. For the moment we must be content with the knowledge that Society members were to the forefront in the development and operation of both. Sad to relate, at least two members made the Supreme Sacrifice whilst engaged in experiments associated with beam-bending tactics.

Reference must be made to the outstanding work done by Society members who were given the difficult, and at times thankless, task of instructing raw recruits (many of whom had no basic knowledge of the subject) in the technique associated with radio and allied subjects. How well they performed their duties is known only to those closely associated with Radio Schools and the like, but it is certain that the keenness and enthusiasm of the " ham " instructor left its mark in all branches of the Services.

It has been recorded on many occasions that we, as a Nation, owe more to the Merchant Navy than to any other section of the community. Having some slight knowledge of the part played by the M.N. during the war, we have no reason to doubt the accuracy of the statement. The M.N., however, depends more than any other Service upon its Radio Officers and it is in that connection that we wish to pay tribute. Society members may only represent a very small percentage of the total M.N. Radio Branch strength, but every man Jack among them has lived up to the high traditions of the Service. Some have been torpedoed more than once, some have been held prisoner by the enemy. All have had their full share in the trials of war. We salute them for the grand job of work they have done and are still doing.

Finally, what about the " civie." What has *he* done to compare favourably with his brother in arms. Frankly we do not know, but we can guess that he has had his finger in nearly every one of the nice little radio pies that were prepared for the benefit of Hitler's Germany and Hirohito's Japan.

We *do* know that the Admiralty Signals Establishment, the Telecommunications Research Establishment, and the Radio Research and Development Establishment have all been better served than they would have been if the Society had not been able to furnish the names of a large number of its members for " special duties." The Ministries, too, have benefited from " ham experience " whilst many engineering concerns throughout the country appreciate (if they did not before) the worth to the community of Amateur Radio. The story of the contribution made to the war effort by the " tweeds and sports coat " fraternity will no doubt be told as the months pass. It is enough for the present to record that their efforts during six years of war have done more than 100 years of peace to show that Amateur Radio is an asset to the country.

Our last word must be in praise of those who, at the end of hard and difficult days in factory or office, found energy and enthusiasm to enable them to undertake strenuous and sometimes irksome tasks either in their home or at local Pre-Service training establishments. Many have given of their best for the past six years devoting many hours each week to tasks which became more difficult as time went on yet never flinching in their duty, well knowing that they had been called to render a service which only they, with their special knowledge, could perform. For them there are no chevrons and no medals, but they have the satisfaction of knowing that a job has been well done.

Yes, the job *has* been well done and as we look back over the dark years of war let us give thanks to Almighty God for a Great and Glorious Victory, remembering in our prayers all those who went forth but did not return. May their sacrifice not have been in vain.

J.C.

SPLITTING THE ATOM

THE following account, taken from the August, 1938, issue of this journal, of a visit paid to the Cavendish Laboratory, Cambridge, by members of the Society attending the P.D.M. held in that town on July 10, 1938, is of topical interest at the present moment.

" Due to the kindness of Dr. W. B. Lewis, we were able to inspect and have explained, the larger of the only two Cyclotrons in the world, whose job it is to split the atom.

" Part of the equipment here is a 100 kW transmitter operating on 11·5 Mc/s. This transmitter supplies radio-frequency alternating potential to two coplanar semi-circular plates situated in the Cyclotron proper, which is itself located between the poles of a mighty electromagnet. Such is the power of this magnet that we saw pieces of copper and aluminium floating about like feathers between its poles, while we were advised to leave our watches outside the building ! Electronic emission from a suitably placed filament in the Cyclotron liberates protons from traces of hydrogen within the apparatus, and these at once accelerate towards that one of the semi-circular plates which is at that instant at a negative potential of 100,000 volts, but before they can impact upon it, the potential, which is changing at the radio frequency of the transmitter, reverses and the protons receive a further acceleration towards the other plate, but again the potential reverses before impact. This process continues at radio frequency and combined with the influence of the magnetic field causes deflection of the protons into a circular track and under the influence of their constantly increasing velocity they travel in ever-increasing circles until reaching a suitable-placed deflecting plate they escape from the radio-frequency field and impinge upon a suitable target. So enormous is their energy level by this time that the atoms of the target are literally smashed to pieces, the effect being somewhat analogous to the impact of a shell on a shingle beach !

" The target is made of the element whose atomic structure is to be studied, and the changes taking place are deduced from the tracks which are left as the rapidly moving particles knocked from the target pass through a cloud of water vapour. These tracks can be made visible on a photographic plate."

OUR FRONT COVER

The cover illustration records two notable milestones in valve development as typified by the Mullard EF39 and EF50. The former is the highly efficient R.F. pentode so widely known and used just prior to the war; the latter embodies the new technique of the " pinch-less " all-glass construction which opens up new possibilities in radio design.

A POST-WAR TRANSMITTER FREQUENCY CONTROL UNIT

By J. W. Mathews (G6LL)

FOR some time prior to the war the ether was becoming more and more crowded as a greater number of amateurs became licensed. This led inevitably to interference (QRM), with the result that many were forced to give considerable thought to the question of reducing this factor to a minimum.

Reducing Interference

Quite obviously if transmission time were to be reduced, it would have the effect of reducing the number of signals on the air at a given moment. If, in addition, contacting stations could use the same frequency, quite a saving of " space " in the limited amateur bands could be effected. The answers to these simple problems are, of course, the use of break-in and the employment of a master oscillator. For the 'phone station operator a system of controlled carrier would replace break-in. In addition, a simple system of receiver muting would be necessary if more than a few watts were used on the transmitter.

The first problem then is to produce an efficient and stable driver unit so that the transmitter frequency may be accurately controlled without fear of its drifting, and which will produce a note equal to that of a crystal oscillator

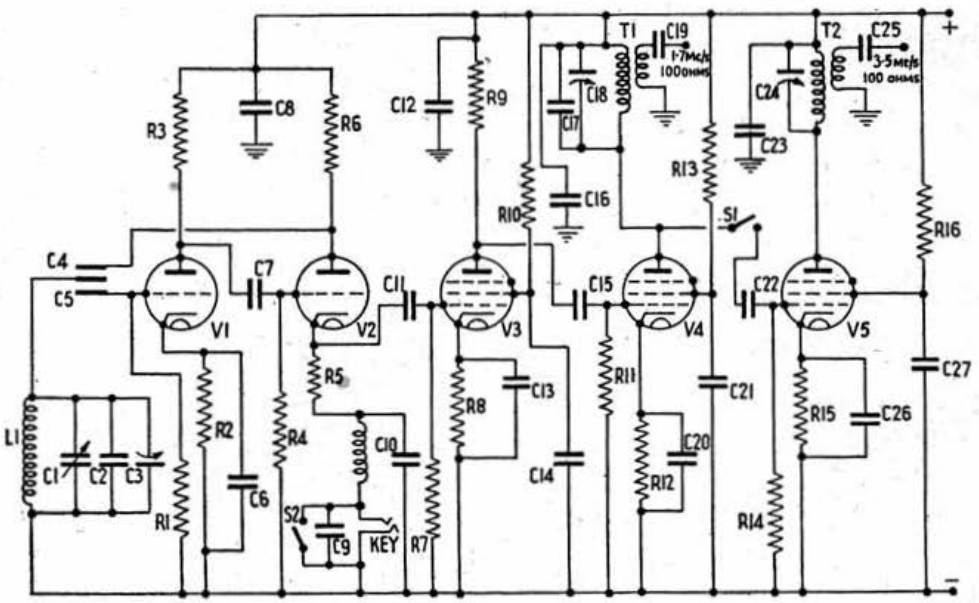
One of the many advantages of this form of drive is that it can be located on the receiver table so that small adjustments of frequency may easily be made should, for example, interference " come up " during transmission. The transmitter itself can be connected through a length of concentric cable to the driver unit.

Since the purpose of this article is merely to outline the construction of a suitable oscillator, no reference will be made to the desirability of specially designing the frequency doublers and power amplifier stages of the transmitter itself. The unit itself will be found to be quite satisfactory as a device to drive any existing transmitter, and should be used as a replacement for the usual crystal oscillator stage.

Choice of Circuit

It will be seen from Fig. 1 that the circuit employs the well-known Franklin Oscillator, followed by a buffer stage. The output from this stage is fed into the grid of a 6V6, in the anode circuit of which is the tuned secondary winding of a transformer. This is designed to give a fairly flat response over the 1·7–2 Mc/s band, which is the frequency range of the oscillator. In practice a small variation of output volts can be measured, but as it is only a matter of a few parts in a hundred this is unimportant. The primary winding of this transformer is designed to work through a condenser of suitable capacity straight into a standard 100 ohms impedance concentric cable. A second stage, which can be brought into use by switching the drive to it from the 1·7 Mc/s output stage, is provided, and this is arranged to give an output on the 3·5 Mc/s band into 100 ohms as before. The output for either stage can then be taken to the main transmitter and amplified or doubled as desired.

The reason for the choice of a Franklin Oscillator, as opposed to, say, the popular E.C.O., is largely because of its simplicity and extreme stability,



Circuit Diagram of Frequency Control Unit.

C1, 100$\mu\mu$F variable.
C2, 150 $\mu\mu$F fixed.
C3, 18, 24, 3-30 $\mu\mu$F trimmer.
C4, 5, see text (about 2 $\mu\mu$F).
C6, 8, 9, 10, 12, 13, 14, 16, 20, 21, 23, 26, 27, ·01 μF.
C7, 150 $\mu\mu$F.
C11, 15, 22, ·001 μF.
C17, 30 $\mu\mu$F.
C19, 340 $\mu\mu$F.
C25, 170 $\mu\mu$F.
R1, 4, 9, 25K. ohms.
R2, 5, 8, 750. ,,
R3, 6, 10, 10K. ,,
R7, 50K. ,,
R11, 14, 20K. ,,
R12, 13, 15, 16, 1K. ohms.
V1, 2, 6C5.
V3, 6D6.
V4, 5, 6V6.
L1, see text.
T1, 2, see text.
S1, see text.
S2, toggle on/off switch.

although this should not be read as implying that the E.C.O. is not capable of producing stable oscillations. However, it was felt that of the two circuits the Franklin gave the better chance and so it was adopted.

It will be noticed that in this circuit two triodes are used. These need not be separate valves as used in the unit described, in fact, they could be exchanged for a 6N7 or similar double triode. The values of anode resistor and grid leaks or bias resistors are not critical and can be varied slightly to suit the characteristics of the valves or valve in use. The only critical components are the coupling condensers to the tuned circuit which are of very small capacity—usually

Front view of the completed Transmitter Frequency Control Unit.

between 1 and 3 μμF. This value is best found by experiment, and should be the smallest capacity that can be used to maintain steady oscillation over the frequency range desired.

It should, perhaps, be pointed out here that the Franklin oscillator is not efficient on high frequencies and attempts to produce results on even 7 Mc/s comparable with those produced on 3·5 Mc/s will be found very difficult. It is in this respect that the E.C.O. is more versatile. However, since the chief object is to produce a really stable oscillator, the use of any fundamental frequencies in excess of, say, the 3·5 Mc/s band are likely to endanger the final result. It is for this reason that the oscillator is operated in the 1·7 Mc/s band where changes of frequency due to drift or heating are likely to be very small.

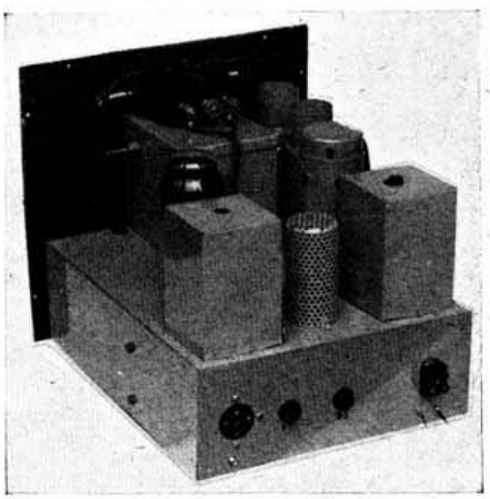
Tuned Circuit

The tuned circuit should be carefully constructed of the best materials available, and a good slow motion dial used. If a dial of the Muirhead type is available this should be used. The coil in the unit described is wound with 53 turns of 28 s.w.g. D.C.C. on a 1¼ in. former, well waxed. After winding, the whole coil is thoroughly impregnated with wax again. This operation lowers the *Q* slightly but is unimportant in this type of oscillator. The tuning condenser is a ·0001μF Eddystone type. If possible this should be of the older fashioned double bearing variety since the modern products have only one, but in any case a good quality well constructed component should be used. In parallel with this are first, a 150 μμF fixed condenser of good quality, preferably of the ceramic type, and second, a 3-30 μμF trimmer, preferably air dielectric. The whole tuning unit is screened in a suitable box of 16 s.w.g. copper with the coupling condensers mounted in the side so that the two leads may be brought out to the grid and anode terminals of the valves in use. It is well worth while spending some time and trouble on this part of the unit.

Buffer Stage

The following buffer stage needs little description as it is merely an ordinary screen-grid type valve of the 6D6 class and serves the purpose of isolating completely the oscillator from the rest of the circuit. A small gain may also be obtained in the stage, although this is not essential. The various values of associated components quoted apply to the type of valve used in the unit described. If any other type of valve is used they may need some slight modification although this is not necessarily so since they are not in any way critical.

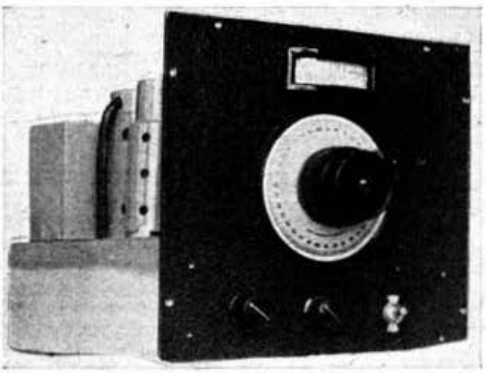
The output from the buffer is taken to the grid of the 6V6 which is used as the output stage for 1·7 Mc/s as previously stated. The anode circuit of this stage is arranged so that it can be switched to the grid of the other 6V6 valve which acts as a frequency doubler and supplies energy at 3·5 Mc/s. The output transformers in each case are arranged to represent about 4,000 ohms impedance in the anode circuits, have a substantially flat response over the band in question and give an output into a 100 ohms line. They are simple to construct and consist, in the case of the 1·7 Mc/s band, of 88 turns of 34 s.w.g. D.C.C. on a 1¼in. former, tuned by a 3–30 μμF trimmer in parallel with a fixed capacity of 30 μμF. The output winding is 40 turns of the same wire with a 340 μμF condenser in series. For 3·5 Mc/s half the number of turns are used and smaller capacities, the parallel trimmer being 3–30 μμF, and the series capacity in the output 170 μμF. It is important to note that the coupling of the anode coil should be very tight to the primary or low impedance winding, but it should be sufficient to wind them adjacently on the same former. Both transformers should be screened in a metal can. It is preferable to use metal 6V6's or alternatively a metal can round a glass or GT type. It should be remem-



Rear view of Frequency Control Unit.
Screened 1.7 Mc/s. output transformer on left with unscreened 6V6 valve behind. Screened 3.5 Mc/s. output transformer on right with screened 6D6 buffer valve behind. Screened 6V6 in centre at front. The 6C5 oscillator valves are to the right of the screening box. Power supply socket is to the left at the front, followed by the output jacks and the key connector.

bered that sufficient ventilation should be provided in this case.

The component values in these output circuits have been chosen so that the standing current of the two 6V6's is as low as possible commensurate with the small amount of grid drive available. It should be realised that these stages have to be run almost Class A in view of this, and with consequent low efficiency. With an anode voltage of 230 the 6V6's take a standing current of 14 mA when undriven. When driven, owing to the small amount of RF available, there is hardly any change, but sufficient RF is produced to give about 100 volts at the grid of a following stage on either 1·7 or 3·5 Mc/s, provided a suitable transformer is used. In practice it was found that a transformer identical with the one in the output stage of the driver unit was quite adequate and ample drive for a 6L6 was obtained by this means.



Side view of the Frequency Control Unit.

Keying

Keying is achieved by opening the cathode circuit of one of the oscillator valves. This provides, without additional filters, an almost clickless method of keying and if it is desired or found desirable to reduce the residual click, a suitable filter circuit may be included. Details of this circuit can be found in Chapter 10 of *The Amateur Radio Handbook*.

This system enables the full advantages of break-in to be used, as having set the frequency of the oscillator (preferably to that of the station being worked), no radiation of any sort can take place until the key is depressed. The signals produced are clear-cut and with no trace of chirp whatever. The addition of a click filter may tend to produce tails on the Morse characters unless care is taken and its use is not recommended unless it is considered really necessary.

Power Supply

No built-in power pack is recommended as this will increase the bulk of the unit apart from producing more heat, which is always one of the main causes of drift. A separate power pack, therefore, should be used which should provide about 230 volts at 60 mA and L.T. to suit the valves used. Due attention should be paid to the smoothing and a double choke filter circuit, with a bleeder taking about 15 mA, provided. No other special stabilising devices need be used, although they could be added as a refinement. In the same way the use of negative temperature coefficient condensers in the oscillator circuit, to compensate for warming-up drift, would be a useful addition. It was found in practice that from switching on, a drift of up to about 600 cycles was to be expected in the first half hour, at least 75 per cent. of which took place in the first ten minutes. After about half an hour a drift of about 300 cycles was observed during the next hour, after which the unit appeared to settle down completely. These drift figures sound rather alarming but in practice they are not so, since if the unit is switched on for 10 or 15 minutes before its anticipated use, it will have warmed sufficiently for the greater part of the drift to have taken place. Undoubtedly compensation for this factor would be an advantage and when components for it are available they will be fitted to the original model.

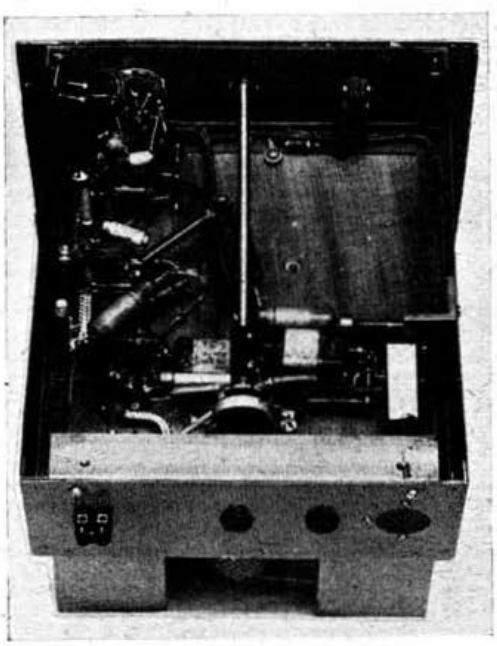
Metering

It will be observed from the photographs that although a meter is fitted to the front panel of the unit it is not shown in the circuit diagram. This omission was made in order to simplify the diagram and because it is a refinement that is not strictly necessary. The meter is a multi-scale instrument and a switch mounted on the panel will cause it to read the anode currents of all the valves as well as the H.T. voltage. The scale is illuminated from the rear and serves as a warning light when the unit is switched on. Also on the front panel, in addition to the main tuning dial, are a toggle switch, which serves to short out the keying circuit, and a knob controlling a small rotary switch for the selection of output stages. The entire unit is screened in a black crackled box 10½ in. × 9½ in. × 9½ in. The chassis upon which all components are mounted is made up from sheet and angle brass $\frac{1}{16}$ in. thick. The values of all components used are specified in the caption beneath the circuit diagram and the general layout is shown in the photographs.

Conclusions

The object of the foregoing description is to indicate the lines upon which a suitable master oscillator may be constructed. The actual design can, of course, be varied to suit individual tastes and components avail-

(*continued on page* 47)



Plan view showing disposition of components.

"THE SCIENTIFIC PRINCIPLES OF RADIO-LOCATION"

By Sir Edward Appleton, K.C.B., M.A., D.Sc., LL.D., F.R.S. (Secretary of the Department of Scientific and Industrial Research)*

RADIOLOCATION is widely recognised as one of the outstanding technical developments of the present war. Its later manifold derivatives are still closely guarded secrets, but it is now possible, to reveal something of its origin and to disclose the basic technique which it involves. *Radiolocation may be defined as the process of locating the position of an object in space by radio waves without any active co-operation on the part of that object. In other words, radiolocation enables us to find the position of a body, such as an aircraft, ship, iceberg, or ionised cloud without going up to that body to find out for ourselves. The only co-operation required on the part of the detected body is of a passive character in that it is required to reflect radio waves.* Fortunately, all solid and liquid bodies, as has long been known, do this. Since, moreover, radio waves are, in general, uninfluenced by darkness, clouds or fog, radiolocation can play the war-time role of an infallible sentinel for the detection of enemy air-borne or sea-borne units.

The fundamental technique of radiolocation is not difficult to grasp. To detect any reflecting object it is necessary first to flood that object with radio waves, in much the same manner as a motor-car headlamp floods a road-sign at night. An aircraft, for example, reflects radio waves when it traverses the radio beam end, if ground detectors are used to pick up the reflected beam from the aircraft, it is possible to determine the *direction* of arrival of the reflected waves and thus the direction of the radio-located object with respect to the ground station. The determination of the direction of a radio source is, of course, a very old technique but, alone, it cannot give us the true position of that source. In radiolocation, however, there is added, most essentially, the determination of the actual *distance* away along that direction. Briefly, then, we can say that radiolocation enables us to specify the position of a radio-illuminated target because it tells us, first, in which direction the target lies, and, second, how far away along that direction it is situated.

Scientific Radiolocation

The method of determining the distance of a radio-located object is one of the most interesting features of radiolocation for it is a product of pure science, and involves the use of a technique developed 20 years ago with no thought of its present widespread practical application. The basis of the method is that the distance away of the located object is found by timing the journey of the radio waves to the reflecting object and back, just as seamen sometimes time an echo of a ship's whistle to determine roughly their distance from the face of a cliff. But the time scales of the two examples are vastly different. Radio waves travel with a speed of 186,000 miles per second, which is about a million times the speed of sound. Such waves, therefore, travel to and from an object 100 miles away in about one thousandth of a second, and it is the accurate and speedy measurement of time-intervals of this order which is the basic feature of radio measurement of distance.

The first experiment on the measurement of distance by radio reflections were carried out in 1924 by two Cambridge physicists, E. V. Appleton and M. A. F. Barnett, in their experimental proof of the existence of the Heaviside Layer and the measurement of its distance above ground. In these experiments, which were carried out under the auspices of the Radio Research Board of the Department of Scientific and Industrial Research, the timing of the radio waves to the reflecting Heaviside Layer and back was achieved by changing the frequency of the waves by a known amount. Nowadays we should call their method that of frequency-modulation. It is no exaggeration, therefore, to say that the first object to be radio-located was the Heaviside Layer. In these early experiments it is noteworthy that B.B.C. stations were used. Shortly after Appleton and Barnett had finished their work, two American scientists, G. Brett and M. A. Tuve, working in Washington, succeeded in measuring the height of the Heaviside Layer using amplitude modulation of the radio waves. For this purpose they devised a radio transmitter which sent out very short pulses, or jabs, of radio energy and recorded the time interval between the emission of a pulse and the reception of its echo on a high-speed galvanometer. The pulse method because of its simplicity, has been widely used later in the measurement of the distance of artificial targets such as aircraft and ships.

In the earlier scientific experiments rather elaborate photographic technique was used for the measurement of echo-delay times. What has later turned out to be a particularly useful simplification in the technique of the pulse-method was introduced in 1931 by E. V. Appleton and G. Builder in the use of the cathode-ray oscillograph, with an associated uniform time-scale, by which the presence of a reflecting object and the indication of its distance away could be continuously portrayed to the eye without the need of developing photographs. By 1932, therefore, the technique of measuring the distance of atmospheric reflecting surfaces, such as ionised layers and ionised clouds, by means of radio pulses and cathode-ray oscillograph display was becoming standard research practice in this country.

Practical Radiolocation

But the application of these methods of the radio-detection of such relatively small objects as distant aircraft and ships by no means followed automatically. In 1932, however, the engineers of the British Post Office reported what is considered to be the first recorded instance of the detection of the presence of aircraft by reflected short radio waves. In the following year, engineers of the American Bell Telephone Laboratories published an account of experiments in which it was shown that aircraft reflected sufficiently appreciable quantities of radio energy to make it possible to detect their presence even when they were otherwise invisible. By 1933 we may, therefore, say that the principles of scientific radiolocation were well known as applied to the radiolocation of naturally occurring reflecting surfaces and that it was also known that aircraft were capable of detection at short distances by the amount of radio energy reflected by them. It remained to develop the military application of the position-finding of artificial objects by fusing

(*continued on page* 47)

* *Abstract of the 36th Kelvin Lecture delivered on 26th April, 1945, at the Institution of Electrical Engineers.*

A FRESHMAN'S GUIDE TO AMATEUR RADIO

By Arthur O. Milne (G2MI)*

PART III—MAKING A CONTACT

In which the business of "Working a Station" is discussed. International abbreviations and the various "Q" signals and report codes are also considered.

HAVING touched upon the various bands and their vagaries, it is perhaps opportune now to describe how contacts between amateur stations were effected, how the language difficulty was minimised and what we used to talk about.

Calling Up Procedure

Contact could be initiated either by sending a "test" call or by listening for and answering a "test" or "CQ" call from someone else.

"CQ" is the international code signal for a general call, *i.e.* "calling all stations," but the British Post Office in its wisdom has always banned the making of a general call by an experimental station, hence the British amateur has had to use the word "test" instead. The legal mind will probably sense that this comes to much the same thing in the end and it certainly has the advantage of proclaiming that the caller is British, even before he sends his call sign!

Abbreviations

Faced as he is with the highly congested condition of the amateur bands as well as fading, atmospherics and the like, the amateur has in course of time built up a vocabulary of words and phrases which serve the double purpose of shortening the length of transmissions and overcoming the language barrier. Together with the international "Q" code this "Radiese," as it is sometimes called, will carry him through a contact with anyone on earth in an orderly and friendly manner, leaving both parties in a pleased and satisfied frame of mind.

A list of the more usual amateur abbreviations can be found on page 283 of *The Amateur Radio Handbook*, but two examples are quoted here to show why they have been adopted. The French word "de" appears in Morse code as —··/·· whereas the equivalent English word "from" is ···—·/·—·/—————/—— Likewise the Spanish word "es" is ·/··· whereas the English word "and" is ·—/—·/—··· The reason for the general adoption of the two foreign words is obvious.

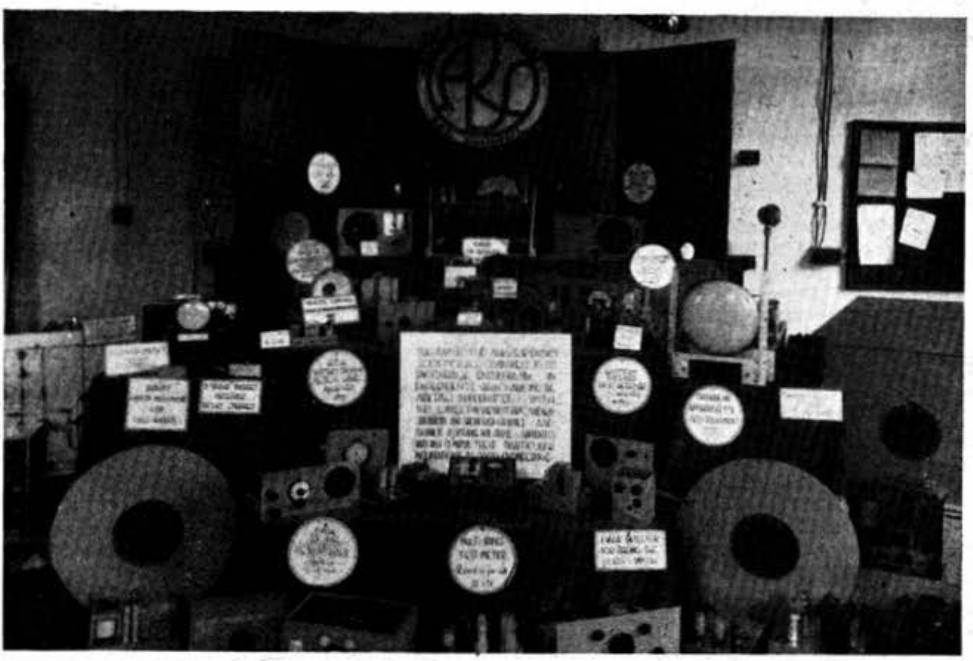
Making Contact

However, all this time our Freshman Amateur is waiting to make a contact so let us see that he does it in the correct manner.

We will assume that he intends to make a "test" call. He will first decide what band he is going to use and will listen around his own crystal frequency (or look for a reasonably clear spot if he uses a variable oscillator) in order to keep clear of interference as far as possible. He will then switch on his transmitter, which has already been lined-up on a dummy aerial load, and send a call such as the following:—

"Test Test Test de G7AA G7AA G7AA" repeating it several times and then finishing with "AR K." (Meaning "end of message—please send.") He then listens on the band near his own frequency probably starting at the edge and slowly tuning towards the centre of the band. If things go well, he will hear his

* 29 Kechill Gardens, Hayes, Bromley, Kent.



A particularly good example of the work which can be done by a well-organised radio club. This is apparatus and equipment made by young trainees—members of the R.A.F. Amateur Radio Society, Cranwell, Lincs. Prior to the war licenced members of the club operated to a schedule drawn up by W/O (now W/C) W. E. Dunn, G2LR.

own call-sign being repeated a number of times, interspersed with that of the answering station, followed by " AR K " or if the other man is able to work break-in, he will invite G7AA at intervals to " BK." Thus :—

" G7AA G7AA G7AA G7AA de G7BB G7BB BK G7AA G7AA de G7BB BK," etc.

If our imaginary friend G7AA is equipped to work " Break-in," as we hope he will be, he will without delay start to call G7BB, who will hear him during the spaces of his own signals and the contact will be established.

Before the war, very few amateurs used the " break-in " method, with the result that most contacts were established by means of a series of one-way messages sent from one participant to the other, each station having to wait until the other signified that he was changing-over to listen. The disadvantage of this system is that contact may be lost due to interference or fading and the parties may even call one another simultaneously, finally giving up the attempt to maintain the contact (QSO). " Break-in " enables the listening station immediately to interrupt the transmitting station, in order (*a*) to warn him of interference, (*b*) to ask him to wait, or (*c*) to change frequency.

Choice of which method to adopt in making a contact, *i.e.* calling test or answering a test or CQ call, must rest with the individual, but certain tendencies were evident before the war, in that amateurs in countries where the number of transmitters was large usually adopted the second method. The isolated station, especially if he happened to be in some out-of-the-way part of the world, could always take his choice of replies to a test or CQ call.

" Ham " Language and the " Q " Code

Some mention has already been made of the means which the operators of amateur stations throughout the world employ to make themselves understood.

" Radiese " is a queer polyglot. Although made up mostly of English or Americanised English words and phrases the fact remains that everyone from China to Peru understands and uses it on the air. Some misguided souls even use it in correspondence when ordinary plain English would be quite in order. On more than one occasion communications from British amateurs addressed to this Journal have been written in " Ham " language to the great distress of our editorial staff !

In addition to the above, wide use was made of the international " Q " code, some of the Q signals having their meaning modified to suit amateur requirements. A full list of these appears in the Handbook on page 279. With war-time developments in mind, and having regard to the multitude of new " Q " codes which have been used by the Armed Forces, it may be that the time has come to revise the " Q " signals used by amateurs so that they can be adapted more closely to present-day requirements.

Whether the very conservative amateur mind will be willing to renounce the old and put on the new is another matter which only time can show.

The RST System

In a scientific hobby such as ours, it is obviously necessary to have a universal system for the quick exchange of technical information during actual contact. For some time this was effected by the use of a series of signals from R1 to R9 indicating " too weak to read " up to " loud and unbearable on headphones " with a supplementary qualification QSA1 to QSA5 which gave an indication of the degree of readability. Later when the quality of the signal was accepted as one of the major considerations, a further series T1 to T9 was brought into use which graded the quality of a signal from raw AC (T1) to pure crystal control (T9). Although this arrangement served its purpose quite well, it was rather cumbersome and especially during a contest, when fast snappy operating was essential, it wasted quite a lot of time, and so came into being the " RST " system, invented by Arthur Braaten, W2BSR. This system has the advantage that Readability, Strength and Tone always appear in the same order and cut to bare essentials ; 579 tells an amateur all he needs to know about his signals !

To sum up, it will be appreciated that by the judicious use of the means available, one amateur could conduct quite lengthy communication with another of whose language he was completely ignorant and both could terminate the contact with a sense of satisfaction and achievement.

How It Worked in Practice

Just to give an example of the type of thing we mean, here is a typical amateur message together with its meaning in plain English :—

" *G7AA de PY9AA R OK MNI TNX. UR SIGS 549 ES STDI. ERE QRA RIO. TX COFDPA 100 WATTS PSE UR INPT ES QRA ? SURE QSL ES PSE FOTO FR FOTO. PSE QSL. NW QRU 73 ES CUL G7AA de PY9AA AR K.*"

Here is a translation of the message as it is understood by the British station :—

" *British 7AA from Brazilian 9AA. Received OK, many thanks. Your signals Readability 5, Strength 4, Tone 9 and steady. Here my location is in Rio. Transmitter is crystal oscillator—frequency doubler—power amplifier with an input of 100 watts. What is the input to your transmitter ? and your location ? I will send you a confirmatory post card for certain and would like to exchange a photograph of my station for one of yours. Please also send me a card. Now I have nothing further for you. Kindest regards and I hope to see you later on the air. British 7AA from Brazilian 9AA. End of message please transmit.*"

This message, typical of many thousands which have been exchanged between amateur stations, shows the value of this Morse code " shorthand " and incidentally brings us to the subject of call signs and QSL cards which will be dealt with in Part IV.

Communications

A final word concerning what we used to talk about. Well, tastes differ, no two people are alike and even radio amateurs are no exception. Naturally the limitations imposed by differences in language often made a comprehensive exchange of ideas very difficult. Even so, many lasting friendships have been made through contacts over the air and many of us maintained regular schedules with our friends all over the world. What did we talk about ? Profanity, Politics and Advertising were barred ; technical subjects predominated but almost every subject under the sun has at sometime or other winged its way across the wide spaces of the earth. Some were interested mainly in multiplying the number of contacts they could make for their own sake. Others kept to a regular series of schedules with certain stations, whilst some were content to " ragchew," *i.e.* just to be friendly, helpful and co-operative, taking pleasure in human contact with fellow enthusiasts in other parts of the world and in spreading that goodwill and fellowship—commonly known as the " Ham spirit."

One man might use his transmitter purely as a means for testing his technical ideas, another would be interested primarily in operating and communication. There was room for all.

(*continued on page* 47)

ELECTRONIC KEYING WITHOUT A VALVE

By W. N. Craig, B.Sc. (GM6JJ).

SOME months ago, the author decided that it would be good preparation for the happier days ahead if he acquired and became proficient on a bug key. This was duly done. It soon became apparent, however, that the sending of dashes at high speeds was as laborious as the sending of dots used to be at lower speeds. Electronic keying seemed to offer a solution.

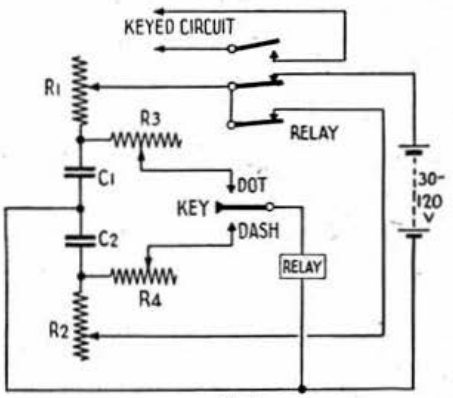


Fig. 1.
Electronic Keying Circuit devised by the Author.
R1, R2, R3, R4 20,000 ohm potentiometers.
C1 2μF.
C2 4μF.

Preliminary Tests

A number of admirable articles on this subject have appeared from time to time in *QST* and *Radio*, and as an introduction to the problem, the simplest of these electronic keys, that described by W9YDA in *QST* for July, 1944, was constructed. Briefly, the device consists of a valve having a sensitive relay in the anode circuit. The formation of dots and dashes is effected by switching into the grid circuit a condenser charged to a potential sufficient to reduce the anode current to a negligible value, thus causing the relay to open. This grid bias is removed over a time interval corresponding to a dot or a dash by discharging the condenser through a resistance of appropriate value. Anode current rises, and the relay closes again. One set of contacts on the relay when closed connects the condenser through a resistance to a battery. The battery is disconnected when the relay is open. The duration of the space between dots and dashes is determined by the time taken to charge the condenser through the resistance. Perfect timing of dots, dashes and spaces is achieved by adjusting the values of the series charging resistance and the parallel discharging resistances. The results obtained from this keyer were all that the designer claimed.

A New Development

There the matter rested until some "bright spark" suggested dispensing with the valve and operating the relay directly from the condenser. Thus arose the germ of the automatic keying circuit shown in Fig. 1.

The basic circuit shown in Fig. 2 is unsatisfactory in operation because the first dot or the first dash of a series is longer than the others. By altering the values of R1, R2 and R3 it is possible to obtain uniform dots or uniform dashes, but not both simultaneously. This led to the use of two condensers, one for dots and the other for dashes, but added the complication that the dash condenser had to be disconnected from the circuit during the formation of dots, and *vice versa*. This was effected by means of one pair of relay contacts.

Referring to Fig. 1, with the key in the neutral position, condensers C1 and C2 are charged through the resistances R1 and R2 respectively. When the key is moved to the dot position, C1 discharges through the relay which is held closed for a period of time determined by the resistance of the relay and the value of R3. Closing the relay disconnects the battery from C1, isolates the dash condenser C2 and completes the keyed circuit. When the voltage across C1 has fallen to a certain value, the relay opens again, opening the keyed circuit and reconnecting the battery to C1 which recharges through R1. After an interval of time determined by the value of R1, the voltage across C1 becomes sufficient to close the relay once more. This cycle of operations is repeated as long as the key is held in the dot position.

Dash formation is accomplished in the same way, but in this case, C2, R2 and R4 form the operating circuit.

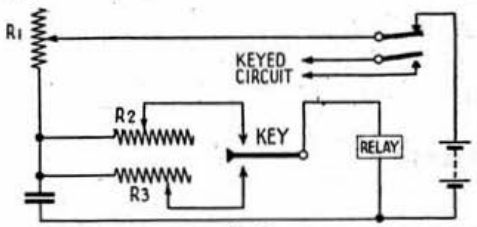


Fig. 2.
Basic Circuit of Electronic Keying Circuit.

The space between dots is varied by adjusting R1, and that between dashes by altering R2. R3 and R4 respectively control the length of dots and dashes. By careful adjustment of these four controls, really good Morse from about 15 to over 30 words per minute is possible.

The relay shown in Fig. 1 has three poles, two normally closed and one normally open. The relay actually used during the experimental work was a 5,000 ohm double-pole change-over type made by *Londex, Ltd.*

Satisfactory operation is obtained with from 30 to 120 volts. The overall keying speed is affected by the voltage. If a supply other than battery is used it should have good regulation, otherwise long first dot and dash trouble will be experienced due to the condensers charging to a higher value between characters than between the dots and dashes of a train.

General

A normal mechanical key can be used with this keyer provided that the dot and dash contacts are insulated from one another, and the dot contact is adjusted to make continuously in the dot position. Alternatively, the old "sideswiper" can be brought into its own again, but in this case, too, the dot and dash contacts must be mutually insulated.

Well, there is the electronic key without a valve. What about one without a relay?

References

Beecher, "Electronic Keying, *QST*, April, 1940.
Grammer, "An Inexpensive Electronic Key," *QST*, May, 1940.
Gunkle, "A Versatile Electronic Key," *Radio*, April, 1941.
"New Ideas on Semi-Automatic Keyers, *QST*, March, 1942.

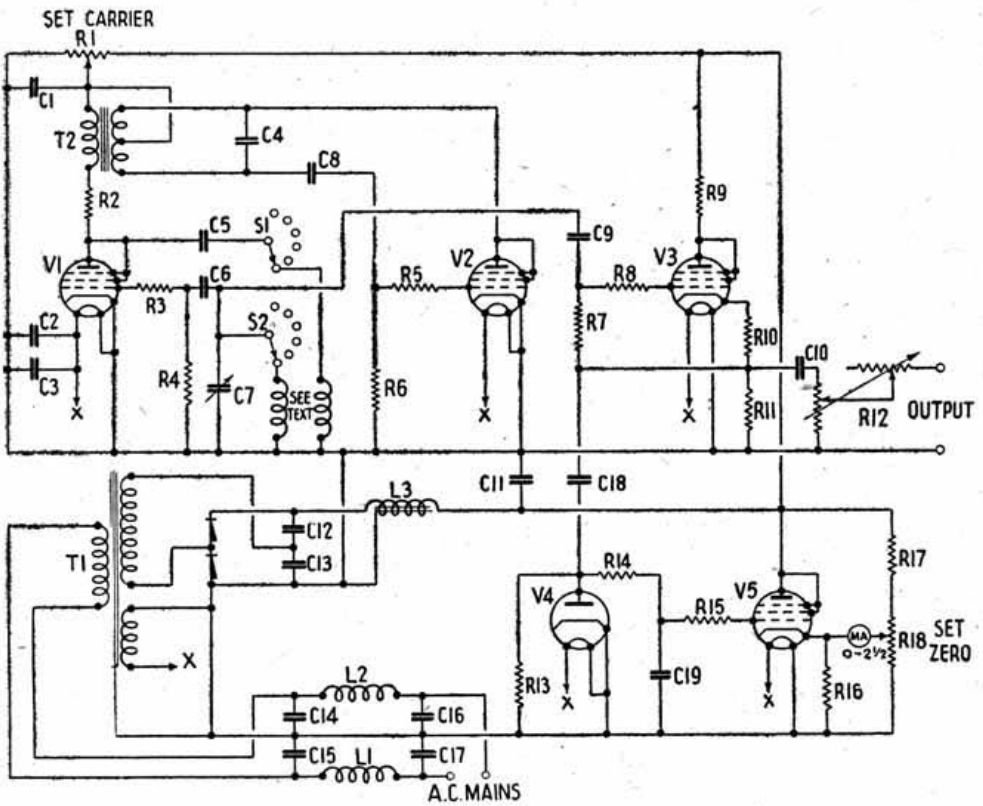
COMBINED SIGNAL GENERATOR AND VALVE VOLTMETER

By B. HENTSCH (BRS5514).

IN considering the design of the signal generator to be described, certain main requirements had to be satisfied; these were frequency stability, the avoidance of frequency pulling into the external load, low constant output impedance, simplicity of operation, reasonable cost compatible with good performance, compactness and all controls brought out on the front panel. The equipment described covers these points reasonably well. The circuit consists of an R.F. oscillator (V1), modulator (V2), cathode follower output (V3), diode rectifier (V4), D.C. amplifier (V5). V4 and V5 comprise a monitoring valve voltmeter.

R.F. Oscillator

The R.F. oscillator (a triode-strapped R.F. pentode) is modulated by a second R.F. pentode, also strapped as a triode. In order to avoid frequency pulling into an external load, a buffer stage after the R.F. oscillator is necessary. For this purpose a cathode follower was chosen as being most suitable owing to the comparatively high input and low output impedances obtainable. Modulation of this stage was attempted but the several methods tested gave poor waveforms, as a result the original method of anode modulating the R.F. valve proved to be the most satisfactory. As the H.T. control (R1) is common to both oscillator and modulator the percentage modulation is approximately constant at any setting of this control. It was noted, however, that any reasonable adjustment of this control did not greatly affect R.F. calibration although the modulation frequency was altered slightly. This is not very important because the carrier can always be set to the same pre-determined level on the output



CIRCUIT DIAGRAM OF SIGNAL GENERATOR AND VALVE VOLTMETER.

C.1	1 μF	350 v. working.
C.2	100 pF	" "
C.3, 10.	·01 μF	" "
C.4	·25 μF	" "
C.5	·004 μF	" "
C.6, 9	50 pF	" "
C.7	·0005 μF	Tuning Condenser.
C.8, 18	·004 μF	350 v. working.
C.11	4 μF	" "
C.12, 13	2 μF	" "
C.14, 15, 16	·005 μF	" "
C.19	·006 μF	" "
T.2	1– Audio Transformer. Centre Tapped. Primary Inductance ·2 H.	
S.1, S.2	Ganged Switch 6-way, 2 Bank, Yaxley pattern.	

R.1	100,000 ohms	Potentiometer. Wire wound.
R.2, 9	100 ohms	½ watt.
R.3, 5, 8, 15	1,000 "	" "
R.4	60,000 "	" "
R.6	1 megohm	" "
R.7, 14	5 "	" "
R.10	150 ohms	" "
R.11	5,000 "	1 "
R.12	2 Ganged, 500 ohms. Wire wound pot's. connected to give constant 500 ohms load.	
R.13	10 megohms	½ watt.
R.16	300 ohms	2 "
R.17	25,000 "	3 "
R.18	500 "	Potentiometer. Wire wound.
L.1, 2	Mains R.F. Filter Chokes.	
L.3	L.F. Choke 10–15 H. 35–45 mA D.C.	

valve voltmeter. A " heat-run " of several hours will prove that frequency drift from this source can be ignored.

Modulator

The modulator, which is quite conventional, is a slightly modified version of the Hartley circuit, the frequency being determined by the inductance of the transformer (T2), and condenser (C4). This value should be adjusted to suit personal preference between say 300–1,000 c/s. No modulation on-off switch is fitted as all normal applications call for a modulated carrier, but if it is required it can be fitted at any convenient point in the circuit.

As the whole unit is fitted into a metal box no separate screening of sections was considered necessary but the box used was a really good one. The mains lead was filtered at the point of entry, and the back of the meter was covered by a metal case; radiation proved to be extremely small. A flat front panel is used and a shelf fitted at a suitable height on the inside. The complete R.F. modulator and valve voltmeter unit was fitted on the top of this shelf with the power pack underneath. The only connections which need go through the shelf are the H.T. and L.T. leads, one side of each being earthed to the front panel. The whole assembly can then be dropped into the box, and the front panel screwed down securely to turned over edges on the inside of the box.

Coil Data

Range	Frequency Range	Inductance	Grid Coil.	Wire.	Anode Coil.
1	90— 170 kc/s.	10 *m*H.	766 turns wound in 3 piles. ¼ in. spacing.	·0076 Enam.	200 turns single pile.
2	160— 320 kc/s.	3 *m*H.	400 turns.	·0036 „	100
3	320— 630 kc/s.	800 *μ*H.	275 „	·0036 „	80
4	610—1200 kc/s.	220 *μ*H.	80 „	·0052 „	24 Close wound side by side.
5	1·2 Mc/s.—2·5 Mc/s.	57 *μ*H.	55 „	·0092 „	16
6	2·5 Mc/s.—6·0 Mc/s.	10 *μ*H.	23 „	·018 „	8

All coils wound on ¾ in. diameter ebonite formers.

Valve Voltmeter

The valve-voltmeter enables the operator to check and if necessary limit the amount of R.F. being fed into the cathode follower. With this voltmeter the dial can be marked at, say, 1 volt and the carrier maintained at that level on all bands and on any condenser setting.

The circuit consists of a diode rectifier (V4) followed by a triode-connected R.F. pentode (V5) as D.C. amplifier. The current-measuring meter is connected in the usual bridge-type circuit, thus enabling the residual reading, which would be obtained if the meter was directly connected in the anode or cathode of the valve, to be balanced-out by means of the " set zero " potentiometer.

Using a 0–2·5 milliammeter, the input required to give full scale deflection is of the order of 2 volts R.F. It will be appreciated that with a simple attenuator of the type fitted, (using wire-wound potentiometers), when the control reaches the end turn of its travel, gradual attenuation in excess of about 40 db is not possible. If further reduction of input is required this must be effected by means of the " set carrier " control.

Most readers will know that misleading results can be obtained on a receiver fitted with A.V.C. if the input from a signal generator is too great. It is recommended, therefore, that the A.V.C. be put out of action by short circuiting the main A.V.C. line to earth or disconnecting it at the diode pin. After inspecting the attenuators fitted to standard commercial signal generators and noting the massive die cast compartments, stud switches, etc., it was decided that to attempt duplication was impossible, consequently a simple dual potentiometer was used with reasonable success. By using two potentiometers ganged together (as shown) the output impedance is maintained at a reasonably constant level.

Power Supply and Screening

The power pack must be capable of supplying approximately 250v 45 mA smoothed D.C. and heater voltages appropriate to the valves in use; the latter can be triodes at any points specified as pentodes; alternative valves are SP41, MH4 and 6J5 types.

Acknowledgments

The author acknowledges his indebtedness to Mr. H. Goacher for the original circuit and to Mr. H. Ratcliffe, 2AOO, for preparing drawings.

Admission of Non-Members to Meetings of the Institution of Electrical Engineers

In September, 1943, the Council instituted a scheme for making the technical meetings of The Institution accessible to those who may be interested in the proceedings but who may consider that their technical experience and educational attainments do not suffice to admit them to any form of Institution membership. In providing this facility, the Council had particularly in mind the injunction of Clause 4 of the Royal Charter (" . . . to promote the general advancement of Electrical Science and Engineering and their applications and to facilitate the exchange of information and ideas on those subjects among the members of The Institution and otherwise . . .").

The Council have recently reviewed the working of the scheme during the past two Sessions and are satisfied that it has performed a useful function. They have decided that it should be continued for the coming Session, and have accordingly ordered that a person in the category outlined above who is interested in the proceedings at Ordinary Meetings, Section Meetings, Local Centre Meetings and Informal Meetings, shall be provided by the Secretary with an application form, on the completion of which and on payment of a fee of 10s. to cover administrative costs, he may receive notices of meetings and an invitation card which will serve as a title of admission to the technical meetings of The Institution to be held during the forthcoming Session in London and in the provinces.

The possession of the invitation card will not confer upon the holder any status within the framework of The Institution, nor will he have the right to join in the discussions without special permission from the Chair.

Those interested in this new facility, whether they reside in London or in the provinces, should apply to the Secretary of The Institution for further details and form of application.

Centimetres and Capacity

Some members have been puzzled, since their arrival in Continental Europe, by finding fixed condensers with their capacity marked in centimetres.

The C.G.S. unit of capacity is the capacity of an isolated sphere of 1 centimetre radius, and this is equal to 10/9 *μμ*F. 1000 cm. = 1 jar.

For ordinary purposes of rough calculation a condenser marked 50 cm. can be taken as 50 *μμ*F and so on, but the exact information is supplied herewith in response to a number of queries.

Wing-Comdr. John D. C. Hunter
(G2ZQ)

RADIO Amateurs the world over will be shocked and grieved to hear of the death of John Hunter, G2ZQ, at the early age of 32.

It is no exaggeration to say that he was probably Britain's most famous amateur and that his passing will be a personal sorrow to hundreds of amateurs in almost every country of the world. All who knew him or who contacted him over the air were impressed by his cheerful, generous nature and his willingness to help others. He possessed an uncanny sixth sense for extracting practically inaudible signals from the QRM on our bands and for making them into intelligible contacts. One of the only two amateurs in the world to work all zones, he had a distinguished position in the DX Century Club and always ranked high in the various DX Contests for which he entered. Educated at Wellington and London University, where he graduated as B.Sc. he served until the outbreak of the war as a Station Design Engineer with the B.B.C. His Amateur Radio career began in September, 1930, when he was licenced as 2ABS, obtaining his full call as G2ZQ on February 26, 1931.

In October, 1938, he joined the Civilian Wireless Reserve and was commissioned as a Pilot Officer, R.A.F.V.R. in February, 1939.

WING-COMMANDER JOHN HUNTER, G2ZQ

At the outbreak of war he went to Leighton Buzzard as duty signals officer and was later charged with the responsibility of converting Fighter Command Squadrons to V.H.F. In this work he formed special fittings parties, the N.C.O.'s for which were of his own choosing and all radio amateurs. The splendid work he did in this connection was the subject of a special mention in dispatches and earned him promotion to the rank of Squadron Leader and transfer to Air Ministry.

Here he was attached to the Telecommunications Department and later to the Signals Plans Department as Wing Commander, where he played an important part in the preparations for D-Day. So successful was his work in this sphere that a year ago he was appointed to S.E.A.C. on similar duties.

It was whilst in Ceylon that he was taken ill with pneumonia and passed away after a short illness.

To the old timers among us, Amateur Radio will never again be quite the same. His famous call-sign and faultless operating were so familiar to us all, so much a part of our accepted experience that it seems incredible that they are silent and still for ever. In fact, he typified what we mean by the term "Ham Spirit." By his untimely death the country has lost a capable officer and faithful servant. Amateurs throughout the world will each experience a sense of very personal loss as they bid farewell to Johnny whose memory will always occupy a warm and affectionate corner of our hearts.

We offer our sincere sympathy and condolences to his wife and two little children and also to his father and mother in their bereavement.

Mr. L. Sanders, **ON4AZ**, Statiestraat 38, Bercham, Antwerp, would be glad to hear from old friends.

Flying Chaplain Returns Home

American Air Transport Command's Chaplain, Lt.-Col. Joseph D. Andrew, W4EFG, has just completed his 30 months tour of duty in the European theatre of operations and is now back home in Skyland, N.C., for a well earned leave.

During his stay in Europe Joe Andrew endeared himself to many British Amateurs and their families and in the course of his official duties flew more than 100,000 miles. Although his duties were mainly administrative, he found time to conduct services at isolated and outlying locations and maintained as well a busy "morale building department," the main feature of which was a complete radio repair shop.

The U.S. newspaper "Stars and Stripes" reports that the Chaplain's return to the States has deprived the Division of its unique reputation for being the only place in the U.S. Army where a private could bring his broken radio and watch a colonel repair it! The same privilege applied to the Division Commanding General, who not only took advantage of it but brought Colonel Andrew his star customers, the Rt. Hon. Harold Balfour and Mrs. Randolph Churchill, who had despaired of getting their American radios repaired until they heard of the Chaplain's extra curricular service.

Joe Andrew was mainly responsible for the organisation of the two very successful Anglo-American Hamfests held in London last autumn, although, in his pleasant Southern accent he would probably explain a dozen reasons why the credit should go to someone else.

We shall certainly miss his smiling face and cheerful banter and his stout defence of anything and everything from the deep South "Man! You speak of sacred 'terrytorry'" we once heard him retort to some ill-advised critic of his home state of North Carolina!

After his leave, Joe will take up his new divisional assignment in the Caribbean area with H.Q. at West Palm Beach.

In wishing him the best of luck we can only add that we look forward to meeting him again, by radio, in the not too distant future.

A.O.M.

News from Europe

Engineer Henry Rákosník, Kutná Hora-Sedlec 112, Czechoslovakia, known to many pre-war members as **OK1AQ**, sends greetings to all British amateurs and wishes to be remembered especially to Miss Corry, G2YL, and Mr. Dedman, G2NH. We gather from OK1AQ that the majority of Czech amateur stations were confiscated or destroyed by the enemy, with the result that an urgent appeal is now made for components and valves. Only a small number of Czech amateurs co-operated with the Germans.

OK1AQ assures us that it is the wish of all true Czech amateurs to maintain the friendly relationships that existed between them and British amateurs in pre-war days. The great help accorded to his country by the British Government, together with the support given by Great Britain to the formation of an independent Czech Army and Air Force, will, he states, never be forgotten by those who suffered under the Nazi domination.

* * * *

We understand that Mr. T. C. Van Braah, of Varssevelt, PA0GA and Mr. C. A. Gehrels, of Eindhoven, PA0QQ, have passed away. The latter was well known to many British amateurs.

At the present time three Societies are functioning in Holland, namely, N.V.I.R. (the pre-war I.A.R.U. Society), N.V.V.R. and V.U.K.A. It is anticipated that all three will combine at an early date.

The "Hissing" Phenomena

Professor Sir Edward Appleton, Secretary of the Department of Scientific and Industrial Research, 24 Rutland Gate, London, S.W.7 in a letter to the General Secretary inquires whether any member can furnish recent information on the "Hiss" phenomena.

Since 1937 the phenomena, which appears to be associated with sunspot activities, has not been heard so frequently, but it is probable that some members may possess data which will prove of value. Information should be forwarded direct to Sir Edward Appleton.

LONDON MEETING

A cordial invitation is extended to Members and their friends to attend a display of

TECHNICAL FILMS OF TO-DAY

(including Radar)

to be shown by

Fl./Lt. P. A. THOROGOOD, R.A.F.V.R., G4KD,

at the

Institution of Electrical Engineers,
Victoria Embankment, London, S.W.1,

on

Friday, 19th October, 1945, at 6.30 p.m.

Tea will be served free of charge at 5.30 p.m.

HEADQUARTERS CALLING

COUNCIL 1945

President:
ERNEST LETT GARDINER, B.Sc., G6GR.

Executive Vice-President: S. K. Lewer, B.Sc., G6LJ.
Honorary Secretary: H. A. M. Clark, B.Sc., G6OT.
Honorary Treasurer: A. J. H. Watson, F.S.A.A., G2YD.
Honorary Editor: Arthur O. Milne, G2MI.
Immediate Past President: A. D. Gay, G6NF.

* *

Members: F. Charman, G6CJ, D. N. Corfield, D.L.C.(Hons.), G5CD, Lt. Col. K. Morton Evans, O.B.E., GW5KJ, F. Hoare, G2DP, E. H. Laister, BRS3386, S. E. Langley, G3ST, W. E. Russell, G5WP.

G.P.O. Liaison Officer: A. E. Watts, G6UN.
General Secretary: John Clarricoats, G6CL.

July Council Meeting

*Resume of the Minutes of a Meeting of the Council of the Inc. Radio Society of Great Britain, held at New Ruskin House, Little Russell Street, London, W.C.*1, *on Monday, July* 16, 1945.

Present: Messrs. E. L. Gardiner (President), S. K. Lewer, H. A. M. Clark, F. Charman, D. N. Corfield, K. Morton Evans, F. G. Hoare, E. H. Laister, S. E. Langley, W. E. Russell and J. Clarricoats (General Secretary).

Apologies for Absence: The General Secretary presented apologies for the absence of Messrs. A. E. Watts, A. D. Gay, A. J. H. Watson and A. O. Milne.

(1) It was unanimously resolved to elect 228 Corporate Members (196 proposed by Corporate Members, 32 supported by references), 19 Associates, 12 Junior Associates and 7 Foreign Members. Messrs. Waterer, G2HP, and Horton, BRS7250, were elected to Life Membership and two Junior Associates were transferred to Corporate Membership.

(2) It was reported that the total membership as at June 30, 1945, was 9,060, representing an increase of 457 since March 31, 1945.

(3) Various matters relating to the re-issue of licences were considered and instructions given to the G.P.O. Liaison Committee regarding the minimum conditions they may accept if temporary facilities are offered.

(4) It was unanimously resolved to award the Pilot Officer Norman Keith Adams Prize for the year 1944/5 to Mr. B. H. Briggs, 2FJD, for his series of articles entitled "The Propagation of Radio Waves."

(5) It was unanimously resolved to award honoraria to the value of £59 17s. 0d. to certain contributors to Volume XX of the Society's Journal. (A full list of awards appeared in the August issue.—Ed.)

(6) It was resolved to record the warm appreciations of Council to Mr. H. A. M. Clark, B.Sc., G6OT, for his series of articles published in Vol. XX entitled "Negative Feed Back in Transmitters and Receivers." (As a Council member Mr. Clark is debarred from receiving an honorarium.—Ed.)

(7) It was agreed to write to the British Standards Institution suggesting that the Society be invited to serve on the B.S.I. panel dealing with Methods of Testing and Expressing the Performance of Radio Receivers, with special reference to communication types.

(8) It was agreed to recommend to the Technical Publications Advisory Committee that they take steps to begin work on the preparation of an entirely new edition of the R.S.G.B. Handbook. The view was expressed that a revision of the present Handbook and Supplement would not prove equally popular.

(9) The Propaganda Committee submitted a report dealing with matters relating to their work. It was agreed to invite members to contribute articles dealing with the technical aspects of "break-in," suppression of key-clicks, receiver muting and associated subjects. The Committee was given permission to prepare a list of hints to transmitting amateurs which would be issued free to members.

(10) A report dealing with a meeting between the Secretary and representatives of the Radio Production Executive was considered. The report indicated that the Government were not willing to dispose of small quantities of surplus radio equipment to individuals, but arrangements could be made for the Society to purchase equipment in bulk quantities, and sell direct to members. After a lengthy discussion it was agreed:

'(*a*) That the Council did not consider it practicable to accept the suggestion made by the R.P.E. to set up a special organisation to deal with the sale of surplus Government radio equipment to members.

(*b*) That the Secretary should again approach the R.P.E. and suggest that arrangements be made for authorised representatives of the Society, acting on behalf of local groups of members, to make bulk purchases from Government surplus stores.

(11) It was reported that a very satisfactory meeting had taken place between representatives of the Society and the Radio Components Manufacturers Federation, and that the list of equipment recently drawn up by the Council and issued under the title "The Post War Amateur Market" had been fully examined. Numerous suggestions had been discussed and the R.C.M.F. had agreed to co-operate fully in meeting the needs of British radio amateurs.

(12) A suggestion that the Society should publish a Call Book was rejected, as was a suggestion that the Society should request the G.P.O. to confine the issue of licences to R.S.G.B. members.

The meeting closed at 9.45 p.m.

London Meetings

The Council has much pleasure in announcing that arrangements have been made to recommence meetings at the Institution of Electrical Engineers, London, S.W. At the opening meeting to be held on Friday, October 19, Ft./Lt. P. A. Thorogood, G4KD, will give a display of Technical Films which will include the following special items:

Principles of Radio Location, I.F.F. Mark III, A.S.V., A.I. Mark IV.

Members will appreciate that these films were, until last month, "top secret."

Tea will be served free of charge from 5.30 p.m. and the display will commence at 6.30 p.m.

A cordial invitation is extended to all members and their friends to attend.

The following dates have also been reserved for meetings at the Institution of Electrical Engineers.

November 16, 1945	March 15, 1946
December 29, 1945	April 12, 1946
January 18, 1946	May 31, 1946
February 15, 1946	

A full list of forthcoming lectures will be circulated to members next month.

Pilot-Officer Norman Keith Adams Prize

The Council has much pleasure in announcing that Mr. B. H. Briggs, B.Sc., **2FJD,** *of* 20 *Lindley Drive, Great Horton, Bradford, has been awarded the Pilot Officer Norman Keith Adams Prize for the year* 1944/45 *for his contribution to Volume XX of* THE R.S.G.B. BULLETIN *entitled "The Propagation of Radio Waves."*

Mr. Briggs is on the technical staff at T.R.E., Great Malvern.

Pre-war A.A. Call Signs to be Retained

Holders of pre-war Artificial Aerial licences who decide to apply for a radiating licence will be glad to learn that as the result of discussions which have taken place between the Society and the G.P.O., the holders of such licences will be permitted to retain the use of their pre-war call sign with the addition of the National prefix.

The call signs affected by this arrangement are those in the series 2AAA–2HZZ.

Membership Certificates

To remove any misapprehension which may exist in the minds of newly-elected members who have been issued with a war-time certificate we wish to make it clear that some time must elapse before paper is available for full-size certificates. An announcement will be published in this Journal when they are again in stock.

R.S.G.B. Prisoners of War Fund

CHANGE OF ADDRESS.—Mr. C. H. L. Edwards, G8TL (Hon. Administrator R.S.G.B. P.O.W. Fund) having returned to 10 Chepstow Crescent, Newbury Park, Ilford, Essex, asks that all correspondence should be sent to that address and not to Sudbury, Suffolk.

FAR EAST NEWS WANTED.—Mr. Edwards also asks that members who have information regarding amateurs recently released from Japanese prisoner of war camps should notify him promptly. As stated last month the Society has information concerning 12 members who have been held by the Japanese, but it is believed that several others may have been incarcerated.

DONATIONS.—The General Secretary acknowledges with thanks on behalf of Council the receipt of donations from District 4, Nottingham, 8s. 6d.; A. E. Ashfold, 5s.; Anon, £1 4s. 2d.

Total Receipts to date £1,642 11s. 7d. Total expenditure to date £942 15s. 4d.; Balances in hand as at Aug. 31st, 1945: European Fund £345 3s. 10d. Far East Fund £354 12s. 5d.

No further donations are now required.

FREQUENCY CONTROL UNIT — (*continued from page* 38).

able, but should one similar to the unit described be built, it will be found eminently satisfactory. Its note and stability are sufficiently good for it to be mistaken for a crystal and it has held its calibration well after many hours run.

Finally, it is earnestly hoped that at any rate the post-war amateur bands will not be occupied by a large number of wavering signals with bad notes originating from poorly constructed master oscillators.

RADIOLOCATION—(*continued from page* 39).

both branches of knowledge and, in particular, by using higher-powered transmitters to extend the range of detection. This brilliant application of scientific principles to forge weapons of the highest operational utility was begun in 1935 by a small group of British scientists, Messrs. L. H. Bainbridge-Bell, E. G. Bowen and A. F. Wilkins, led by Sir Robert Watson Watt, at an Air Ministry Station on the East Coast of England. This effort begun by this small nucleus, gradually expanded in volume and, as a result, this country was already provided with radiolocation sentinels for the detection of aircraft when war broke out in 1939.

Further Possible Developments of Scientific Radiolocation

The use of methods of radio distance finding by reflection have already provided us with a vast fund of knowledge concerning the electrical reflecting layers in the upper atmosphere from which it is now possible to predict the most suitable wavelengths for use in communicating over various distances at different times in different parts of the world. Further work is now in progress in England on the location of meteor trails by means of radio reflections. Another problem being considered is the possible radiolocation of the moon. Calculations show that with a very powerful sending station, and sharp focusing at the sending and receiving stations, it should be possible to get back detectable radio echoes after the radio waves have made their 2½ second journey to the moon and back.

A FRESHMAN'S GUIDE TO AMATEUR RADIO—

(*continued from page* 41).

Apart from his technical achievements, it is certainly true to say that the Radio Amateur by reason of his wide horizon and world-wide contacts, acquired an easy confidence in his daily dealings with his fellows, tended to tolerance towards others, was naturally democratic in outlook, treated other men as equals and had perhaps fewer prejudices than the average. All mankind was a brotherhood to him, the only "Outsider" being he who transgressed the Amateur code of ethics.

(*To be continued.*)

KHAKI and BLUE

● Ft./Lt. S. G. Abbott, **G3JU**, Met. Officer at H.Q. 212 Group R.A.F., M.E.F., is looking for ham contacts. His station is located at Benina, near Benghazi.

● W./O. Leonard, **G5KV**, and Sgt. Farr, **G8IJ**, who have been Stationed in India are now on their way home for demobilisation. Sgt. Farr confirms that the meetings at 164 Signals Wing referred so in the March BULLETIN were a myth.

● Cfn. J. P. Evans, operator of **GW8WJ**, is now at Twycross, near Nuneaton, with R. Signals, and is anxious for contacts with local members.

● Sgt. J. Millie, **GM8MQ**, 16 T.M. Section 21 Army Group Signals, 21 Army Group B.L.A., is anxious to locate Capt. J. Simpson, R. Sigs., BRS3587. He also asks to be remembered to the Catterick gang and to all ex "Batchelors."

● Mr. A. M. Royaux, **ON4KM**, wishes it to be known that he will be pleased to extend hospitality to any amateur serving in Belgium. His new address is 58 Politeshof Street, Antwerp. He has already had the pleasure of meeting G4NU, 6SK, BRS9210 and 10221.

● Ft./Sgt. John Harvey, **2CQJ** (M.S.U. 5275B, R.A.F., Unit Berlin, R.A.F., B.L.A.) reports that he is now located in the suburbs of the German capital having "lost" G8RW en route from Brussels. The Berlin Radio Unit Radio Society is flourishing and weekly meetings are envisaged. Whilst looking over someone's office he unearthed 64 copies of *QST* and a number of QSL cards addressed to D4MDN. 2CQJ would like to hear from any member who can give him information about measuring the field strength of distant transmitters.

An Offer

Mr. A. J. Ward, **G3WD**, 18 Market Street, Lichfield, Staffs., will be glad to assist members in the design of their post-war transmitting equipment. Enquiries on all types of apparatus will be welcomed as also will technical queries.

Members availing themselves of this offer are asked to send a stamped addressed envelope for a reply.

Can You Help?

Mr. D. Parr, 230 Robinhood Lane, Hall Green, Birmingham, a cousin of "Snowy" Campbell, VK3MR, seeks information regarding the control of model boats by means of keyed R.F. circuits. He wishes to employ sensitive relays for operating the circuits at low plate current. Can any member put him in touch with a firm who specialise in relays for the purpose required?

Hospitality Offered

Mr. A. G. Cole, **G3GS**, having returned to the Channel Islands after a stay of five years in England will be glad to extend a welcome to any member who may be in Jersey. His address is 6 Greve D'Azette Gardens, St. Clements.

Radio Ankara

We understand from Mr. P. W. Appleby, **BRS9176**, that Radio Ankara, Turkey, will be pleased to receive reception reports from Society members.

Congrats

● To Mr. F. A. Marr, **ZE1JC**, of Salisbury, Southern Rhodesia, who was recently awarded the Imperial Service Order. To some extent this signal recognition is a tribute to the excellent radio work carried out by Mr. Marr who, to quote from the official citation "when stationed at Gokwe was responsible for the establishment of wireless communication with Salisbury at a time when the station was not provided with a telephone. . . ."

For 7 years Mr. Marr used his amateur station to maintain daily contact between his District (some 13,000 square miles in area) and Salisbury (ZEA Aeradio).

● To Mr. D. Buddery, **BRS2999**, who was married in June last to Miss G. Hamilton Dene. Mr. and Mrs. Buddery are now living at Surbiton Lodge, 225 High Street, Gorleston, Norfolk.

● To Sgt. J. Millie, **GM8MQ**, now the father of a little "Ham" named Heather Ann Millie.

● To C. R. Chick, **G3JF**, on his recent marriage. He seeks news of G3YY, 8OQ and other Brighton members. He is now living at 217A Station Road, Harrow, Mdx.

Silent Keys

We regret to record the passing of these amateurs :—

Flight-Lieut. H. Bean, R.A.F.V.R., **BRS5816**, late of Finchley, London, N. (posted missing and presumed killed after air operations on August 17, 1944).

Sergeant F. A. McBrinn, R. Signals, **GI4OB**, of Bangor, Northern Ireland (died in Thailand, November 12, 1943, whilst a Prisoner of War).
Sgt. McBrinn joined 3 A.A. Brigade Signals in May, 1939. When war broke out he went to France and later took part in the defence of Dunkirk. He then proceeded to Singapore. Whilst taking part in the Malaya campaign he was captured and interned in Camp 4, Thailand.

Sergeant Ian G. Campbell, R.A.F.V.R., **2DDI**, Bangor, Co. Down, Northern Ireland (posted missing and presumed killed after air operations during the spring of 1944).

Flight Lieutenant Ivor ("Kim") Fynn (ex ZE1JH), Southern Rhodesia Air Force, of Bulawayo (died in July, 1945).

Sergeant W. J. Hickmore, R.A.F.V.R., **BRS4344**, of Bromley, Kent (drowned whilst on active service, April 15th, 1945).

Warrant Officer John Ulric Sharland, South African Corps of Signals, **BERS548** of Seapoint, Cape, South Africa (killed in an air crash at Kisumu, Kenya Colony, on July 11, 1945, whilst on his way home from Italy for demobilisation).

EXCHANGE AND MART SECTION

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

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

ABUNDANT supplies available for amateurs. All new goods. Electrolytics, resistors, condensers, coils, I.F.'s, speakers 2 in. to 12 in. Filament, mains, O/P transformers, 1 mA meters, Yaxley switches, Mullard bridges and oscilloscopes, 10,000 English and American tubes, including many hard to get. State your wants. S.A.E., I ship C.O.D.—BRS7370, BERNHARDS RADIO CO., 67 High Street, Chatham. Phone 2927.

AMATEUR on short leave has many pre-war kits, sets and sundries for quick disposal. S.A.E. list.—Box 694, PARRS, 121 Kingsway, London, W.C.2.

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

AVO All-wave Oscillator (mains), £13 ; G.E.C. Cathode Ray tube MW18-2, £6, new unused.—BRS8344, MARCH'S, 382 Stannington Road, Sheffield, 6.

BE SURE and write for our mail order list " T.R." Steel racks, chassis, condensers, coils, chokes, etc. Complete trimmer tool kit, box spanners, screw drivers (12 tools and 2 extension handles) in carrying wallet, 30s. 2½d. stamp for list " T.R."—WAVEBAND RADIO LTD., 63 Jermyn Street, London, S.W.1.

BULLS !—Feb., 1934-April, 1936, inc. Jan., 1941-Dec., 1944 (6 missing). " Wireless Worlds," Jan., 1941-Mar., 1942, inc. Offers ?—BRS1357, 11 Kynance Gardens, Stanmore, Middx.

BRS5689 again ! Books : 5 volumes " Electrical Installations " by Kennedy, 12s. 6d. lot. " Troubleshooters Handbook " by Girhardi, 50s. " Marconi Book of Wireless " by Marconi, 5s. " Radio Laboratory Handbook " by Scroogie, 10s. " Problems in Radio Engineering " by Rapson, 5s. " Radio Training Manual " by F. J. Camm, 5s. All A1 condition. 600 ohm, 3 amp new line cord, 7s. 6d. Horn speaker unit by Grampian, handles 18 watts, requires new cone, £3. 100 assorted ½ watt resistors and small condensers, £1 lot. Will exchange £30 worth good components for 6 volt car radio in good condition.—BRS5689, 24 Rossie Island Road, Montrose, Angus.

B.T.H. Transformer, massive 500-0-500 volts, 200 mA with heater windings, £2. Experimental filament transformer, massive, having eleven outputs between 5.5 v. and 9 v., 30s., another with two outputs, 6.25 v. and 7.5 v., 10s. Two each 4 μF, 8 μF, 500 v. electrolytics, 3s. 6d. each. Three each S.P.D.T., D.P.D.T. Bulgin toggle switches, 2s. 6d. each. One " Pye " 32H, 800 ohm shrouded L.F. choke, 10s. One 350-0-350 100 mA receiver transformer with 4 v. heaters, new, 25s. Four .25 μF Mansbridge condensers 650 v. test, 1s. 6d. each. Three 1 μF ditto, 2s. each. Three 4 μF ditto, 4s. each. Twelve 5A All-Brown bakelite surface type lighting switches, 10s. lot. 3½-in. projecting type heavy milliampmeter 0-80 with shunt 0-100 mA, 30s.—G2XV, 89 Perne Road, Cambridge.

CRYSTAL Pick-up Garrard RC. 4A head complete, new or little used, urgently wanted.—SAINSBURY, BRS3433, Trowle, Trowbridge, Wilts.

DURALIUM chassis, panels, brackets, boxes, etc., to your requirements. Good range Ham supplies. See previous adverts. and send for lists.—STUCK'S RADIO, North Street, Sudbury, Suffolk.

EXCHANGE for gear or sell 1936 Radio Antenna Handbook, ARRL Handbook, Call Book, Berne Call List, Ship and Coast stations, QST July, 1936 to 1940, and Bulletin, 1934 to 1940 complete. Various battery valves also Kodak Bantam 6.3 with filter.—G8DA, 10 Selkirk Street, Cheltenham.

EF38 wanted, also A.C. gram-motor.—BM/YNGE, W.C.1.

FB for P.A. tank tuning ! Transmitting variable condensers, 50 $\mu\mu$F. (1,250 volt), world-famous make ; ex-Government contract, beautiful precision hand-finished job, brand new boxed, £1 ; also oil filled fixed condensers, 3,000 volt test, 1,000 volt working ; 0.1 μF and 0.25 μF, 4s. 9d. each. All goods new and guaranteed.—BRS3854, 82 Craven Park Road, London, N.15.

FOR SALE.—Valve Voltmeter, £6 10s. Test oscillator, £6. Valve Tester, £6. Oscilloscope, £15. 12-watt amplifier. All above A.C. Acorns, new, 30s. Marconi pick-up, £1 15s.—BRS7021, 360 Dewsbury Road, Leeds.

FOR SALE.—Hammarlund super-pro receiver series " L " complete with Hammarlund universal power pack and Jensen series " R " mains energised speaker, perfect condition, less than 100 hours use. What offers ? Must sell.—Box 673, PARRS, 121 Kingsway, London, W.C.2.

G13HS.—Surplus tubes, slightly used : 12SC7, (2) 6D6, (3) BL63, 7s. 6d. each, all new. 1 D8GT, 16s. ; 25 A6GT, 15s. 6d. ; AC/HL, 5s. 6d. Wanted : Igranic slow motion dials, modulator.—D. BOFFIN, Faringdon, Berks.

HAMMARLUND Comet crystal pro, coverage 30 Mc.-1 Mc., crystal inefficient, otherwise O.K., and National 81X with speaker. Best offers accepted.—GELL, 113 Redhill Road, Arnold, Nottingham.

H.R.O. Senior Coils : 50-100 kc/s., 100-200 kc/s., 180-430 kc/s., as new, post paid, £20.—B. F. SKINNER, 42 Midland Road, Bedford.

INSTRUCTOGRAPH.—Code tutor with 10 tapes, oscillator and literature, new condition, £5.—BRS3132, Linley Bungalow, Bosty Lane, Aldridge, Staffs.

MODULATION transformer, Thordarson T-84, M70 for 6L6's, AB2, 807's, etc., to 2,500, 5,000 and 7,500 ohms. 250 mA secondary, Audio watts up to 75. Driver transformer Thordarson T-84D 59, for two 6C5's to two 6L6's or similar 5 : 1 turns ratio overall, both as new, £7 the pair. A.F. amplifier, Grampian, AC/DC, H30 to pair KT 30's, 5 watts approx. Mc Microphone transformer fader Mic/Gram, level and tone control, speaker transformer, etc., on chassis 3 in. × 13 in. × 9 in., £8. Milliameter D.C. Mc. (believed by Everitt Edgcumbe) high-grade movement ; 3 ranges, 0-6, 0-60, 0-600 mA, centre zero, 4 in. dial, in polished wood case 9 in. × 7 in. × 5 in., suitable for conversion to multi-range instrument, £5. C.W.O. or S.A.E. please.—G2BB, Roza, Reading Road, Yateley, Hants.

MONOMARK service.—Permanent London address. Letters redirected. Confidential. 5s. p.a. Royal patronage. Key tag 9d.—Write BM/MONO7A, W.C.1.

OFFERS.—Rider's Trouble Shooters Manual, volume XIII 1943.—163 Dove House Lane, Solihull, Warks.

SALE.—8 μF, 900 v. Mansbridge condensers, 15s. each ; 500-0-500 v. 250 mA transformer, filament windings, 50s. Ferranti multirange 0-15-30-150, 40s.—BRS3789, 24A Watcombe Road, Bournemouth.

SALE.—(3) 807 valves unused, 25s. each. Two carbon hand microphones, 10s. ea.—GRANT, 40 Knowsley St., Preston, Lancs.

SALE.—Bulletins, 1934 to 1940, complete ; 1941 complete less Nov., 1943, complete less Dec., 1932, complete less Jan. ; also Short-Wave Magazine, 1939, complete less Jan., Oct., Nov., Dec. Offers !—G6VC, 66 Burch Road, Northfleet, Kent.

SALE.—Two Western Electric 705A rectifying tubes, unused. Set of 15 spare tubes for Hallicrafter S27, new, boxed : 954, 955, 956, 6AC7 (2), 6AB7, 6SK7, 6H6 (2), 6C8G, VR150, 5Z3, 6V6GT (2), 6J5.—Best offer to Box 677, PARRS, 121 Kingsway, London, W.C.2.

SALE.—A few 8 μF and 8-8 μF, 500 v. electrolytics. A Garrard motor and pick-up unit ; two 6L6's. All unused, boxed. Offers !—Box 674, PARRS, 121 Kingsway, London, W.C.2.

SALE.—Hallicrafters S27 receiver, A.M., F.M. 27 to 143 Mc., perfect condition, £70. Zetavox 8-valve superhet, medium and long wave, table model, £12. " WB " 8in. speaker 2,500 ohm field, £1. Radiophone superhet Radiopack medium and long with IF's, £3. PX25's unboxed, hardly used, £1. Brierley 11-watt amplifier chassis and valves, £11. 50 assorted battery and mains valves, all O.K., lot £3. " Television and Short Wave World," Jan., 1935, to Sept., 1939, two missing ; offers lot. Wanted : HRO coil unit range A.—Box 685, PARRS, 121 Kingsway, London, W.C.2.

SKY Champion 1939 (lift-up lid model), perfect condition, calibrated, spare valves. Offers to 95 High Road, Beeston, Notts.

TELE-RADIO (1943) LTD. for new components at list prices. Weston meter 0-250 micro amps, centre zero, £3 5s. C.R. tubes. Precision sub-standard condensers, 100% accuracy, .0001 μF, 37s. 6d. ; .001 μF, 18s. ; .01 μF, 21s. ; .1 μF, 27s. 9d. ; 1 μF, 45s. Wirewound precision resistors. Vitavox and Celestion speakers. Specialists in short-wave work.—TELE-RADIO (1943) LTD., 177A Edgware Road, London, W.2. Phone : Pad 6116.

WANTED.—National One-Ten receiver. Must be in working order, with coils and valves, and preferably with power supply. Full details to F./O. CLARKE, Room 157, Crown Hotel, Harrogate, Yorks.

WANTED.—One each following numbers " Wireless Engineer " in good condition : January, 1942, April and May, 1943, July, 1945. Also offers sale or loan of Bell System Technical Journal for 1932, 1934, 1937.—BRS6428, 44 Broomfield Road, Tolworth, Surbiton, Surrey.

WHAT offers ? New, just purchased, latest edition Terman's " Fundamentals of Radio."—Box 683, PARRS, 121 Kingsway, London, W.C.2.

YOUNG man, good education, requires improved position, design or technical writing ; Grad.I.E.E., City and Guilds Finals Technical Electricity and Radio Communication ; 5½ years' test and design with leading manufacturer.—Box 696, PARRS, 121 Kingsway, London, W.C.2.

3-VALVE battery receiver in Eddystone cabinet, tuned R.F. pentode output, full dial bandspread on amateur bands, complete with coils and valves, £5, plus carriage. American straight key, fine action, 10s.—GRAY, " Fourwinds," Devenish Road, Sunningdale.

60-WATT Class B. modulation transformer, £3 ; 200 micro amps, 2½ in., £2 each ; Acorn tubes R.C.A. 955, £1 10s. each ; 0.1 thermocouple meters, £1 10s. each ; 0.1 mA, 3½ in. M/C, £2 each ; 30-watt P.P. output trans 5 ohm Eimac 35T (3), £1 10s. each.—Box 693, PARRS, 121 Kingsway, London, W.C.2.

PATENTS AND TRADE MARKS

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

L.F. Transformers for Sound Amplifiers

Radio Instrument Co., 294 Broadway, Bexleyheath, Kent, inform us that they are in a position to supply specially designed L.F. transformers for sound amplifiers. Type K1V3 is particularly suited to the circuit described by Mr. A. R. Yates in our April issue.