

R.S.G.B.



BULLETIN

August 1950

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Radio Society of Great Britain

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Forthcoming Events

REGION 2

Barnsley.—August 25, September 8, 7.30 p.m., King George Hotel, Peel Street.
Bradford.—August 29, September 12 (A.G.M.), 7.30 p.m., Cambridge House, 66 Little Horton Lane.
Catterick.—Wednesdays, 7 p.m., Loos Lines, Catterick Camp.
Darlington.—Thursdays, 7.30 p.m., Club Room, British School Yard, Skinnergate.
Doncaster.—September 13, 7.30 p.m., Black Bull, Market Place.
Gateshead.—Thursdays, 7 p.m., Y.M.C.A., Sutherland Hall.
Middlesbrough.—Thursdays, 7.30 p.m., All Saints' Hall, Grange Road.
Newcastle-upon-Tyne.—August 21, 8 p.m., British Legion Rooms, 1 Jesmond Road.
Scarborough.—Thursdays, 7.30 p.m., L.N.E.R. Rifle Club, West Parade Road.
Sheffield.—August 23, 8 p.m., Dog and Partridge, Trippett Lane. September 13, 8 p.m., Albreda Works, Lydgate Lane.
Wakefield.—August 23, September 6, Carr Lodge Cafe, Horbury.
York.—Wednesdays, 7.30 p.m., Community House, Falgrave Crescent.

REGION 3

Birmingham (South).—September 3, 17, 10.30 a.m., Stirchley Institute.
Birmingham (M.A.R.S.).—September 19, 6.45 p.m., Imperial Hotel.
Stourbridge (S. & D.A.R.S.).—August 25, Corn Exchange Vaults; September 5, King Edward VI School; September 22, Annual Dinner.

REGION 4

Derby (D. & D.A.R.S.).—August 23, 30, September 6, 13, 7.30 p.m., Club Room No. 4, School of Art, 119 Green Lane.
Leicester (L.A.R.S.).—August 21, September 4, 18, 7.30 p.m., Holly Bush Hotel, Belgrave Gate.
Loughborough.—September 13, 7.30 p.m., Science Lab., Limehurst School.
Mansfield (M. & D.A.R.S.).—September 3, 3 p.m., Swan Hotel.
Northampton (N.S.W.C.).—August 25, 6 p.m.; September 1, 7 p.m.; September 8, 15, 6 p.m., Club Room, 8 Duke Street.
Nottingham (South).—September 12, 7.30 p.m., Trent Bridge Hotel.
Peterborough.—September 5, 7.30 p.m., St. John Ambulance H.Q., Cowgate.
Retford.—September 3, 3 p.m., 8a Bridge Gate.
Spalding.—August 31, 7.30 p.m., 10 South Parade.
Workshop.—September 4, 7.30 p.m., King Edward Hotel.

REGION 5

Cambridge (C. & D.A.R.C.).—August 18, 8 p.m., "Jolly Waterman."
Cheshamford.—September 5, 7.30 p.m., Smith's Radio Shop, Moulsham Street.
Little Hallingbury.—October 1, G6UT's Annual "Ham Party," 2.30 p.m., Normandale, New Barn Lane. Ladies welcome.

REGION 7

Barnes & Richmond.—September 12, 7.30 p.m., 22 Lowther Road, Barnes.
Brentwood.—August 18, September 1, 8 p.m., Drill Hall, Ongar Road.
Croydon (Surrey R.C.C.).—September 12, 7.30 p.m., "Blacksmith's Arms," South End.
Dulwich & New Cross.—September 4, October 2, "Kentish Drivers," Rye Lane, Peckham, S.E.15.
East London.—September 17, Ilford Town Hall.
Edgware (E. & D.R.S.).—Every Wednesday, St. Michael's School.
Enfield.—September 17, 3 p.m., George Spicer School, Southbury Road.
Finsbury Park.—August 22, 7.30 p.m., 164 Albion Road, Stoke Newington, N.16.
Hayes & Uxbridge.—September 1, 7.30 p.m., "The Vine," Uxbridge Road.
Hoddesdon.—September 7, "The Salisbury Arms."
Holtway (Grafton R.S.).—September 18, 7.30 p.m., Annual General Meeting, thence every Monday, Wednesday and Friday, 7.30 p.m., Grafton School, Eburne Road, N.7.
Lewisham.—September 18, 8 p.m., "Anchor," Lewisham Road, S.E.13.
Plumstead, Woolwich & Abbey Wood.—August 30, September 13, 8 p.m., Club Room, "Bull Tavern," Vincent Road, S.E.18.
St. Albans.—August 30, September 13, 8 p.m., "The Beehive," London Road.
Slough.—September 21, 7.45 p.m., "The Golden Eagle Hotel," High Street.
Sutton & Cheam.—September 5, September 19, Sutton Adult School, Benhill Avenue.
Welwyn.—September 5, 8 p.m., Council Chambers.

REGION 8

Brighton.—Tuesdays, 7.30 p.m., "Eagle Inn," Gloucester Road.
Guildford.—August 27, 10.30 a.m., Coach from Royal Arms Hotel, North Street, to Worthing, "Bucket and Spade" Meeting.
Reading (R.S.).—August 26, 7 p.m., Abbey Gateway.
Southampton.—September 2, 7.30 p.m., 22 Anglesea Road, Shirley.
Worthing.—August 27, Sussex "Bucket and Spade" Meeting. Contact T.R. for further details.

REGION 9

Bristol.—September 22, 7 p.m., Keens Cafe, Park Row.
Exeter.—September 1, 7 p.m., Y.M.C.A., 41 St. David's Hill.
North Devon.—September 1, 7.30 p.m., Rose of Torridge Cafe, The Quay, Bideford.
Torquay.—September 15, 7.30 p.m., Y.M.C.A., Castle Road.
Falmouth.—September 15, 7 p.m., Tothill Community Centre, Tothill Park, Knighton Road, St. Jude's.
Weston-super-Mare.—September 5, 7.30 p.m., Y.M.C.A.
West Cornwall (W.C.R.C.).—September 7, "Fifteen Balls," Penryn, near Falmouth.
Yeovil.—Wednesdays, 7.30 p.m., Grove House, Preston Road.

REGION 14

Ayr.—August 30, 7.30 p.m., Royal Hotel, Prestwick.
Falkirk.—August 25, 7.30 p.m., Temperance Cafe, High Street.
Glasgow.—August 30, 7 p.m., 39 Elmbank Crescent.



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R·S·G·B

BULLETIN

For the advancement of Amateur Radio

VOLUME XXVI No. 2

AUGUST 1950



THE INTERFERENCE ADVISORY COMMITTEE

THE news that the Amateur Radio movement is not officially represented on the Interference Advisory Committee set up by the Postmaster-General in accordance with Section 9 of the 1949 Wireless Telegraphy Act, will cause widespread disappointment in amateur circles. The fact that not one of the professional men nominated to serve on the Committee is a radio amateur of experience can only mean that the Postmaster-General's advisers are unwilling to recognise the importance of the amateur viewpoint. Yet radio amateurs know as much about the problem as any other group of people who use the ether. Furthermore—and it is a point that should be borne in mind by the Committee—radio amateurs pay licence fees greatly in excess of those paid by broadcast listeners but are given no protection by the Post Office when they complain of interference to short-wave reception.

It is worthy of record that, as soon as the new W/T Act became law, the Society wrote to the Institution of Electrical Engineers and asked that the President of that body should, when preparing the list of nominees, as required of him in the Act, consider the claims of radio amateurs to be represented on the Committee. The Society's request was turned down on the ground that individual organisations, as such, would not be represented. The Council accepted that view but believed that the President of the Institution would, in due time, suggest to the P.M.G. the name of at least one prominent professional man known to be closely associated with the Amateur Radio movement.

Recently the Society wrote again to the Institution and asked whether the Advisory Committee had been nominated. In his reply the Secretary of the Institution stated that the President had the best interests of British amateurs well in mind in preparing the nominations and that the list included the name of a person "who he understands is a member of long-standing of your Society."

In fairness to all concerned the Society felt

compelled to explain to the Institution that the nominee referred to joined the Society as recently as 1943 and that he does not hold a transmitting licence.

A suggestion that the President of the Society should meet the President of the I.E.E. to discuss the matter was dismissed on the ground that, as the list had gone forward to the P.M.G., no useful purpose would be served.

Now let us look at the list and see who has been nominated. Anyone connected with the radio and allied industries will see at a glance that practically every nominee *does* in fact represent an interested party. Additionally, practically every user of the ether is represented except one of the biggest users of all—the radio amateur. The list includes persons known to be associated with commerce and shipping; with aircraft and motor cars; with broadcasting and refrigerators; with transport, lamps and electric signs. The interests of the radio and electro-medical trades will be safeguarded by prominent persons associated with those industries, whilst the interests of organisations such as the Institutes of Physics, Transport and X-Ray Technology, will in like manner be fully protected.

We have no complaint against the list of nominees but surely if a seat could be found for representatives of certain women's organisations (such as, presumably, the Townswomen's Guilds) then someone known to be closely associated with Amateur Radio should have been invited to join the Committee.

The P.M.G. was recently asked in the House of Commons to ensure that the Amateur Radio movement is given representation on the Advisory Committee. In his reply Mr. Ness Edwards said that the point would be borne in mind. Is it too much to hope that he will now instruct his advisers to issue an invitation to a representative of that movement to join the Committee? Such a step would be warmly welcomed by the 8,000 odd licensed radio amateurs of this country and by thousands of others who are interested in short wave reception.

J. C.

THE 25th ANNIVERSARY CONGRESS of the I.A.R.U., Paris, 1950

AT 10 a.m. on May 18, 1950, about 100 delegates from 15 I.A.R.U. Member Societies assembled in the Grand Hall of the *Aéro Club de France*, 6 Rue Galilée, Paris, France, for the first Plenary Session of the 25th Anniversary Congress of the International Amateur Radio Union. Introductory speeches were made by the Minister of Posts and Telegraphs, the President of R.E.F. (M. Georges Barba, F8LA) and Mr. J. de Roos (PY2JU), who, being the eldest of the Heads of Delegations, spoke as the *doyen* of the Congress. The Congress was then formally opened by the Minister after which M. Barba addressed the meeting.

of the friendship of Amateur Radio as evidenced in their countless mutual contacts.

M. Barba then invited nominations for the office of President of the Congress, whereupon the delegate of Sweden proposed Mr. W. A. Scarr (G2WS), President of the R.S.G.B., and the delegate of Switzerland proposed M. Georges Barba (F8LA), President of the R.E.F. M. Barba respectfully declined to accept his own nomination as he thought it would be more fitting that the United Kingdom should take the lead in view of the importance and status of the R.S.G.B. On being put to the vote, the proposal made by S.S.A.



I.A.R.U. CONGRESS, PARIS, MAY 18-20, 1950.

Mr. W. A. Scarr G2WS, President of the Congress (sixth from left front row), is seated between Prince de Broglie, President of Honour (with attache case), and M. Georges Barba, F8LA, President of R.E.F. Messrs. S. K. Lewer, G6LJ, and Gerald Marcuse, G2NM, are second and third from the left, front row.

First Plenary Session

M. Barba reviewed the achievements of the past 25 years and emphasised the importance of the work of the Congress, wishing the delegates complete success in their various tasks. He then introduced the President of Honour, Prince Louis de Broglie, Permanent Secretary of the *Académie des Sciences* and invited him to address the meeting.

The Prince spoke at length of the spirit and the significance of amateur work in the history of science and of the part played by radio amateurs in the development of radio communication, recalling the pioneer achievement of M. Léon Deloy (F8AB), who established the first transatlantic communication on short waves. Prince Louis also referred to the discovery of the effects of the ionised layers in the upper atmosphere and of the contributions made by experimenters in that connection. He looked with confidence to the further contributions by amateurs to the science and art of radio.

Next, General Gilson, *Commandant Supérieur des Communications* in the French Army spoke of the valiant assistance given by radio amateurs to the cause of national defence in time of war and recalled the determination of the French Government to secure the services of amateurs in the work of radio investigation and technical instruction.

A short speech by Dr. E. Gnessutta (IIGN), Head of the Italian Delegation, followed on the subject

(Sweden) was accepted *nem. con.* Mr. Scarr thanked the meeting for the expression of confidence in the Society which he represented and forthwith occupied the chair as President of the Congress.

Mr. Scarr then read messages of good wishes from W.I.A. (Australia) and A.R.R.L. (U.S.A.), both Societies regretting their inability to send a delegate to Paris. On the proposal of Mr. John Clarricoats (General Secretary of the R.S.G.B.) it was agreed that a telegram should be sent from the Congress to the A.R.R.L. thanking that Society for its good wishes and expressing the regret of the Congress that no delegate from the U.S.A. would be present. The Swiss delegation asked for a more detailed explanation of the absence of the A.R.R.L. The President stated that the A.R.R.L. had previously informed the R.S.G.B. at length of the circumstances which had prevented the A.R.R.L. from sending a delegate to Paris.

Next followed the identification of the several delegations. The Secretary of the R.S.G.B. stated that his Society would be representing W.I.A. It was noted with regret that Czechoslovakia, Israel and Mexico, who had expected to send delegates, were not represented.

Committee Chairmen Elected

The President invited nominations for the office of Chairmen of the Technical and Administrative Committees. A proposal by the United Kingdom, seconded by Brazil, to elect Lt. Col. P. Revirieux

(F80L) as Chairman of the Technical Committee was adopted *nem. con.*, and a proposal by Sweden, seconded by Norway, to elect Mr. S. K. Lewer (G6LJ) as Chairman of the Administrative Committee was also adopted *nem. con.*

The morning session closed with the reading of a letter from O.V.S.V. (Austria) expressing their regret at being unable to send delegates and asking R.E.F. (France) to represent them at the Congress.

The two Committees began their respective proceedings at 2.30 p.m., about 33 delegates being present in the Administrative Committee and 20 in the Technical Committee.

ADMINISTRATIVE COMMITTEE

The Chairman, Mr. S. K. Lewer (G6LJ) suggested that the Committee should first examine the question of Band Planning as it may apply after the Atlantic City Allocation Table comes



Mr. W. A. Scarr, G2WS (left), President of the Congress and of the R.S.G.B., with M. Georges Barba, F8LA (centre), President of the R.E.F., and Mr. S. K. Lewer, G6LJ, Chairman, Administrative Committee and Past President, R.S.G.B.

into force. As a basis for discussion, the R.S.G.B. had circulated a paper on the subject, and R.E.F. had formulated a number of questions.

Band Planning

The meeting agreed that Band Planning as a principle should be accepted, and while some delegates spoke in favour of compulsory Band Planning it was generally agreed that it should take the form of a recommendation. A compulsory arrangement was already in force in Sweden and Brazil. In Spain the Government would be willing to impose an obligatory plan, but the Spanish Society (U.R.E.) was not in favour of it.

1.8 Mc/s. Band. It was agreed that no useful purpose would be served by formulating a plan for this band.

3.5 Mc/s. Band. The delegate of Belgium pointed out that in his country the amateur allocation was restricted to 3510-3620 kc/s. Nevertheless, he supported the R.S.G.B. Plan for this band, and the meeting agreed unanimously to recommend its adoption.

7 Mc/s. Band. Some strong comments were made on the interference from certain broadcasting stations, and in Italy the situation suffered from the activities of a number of amateurs who did not have adequate technical knowledge. The delegates of Sweden, Switzerland, Belgium and Italy spoke in favour of an allocation of 100 kc/s. for telegraphy only, but after further discussion the meeting agreed by 10 votes to 1 to adopt the R.S.G.B. Plan for this band.

14 Mc/s. Band. The delegate of Belgium advocated the complete separation of telegraphy and telephony and preferred to have the telegraphy portion extended above 14100 kc/s. The delegate of the U.K. explained that if the principle of

sharing were abandoned, the result in the U.K. for newly licensed amateurs would be a restriction to the portion of the band allocated to telegraphy only. The delegate of Sweden remarked that when conditions were poor it might be reasonable and desirable to use telegraphy in the telephony part of the band.

The delegate of Belgium pointed out that Belgian amateurs were restricted to 14050-14400 kc/s. and explained that this reduction was imposed for military reasons when licences were restored after the war. A somewhat similar position was reported to have existed in Italy in regard to the 28 Mc/s. band: the I.A.R.U. had been asked for help, and as a result the proper amateur allocation was reinstated. The delegate of the U.K. said that any curtailment by any national administration of an exclusive amateur allocation should in future be made a subject for consideration and investigation by I.A.R.U. Headquarters and that the fact should be brought to the notice of all Member Societies. The delegates unanimously agreed to provide the Chairman with a list of the frequencies at present available to amateurs in their respective countries.

The delegate of France proposed that the telegraphy portion should be extended to 14125 kc/s. and the delegate of the U.K. thought that the R.S.G.B. would agree to this extension on the understanding that the rest of the band would be shared between telegraphy and telephony.

The delegates of France and Belgium spoke in favour of an exclusive telephony portion, but after further discussion they agreed to the sharing of

the higher frequency portion between telegraphy and telephony.

The delegate of Italy considered that the principle of sharing was a bad one, but agreed to support the R.S.G.B. plan. The delegate of Brazil said that in his country there was a regulation imposing a division between telegraphy and telephony at 14100 kc/s.

After some further discussion on the Canadian and American telephony bands, the meeting unanimously agreed to support the principle of sharing by telegraphy and telephony stations as indicated in the R.S.G.B. Band Plan.



F9TR, G2MI, G2WS, SM5ZD and SM5VL outside the Aero Club of France just before the opening of the Congress.

The Committee approved by 8 votes to 3 a proposal by France to divide the 14 Mc/s. band at 14125 kc/s. instead of 14100 kc/s. (as between telegraphy and telephony/telegraphy) as recommended by the R.S.G.B.

21 Mc/s. Band. The Committee recognised the excellent opportunity to plan this band in advance and agreed unanimously to recommend the adoption of the R.S.G.B. plan.

28 Mc/s. Band. After considering a proposal by France to extend the exclusive telegraphy portion of this band to 28200 kc/s., to be divided as between U.S. stations and non-U.S. stations, the Committee agreed unanimously to adopt the R.S.G.B. plan.

The Chairman pointed out that the success of the Band Plan would depend on the widespread knowledge of its details, and stressed the importance of giving it as much publicity as possible.

Several delegates considered that the U.S. telephony bands should be restricted, and recommended that in future the A.R.R.L. should consult other Member Societies before submitting proposals for Band Planning to the F.C.C.

The first session of the Committee then ended at 5.50 p.m.



F9CQ, G6LJ, F9MX, F9TR, G2IG and F9—outside the Ministry of Posts and Telegraphs.

Representation at Future I.T.U. Conferences

The Committee resumed its duties the following day (May 19) at 9.30 a.m. and began by considering the paper which had been prepared by Mr. S. K. Lewer (G6LJ) for the R.S.G.B. on the subject of I.A.R.U. representation at future conferences of the International Telecommunications Union. Strong support was given to the suggestion that representation should be on a world-wide basis, and it was unanimously resolved to recommend the Member Societies to agree in principle that at future I.T.U. Conferences the I.A.R.U. shall be represented by at least one delegate from each of the three Regions of the world.

The delegate of France proposed that the cost of representation should be borne by all Member Societies in proportion to the number of licensed amateurs in their respective countries. The Chairman pointed out that in many countries there are some amateurs who are not members of their national societies and some Societies might therefore be called upon to carry an undue burden. There were also other circumstances which could be

considered to affect the responsibilities of the national Societies in various countries.

A long discussion followed on the question of assessing the proportion of the expenses to be contributed by each Society, and it was finally agreed *nem. con.*, that at least in Region 1* all Member Societies should

be asked to contribute a share of the cost of representation of Region 1 at all future I.T.U. Conferences and that this should be on the basis of the number of transmitting licences in force in each country at the beginning of each Conference year. It was also agreed that each Member Society should make its own arrangements for collecting the necessary funds.

Administration of the I.A.R.U.

After a recess for lunch the Committee proceeded to consider the question of the administration of the I.A.R.U. The delegate of Switzerland considered that the affairs of world-wide Amateur Radio were now so complex that the present Headquarters of the I.A.R.U. could not be expected to cope with all the problems which arose, and he proposed that the centre of the I.A.R.U. administration should be in Europe. He also expressed the view that the R.S.G.B. should be invited to accept the responsibility of the Headquarters or alternatively as a Bureau to serve the interests of the Member Societies in Region 1.

The Chairman stated that on several occasions in the past the A.R.R.L. had asked the R.S.G.B. whether it would be prepared to accept the duties of the Headquarters Society, but the R.S.G.B. up to the last occasion (1947) had not been in a position to accept such a responsibility.

The delegate of the U.K. then interposed by reading a letter from Mr. A. L. Budlong (Managing Secretary of the A.R.R.L.) which had just been received by the R.S.G.B. on the subject of representation at international conferences. The A.R.R.L. view was that representation should be on a purely national basis and that representation in the name of the I.A.R.U. would be infinitely less effective. The A.R.R.L. also stated that arrangements were being made for the admission of I.A.R.U. representatives to the Extraordinary Administrative Conference to be held at The Hague.

The Committee discussed this letter at some length and several delegates expressed serious concern and astonishment at the views held by the A.R.R.L. It was considered impossible for every national Society to send a delegate to each international conference, and it was feared that certain Governments would be inclined to take less notice of their amateurs if they were to act without the support of the I.A.R.U.

The Chairman pointed out that the attitude of the A.R.R.L. is based on the assumption that each national Society enjoys the same intimate contact with its Government as exists between the A.R.R.L. and the F.C.C., but unfortunately this was not so. Member Societies, particularly in Europe, needed all the support they could procure.

The Committee therefore rejected the views expressed in the A.R.R.L. letter and re-affirmed its decision to recommend that representation should be on an international basis.

The discussion then returned to the proposal to transfer the administrative centre of the I.A.R.U. to Europe. The Chairman emphasised that the Committee should be careful to avoid any step which might cause a division within the I.A.R.U. and that it would be very undesirable to have a regional bureau which received stronger support than the Headquarters organisation itself.

The Committee unanimously expressed the thanks of all the Member Societies represented at the Congress to the A.R.R.L. for its services as the I.A.R.U. Headquarters Society, and it was suggested that the I.A.R.U. Headquarters could be assisted in its task by the establishment of a

* Region 1 includes Europe, Africa, and part of the territory of the U.S.S.R. in Asia and Outer Mongolia.



Capt. Per-Anders Kinnman, SM5ZD, President S.S.A., with Mr. W. A. Scarr, G2WS, President, R.S.G.B.

Bureau for Region 1. Several delegates spoke in favour of the continuance of the A.R.R.L. as the Headquarters Society, and the proposal to transfer the administrative centre of the I.A.R.U. to the R.S.G.B. was lost by 13 votes to 1.

After further discussion, the Committee agreed *nem. con.* to recommend that a Bureau should be established in Region 1 to represent the interests of the I.A.R.U. Member Societies in Region 1, and that the R.S.G.B. should be invited to accept the responsibility for this Bureau.

The proceedings of the day then terminated at 5.30 p.m.

At 9.50 a.m. the following day (May 20) the Committee proceeded to discuss some of the aspects of the administration of the proposed Bureau. The delegate of the U.K. estimated that the cost of operating such a Bureau would not be less than £500 per annum and expressed the view that the Council of the R.S.G.B. might be willing to accept financial responsibility for a period of one year but not indefinitely. Voluntary help would also be considered.

The Chairman suggested that the discussion had reached its practical limit and that the R.S.G.B. could now be left to examine the details of the proposal. Any difficulties would be communicated to the Member Societies of Region 1.



The French Minister of Posts and Telegraphs, with delegates from France (F8LA, F8TM), Sweden (SM5ZD) and Great Britain (G6CL, 6LJ, 6CJ, 2WS). F9TR (official interpreter) is between the Minister and Mr. Scarr.

V.H.F. Operation

The Committee then returned to the subject of Band Planning in the light of the proposals formulated by the R.E.F. which had not already been covered by the previous discussions. The delegate of France advocated a general agreement on the use of a lower frequency band for providing a serviceable link when DX tests were being made on 144 Mc/s. The same proposal was being put forward by the Finnish Society (S.R.A.L.). Considerable differences of opinion existed as to what frequencies would be suitable, and in regard to the suggestion of using 50 Mc/s. it was clear that general international use of such frequencies was out of the question. The delegate of France agreed that no useful purpose would be served by continuing the discussion.

The next proposal by the R.E.F. related to the planning of the 144 Mc/s. band. In the interests of DX communication, some division of the band was considered desirable. Several delegates spoke in favour of allocating a portion of the band for DX purposes, and on a proposal by the delegate of Finland the Committee approved *nem. con.* a plan to reserve a band 200 kc/s. wide (144.0-144.2 Mc/s.) for DX tests.

A similar proposal was made by the delegate of Holland in regard to the 75 cm. band. Mr. W. A. Scarr (G2WS) suggested that a band 1 Mc/s. wide between 432 and 433 Mc/s. should be reserved for DX tests, and this was agreed *nem. con.*

Contests

Mr. F. Charman (G6CJ), in presenting his paper on the subject of Contests, emphasised the view of the R.S.G.B. that there are too many international

contests and suggested that certain existing contests might be combined.

There was general agreement on the desirability of reducing the number of contests, and it was thought that the proposed Bureau of Region 1 would be able to effect the necessary simplification. Member Societies were asked to submit fully detailed statements to the Bureau within two months, setting out their views so that a co-ordinated plan could be evolved and put into operation by January 1, 1952.

It was pointed out that any general Contest Plan arranged by the I.A.R.U. could be upset by unfortunate conflicts with contests organised by commercial concerns, but the Committee felt that the desired success would be achieved by the spirit of co-operation between the various Member Societies. It was hoped that an opportunity would be had of discussing the future of contests at the forthcoming Conference at the Hague.

Violation of Regulations

After a recess for lunch, the Committee re-opened its proceedings with a review of the problem of interference caused by commercial and other stations operating within the amateur bands. Member Societies were advised to forward their complaints to the I.A.R.U. Headquarters so that appropriate action could be taken. Difficulties in removing the interference were bound to occur as long as some countries were still observing the Regulations agreed at the Cairo Convention (1938), but greater success could be hoped for when the Atlantic City Regulations were brought fully into effect.

It became apparent for the first time that at least two national Societies had suffered a loss of rights in regard to amateur frequencies. The Chairman said it was the duty of the I.A.R.U. to see that these rights were restored and that this was a good example of the importance and real significance of the I.A.R.U.

Operational Practices

The Spanish Society (U.R.E.) had formulated a number of proposals relating to operational practices, but owing to the lack of time the delegates of Spain agreed that they could be omitted from the discussion.

The work of the Committee was concluded by a brief examination of a number of other points raised by several of the delegates, after which the delegate of Brazil expressed the thanks of the Committee to its Chairman for the fair and able way in which the business of the Committee had been handled. The Chairman then thanked the Delegations for their support and closed the meeting at 3.30 p.m. in order that the delegates could join the main assembly for the official photograph.

TECHNICAL COMMITTEE

Under the Chairmanship of Lt. Col. P. Revirieux (F8OL), the meetings of the Technical Committee were held simultaneously with those of the Administrative Committee. All the delegates present had the same ends in view, namely, an improvement in the use of the crowded amateur bands, reduction of interference to broadcasting and television, and the best use of the amateur's particularly favourable opportunities for collecting and correlating propagation data.

The Chairman pointed out that in return for improved facilities which it was hoped could be gained, the amateur should set his own house in order and maintain good technical operating

standards. He proposed that the question of T.V.I. should be examined, and invited the R.S.G.B. to relate the experiences of U.K. amateurs in contending with a fully developed television service. The delegates of all the other Societies represented on the Committee foresaw the inevitable advent of a television service in their respective countries, and wished to establish an equitable arrangement with their administrations before it is too late to have any worthwhile effect.

B.C.I. was discussed at some length, but eventually it was agreed that no attempt should be made to set a "minimum protected field strength" for medium and long waves. A modern receiver, it was contended, would yield to fairly simple treatment; and in any case, nearly all administrations and corresponding amateur societies had set up an amicable working arrangement.

Turning to matters directly related to transmitter operation and performance, the Chairman requested all delegations to fill in a questionnaire suggesting performance figures and tolerances.



THE TECHNICAL COMMITTEE IN SESSION

SM5VL explains a point to the Technical Committee. P10ZX and G2IG face the camera with G2MI on the right.

At the next session, the suggestions were examined and discussed, the major part of the time being devoted to telephony bandwidth. Most of the European suggestions were aimed at defining only the A.F. bandwidth passed by the speech amplifier and modulator, but the R.S.G.B. view was that the width of the carrier-plus-sidebands was the important parameter. Ultimately a compromise was reached, defining both in such a manner that A.F. harmonic generation and non-linearity of the modulated stage are both taken into account.

The standards for F.M. were arrived at on the postulate that no greater bandwidth was allowable than for A.M.

Harmonic radiation proved to be the most difficult subject. Performance standards could be laid down, but none of the delegates present could hope that more than a minority of fortunate amateurs would be in a position to measure the attenuation achieved. Accordingly, I.A.R.U. Member Societies are to be urged to do everything in their power to acquaint their membership with modern techniques. In this connection, the R.S.G.B. publication *Transmitter Interference* was cited, and permission to publish brief extracts was sought. The R.S.G.B. delegation willingly signified their approval of any such course provided

only that a written request was sent to the Society and that acknowledgment was given in the reproduced publication.

T.V.I. (Television Interference)

The Committee agreed to present the following recommendations to all Member Societies of the I.A.R.U.

(a) To ensure that, in all countries, complaints lodged by television viewers shall be investigated by a technician of the Technical Authority in control of amateur activity.

(b) To ensure that the Authority recognises as interference only those cases where trouble is caused to reception in areas having a television field strength above a set limit.

(c) To obtain from the Authority a definition of minimum standards of performance to be expected from television receivers. Cases of interference to receivers falling short of these standards should not be recognised.

B.C.I. (Broadcast Interference)

The Committee agreed that there is no very difficult problem in the case of interference to broadcasting, assuming a receiver of good design is under consideration. The Committee further agreed that only instances involving a receiver of good and modern design should be regarded as constituting a case of interference.

Investigation of such cases should always be undertaken by a technician of the Authority in control of amateur activity.

Telephony Transmissions

The Committee regretfully came to the unanimous conclusion that too many amateur telephony transmissions (A3 and F3) show insufficient technical qualities and so endanger the good name of Amateur Radio. They also expressed the desirability of general acceptance of minimum technical standards, which are in fact easily attainable, and agreed that the I.A.R.U. Member Societies should make the following recommendations to their members.

(1) *Bandwidth of A3 Transmissions.* In order to limit the bandwidth occupied by an A3 transmission a two-fold performance specification should be adopted.

(a) The frequency response of the A.F. equipment, comprising speech amplifiers and modulators, should be such that for a constant and sinusoidal input, attenuation at 4 kc/s is at least 26 db. with reference to the response at 1 kc/s. This characteristic refers to a curve relating the A.F. voltages applied to the modulated stage to the input (constant and sinusoidal over the range of frequencies concerned).

(b) A limit should be imposed to the total energy radiated outside a band of ± 10 kc/s. with reference to the carrier, such that it cannot be detected with a receiver of adequate design located at a reasonable distance. This limit is not intended to cover the radiation of H.F. harmonics which were dealt with separately.

(2) *Bandwidth of F3 Transmissions.* All delegates agreed to the desirability of permitting N.B.F.M. in the bands lower than the 28 Mc/s. band.

In order to define the bandwidth adequately, it is desirable that the A.F. characteristics adhere to the conditions set out in paragraph (1) (a), above, and that the maximum deviation shall be 2.5 kc/s.

In the 28 Mc/s. band it will be the responsibility of each Member Society to recommend a frequency deviation as small as possible, and which will eventually be used to determine a fixed value in

the light of experience of reciprocal interference.

The delegates judged it to be inopportune to limit technical initiative in the V.H.F. bands and consequently did not propose to set a maximum for these frequencies.

High Frequency Harmonics

As no easy method of harmonic measurement is available to the amateur, it was not proposed to set a numerical tolerance. However, it will be urgently recommended to all amateurs that they should reduce the level of harmonics to the lowest possible figure.

Member Societies are urged to provide their membership with all available literature on the subject, and to convince them that very considerable harmonic suppression may be realised by simple means.

At the conclusion of the discussions, the delegates congratulated the R.S.G.B. on the publication of the booklet *Transmitter Interference*, a study of which was considered to offer remedies to most of the causes of amateur interference.



G6CJ, 2MI and 6CL at the General Ferrie Memorial erected within the shadow of the Eiffel Tower.

Scientific Observations

Lengthy discussion took place on the ways and means for establishing and developing liaison between Member Societies and various Scientific Authorities. The lines of investigation for which the amateur is best fitted were considered and were embodied in recommendations to be submitted to Member Societies. Details of these recommendations will be published later.

SECOND PLENARY SESSION

After the taking of the official photographs, the second Plenary Session was opened by the Congress President (Mr. W. A. Scarr, G2WS) who invited Prince Louis de Broglie to give an address on the Electron Microscope.

Then followed the presentation of reports of the two Committees by their Chairmen (Mr. S. K. Lewer, G6LJ, Administrative Committee, and Lt. Col. P. Revirieux, F8OL, Technical Committee). The President explained that complete formal reports would be prepared in due course and circulated to Member Societies.

Several suggestions were made with regard to the best time for holding meetings of the Member Societies of Region I, with special reference to the preparation for future international conferences. Finally, a proposal by the delegate of Finland that a meeting of the Member Societies of Region I should be held in 1953 was accepted by 10 votes against 3.

The General Secretary of the R.S.G.B. then moved a vote of thanks to the *Aero Club de France* for permitting the Congress to be held within its precincts, to the President and Council

of R.E.F. for the organisation of the Congress, to M. Bernard Malandain (F9MH) for his services as Organising Secretary and to the interpreters who had translated the proceedings of the Congress into French and English. This was carried with acclamation.

M. Georges Barba (President of R.E.F.) proposed a vote of thanks to Mr. W. A. Scarr as President of the Congress, to Mr. S. K. Lewer as Chairman of the Administrative Committee and to Lt. Col. P. Revirieux as Chairman of the Technical Committee for their work in directing the affairs of the Congress; this was also carried with acclamation.

The President concluded with a speech of thanks to all the delegates and to the national Societies who had supported the conference, and declared the Congress closed at 6.05 p.m.

Congress Banquet

A banquet was held later in the evening in the main Assembly Hall of the *Aero Club de France* at which the Minister of Posts and Telegraphs presided. About 300 delegates and their wives were present. While some members were disappointed that no advantage was taken of the circumstances to invite speeches from various personalities who had achieved fame in the history of amateur radio, the occasion naturally provided countless opportunities for personal contacts between amateurs from so many different nations which will long be remembered as marking another milestone in the progress of international understanding and friendship.

S.K.L.

I.A.R.U. Broadcast from Radio Leopoldville

A recording of speeches made at the Congress was broadcast from Radio Leopoldville on Wednesday, June 7, in the regular programme for radio amateurs at 2040 G.M.T. on 9767 kc/s. Conditions at the time afforded excellent reception in this country, and the recordings brought back many pleasant memories to those British delegates who had attended the Congress.

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

THE Fourth R.S.G.B. Amateur Radio Exhibition will be held at the Royal Hotel, Woburn Place, London, W.C.1, from Wednesday, November 22 to Saturday, November 25, 1950, and admission will again be by catalogue. Members will receive a copy of the catalogue with either the October or November issue of the *BULLETIN* whilst non-members will be able to purchase a copy in advance from Headquarters (price 1s. 3d., post free) or obtain one at the door (price 1s.).

Those who wish to arrange for parties of non-members to visit the Exhibition will be able to purchase small quantities of the catalogue from Headquarters at a special price.

The Exhibition will be opened at 2.30 p.m. on November 22 by Mr. Hugh Pocock, Managing Editor of "Wireless World." On that day and on the next three days the Exhibition will remain open until 9 p.m. On November 23, 24 and 25 it will open at 11 a.m.

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

MAKE A NOTE OF THESE DATES

June 22nd to June 24th, 1951
FESTIVAL OF BRITAIN YEAR
NATIONAL CONVENTION

A MULTI - BAND FREQUENCY METER

for the Radio Amateur

By A. G. WOOD (G5RZ)*

ONE of the requirements of the Amateur Wireless Transmitting Licence issued by the Post Office is that an accurate means of making measurements of the radiated frequency shall always be available. The following description deals with the construction and calibration of an inexpensive and sufficiently accurate meter designed to fulfil the above requirement.

Frequency meters may be divided into two broad types. First the sub-standard meter which employs a 100 kc/s. or 1,000 kc/s. crystal and relies upon the 100 or 1,000 kc/s. markers produced over a wide range of harmonics. This type offers a high standard of accuracy at the spot-frequency points, but suffers from the disadvantage that additional means must be made available to locate frequencies in between these points. The second type is the adjustable self-excited oscillator which can also be used for harmonic operation. It is however affected by temperature changes and other causes and requires some known standard of high accuracy for checking purposes. A combination of these two types forms the basis of the meter to be described.

Scope

The instrument is designed to provide crystal-controlled marker points at 50 kc/s. intervals from 1,000 kc/s. to about 60 Mc/s. (depending upon the sensitivity of the receiver in use) and a continuously variable frequency check throughout the ranges given in the accompanying table. These oscillations are produced by a stable electron-coupled oscillator the accuracy of which can be checked against the crystal oscillator before use. The ranges covered, together with the corresponding harmonics are as follows:—

Harmonic	Range in Mc/s.
1st	3.5—3.8
2nd	7.0—7.6
4th	14.0—15.2
6th	21.0—22.8
8th	28.0—30.4
11th	Television sound (London)
12th	Television vision (London)
16th	56.0—60.8
40th	140 —152

Check points 50 kc/s. apart are available for the 1.8 Mc/s. Band.

The actual lay-out of the components can be left to individual choice, and, with the exception of the E.C.O. construction, no very special precautions are necessary. All wiring should be carried out in a workman-like manner and made as rigid as possible.

The writer employs rack and panel construction in his transmitter and, purely for convenience, the measuring equipment was built up in panel form, to fit into space which was available. For those who desire guidance, Fig. 1 shows a plan view of the actual lay-out used at G5RZ. The unit is built on a chassis measuring 13 in. \times 8 in. \times 2 in. deep, the depth of the front panel being 4 $\frac{1}{2}$ in.

It will be seen from the circuit diagram (Fig. 2) that V1 functions as a crystal oscillator incorporating a 1,000 kc/s. bar of known accuracy and that V2

is a transitron oscillator adjusted to oscillate at 50 kc/s. At this frequency it is locked by injecting some of the output from V1. V3 is a variable oscillator of the electron-coupled type, the output from which is amplified by V4. V5 is a twin triode, the first section of which serves as a mixer for the outputs of V2 and V4. The second section functions as a detector thereby enabling headphones to be plugged in to its anode circuit if required.

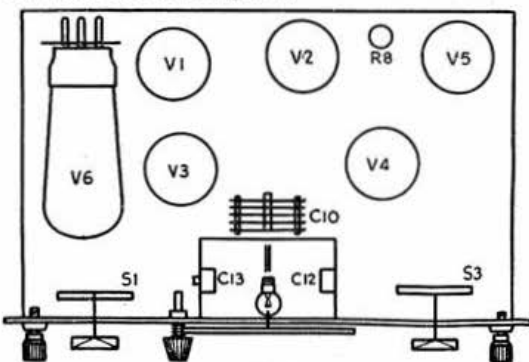


Fig. 1.
Layout of Frequency Meter viewed from above

A stable H.T. potential is applied to the screen grids of V3 and V4 by the voltage stabiliser V6. The power requirements of the equipment are 6.3 V. at 2 A. and 250 V. D.C. at 25 mA., the actual consumption of each stage being:

V1	3.5 mA.
V2	5.0 "
E.C.O. unit (V3, V4)	15.0 "
V5	1.5 "

It is strongly recommended that the meter be built up and tested, stage by stage, following the same order as that given to the numbering of the valves. This order will be employed in describing each stage hereunder in greater detail. By following this method any fault which may occur in construction and any modification which may be required in the use of components can readily be corrected or effected before the chassis becomes overcrowded with wiring and components.

Crystal Oscillator (V1)

This stage calls for no special comment. The preset capacity C2 which is used to vary the frequency of the crystal oscillator very slightly when the meter is finally calibrated should be mounted so that it may be adjusted from the top of the chassis. Once adjusted it will not require further attention except at long intervals.

Transition Oscillator (V2)

The frequency at which V2 will tend to oscillate is controlled chiefly by the capacity of C5 and the value of the resistance network R7-8. The frequency is also controlled within wide limits, by the value of the resistances R5-6, although the latter are not critical. The degree of injection from V1 required to lock this valve is controlled by C4. The valve should first be checked to see that it is oscillating. With C4 at minimum listen on the station

*Holmeside, Heath Road, Leighton Buzzard, Beds.

receiver for a series of harsh noises entirely unmusical in character. The capacity of C4 should then be increased gradually until the note suddenly becomes T.9. (It may even disappear entirely at the listening frequency, in which case the receiver should be retuned until it is heard again.) This test should be made with R8 fully in circuit. Select a relatively quiet portion of the spectrum, say between 2 to 3 Mc/s., on the receiver, and locate the second harmonic of the crystal on 2 Mc/s. Then switch in the transistor and carefully tune the receiver up to 3 Mc/s., counting each intervening harmonic of the transistor. If this stage is correctly adjusted there should be exactly nineteen such harmonics, not counting those appearing at 2 and 3 Mc/s. precisely. If this is not the case, alter the setting of R8 slightly, and try again. If the desired result still cannot be achieved, even with R8 entirely cut out, it will be necessary to replace C5 with a condenser of slightly different capacity or even with another of the same capacity but a different tolerance. An alternative is to increase the value of R7. If the values given in the context are adhered to, however, correct adjustment should be obtained with R8 set about half-way. The final setting of C4 should be such that the transistor locks correctly each time it is switched into circuit and, of course, oscillates at exactly 50 kc/s.

Electron-coupled Oscillator (V3)

It is very important in designing this stage to achieve maximum stability and freedom from drift, consequently special care is required. The oscillator coil consists of 16 turns of No. 18 S.W.G. enamelled wire tightly wound on to a 1 in. former, preferably ceramic. A good plan when winding is to pass a current of several amperes through the wire so that it is wound hot. The subsequent contraction after cooling will result in a really firm job. When the tap has been soldered on at 3 turns from the earthy end, a light application of coil dope will complete the work. Incidentally the coil is mounted rigidly below the chassis between V3 and V4 and is screened from the surrounding components.

Tuning is accomplished by means of C10, which is mounted centrally above the chassis and fixed securely to the rectangular aluminium frame. This in turn is bolted to the chassis. Fitted inside the frame (the sides of which also carry the capacitors C12 and C13) is a two-to-one reduction gearing (taken from the T.1154 set). The front of the panel carries a 4½ in. ivory circular dial, calibrated from 0°-360°. The whole assembly is rotated by a small knob and spindle to which is attached a rubber grommet bearing on the outside edge of the scale. By this means very fine adjustment of the condenser can

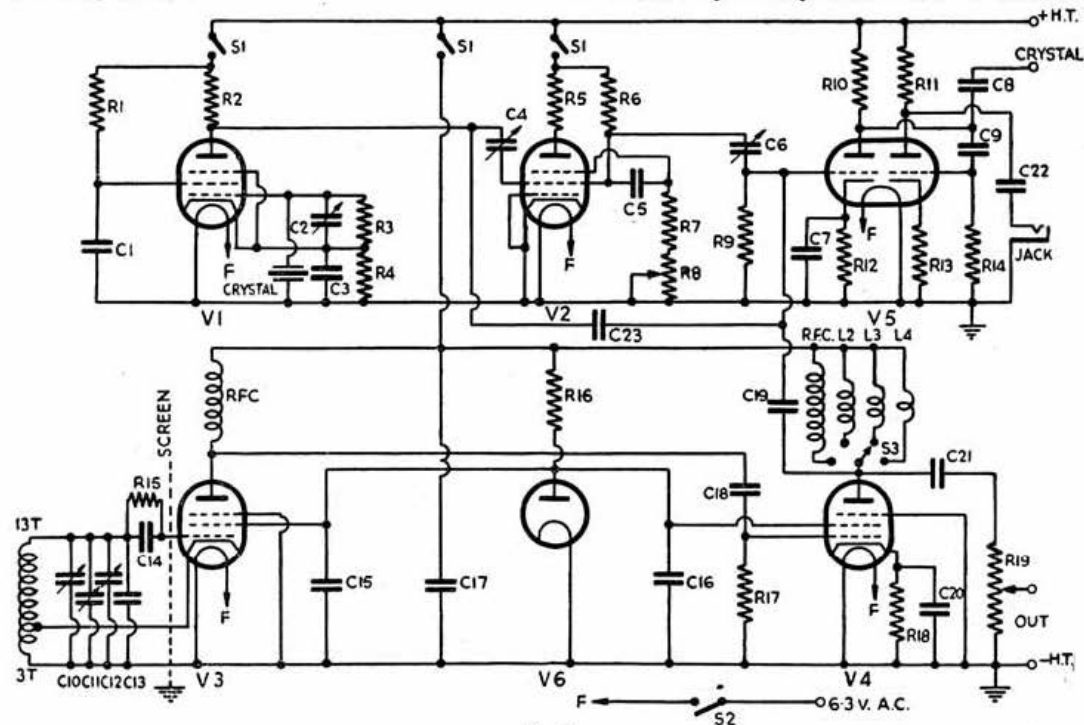


Fig. 2.
Circuit Diagram of Frequency Meter.

R1	25,000 ohms.
R2, 6	50,000 ohms.
R3, 9, 14,	
15, 17	500,000 ohms.
R4	7,000 ohms.
R5	75,000 ohms.
R7	13,000 ohms.
R8	10,000 ohms Pot.
R10, 11	100,000 ohms.
R12	10,000 ohms.
R13	1.5 megohm.
R16	15,000 ohms 2 watt.
R18	390 ohms.
R19	20,000 ohms Pot.
V1	6SJ7
V2	EF50

V3	6K7
V4	6AC7
V5	6SL7
V6	5130 stabilizer (N.B.— Not diode as shown)
X	1,000 kc/s. crystal.
RFC	Pie-wound H.F. chokes.
Jack	Open-circuit 'phone type.
C1	0.1 µF.
C2	50 µF. preset.
C3, 8	65 µF.
C4	5-10 µF. preset.
C5	200 µF.
C6	50 µF. preset.
C7, 20	500 µF.
C10	65 µF. tuning.

C11	10 µF. preset
C12	65 µF. preset.
C13	165 µF. silver-mica
C14, 18, 21	100 µF.
C9, 15, 16,	
17, 22	0.01 µF.
C12, 23	10 µF.
L1	16 turns No. 18 S.W.G. enamelled wire close wound 1 in. diameter tapped 3 turns. See text.
L2, 3, 4	See text.
S1	Wafer stage switch.
S2	Filament toggle switch.
S3	Wafer range switch.

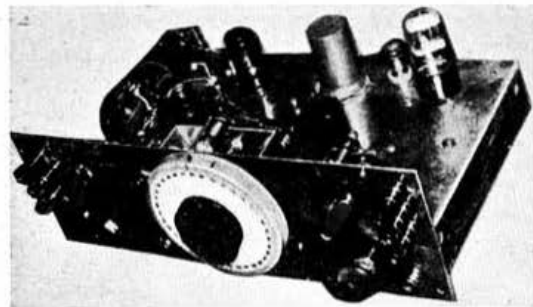
be made and the whole assembly becomes entirely free from any backlash. A $\frac{3}{8}$ in. diameter hole, behind which is mounted a dial light, is drilled at the top of the front panel and just behind the edge of the dial. A short length of steel wire is suitably bent to shape and fitted to project just over the calibrated edge of the dial. The lamp is wired in parallel with the filaments so that when the instrument is in operation the light glows through the ivoryine dial and throws the steel wire marker into sharp relief. It is thus possible to adjust the setting to within half a degree, which, at the fundamental range is equivalent to about 500 cycles.

The padding condenser C11 is mounted so as to be adjustable from the front panel. The method of adjustment is as follows: After having adjusted the dial to give a reading corresponding to exactly 0° on the scale, set C10 to maximum and C11 to half capacity; tune the receiver to exactly 3,500 kc/s. by means of the crystal and transitor stages and vary C12 until the E.C.O. zero-beats with this frequency. With the previous stages still running gradually reduce C10, following carefully on the receiver and checking up with the 50 kc/s. marker points as the frequency is increased. C10 at minimum (360° on the scale) should coincide with a frequency very slightly in excess of 3,800 kc/s. If this range is not achieved, either the size of C10 must be increased slightly or else the inductance of the coil must be raised by the addition of a turn or two. If the range is appreciably exceeded, it is advisable to tap C10 down a turn or two on the coil until the specified range is just covered. A greater tuning range is not required as naturally the greatest amount of band-spread is desirable; equally a smaller range will restrict the operation of the meter either on its fundamental or in the harmonic range.

Amplifier (V4)

No special remarks are called for concerning the wiring up of this stage except in regard to the anode circuit. To increase the harmonic output a four-way wafer switch S3 is fitted to the front panel as shown in Fig. 1. This allows for four different inductances to be switched into the anode circuit at will. Position 1 contains an ordinary R.F. choke and provides sufficient output on the 3.5, 7 and 14 Mc/s. bands. Position 2 contains a coil L2 which consists of about 25 turns No. 18 S.W.G. enamelled wire, close wound on $\frac{1}{4}$ in. former and takes care of the 21 and 28 Mc/s. bands. Position 3 contains a coil L3 which consists of about 10 similar turns and covers the London television frequencies and the old amateur 56 Mc/s. band. Position 4 contains a coil L4 with two turns of No. 16 wire spaced $\frac{1}{4}$ in. and $\frac{1}{4}$ in. diameter and this provides an improvement in the harmonic output on the 144 Mc/s. band.

These values are by no means critical and it may be



View of completed frequency meter. The stabilizer valve V6 is mounted horizontally on the left. Left to right at the rear can be seen V1, V2 and V5. In front and to the left of the V.F.O. tuning condenser is V3 with V4 on the right.

found, for example, that the 14 Mc/s. band is best catered for when the switch is in position 2. Potentiometer R19 provides a means of reducing the strength of the harmonic produced across the output terminals.

Mixer and Detector (V5)

Again no special comment is called for. The first half of V5 acts as a mixer for the output from V2 via C6 and the output of V4 via C19. Output from this stage is taken via C8 to a terminal on the panel and also via C9 to the grid of the second half of the valve, where it is rectified and appears across the open circuit phone jack.

Stabilizer (V6)

To minimise variations in E.C.O. frequency the screen grids of V3 and V4 are supplied with H.T. from a stabilizer valve (V6) and although it could, perhaps, be considered as a refinement, its inclusion is strongly advocated.

Switching

Balancing the layout on the front panel is a further wafer switch which controls H.T. to the various stages. It would take up too much space to describe this switching arrangement in detail. Sufficient to say that a search through the junk-box produced a wafer, which after a considerable amount of thought was made to provide five alternative positions:

- (1) H.T. on V5 only
- (2) H.T. on V1 and V5
- (3) H.T. on V1, V2 and V5
- (4) H.T. on all stages
- (5) H.T. on V3, V4, V5 and V6

Calibration

If individual stages have been checked as construction proceeds, the task of calibration, when the equipment is complete, is greatly simplified.

The first operation is to locate WWV the U.S. Bureau of Standards station on the station receiver. WWV operates day and night on frequencies of 2.5, 5, 10, 15, 20, 25 and 30 Mc/s. Select the transmission which is audible at the highest possible frequency. If necessary switch on the crystal stage of the frequency meter, to help in finding it. In all probability the crystal will not zero-beat with WWV but will produce an audio note. Switch-off the receiver B.F.O. and by means of an adjustment on C2 bring the crystal down to zero beat. It is then adjusted to exactly 1,000 kc/s. If the crystal harmonic is of insufficient strength, link a length of wire from the terminal marked "crystal" round the aerial lead to the receiver. Next, switch in the transitor and check 19 harmonics between any two adjacent crystal harmonics by tuning the receiver with the B.F.O. on. With these two stages still running, switch to Position 4 and allow the E.C.O. about ten minutes to warm up and settle down. Tune the receiver to exactly 3,500 kc/s.—the crystal and transitor stages will give this value exactly—and adjust the main tuning dial of the meter to exactly 0°. The E.C.O. will then be heard giving an audio beat. Again switch-off the B.F.O. and if necessary transfer the feeder link from the crystal terminal to the potentiometer (R19) output terminal. Reduce the strength of the signal heard by adjusting R19, to a reasonable level. Finally adjust C11 one way or the other until zero beat is attained. All that now remains is to tune the receiver through the range 3,500 kc/s. to 3,800 kc/s. with the B.F.O. in, and adjust the main tuning dial until the E.C.O. zero-beats with each 50 kc/s. marker point. Take a careful note of each dial reading and the corresponding

Aerial Systems for the Flat Dweller!

BY G2EC

Next time someone says "Amateur Radio is not what it used to be" show him this article. It tells the inspiring story of how one of Britain's best-known amateurs overcame—with a fascinating mixture of technical ingenuity and "cloak and dagger" methods—a threatened close-down; and incidentally went on to obtain the leading G score of 130 442 points in the 1949 A.R.R.L. DX Contest.

THIS is neither a treatise on revolutionary aerial design nor a recommendation of systems which others should use. It is merely a description of the adaptation of well tried types to the peculiar circumstances which obtained in the writer's own location in a large block of flats in the centre of London.

Some eighteen months ago, after much argument with higher authority, the aerial systems, erected with much painstaking effort on the roof of the building, were declared architecturally unsightly and "were to be removed forthwith." Courses open were thus:

- (a) Give up Amateur Radio.
- (b) Change location.
- (c) Use "invisible" wires.
- (d) Use systems which could be erected and dismantled at short notice for use during darkness hours or when censorious eyes were absent.

The latter course was chosen and though it has been irritating to have to move out of a warm room and grope around a roof 80 feet high in stygian blackness, sometimes in wind and snow, before being able to put the transmitter on the air, it has proved on the whole very well worth while.

Systems in Use

The final system based on the "put up and take down quickly" principle resulted in the following aeriels:

- (a) A wire 132 feet long. This produced a $\frac{1}{2}\lambda$ radiator on 3.5 Mc/s., a full wave radiator on 7 Mc/s. and two full waves on 14 Mc/s. The aerial was end-fed in each case by separate 72 ohm coaxial cables through suitable impedance matches. The impedance match and cable was remotely selectable from the operating position.
- (b) A half wave 3 wire dipole for 14 Mc/s. to cover nulls in the pattern of (a).
- (c) A three element rotary beam with electric head for 28 Mc/s.

These were so arranged that after considerable practice, all three could be erected and put into operation from their normal and completely prone positions lying flat on the roof of the building in a total time at night of eleven minutes away from the operating shack. Times were slightly quicker in daylight hours!

The flat was on the sixth of the seven stories of the building and at one end of it. The roof of the building was some 150 feet long and 50 feet wide at its widest point with such things as lift and water outhouses on the top.

To feed R.F. from the transmitter to the roof of the building for the various aeriels a rope of 72 ohm coaxial cables, terminated at the operating position in a 5 way coaxial switch, was led out through the shack window juxtaposed to a black, though otherwise friendly, drain pipe, thence to the roof; the resulting cable run was thus virtually invisible. Except for the 28 Mc/s. line the coaxial cables were terminated on the roof, in four waterproof boxes containing condenser/coil arrangements for matching their impedance (72 ohms) into the

aerial in use. Spare cables in the rope were provided for keying the transmitter (tuning purposes) and operating the aerial relays. Before plugging each R.F. cable into its impedance matching box, the transmitter was tuned in turn on 3.5, 7 and 14 Mc/s. into the appropriate cable when that cable was terminated with a 72 ohm pure resistance.

To permit three band operation using the 130 ft. long wire, relays were installed in two of the three boxes so that the wire, which terminated on one, could be remotely switched to the second or the third box, thus permitting its connection through the appropriate 3.5, 7 or 14 Mc/s. impedance matches within the boxes and their associated coaxials down to the transmitter. Fig. 1 shows the general arrangement of the R.F. cables and switching relays.

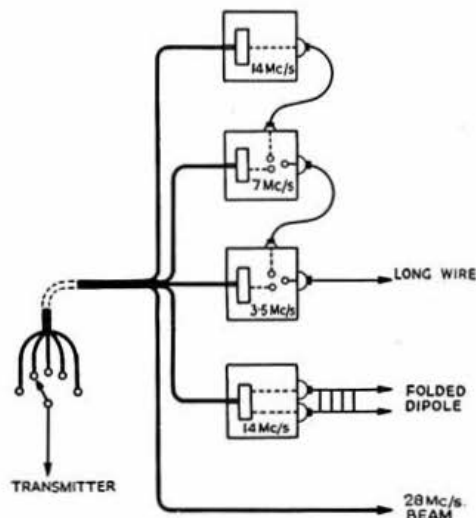


Fig. 1 Layout of R.F. Cables and Switching Relays.

Some ex-Government "Poles telegraph 18 feet"—the sort which break or make as required—were used to loft the wire. Bottom halves were made up into suitable lengths and fixed into positions which could be permanently left in inconspicuous places against the outhouses. To complete mast erection therefore entailed only a modicum of physical agility and wall/outhouse climbing to slip on two top 9 ft. sections to which 6 inch pyrex insulators, already carrying the run free wire, were attached. Once the top halves were dropped onto the permanently positioned bottom sections and the wire was made taut from one end and made off to a hook, the result was a quite presentable aerial about 20 foot above the roof.

The 14 Mc/s. three wire dipole was given similar physical treatment though in this case the 72 ohm coaxial was permanently connected through its 72/600 ohm match to the aerial. With the 132 ft. long wire and three-wire dipole in position they were tuned in turn into their four coaxials at the boxes.

The Beam

The three element semi-wide spaced beam, with an electric rotating head, was much trickier. In position it was mounted 14 ft. above the roof on a 12 ft. 1½ in. steel mast using a baseplate 2 ft. high and kept in position by four stays clipped onto the mast by heavy brand quick-release dog collar clips. The beam and electric head were firmly screwed together and to the latter a short metal pipe was fixed as a socket into which the 1½ in. steel pipe mast fitted and held firm.

Getting the aerial up and down entailed the evolution of a "beam erection drill" to ensure that the mast, stays, clips and head were meticulously arranged for single handed erection.

This "drill" was designed to achieve the following—"With the mast in one hand, the beam and electric head were angled up from the roof with the other, the mast was slipped into its head socket, and then by a series of well-timed heaves and strains the mast plus beam was got into a vertical position. The whole was then lifted the two extra feet into its baseplate socket, and clips and stays attached" (invariably with a sigh of relief). It all looks so simple in print, but in complete darkness, single handed, possibly in a half gale with a 70 ft. unfenced drop to the street a few feet away, the writer recommends manipulating 28 lbs. at the end of a 12 ft. pole to upset even the most well-behaved human circulating organs, at least until confidence is gained.

Electrically, or rather electronically, the aeriels were effective. The view from the roof is virtually uninterrupted through 360 degrees and screening is nil. Ground wave ranges have thus been high of course, but excellent reports were also received from afar, especially on the long wire when used on 3.5 Mc/s.

The aeriels fall far short of the ideal, but nevertheless, observing the local strictures, they permitted G2EC to continue to enjoy the "vice" of Amateur Radio without causing affront. After all "What the eye never sees, the heart never grieves over."

AMATEUR TELEVISION

DURING a recent debate in the Upper House on Television, Lord Waleran, a senior executive of E. K. Cole, appealed to the Government to issue licences for experimental television transmission by amateurs.

Lord Waleran, in the course of his speech, said:

"In the years past our amateur radio enthusiasts have done a great deal to develop short-wave radio, and their efforts have proved of inestimable value to the country. So far as I know, no licences have been granted for experimental television transmission by amateurs—known through the world as radio 'hams.' I feel that it would be a good thing if such licences could be granted. I know that here we are up against the question of space in the ether and frequency allocation. I suggest to the Government, however, that they might look into this matter and consider whether it would not be possible to grant a number of licences, but only in the centimetre wavelengths, where there is a great field for experiment today."

In his reply to the debate on behalf of the Government the Earl of Lucan expressed his interest in the suggestion put forward by Lord Waleran and assured him that the Postmaster-General would give it his full consideration.

Parallel action from within the House of Commons is being taken by Mr. C. I. Orr-Ewing, M.P., who has asked the P.M.G. to receive a small deputation to discuss the question of Amateur Television.

Travel by Underground

THE underground aerial may be buried but it certainly won't lie down! Since the publication of the article "Down to Earth" in the July, 1949, issue of the BULLETIN, several members have written in support of the DX properties of these terrestrial "sky-wires." In view of the controversy over our right to erect towers and masts, who knows how much digging lies ahead for the amateur fraternity? Perhaps N.F.D. rules for 1960 will specify "no steam shovels or excavators permitted."

One well-known DX operator, ZC1AL of the Arab Legion, is indignant that any disbelief in the virtues of this form of aerial should have been expressed. He points out that the ground aerial is frequently used in army communication systems and possesses valuable directional properties as well as minimising the effect of static in tropical regions. While it is generally considered that these aeriels only radiate ground waves, ZC1AL has found that, at least in sandy soil, considerable sky-wave radiation takes place. (It would be hypercritical to suggest this might be due to the effective earth being situated several feet below the surface of such terrain). But, whatever the explanation, none can argue with the results which ZC1AL achieved in the Adjun mountains of Transjordan with a low-power No. 19 set and one of these aeriels.

One night in the winter of 1947, after closing down the 50-mile official 'phone link he tried a CQ call on 7 Mc/s. C.W. Back came a UA1. The aerial, which up to this time had consisted of 80 ft. of insulated wire about 6 in. from the ground, was "lowered" and covered with earth. ZC1AL's signals were still audible at RST358 in Leningrad. Two days later, with the aerial pointed towards the United Kingdom, ZC1AL received a report of RST379 from G3BPP on 7 Mc/s. Obviously, there was little to complain about in those underground activities!

Mr. T. A. Robinson, a Junior Associate, of Swindon, Wilts., is another member who, soon after the plants were safely out of the ground, was to be seen steadily digging. Into a trench 20 ft. long, 6 in. wide and 1 ft. deep, some 50 ft. of insulated wire was laid, threaded through short pieces of wood and then folded back again, spaced ½ in. The wire was brought to the surface through a bamboo rod and the wire covered with a layer of broken slate forming an inverted vee, the earth afterwards being replaced. Bringing the lead-in to the bench proved a more difficult operation as it involved scooping a shallow channel along a 12 ft. length of cement. However, Mr. Robinson, who comes from a family with strong views on the subject, remained undaunted and the work proceeded. Incidentally, Mr. Robinson, senior, was one of the 1924 pioneers of this form of buried treasure, his version having picked up less tram interference and two more stations. We regret to report that results of the 1949 model are not conclusive, although its efficiency improves above 7 Mc/s.

J. P. H.

Multi-band Frequency Meter Continued from Page 54
frequency at this position and plot the results on a sheet of graph paper. If these points have been made accurately a diagonal line on the paper should pass through each point.

For subsequent use it is only necessary to adjust the tuning dial to 0° (allow some minutes for warming up after switching-on with the switch S1 in Position 4) and to plug in a pair of phones to the jack to check that the E.C.O. has maintained its calibration. If zero beat is not heard in the 'phones a slight adjustment on C11 will correct matters and the frequency meter will then be ready for use.

The accompanying photograph should supplement Fig. 1 in giving a clear idea of the general layout of this very useful piece of equipment.

EMIGRATION WITHOUT TEARS

By P. A. MANCHÉE (BRS 12480)*

A few months ago the author and his wife left the United Kingdom to settle in Australia. This article, based on their experiences, offers valuable advice to members contemplating a similar journey, either to Australia or to other distant parts of the Empire.

ALTHOUGH many Service members have, in the past few years, become adept at transferring their stations from one part of the globe to another, the average civilian has less opportunity to learn, by the painful process of trial and error, the complex art of working in all continents. Major upheavals are likely to occur only occasionally in a lifetime. Errors once made, can seldom be rectified. It is felt, therefore, that the following notes will at least provide a starting point for those members planning to see for themselves what DX looks like. Although based on experience gained in travelling to Australia, much of the advice will apply equally to voyages to other parts of the Empire.

The Four Essentials

- Take all possible equipment
- Pack securely
- Label clearly
- Insure everything

Be Prepared

The first essential is to be prepared. In these days, it is seldom that one is able to ascertain far in advance the exact date of sailing. This is particularly true of the official emigration schemes. You may have been waiting, with various degrees of patience or impatience, for months. Then, suddenly, you may be told that your ship sails next week. Seven days in which to pack and despatch everything to the ship—our own experience—is typical of many cases. Make sure that you have everything ready, with plenty of packing materials, cases and boxes available, so that you are not caught unawares when sailing instructions arrive.

What to take

The answer to the question "What should be left behind?" can easily be answered. Take every piece of apparatus for which you can possibly find room. This normally involves effecting a diplomatic compromise consistent with domestic harmony. Prices of Amateur Radio equipment are comparatively high in Australia and the supply of surplus gear is very limited. BULLETIN advertisements cause much frustrated gnashing of teeth in the Dominion. Good communication receivers are scarce and expensive, the Eddystone 640, for example, retailing at about £60 (Australian currency). It is believed that prices are high in many other parts of the Empire, such as South Africa and New Zealand, although there are one or two favoured spots such as Ceylon, where it is reported that valves are sold by their weight as scrap metal and are even considered dear at 1d. each! But unless you have inside information that such conditions exist at your destination, it will usually prove profitable to carry at least the main essentials, including test equipment, for your station, whether transmitting or receiving.

Packing

It may seem a little unnecessary to stress the importance on a long voyage of secure packing. The fact remains, however, that many people have strange ideas as to what constitutes adequate protection: a statement with which many long-suffering G.P.O. officials would doubtless agree. Remember that your cases will receive a very severe test of their durability when they are swung on and off the ship and that they may be packed under considerable pressure in the hold. Tea chests, strengthened with cross ribs, with a second case floating inside of each chest on a packing of straw, were found most satisfactory. Every container should be numbered, a list of contents painted on the outside and, of course, the owner's name and destination painted in clear lettering actually on the case.

Insurance rates are reasonable and most shipping companies will gladly supply information when issuing the tickets. Travellers are strongly advised to insure every piece of luggage, both contents and outside packing. It is a good idea to keep extra valuable or small delicate gear as personal luggage, and to carry these items when embarking. A small portable receiver and an "Avo" test meter were thus favoured by the writer: the rest of the equipment travelled in the hold.

There is, incidentally, a special cheap rate for the despatch by emigrants of luggage in advance from the home address to the ship. It is well worth making enquiries on this point when arranging rail transport.

Customs

Do not forget to keep a complete list of contents both for reference and for production to the Customs officials. The Customs declaration forms are usually filled in *en route* and sent ahead ready for the ship's arrival in port. The general principle adopted by the Customs officials appears to be: items taken for personal use and not for resale will be cleared without charge. This is true of almost all Amateur Radio equipment which can be declared as "used, and for personal use only." Any brand-new items are, of course, liable to an import customs charge.

Journey's End

On arrival at Melbourne, six pieces of personal luggage were cleared immediately by the Customs officials. Keys of all trunks, etc., in the hold were handed to baggage agents, and all cases were received intact a few days later.

It has been observed that mains supplies in Australia are normally 200-250 V. A.C., 50 c/s., although there are a few districts in Victoria with D.C. No A.C./D.C. sets are manufactured in the Dominion but vibrator power units are popular in country areas. Generally speaking, circuits and designs follow American rather than British trends.

Acknowledgement must be paid to the warm welcome received from VK amateurs. The writer was particularly fortunate in being introduced to local radio activities through the good offices of VK3AFM, with whom correspondence had been carried on for many years. Local meetings of the Wireless Institute of Australia are held monthly in the very fine Radio School in Melbourne.

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B.E.R.U. 1950

THE report on the 1949 contest opened with a comment on the fine propagation conditions that prevailed and mentioned the problem of having several bands open at once. This year our opening remarks again refer to propagation but with this difference—conditions were so poor that the 1950 event will long be remembered for that reason; the problem was often to find even one band open! Throughout the British Commonwealth the low frequencies were noisy and the M.U.F. low; in fact, the logs show a great scarcity of 28 Mc/s. contacts. Maybe it is the unlucky thirteenth time! In spite of this, however, the scores of the leading stations are well up to standard in the Senior events, though the low power stations were noticeably handicapped.

Senior C.W.

The Senior C.W. table records the calls of many well known regulars and shows that there was a close race amongst the first ten.

Mr. W. E. Russell, G5WP, who has been trying hard since 1937 to win the event, is warmly congratulated on reaching the top place at last, although he himself declared awhile back that the Senior could not be won from Great Britain! His pair of 35T's with a rotary W8JK for 14 and



After many attempts "Rusty" — G5WP of Woking, Surrey—has at last brought the B.E.R.U. Senior (C.W.) Trophy back to the British Isles. Only other C to win this contest is G5ML, who led the field in 1934.

28 Mc/s. supplemented by a long wire for 3.5 and 7 Mc/s. enabled him to beat conditions and gain 2,254 points from 197 well-selected contacts in 52 zone-bands.

Second place goes to Mr. W. R. Joss, G2AJ, who also used 35T's for the H.F. bands and a pair of 811's for the L.F. bands. His collection of six aerials helped him to score 2,192 points



G2AJ of Biggin Hill, Kent, came near to achieving a double victory with his first B.E.R.U. entries. He is seen here with the equipment which gained him leading place in the 'phone section, and a second in the senior C.W. section.

from 51 zone-bands. As he also won the Telephony Contest, he is to be congratulated on the results of his first attempt at "BERU."

Third place goes to Mr. C. Herbert, ZL1MB, with 257 contacts in 41 zone-bands and 2,185 points. As with most leading stations, his story shows that this was a year when aerials as well as skill were necessary. His VT127A valve behind a 500 ft. Vee, an 8-section Sterba or a 3.5 Mc/s. "Zepp" brought results from the place where conditions were poorest of all. Our old friend Maj. Ken. Ellis managed to get himself an MP4 call in time for the contest, but in doing his "duty" and offering contacts to all and sundry he forfeited the chance of many high scoring points and finished with a rather low score for 340 QSO's.

Junior C.W.

Students of "form" can usually spot the leading Senior stations, but it would be unwise to wager on the Junior event. Mr. Sydney Clark, VS1CW, of Singapore, is this year's surprise winner. His modest 807 output stage and simple aerials gave him 38 zone-bands, 1,749 points and a lead of 500. His 7 Mc/s. contacts are a DX feat in themselves.

One of the few regular representatives of the Union, Mr. J. C. Van Wyk, ZS6QF, takes second place with a score of 1,257 points from 29 zone-bands. This station used an 807 with a long wire 7 Mc/s. aerial, folded dipole for 14 and a "quad" for 28 Mc/s.

All DX men know Mr. Bob Campbell, VK4RC, and we are pleased to see him, after many attempts, rise to third place in the Junior. A score of 1,231 points in 31 zone-bands from the ubiquitous 807 and a single centre-fed 33ft. vertical is worth noting.

Another well known, and well placed, "regular" is Mr. J. S. Nicholson, VU2JP. We would risk a shilling for a place next year—it's up to you now, Nick!



G6RH of Slough, Bucks, has long established his claim to B.E.R.U. fame. This year he concentrated on the 'phone section—and gained third place.

Senior Telephony

As a new venture for B.E.R.U. Contests, and under this year's conditions, it is perhaps not surprising that British Isles stations have taken the leading positions. The scores are high for a 24-hour period, but when the existence of this event becomes more widely known there may be serious competition from Dominion or Colonial stations.

As already indicated, Mr. R. Joss, G2AJ, leads, with a score of 1,294 points in 31 zone-bands, closely followed by Mr. John Ellery, G2DPZ, who made 1,277 points in 32 zone-bands with the aid

of an Eimac 100TH and a "farm" of eleven aeriels, ranging from rhombics to dipoles.

Third place goes to Mr. R. Holmes, G6RH, close behind with 1,250 points from 29 zone-bands. Bob, who also has a high place in the C.W. Contest, used a 4-125A valve with two rotary beams to overcome space limitations.

Junior Telephony

The only two entries for this section were from VU2LU (271 points) and GM3DZB (222 points). It has been decided to make no awards for this section but it is hoped that conditions will be more favourable to low-power stations next time.

Receiving

With this section operating on R.T. instead of C.W., not only were many more logs received, but they came, in the main, from a different group of amateurs. It was undoubtedly disappointing to the few regular C.W. entrants but to run both classes does depend on the amount of labour available for judging. Our familiar C.W. entrant, Mr. Eric Trebilcock, of Melbourne, disappointed, but undefeated, sent in a check log which would have made a good 1,500 points.

The winner, Mrs. Haydon, wife of G3BLP—using her husband's DX aeriels—leads with 862 points. Mr. P. Walker, of Nairobi, with 780 points is second, and Mr. W. Mills, A1036, of Chelmsford, third. Three logs were received from the members of the Radio Society of East Africa, and it is noted that the Society provided nicely printed log forms.

Entries: Logs

The total number of logs received (172) is greater than in 1949, but only because another section has been added. Canada was well represented, Australasia moderately, Africa poorly; the bulk of the remainder being from Britain. The Telephony event produced only 20 claims, due partly, perhaps, to the combination of an early date and a new event. It should be possible to bring in logs from many more of the four or five hundred stations who take part in B.E.R.U., but probably only a few are aware of the dates until after the events have started, in spite of much publicity, including the circulation of the rules some months in advance to Empire Societies and individuals.

The 40 check logs were welcomed and were of great use. Four logs were not acceptable, as entries, as they were not set-out in accordance with the rules; they have been used as check logs.

The accuracy of the logs is, in general, high, and it is noted that the telephony entries are particularly good. In many cases where points are lost it is through carelessness, and often it is the same stations who begrudge the time required for making an analysis sheet.

The quality of the logs varies: some are beautiful; others come in miscellaneous shapes and sizes; one was stitched on the right; two were over five feet long with nowhere to cut; another appeared in grease pen on something like blotting paper! The Contests Committee appeal to all future competitors to help reduce their labour by sending logs which can be handled and read quickly. A carbon duplicate logbook with direct entry will save mistakes and increase scores.

Operating

The standard of operating was reported to be high, though some complaints were made about V.F.O. use, to which there appears no clear answer short of removing competition! Signals were mostly of good quality, but with a sprinkling of well known "doubtful T9" stations.

PLACINGS—SENIOR TELEGRAPHY SECTION

Pn.	CALL	QSO.	Pts.	Pn.	CALL	QSO.	Pts.
1	G5WP	197	2,254	46	VQ2GW	77	871
2	G2AJ	207	2,102	47	VK3PL	79	863
3	ZL1MB*	257	2,185	48	G6XL	62	848
4	G6CJT	184	2,167	49	ZS6BJ	72	807
5	GW3ZV	193	2,132	50	VK3JJ	73	786
6	ZS5YF	297	2,123	51	VK2VN	90	785
7	VK2DI	206	2,096	52	VE6EO	87	771
8	G6RH	177	2,069	53	G6IF	53	743
9	ZL2FA	263	2,060	54	ZE1JO	68	727
10	MP4KW	340	2,059	55	VK2AAH	62	720
11	VE3KE*	214	1,926	56	VE3QB	66	715
12	ZE2JV*	193	1,788	57	G3BDQ	56	711
13	VK3XK	151	1,761	58	VE5QZ	70	695
14	VP6CDI	209	1,701	59	G6RB	51	690
15	V81DZ	177	1,687	60	VE1CU	88	690
16	G6GN	135	1,675	61	VE2BK	82	667
17	G5DQ	143	1,590	62	VK2PV	53	657
18	G3DCU	122	1,581	63	VK2MT	54	625
19	V86AX	161	1,528	64	G6MRV	53	623
20	VK2RA	135	1,520	65	G8ON	45	618
21	VQ4SC	164	1,495	66	G5MR	44	597
22	VK6RU	177	1,478	67	G6BB	41	572
23	VE2NT*	188	1,390	68	G6HD	40	541
24	G8PB	109	1,351	69	VE3ADV	41	514
25	G2DC	104	1,251	70	G8KU	38	500
26	G6LI	100	1,230	71	VE1HG	55	496
27	ZS6BT	100	1,209	72	G6CL	34	486
28	G6XN	110	1,207	73	G2DK	35	474
29	ZB1BD	179	1,153	74	VP8AI	41	447
30	VQ3SS	107	1,150	75	G6MIZ	29	412
31	G3AZ	85	1,127	76	G2AJB	29	409
32	GW5SL	90	1,106	77	ZS6VH	34	402
33	G8KP	81	1,087	78	VK2OA	31	395
34	G2QT	85	1,082	79	G2KK	27	358
35	G5PQ	78	1,065	80	GM3CIX	25	351
36	VE1IM	174	1,055	81	ZL3GR	33	335
37	VK3ZC	90	1,045	82	GM3CVZ	20	291
38	VK7JB	109	1,016	83	G5WI	20	281
39	G5DF	79	1,005	84	VK7LJ	20	272
40	VE7VO	102	989	85	V86BC	33	246
41	G14NU	79	975	86	ZL3CP	19	242
42	G8BXN	69	947	87	G6NK	12	173
43	VP6AT	98	920	88	VR2AS	28	134
44	VE2OL	95	911	89	G5ZK	8	116
45	VE1EK	102	892	90			

* Zone Award.

† Not eligible for Award

JUNIOR TELEGRAPHY SECTION

Pn.	CALL	QSO.	Pts.
1	V81CW	174	1,749
2	ZS6QF	116	1,257
3	VK4RC	112	1,231
4	VK5OU	116	1,203
5	VU2JP	140	1,192
6	V82CN	82	899
7	ZD4AM	104	763
8	VK3UM†	61	670
9	ZB2I	96	472
10	VP1AA	27	358
11	VE3AFY	52	343
12	ZS5BW	22	302
13	VK3XB	21	266
14	G8DA	18	263
15	VK5RK	19	215
16	VE2IL	11	145
17	VE2BR	7	94

that month than later. On the other hand the North loses by April, and the whole of the useful periods are heavily occupied. However, since the move forward to January did not relieve interference with other contests, it might be more generally satisfactory to return to the February - March period.

Letters

It is not possible to answer individually all

Date: Conditions

From all directions, conditions have been reported as very poor throughout the three weekends, particularly from VK-ZL where 28 Mc/s. was nearly blank and QRN was bad. It was appreciated that January might be a little early for the Southern Hemisphere, and also that ionospheric disturbances are more likely in

TELEPHONY SECTION

Pn.	CALL	QSO.	Pts.
1	G2AJ	105	1,294
2	G2DPZ	104	1,277
3	G6RH	107	1,250
4	VQ4ERR*	87	1,008
5	VK3HW	81	830
6	V81DZ	71	829
7	VQ4SC	71	814
8	ZE2JV	55	573
9	G3A00	43	534
10	ZL1HY	39	527
11	G3DO	41	509
12	V89AH	40	489
13	VE3QB	39	487
14	ZE1JO	32	391
15	VK6PJ	21	291
16	G2DYY	15	215
17	VE2NI	17	177
18	VO1T	16	159
19	VQ4RF	7	114
20	ZS5DS	3	42

RECEIVING SECTION. (TELEPHONY)

Posn.	NAME	Points	Zone
1	Mrs. Jean Haydon	B.R.S. 15961	862 G
2	P. A. Walker*	E.A.R.S. 14	780 VQ4
3	W. C. Mills	A. 1036	638 G
4	D. L. McLean	B.R.S. 7594	592 G
5	B. Kendall	B.R.S. 14261	590 G
6	W. L. Ely	B.R.S. 1535	585 G
7	C. F. Peers	B.R.S. 3543	558 G
8	W. J. C. Pinnell	A. 1013	533 G
9	F. W. Parkhurst	B.R.S. 10663	486 G
10	D. D. Grieve	E.A.R.S. 13	486 VQ4
11	E. W. Trebilcock	B.E.R.S. 195	416 VK3
12	K. Howell	E.A.R.S. 1	390 VQ4
13	L. Shearlaw	B.R.S. 15846	218 G
14	D. W. E. Powell	B.R.S. 17241	214 G
15	L. Van Zyl	ZSLTB	186 ZS
16	D. P. J. Mead	B.R.S. 18249	146 G

letters received, but the comments and suggestions have been a welcome help in preparing this report. In studying these, attempts are always made to give universal opportunity, but some proposals, such as more sections, or single-band awards must be considered in terms of man-hours of judging time (already well over 100). The zoning and scoring methods, worked out over many years, seem to be well established, though an adjustment of zone for VK7 might be an advantage. All agreed, in spite of poor conditions, that they had enjoyed this year's contests.

DIRECTION FINDING CONTEST EDGWARE EVENT

DESPITE heavy rain, fourteen contestants took part in the first qualifying round for the 1950 R.S.G.B. Direction Finding Contest held in the Edgware District on Sunday, July 23. The event, which was organised by Mr. H. W. Pope (G3HT), was held in accordance with the rules published in the June, 1950, issue of the BULLETIN. Eight of the competitors succeeded in locating the hidden transmitter within the stipulated time of 2½ hours. These were:

Position.	Competitor.	Time of arrival (B.S.T.).
1.	G. T. Peck (High Wycombe)	1511
2.	R. Haygreen (Edgware)	1512
3.	G. C. King (Dagenham)	1520
4.	J. Salter (High Wycombe)	1527
5.	S. T. Smith (Southend)	1531
6.	W. F. Holdaway (Chadwell Heath)	1552
7.	R. D. Charlton (Romford)	1554
8.	A. E. Glozier (Barking)	1558
9.	R. K. Seabrook (Southend)	1612
10.	F. A. W. Wisdom (Romford)	1613
11.	S. Fryer (Edgware)	1614

It is reported that one competitor whose bearings brought him into the vicinity of a mental hospital was earnestly invited to come inside! After the contest the party, including numerous assistants (drivers and map-readers), sat down at Ye Olde Elstree Tea Rooms, to a tea which later developed into a general discussion on D/F Contests.

LONDON MEETINGS

MEMBERS are asked to note that meetings of the Society will be held at the Institution of Electrical Engineers, Savoy Place, London, on the following Friday evenings: September 29, October 27, November 17, December 15, 1950. January 26, February 23, March 30, April 27, 1951.

A programme of lectures will be published next month. Meetings will commence at 6.30 p.m. preceded by a buffet tea from 5.30 p.m.

NEW LICENCE CONDITIONS

AS the result of representations made by the Society the Postmaster-General has agreed that A2, i.e., M.C.W. (Telegraphy), may be used by new licensees during their first year on frequencies of 420 Mc/s. and above.

Power in excess of 25 watts and the use of A2 and A3 (Radio-telephony) are not normally granted on the first issue of a licence except as stated above. The licensee can, however, apply for the maximum power and the types of emission shown in the table below at the end of the first year of his licence. He must then submit evidence to prove that the station has been used in communication with other licensed amateur stations on C.W. during this period.

In the past the Post Office have not found it necessary to remind amateurs that they were expected to use their transmitters and become proficient during their first year before a full licence was issued, but, because the position has been challenged by one amateur, a new clause has now been added to the Summary of Conditions governing the issue of a high power licence.

The following table shows the frequency bands, power, and types of emission available to U.K. amateurs at the present time:

Frequencies in Mc/s	Maximum Power in Watts (Provisional)	Types of Emission
1.715—2.000	10	A1, A2 & A3 (amplitude modulated only)
3.500—3.635	150	
3.685—3.800	150	
7.000—7.300	150	
14.000—14.400	150	
28.000—30.000	150	A1, A2 & A3 (amplitude or frequency modulated)
144 — 146 *	150	A1, A2 & A3 (amplitude modulated only)
420 — 460 †	25	A1, A2 & A3 (amplitude or frequency modulated)
1215 — 1300 †	150	
2300 — 2450	150	
5650 — 5850	150	
10000 — 10500	150	

* Subject to non-interference with Government Services working in this band.

† Subject to non-interference with other Services working in these bands

Interference with Wireless Telegraphy Advisory Committee Appointed

THE President of the Institution of Electrical Engineers, with the approval of the Council, has nominated 45 persons to constitute the panel provided for by Section 9, Sub-Section (2) of the Wireless Telegraphy Act, 1949.

From this panel, the Postmaster-General has appointed an advisory committee of 17 members which he will consult before making regulations for prescribing the requirements to be complied with in the case of the ignition systems of certain internal combustion engines, and an advisory committee of 18 members which he will consult before prescribing requirements to be complied with in the case of refrigeration apparatus. The requirements in each case will be designed to ensure that the apparatus concerned does not cause undue interference with wireless telegraphy.

The Chairman of the Ignition Systems Committee is Col. Sir A. Stanley Angwin, K.B.E., D.S.O., M.C., T.D., B.Sc.(Eng.), M.I.E.E. Dr F. T. Chapman, C.B.E., D.Sc.(Eng.), M.I.E.E., is Chairman of the Refrigeration Apparatus Committee.

In the Workshop

HINTS ON BEAM CONSTRUCTION

WHILST most amateurs confine their constructional activities to "apparatus," many also turn their attention to the purer mechanical field of multi-element rotary beam aerials and tower construction. Although the same basic engineering processes are involved, they must, in these applications, be much more carefully employed. In this article it is proposed to review briefly these processes with emphasis on the difficulties which arise due to the necessity of locating aerials out of doors.

There is no need to comment too fully on the many examples of "free enterprise" that one sees in the construction of rotary beams. Slovenly contraptions, alas, too common, cannot altogether be excused by the amateurs' oft-claimed privilege of "improvisation" and "expediency." It is always painfully amusing after a period of gales and heavy weather, to hear the sad recital of casualties to beams and aerials generally. These tragedies are not always due to mechanical weakness or constructional faults—electrical failures in the breakage of feeder lines are equally disastrous, and normally require the lowering of the beam to the ground for an effective repair.

It is not proposed to refer here to the so-called "plumbers' delight" which is a bad expedient and a mechanical nightmare except, perhaps, for V.H.F. operation.

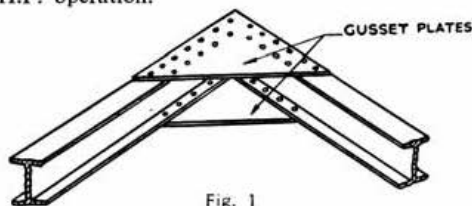


Fig. 1
Fabrication of the corner of a beam cradle.

General Considerations

Aluminium and duralumin are used almost exclusively in the construction of beams, but unfortunately both materials corrode rapidly in industrial or seaside areas. The best safeguard seems to be a fairly liberal application of anti-corrosion grease such as is used in the protection of machinery.

Screws and Bolts.—Many readers will have noticed the severe corrosion which takes place when brass, and particularly steel, bolts and screws are used in aluminium construction. This trouble, which is due to electrolytic action, can be mitigated to some extent by the use of cadmium plated screws. Welding or riveting is however the best solution, but if this is not possible a good tip is to apply Bostic "C" beneath the heads of bolts and screws before insertion.

Welding and Riveting.—Welding is the most satisfactory process for the construction of beam cradles where a single boom is not used, but unfortunately relatively few amateurs have access to the necessary plant. Commercial welding is liable to prove rather expensive chiefly due to the care with which dimensions and "squareness" have to be observed.

The alternative is a fabricated structure built up

by the use of rivets and "gusset plates." Excellent results are possible, and the work can be carried out by the inexperienced amateur who is willing to spend time on a somewhat lengthy job. The use of gusset plates, as applied to the fabrication of a beam cradle, is illustrated in Fig. 1. The cradle itself is made from extruded "H" section duralumin, now readily obtainable and excellent for this purpose.



Fig. 2

To avoid drilling beam elements, clips should be used in conjunction with stand-off insulators.

It is not possible to give detailed constructional information because dimensions and layout will depend upon individual ideas of design and requirements and will be governed by the particular bands to be covered. Briefly, the members are prepared, and the gusset plates cut from, say, 16 S.W.G. dural sheet. A gusset is then applied to each corner and held in place by three or four nuts and bolts to give sufficient rigidity while holes for the rivets are drilled. The rivets should be of aluminium, about 3/32in. round heads, and the holes drilled to give a "tap-in" fit for the rivets. The rivets should be cut-off leaving about 1/4in. projecting—they are then "peined" or clinched with a "ball-pein" hammer (i.e., a hammer with a "ball" as one face), using another hammer or heavy block of steel against the head of the rivets. Better results can be obtained with a concave rivet punch, if available.

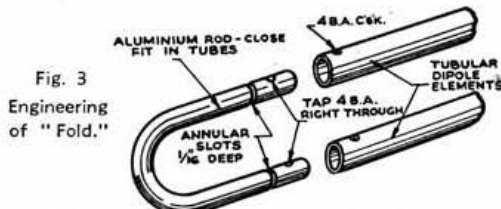


Fig. 3
Engineering of "Fold."

Particular care should be taken to keep the structure square and to dimensions—a simple wooden jig to hold the members in place on the floor or bench is a considerable help. Cross members to the structure can be added in the same way to carry bearings, etc., as the design demands and additional diagonal stiffening provided if necessary. This form of construction can give a remarkably rigid structure.

Beam Elements

In general, beam elements are made from "dural" tube 1/4in. to 1in. in diameter and between 16 and 20 S.W.G. thick. It is most

important to remember that "dural" tends to crystallise and fracture under movement or wind vibration. Fixing holes, therefore, should on no account be drilled through the tubes as this local weakness will assist fracture. Furthermore, the tightening of bolts through the tubes causes flattening and distortion so that the nuts will eventually loosen off.

If the elements are to be supported on insulators, shaped clips of aluminium should be mounted as shown in Fig. 2. Locking washers and locknuts should be used as a precaution against loosening. Care should also be taken to see that a lead or fibre washer is placed under the screw-head *inside* the insulator, otherwise the latter is very likely to fracture during the tightening-up process.

Joining Tubes for Elements

It is sometimes necessary to join lengths of "dural" tubes to give the requisite lengths for radiators, reflectors and directors. In this case a solid "liner" of aluminium should be prepared which should be a firm fit in the tubes. Holes may then be drilled each side of the join for bolts which can be tightened with safety. Bostic "C" should be applied round the joint before bringing the tubes together to keep out moisture.

Engineering the "Fold"

It is popular practice in beam technique to produce an impedance step-up to the transmission line by "folding" the driven element, usually by a single fold. The job of joining up the tubes forming the driven element to the tube forming the fold requires to be well done *electrically* and *mechanically*. Fig. 3 shows a successful method



Fig. 4

"Fold" spacing insulator and clips (not drawn to scale).

by which this may be achieved; the construction is self-explanatory. When assembling, the two annular grooves or slots (cut with a hacksaw) are filled with Bostic "C" before the bend is pushed into the tubes. This forms an effective seal. The internal surfaces of the tubes must be carefully cleaned before the bend is inserted and the bolts fitted.

Spacing the "Fold"

As previously mentioned, drilling of tubular elements should be avoided. If it is required to space the "fold" from the driven element, it is necessary to design a form of spacing insulator with suitable clips.

Fig. 4 shows a recommended arrangement. The insulator may be of any suitable material such as mycalex or laminated bakelite, shaped as shown. The clips may be aluminium, about 16 S.W.G.

It will be seen that the tightening of the bolts through the insulator will draw the clips into the recesses and tighten them effectively on the tubular elements. No dimensions are given as these will depend on the technical considerations of the design, but the idea can be adapted to meet any requirement.

Connections to the Dipole

The connection of the feeder-line to the dipole is probably the most important feature of all. Breakages or bad contacts here cause much heart-burning since the whole beam has, in most cases, to "come down" to permit repairs to be made.

A recommended method of making the connection is shown in Fig. 5. It will be seen that the

feeder-line is looped so that it may be supported in some convenient way as it is essential that its weight does not fall on the contact points. Also it is desirable that the "open" end of the line should face downwards to lessen the liability of moisture ingress which is such a mortal enemy to co-axial and similar lines. The ends of the tubes are plugged with aluminium and drilled and tapped to take two or four B.A. screws as shown. The exits of the wires from the cable should be carefully sealed with Chatterton's compound

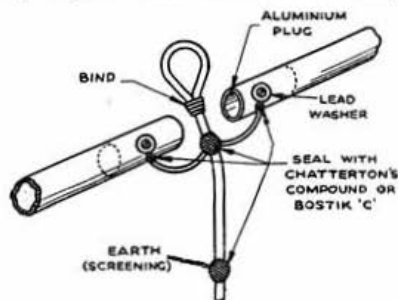


Fig. 5

Careful connection of low impedance feeder-line to dipole elements will eliminate risk of breakages. The example shown is for 80-ohms, twin-screened line.

melted on, or with Bostic "C." This is most important though it is frequently neglected in amateur circles.

Windage

The author has adopted a simple scheme to damp out windage vibration which occurs in folded elements. A weather-proofed cord is attached to the elements at about three-quarters the length of each overhang and brought back in a "V" to the cradle or supporting structure through light springs in tension.

First Radar Reporting Unit

A RADAR UNIT of the Royal Auxiliary Air Force is to be formed in Central London with the title of No. 3700 (County of London) Radar Reporting Unit and with its Headquarters and social centre at No. 77 Hallam Street, London, W. Its first Commanding Officer is to be Group Captain E. Fennessy, O.B.E., who will hold the R.Aux.A.F. rank of Wing Commander.

The formation of the unit originates from discussion between the Air Ministry and representatives of the Radar Association. It is an important development designed to give new opportunities to members of the Association, as well as all those interested in radar, to take an active share in the radar defences and to use their knowledge and skill in the radar field for the security of the country.

No. 3700 R.R.U. R.Aux.A.F. will be concerned exclusively with the reporting role—manning, operating and servicing of "Chain Home" stations—and so appeal to men and women interested in radar in the London and Home Counties area whose work and other activities will permit a few hours' attendance each week at No. 77 Hallam Street. The unit will be provided with "live" training by manning operational stations at certain weekends and by taking part in R.A.F. exercises, and attendance at summer camps. Training arrangements are made as flexible as possible to suit the convenience of auxiliaries.

The usual Royal Auxiliary Air Force emoluments will be payable to members of No. 3700 R.R.U.

THE MONTH ON THE AIR

By A. O. MILNE (G2MI)*

Helping Hand

ONCE again Amateur Radio has rendered aid to a ship in distress. On July 7 Brian Oddy, G3FEX, of Steyning, Sussex, sent a CQ call on 3521 kc/s. and heard a station calling him, with a request that he should telephone an urgent message to a Royal Naval Air Station near Padstow, Cornwall. The station turned out to be a naval launch using the call MGF22 proceeding to a ship in distress off Lundy Island and unable, due to propagation conditions, to communicate direct with base. Having passed the emergency traffic and put the boat and coastal station in contact, G3FEX and his father retired to bed. An hour or so later they were roused by the telephone. It was the R.N. Air Station saying that they had lost contact and asking for further assistance. G3FEX was able to pass a message to the ship which allowed ship and shore to regain

Thought for the Month

*Our Happy Lid with eyes aglow
Is testing out his V.F.O.,
The note, perhaps, a trifle rough,
But getting contacts fast enough.*

*His drifting up and down the band
Ensures he's heard in every land,
He boasts: "Why use a note T9,
With R.A.C. I'm doing fine."*

*Until at last the "locals" came
And put a stop to this lid's game.
His lead-filled body lies at rest,
And we are spared one rasping pest!*
G3VA

contact. Later Brian and his father were most courteously thanked by the Admiralty for their efforts.

Just a thought occurs to us; had there been no requirement for radio amateurs to know the Morse Code this incident would never have taken place, and quite possibly lives would have been lost in consequence.

Conditions

The month of July was remarkable for some very unusual conditions on the bands, particularly on 14 Mc/s. At times, very short skip prevailed especially about the same time morning and evening. Stations in Northern France, Scotland, Holland and even the North of England were S9 in London. Even more unusual, a GM and a W6 were worked from London on the same frequency within a few minutes of each other. The early mornings produced high noise level, with a small number of DX stations at good strength, and no other signals from the same part of the world audible at all. During this period BRS16304 copied many 3.5 Mc/s. signals from across the Atlantic between 0130 and 0330 G.M.T., several of them at more than S9. The 7 Mc/s. band produced HK, HC, CO, YV and XE.

Notes and News

BRS16304 reports that CS3AA is an American in the Azores and that this prefix is being used

by Americans in CT2. Bill Cuniff, JA2HB, who is the F.E.A.R.L. QSL Manager, draws attention to the certificate awarded for working seven out of the nine Japanese districts. Cards for claims should be sent to F.E.A.R.L., A.P.O. 500, San Francisco. Coupons for return and postage must be included.

G6BB using a G3JR aerial has added FM8AD, FP8AC, VP9HH, EA9AT, TI2PZ, VQ8AU, 3V8AG and CR4AE to his collection and is now trying for the EDX certificate. G2DP has his DXCC for 28 Mc/s. 'phone according to G3GAD, VE1BV is now on Resolution Island and signing /8. He was heard coming through very well at 2130 G.M.T. on July 18 on 14030 kc/s. '1BV is a very old-timer and his call will be familiar to those who used to take part in pre-war B.E.R.U. contests. His present input is 4 watts to a folded dipole.

VS1CW ex-VK5SC, now once more G3CMP, is a candidate for the "Two-Call" Club. He made WAZ whilst in Malaya but still needs an XE card. Countries total 148-117 to date. He must be the only man living who has received three QSL's from Zone 23 by the same post!

BRS16304 says CR8AJ in Goa is on 28950 kc/s. Apparently this station establishes contact and then goes over to 21 Mc/s. and works cross-band. He received an S9 plus 20db report from Lisbon on this band. This news is especially interesting as 21 Mc/s. has not yet been released to amateurs!

*29 Kechill Gardens, Hayes, Bromley, Kent.



Wreck Bay, Galapagos Islands, was the scene of a concentrated outburst of amateur radio activity during the period April 21-28, 1950, when the HC8GRC expedition—organised by the Guayaquil Radio Club—made 2,116 separate contacts in eight days. Responsible for this feat were: left to right, HC2KB; XYL of HC1JP; HC1JP; HC2TR; HC1PK; seated, HC2JR (President of G.R.C.). Contacts included 72 with British stations: 33 on 28 Mc/s. 'phone; 24 on 14 Mc/s. 'phone; and 15 on C.W. Altogether 744 contacts were made on 28 Mc/s. 'phone; 792 on 14 Mc/s. 'phone; 2 on 7 Mc/s. 'phone; 505 on 14 Mc/s. C.W.; 57 on 7 Mc/s. C.W.; and 8 on both 3.5 and 28 Mc/s. C.W.—representing 69 countries in 27 zones. The equipment included a NC173 and two 75A1 receivers; three transmitters; a 28 Mc/s. wide-spaced 3-element beam and a 14 Mc/s. folded-dipole aerial. One 1.5 kW. generator supplied power—with only one half-hour rest—throughout the eight days. The Club also operated as HC9GRC on the outward trip when contacts included two with European stations: G2AKQ and DL4CU. QSL cards have been sent to every station worked on each band. Let's hope this efficient Group will turn their eyes next towards Easter Island!

CR5AC (Port Guinea) is on 14130 at 2300 B.S.T., whilst CR5AM is active on C.W. EQ3FM is one of three stations in Teheran, the others being 3SAM and 3FAL. Cards have been received from 'SAM.

did not think that such a small rig was capable of working outside the U.S.A.!

Calling Marine Operators

P. C. Probert, G3GPZ, who is a marine operator, suggests a world-wide association of sea-



TA3FAS—ANKARA, TURKEY
Society member, Jim Fry, W5HBQ—depicted here—is the present operator at TA3FAS. The main receiver is a National NC183, and the two transmitters are BC610s, one for 14 and 28 Mc/s., and the other for 1.7, 3.5 and 7 Mc/s. Four element beams are used for 14 and 28 Mc/s., and a 275ft. long wire for the other bands. TA3FAS will be active shortly on 1,900, 3,510 and 3,520 kc/s.

Col. Elser, TA3GVU, stated during a recent QSO that the original operator at TA3FAS is now W3PWR and that he has all the '3FAS logs up to July 14, 1949, in his possession. The present operator at TA3FAS (Jim Fry) has been most punctilious about his QSL's.

G3EET warns against a 'phoney KP4AK. The genuine station gives his QTH as Box 3036, Santurce, the 'phoney gives his as Box 1061, San Juan.

ZE3JL reports that Jimmy Warren, ZS9F, who was blinded when lightning struck his station, is on his way to England. The ZE QSL Bureau is now in full swing again.

BRS18017, with a new aerial, gives PJ5TR, 14025 at 2145; OX7B, 14020 at 2050; and EA8AY, 14250 at 2030 as a few choice items.

Those lucky ones who landed MD9AA hooked a rare one, as will be seen when the cards arrive. Strange to relate all the "wide boys" spent quite a lot of fruitless kilowatts calling ZD9AA, for some reason best known to themselves!

G2ZF states that "Smithy" of HZ1AB is now W8UMG. He was active from November, 1948, to July, 1949, and will re-QSL willingly for anyone short of his card. G2ZF received his QSL from CR10AA direct, so he does!

The Ceylon QSL Manager, VS7NX, has knocked up 129 countries for his DXCC; has the cards for B.E.R.T.A. and only needs XE for WAZ, which must be on C.W. He says they are very rare. We certainly agree, in fact we cannot remember ever hearing one on C.W. VS7SR and VS7LP are two new calls. 7BR is back from leave.

G3BGP of Canterbury says a W4 was quite amazed to get a reply to his CQ; he was only using a Collins 32-V-1 running at 150 watts and

going-operator amateurs. This is a good idea especially in view of the efforts to extend the mobile marine facilities to the ships of other nations. Anyone interested should write to him c/o 120 Old Lodge Lane, Purley, Surrey. He will not be on with his G call until November.

Radio Amateurs' Examination

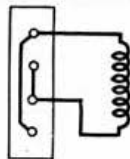
TO prepare candidates for the Radio Amateurs' Examination, a course of lectures is to be given by Mr. Alan Bayliss, B.Sc. (G8PD) at Wembley Hill Evening Institute, High Road, Wembley, during the forthcoming autumn and winter.

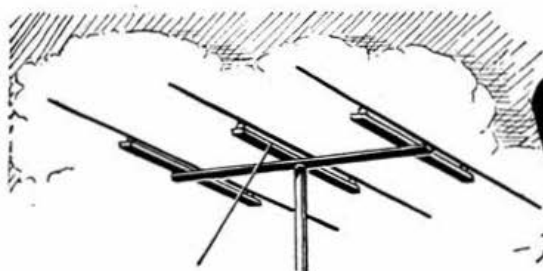
Candidates will enrol at Park Lane School, Wembley, during the week commencing September 11 and the course will commence on September 18.

It is hoped that candidates for the 1951 examination living within easy reach of Wembley will take advantage of this special facility which is being provided by the Middlesex County Council Further Education Department.

Side Slip

MR. R. H. M. JOHNSTON, G2ZP, has drawn attention to an error in Fig. 4 of the article by R. W. Rogers, G6YR, "The Design of Tank Circuits of Constant Q" which appeared in the April issue of BULLETIN. As shown the tank coil on 1.8 Mc/s. is short circuited. The correct arrangement is as illustrated.





AROUND THE V.H.F.'s

Further G/DL Contacts on 2 Metres

By W. H. ALLEN, M.B.E. (G2UJ)

THE first G/DL contact on two metres, between G3DIV/A (Eastbourne) and DL4XS/DL3KE (Wiesbaden), details of which were given last month, was followed by others including one between G2XC (Portsmouth) and DL3FM (Essen) on June 28. It is believed that G5BY (Bolt Tail, Devon) also worked the same German station, but confirmation is lacking at the present time.

Two-Metre Station Reports

G2AHP (Perivale, Middx.), having now worked 100 stations on two metres, is anxious to make contact with Cambridgeshire and Norfolk. His new 12-element stacked array out-performs any other type of aerial so far tested, including "3 over 3" and "4 over 4". He finds that much interesting V.H.F. news may be gleaned from the Thames Valley two-metre net which operates from 1030 B.S.T. on Sundays.

During the evening of June 28, G3EHY (Banwell, Somerset) heard DL3FM on several occasions calling CQ at strengths up to S7, but although repeated calls were made the German station did not reply. A similar negative result occurred the following evening when PA0PN was heard on both 'phone and CW. G3EHY did, however establish contact that evening with G8GL (Northallerton) over a distance of 220 miles.

Our Banwell reporter found it possible to work over distances of more than 200 miles for two-thirds of the period mid-June to mid-July, with 150-mile ranges on most of the "poor" days. His sked. with G2CPL (Lowestoft), over a 221-mile path, failed on only nine occasions. From almost daily operation on the band, both summer and winter, G3EHY has proved that good two-metre conditions are by no means confined to the warmer weather, and that—from his situation, anyway—it is a bad day indeed when stations 100 miles away cannot be worked. It is to be hoped that the many new calls to be heard on the band these days will not desert it during the coming winter months.

G3EHY found conditions good—particularly during the morning—for all directions during the R.S.G.B. Two-Metre Field Day. It is unfortunate that more activity does not take place on Sunday mornings, for there is little doubt that the band is often in good shape at that time.

A suggestion is put forward for the consideration of stations in the London area that they should have available an alternative frequency to avoid mutual interference in the congested section of the band in which the majority of them work, as an increasing number of contacts are being missed due to this cause.

G2FMF (Hillingdon, Middx.) is thanked for a list of 70 stations, together with their frequencies, heard during the weekend July 1 and 2 and including the period of the R.S.G.B. Two-Metre Field Day. This gives an excellent idea of what can be heard during periods of peak activity, provided the aerial and receiver are up to their job. The equipment in this case comprised two six-element stacks erected at right-angles to one

another—the N/S one being indoors—and a converter employing a 6J6 neutralised push-pull R.F. stage, an EF54 mixer and an EF50 oscillator and doubler.

After an absence of more than eight months, G3COJ (Hull) is again active with 150 watts to a pair of HK257Bs on 144.20 Mc/s. and a 16-element beam. The receiver comprises a c.c. converter with *Cascade* R.F. stage into an AR88. On the evening of July 8, G3FUM (Weston-super-Mare) and GM3EGW (Dunfermline) were worked at distances of 200 miles, and G5BY was heard. GM3EGW and GM3BDA (Airdrie) were contacted on the 18th, the latter being S7 at 215 miles. On the following evening the northern path was poorer, but conditions to the southward improved, resulting in a contact with G2XC, again more than 200 miles distant, in addition to several London stations. On July 20, PE1PL (The Hague)—see later paragraph—was heard at RST 559 around 2030 B.S.T., and later a contact was obtained with G3DIV/A (Eastbourne). Apart from the foregoing, 'COJ found conditions fairly poor, although not bad enough to prevent G3EHY from being heard on most evenings. G2BUJ (Swindon) was heard and called several times during the month, but to no purpose.

GW2ADZ (Llanymynech, Mont.) found July and the latter part of June generally poor, the several excellent openings experienced in the South of England not being evident in North Wales. However, G-DX up to 250 miles was possible on July 5, 8, 12, 18 and 19, and on the 18th a DL1 was heard on 144.2 Mc/s. for a few minutes around 2130 B.S.T.

It appears that G4LU (Oswestry) also worked PA0HA (Hoogezand) during the "PA Party" reported in our June issue, and as this station is only half a mile to the east of Llanymynech, ADZ considers that his record ought to be held jointly! What would seem to have been the greatest distance at which a Dutch station was heard at that time was the reception of PA0MU by GW5SA at approximately 450 miles.

European Two-Metre News

We are indebted to G3COJ for the following information: SP5PZK—a club station—is on 144.00 Mc/s. with 100 watts, a *Cascade* receiver, and a fixed beam trained on Berlin. During the European Tests on July 2 they failed to work anyone outside Poland where, it is understood, there is not a great deal of V.H.F. activity. HE1JJ is reputed to have worked DL4XS (Wiesbaden) on July 2. DL4CK, who is W6YHI, has now returned to the States, while DL4XS has been visiting Italy.

DL3AU states that owing to unforeseen difficulties, DL1SI (see June issue of the BULLETIN) did not operate on high power during the period June 25 to July 2. Mr. C. A. King, of B.A.O.R., Herford, is also thanked for his letter regarding DL1SI.

G3BSR throws some light upon the recent activities of PE1PL following a 14 Mc/s. contact with PA0CW, who, together with PA0BL and another,

operated this station at the Laboratory of Physics at The Hague. Input was 60 watts to a 16-element beam on a frequency of 144.00 Mc/s., when C.W., phase-shift C.W. and 'phone transmissions were radiated daily for three weeks from the early part of July. Whether the station is still in operation is not known.

Another European DX possibility is opened up by news from TF3MB (Reykjavik) that there is now two-metre activity in Iceland. TF3EA, 'MB, 'RS and 'SF are on the band regularly between 1300 and 1900 G.M.T. on Saturdays and Sundays, using converted SCR522 transmitters and five-element beams. A figure of 144.75 Mc/s. is mentioned, but whether all the stations operate on that frequency is not clear. Those who would like to arrange skeds. should write to TF3MB, Magnus Blöndal, Post Box 1080, Reykjavik.

Seventy Centimetres

GW2ADZ has had a QSO with G4LU which, if not remarkable for its distance, is believed to be the first GW/G contact between fixed stations. Tests have been carried out between GW2ADZ and G3EHY, and the latter believes that he heard the Welsh station on three occasions, but at such indifferent strength that positive identification was impossible.

SM5VL (Stockholm), V.H.F. Editor of *QTC*, has recently completed an interesting c.c. converter for the range 432-436 Mc/s. Half a 6J6 is employed as an earthed-grid R.F. stage, a triode-connected 6AK5 as mixer, and all tuned circuits are concentric lines taken from the ARN5. Double conversion is used, the first I.F. being tunable over the range 27 to 31 Mc/s. and the second is in the region of 5 Mc/s.

Have you any news which you think might be of interest to other amateurs working on the V.H.F.'s? If so please write to G2UJ, 32 Earls Road, Tunbridge Wells, Kent.

TWO METRE FIELD DAY RESULTS

THIRTY-FIVE portable stations, almost double last year's number, took part in the Two Metre Field Day on July 2, 1950. In addition, well over 100 fixed stations were operating during the contest period. But despite the increased activity, leading scores are slightly below those of 1949, undoubtedly due to rather patchy propagation conditions. Even so, there were several contacts—both portable-to-portable and portable-to-fixed—over distances exceeding 200 miles. Several entrants reported severe fading on stations more than 60 miles away.

Activity was fairly widespread, at least in Southern England. The West Country and South Wales produced a number of useful contacts while several expeditions were made to counties seldom heard on the band. More North Country activity, however, would have been most welcome. That the "quality" of a particular location cannot always be readily assessed from the study of a relief map alone was emphasised by the experiences of GW5BM/P. After choosing Cefn Onnew (1,694ft. a.s.l.), one of the highest points in Brecknockshire, 'BM and his party were disappointed to find an almost complete cut-off of 144 Mc/s. signals towards the east. Was the high mineral content of the surrounding terrain to blame? The "quality" of a particular site is a subject which deserves fuller investigation.

Equipment

Mr. K. J. Grimes, G3AVF, of Torquay, operating from Black Hill (1,300ft. a.s.l.), 4 miles west

of Bovey Tracey, Devon, finished at the top of the list; his 32 contacts (12 of them over distances greater than 150 miles) gaining him 183 points. His transmitter consisted of three QVO4-7 stages followed by an 832 power amplifier with a 7-element wide-spaced Yagi aerial. The receiver was a three stage converter (6J6 neutralised R.F.—6J6 p.p. mixer—9002 oscillator) followed by an R109 tuned to 5 Mc/s. The runner-up, Mr. R. L. Glaisher, G6LX, of East Croydon, took his equipment to Orcop Hill, 9 miles S.S.W. of Hereford from where he made 44 contacts with a 6J6-6C4-832 transmitter, an 8-element bi-directional stacked aerial, and a crystal-controlled cascode converter with an R209 receiver. G6XM/P operating from 4 miles north of Alton, Hants. made the most contacts—64—but the points scored over the shorter distances were not sufficient to overtake those of the leading stations. An 832 P.A. was favoured by the vast majority of entrants, the few exceptions including p.p. 6C4s (G5MA/P), p.p. CV63s (G2WS/P), and p.p. 7193s (G3CVO/P and G8SI/P). G2XV/P contacted four Dutch stations while two Fs were raised by G5MP/P.

Comments

Several stations encountered unexpected difficulties in connection with their sites: G3CVO/P was originally erected in the wrong field, necessitating a hasty removal, while other stations operating in the Ashdown Forest were alleged to be contravening local bye-laws. Written permission is the best safeguard against this type of interference. Several entrants commented upon the broad signals, mainly from fixed stations, still to be heard and suggest that these contests should be confined to C.W. One fixed station was reported as spreading a full megacycle at a distance of 50 miles. There is also a tendency for some operators to listen only for strong signals, a habit which is particularly exasperating for those who are "in the wilds." Multi-operator stations came in for some criticism but this practice, surely, is one of the traditional pleasures of a V.H.F. Field Day.

Positions

Posn.	CALL	LOCATION	Contacts	Pts.
1	G3AVF/P	4m. W. Bovey Tracey	32	183
2	G6LX/P	9m. S.S.W. Hereford	44	168
3	G3ABA/P	6m. W.N.W. Coventry	50	158
4	G3APY/P	3m. W. Ambergate	45	156
5	G6XM/P	4m. N. Alton, Hants	64	154
6	G2XV/P	Linton, Cambs.	43	148
7	G5RP/P	4m. W. Wantage	33	121
8	G3CZV/P	4m N.E. Leek, Staffs.	35	119
9	G5MA/P	Storrington, Sussex	41	107
10	G3MA/P	May Hill, Hereford	30	107
11	G2HCG/P	Honey Hill, Cold Ashby	32	105
12	G2ATK/P	7m. S. Birmingham	34	96
13	G8TB/P	2m. N. Reigate	41	89
14	G3AHB/P	Stokenchurch, Bucks.	38	81
15	G8KZ/P	2m. W. Oakham, Rutland	28	79
16	G8SM/P	2m. S. Kingclere	34	78
17	GW3ATZ/P	4m. S.W. Mold	26	75
18	G3FD/P	2m. S.W. Dunstable	31	70
19	G4CI/P	7m. E. Guildford	33	64
20	G3BPM/P	6m. S. Thame, Oxon.	29	62
21	G5MP/P	11m. W. Dover	13	60
22	G3CU/P	Dulwich S.E.23	37	49
23	G3ERD/P	Littleover, Derby	15	48
24	G2WS/P	3m. W. Crowborough	24	45
25	G8QY/P	4m. S.E. Hereford	14	40
26	G3CVO/P	Bledlow Ridge, Bucks.	17	33
27	G8SI/P	Olivers Mount, Yorks	4	14
28	GW5BM/P	Llangattwg. Mtns.	5	12

Also active: G3ABH/P, 3EIW/P, 3MY/P, 4IB/P, 6NB/P, 6JK/P and GW4OS/P.

Check Logs: The following are thanked for forwarding check logs—G2OI, 3BLP, 3DGN, 4RX, 5AS, 5JU, 6CJ and 8IP.

RECORD ATTENDANCE AT CAMBRIDGE O.R.M.

ARRANGEMENTS for the Cambridge O.R.M. started on a cold day in January and finished a blaze of sunshine on Sunday, July 9, 1950.

Originally planned for an attendance of 80 to 100 and with July 1 set as the closing date for tickets, the demand soon became so great that by the middle of June all outstanding tickets had to be called in, and revised arrangements made on three separate occasions to increase the number of reservations, until the maximum figure of 300 for luncheon was reached. Even then, on the actual day, overflow arrangements had to be made for lunch and in fact 335 teas were served! The programme will long be remembered by those who were fortunate enough to obtain tickets.

Shortly after 11 a.m. the President and General Secretary arrived on the *Pye Sports Field* from Ipswich where they had attended a dinner given on the previous evening by the local group. They were there joined by Council members 4KD and 8TL and a large body of members, relatives and friends who had come from Norfolk, Suffolk, Essex, Huntingdonshire and Cambridgeshire within the Region, and from Scotland, Stoke-on-Trent, Nottingham, Lincolnshire, Hampshire, Surrey, Oxford and London. Especially welcome were visitors from the United States, India, China and Italy.

Although the advertised demonstration of colour television by *Messrs. Pye, Ltd.*, could not be given because of the recent installation of the apparatus in a London hospital, an excellent demonstration of black and white television with two cameras was given by that firm. The *Model Radio Control Society* exhibited a DUKW and torpedo boat on the field and in the river.

Lunch and tea were served and the business meeting held in the Cambridge Borough Restaurant, Petty Cury, which had been specially and willingly opened for the first time on a Sunday for the occasion. After an excellent meal a civic welcome was extended by the Mayor of Cambridge (Alderman Captain A. C. Taylor, J.P.) to which the President, Mr. W. A. Scarr, M.A. (G2WS) suitably responded. During lunch the visitors from overseas were presented to the Mayor. Afterwards a party more than 170 strong under the leadership of Mrs. Jeapes (wife of G2XV) was conducted on a two hours tour of the Cambridge Colleges by volunteer guides of the Y.M.C.A.

Business Meeting

As soon as the tables had been cleared the Business Meeting was opened by the Regional Representative, Mr. R. F. G. Thurlow (G3WW), in the presence of about 160 members. The President who was invited to take the Chair, congratulated the R.R. and his helpers on the excellent arrangements made for the record gathering. After the Regional, County and Town representatives had identified themselves, the General Secretary, reinforced with a microphone on account of the size of the meeting, gave an interesting and informative talk despite some QRM from the washing of plates! After question-time Mr. P. Thorogood (G4KD) briefly touched on Council matters whilst Mr. Thurlow returned thanks for the warmth with which the arrangements made had been received by all who attended. He pointed out that these would not have been possible if he had not received the whole-hearted support and help of officers of the Society and in the Region headed by the Cambridgeshire C.R., and the Cambridge T.R. He then announced that a total of more than 260 gifts had been donated by

manufacturers, wholesalers and retailers for the occasion. An excellent buffet tea followed.

The Draw

In order to preserve interest in the "draw"—which incidentally took 1½ hours to complete—the President drew tickets for the three chief gifts, (BC221 and *Lavioe* meters, a 2,400 volt U.S.A. Power Pack and a *Woden* U.M.3 modulation transformer) noted the numbers and returned them to the hat. At the end of the "draw" the names of the winners of these three big items were disclosed whereupon each handed back the prize—a soldering kit—which he had won! A separate draw for a heavy duty "Avo" meter, in aid of expenses, realised over £17. After an expression of thanks to the Borough catering staff for their grand effort the gathering broke up; those travelling south being destined to meet a heavy thunderstorm.

Trade Displays

Throughout the day *Labgear, Stratton & Co., Denco*, and *Philpotts Metal Works* provided much appreciated trade displays. The items shown proved of special interest to those who had not been able to attend either the R.S.G.B. Amateur Radio Exhibition in London or the 1949 Convention in Manchester.

R.F.G.-T.

Ipswich Group Greet President and Secretary

THE President (Mr. W. A. Scarr, M.A.) and General Secretary (Mr. John Clarricoats) were cordially welcomed at an informal dinner held during the evening of July 8th at the Oriental Cafe, Ipswich. In addition to the 30 local members who were present, the party included G6AB and G6DH from Clacton, Essex.

An excellent meal was followed by a brief intimate talk by Mr. Scarr who was thanked by Mr. Justin Egerton, G8MU. The General Secretary then addressed the gathering on a variety of Society topics and afterwards answered a number of questions.

The friendly informal atmosphere; the high proportion of B.R.S. members present and the keenness of the many young members in this thriving Group were points commented upon by the various speakers.

The opportunity of meeting the President and Secretary, personally, under such happy conditions was a privilege much appreciated, and provided a grand prelude to the record-breaking O.R.M. at Cambridge on the following day.

Incidentally this was the first time that the Ipswich Group had been honoured by the presence at a meeting of Society officials.

London Members' Luncheon Club

THREE well-known Kenya amateurs in the persons of Sidney Pegrum, VQ4CRE, John Powell, VQ4HJP and Steve Hubbard, VQ4NSH, together with R. Mackichan, VS6BC, from Hong Kong, were warmly welcomed at the July meeting of the Club.

London members and visitors to London are asked to note that the Club meets for lunch on the third Friday of each month at the Kingsley Hotel, Bloomsbury Way, W.C.1 (opposite Headquarters). Full details can be obtained from the Hon. Secretary, Mr. W. E. Corsham, G2UV, 143 Abbots Road, Wembley, Middlesex.

Safety First!

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

All apparatus and wiring should be placed so that it is impossible to touch points of high D.C. or R.F. potential under normal operating conditions.

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

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

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

Orderliness in layout is the keynote of safety.

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

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

High wattage bleeder resistances across power-pack filter condensers will prevent shocks from fully charged condensers.

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

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

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

Take your time—develop a safety technique.

High Wycombe D/F. Contest

THE third of the R.S.G.B. D/F Contests, announced in the June issue, will take place in the High Wycombe area on September 3. Details are as follows:

Call Sign: G4NT/P **Frequency:** 1883 kc/s.

Assembly Point: Tylers Green (opposite Red Lion Inn, Penn) on main road 3 miles N.W. of Beaconsfield, Bucks. (Map Reference 906396)

Map: Ordnance Survey, New Popular Edition, Sheet number 159.

Assembly Time: 1345 B.S.T.

Intending entrants should notify Mr. G. T. Peck, Radio Section, Ernest Turner Social Club, Chiltern Works, Totteridge Avenue, High Wycombe (Tel: H. W. 1301/2) not later than September 1 (enclosing 2s 6d. per head if tea is required). It is understood that local awards will be made on the results of this event.

R.N.V.(W)R. Training

A ROYAL Naval Volunteer (Wireless) Reserve station (call MF020) now transmits general traffic to reservists on Monday, Wednesday and Friday evenings from 2000 to 2100 hours on a frequency of 3525 kc/s.

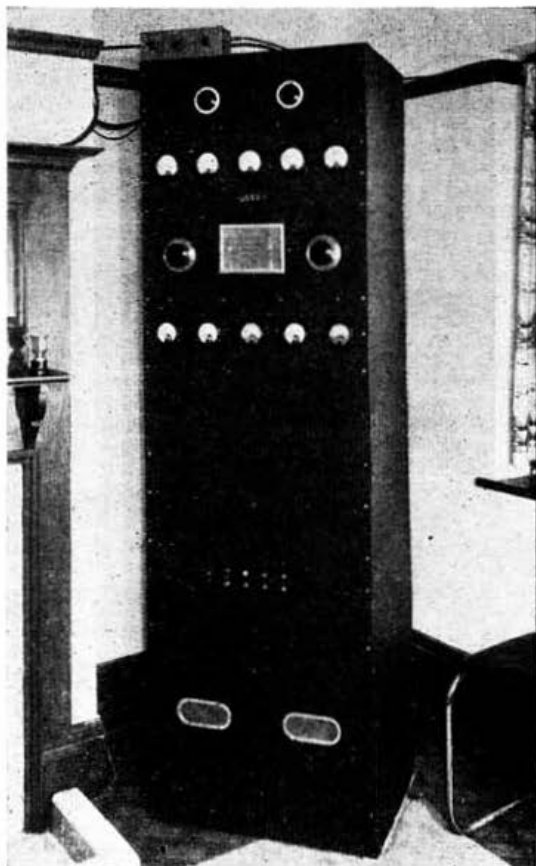
During these periods members who use the 3.5 Mc/s. band are urgently requested to take steps to avoid interference with these important training exercises.

Members will remember that the 3.5 Mc/s. band is shared in Region 1 between Amateur and other Services.

LOW POWER CONTEST

September 30—October 1, 1950

Rules (see next issue) will be basically similar to those for the 1949 event as published in the September, 1949, issue of the Bulletin (p. 89).



STATION G5RV—CHELMSFORD

The main transmitter at G5RV comprises a TVI-proof wide-band exciter and three separate TVI-proof 150 watt P.A. units. A low-pass harmonic filter is mounted on top of the cabinet. The transmitter runs at 150 watts input, phone or key, on all bands from 3.5 to 28 Mc/s. A description of the TVI-proof wide-band exciter (used at G5RV) appeared in the July issue.

QUA

COMMONWEALTH amateurs, visiting the U.K., are finding that applications for temporary G licences are being promptly handled by the G.P.O. Full power and telephony permits are normally granted when the applicant provides evidence that he has held a similar licence in his own country. **VE3ATU** (now **G3GSK**) is one of those who are most grateful for these facilities. It should be noted, however, that they do not apply to licences issued overseas by the military authorities.

It is difficult to keep abreast of the many **DX** certificates now being issued. Latest additions to the list include the *Diplome de L'Union Française* (R.E.F.) issued in four separate categories; an award to European amateurs who have contacted two stations in each of the seven SM call districts (one station in the case of non-European amateurs) issued by S.S.A.; a Worked All JA Districts certificate (F.E.A.R.L.); and a Worked All Europe award (D.A.R.C.). The South African Radio League announces that its new award (see March, 1950, *BULLETIN*) will in future be known as the "All African Award" (A.A.A.) to avoid confusion with the "Worked All America" award issued by the Brazilian society L.A.B.R.E.

In their annual call-book number *Break-in*, N.Z.A.R.T. lists several **Q-signals** which deserve much wider publicity amongst amateur operators. These include **QCM**, **QDH** and **QIF**. **QCM** means either "Is there a defect in my transmissions?" or "There seems to be a defect in your transmission." **QDH**? asks "What is causing the present interference?" with the answer "The present interference is being caused by..." While **DX** enthusiasts should note **QIF**? "What frequency is... (station) using?" with the reply "... (station) is using... frequency."

Although Canada has no television service of its own yet, more than 2.5 million Canadians live within range of United States TV stations. So far during 1950 more than 14,000 sets have been sold. One result (apart from TVI) is a growing need for experienced TV service and maintenance engineers. The Ontario Immigration Department, Ontario House, London, S.W.1, is seeking to fill these vacancies. **Peter A. Manchée** (BRS 12480) who emigrated to Australia in 1948 has been recently appointed Publicity Officer for Victoria to the Australian Broadcasting Commission. His knowledge of VK-broadcasting was partly gained through pre-war listening to the Sydney and Lyndhurst S.W. stations.

Did you know that the following personalities had all owned amateur transmitters? King Ghazi of Iraq; Prince Abd el Moneim of Egypt; Archduke Anton of Austria; Dr. Terman of "Radio Engineering" fame; William Le Queux, popular novelist of thirty years ago; and "A. J. Alan," pre-war B.B.C. story-teller.

From old issues of *Wireless World* it is interesting to learn that on the outbreak of war in 1914, all amateur experimenters—receiving as well as transmitting—were called upon "to remove at once your aerial wires and dismantle your apparatus." Many amateurs fell under popular suspicion of being agents of the German Secret Service who were said to have established a network of stations along the East Coast. Several "shacks" were searched and a few well-known amateurs of the day were arrested during the height of the spy-scare. In a letter to *The Times* **R. H. Klein**, Hon. Secretary of the Wireless Society of London (as the R.S.G.B. was then called)

suggested that the authorities should enrol a number of members to keep watch for the use of illicit wireless transmissions.

When ordering a new printing of **QSL** cards make certain that you have provided spaces for the following minimum information: call-sign of station worked, date and time of contact; mode of transmission (i.e. telephony/C.W. or preferably A1, A3, etc.), band, and signal report. The card should also state definitely that it is sent in confirmation of a contact. Lack of information on some present-day cards is particularly unfortunate when they are required for awards such as the Empire DX Certificate where, for example, the band used must be shown.

The South African Radio League is celebrating its 25th anniversary this year... membership of the Wireless Institute of Australia now exceeds 2,250... German amateurs are holding the D.A.R.C. Short Wave Amateur Convention 1950 in Bad Homburg, near Frankfurt, from September 8-10, the proceedings will be broadcast over the convention station DL0KT... CE3IX has been elected President of the Radio Club de Chile for 1950-1... IIAOJ has been receiving the London and Paris TV transmissions on a home-built set... one of the first practical applications of remote control by radio was the operation of fog signals in the Firth of Clyde in 1914.

Visitors to Headquarters

RECENT visitors to Headquarters have included Major W. ("Bill") E. Mitchell, VK3UM, until recently Federal Secretary, W.I.A. and Organiser of the "Food for Britain" Parcels scheme; Hans Eliason, SM5WL, Hon. Editor of *QTC*, Official Journal of the Swedish Society, S.S.A.; Sidney Pegrum, VQ4CRE, a past President of the Radio Society of East Africa, and John Powell, VQ4HJP. Major Mitchell is now on a staff course at M.E.X.E. Christchurch, Hants. During his stay in England he hopes to take out a G call.

Ten Minute Quiz

A pot-pourri of questions for the radio amateur.

1. What simple type of audio frequency power amplifier is regarded as giving the best high-fidelity output?
2. Define the amplification factor of a valve.
3. What is the customary form of coding used to identify valves of continental manufacture?
4. The 3.5 Mc/s.-3.8 Mc/s. band is split into two parts. What are the frequency limits of the non-amateur band between the two parts?
5. What "official radio stations" share the 70cm. amateur band?
6. State the term given to abnormal ionization of the "E" layer which occurs in a "cloud" or "irregular patch" form.
7. What acid is recommended for etching quartz crystals?
8. How much does an American pay for his amateur licence?
9. What is the line time-base frequency in British television?
10. What have the following amateurs in common? G2UJ, G3AGM, G4KD, G5CD, G5LC, G6JJ, G8TL.

Now turn to page 72 to discover if you have beaten the question-master.—H. E. B.

HEADQUARTERS CALLING

COUNCIL, 1950

President :

WILLIAM A. SCARR, M.A., G2WS.

Executive Vice-President : F. Charman, B.E.M., G6CJ.

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

Hon. Secretary : J. W. Mathews, G6LL.

Hon. Editor : Arthur O. Milne, G2MI.

Immediate Past President : V. M. Desmond, G5VM.

Members : W. H. Allen, M.B.E., G2UJ, A. P. G. Amos, G3AGM, L. Cooper, G5LC, D. N. Corfield, D.L.C. (Hons.), A.M.I.E.E., G5CD, W. N. Craig, B.Sc., G6JJ, C. H. L. Edwards, A.M.I.E.E., G8TL, P. A. Thorogood, G4KD.

General Secretary : John Clarricoats, G6CL.

June Council Meeting

Resume of the Minutes of a Meeting of the Council held at New Ruskin House, Little Russell Street, London, W.C.1, on June 13, 1950, at 6 p.m.

Present.—The President (Mr. W. A. Scarr, in the Chair), Messrs. W. H. Allen, A. P. G. Amos, L. Cooper, D. N. Corfield, W. N. Craig, C. H. L. Edwards, J. W. Mathews, A. O. Milne, P. A. Thorogood and John Clarricoats (General Secretary).

Apology.—Apologies for absence were submitted on behalf of Messrs. F. Charman, V. M. Desmond and A. J. H. Watson.

"Milford Viscount."

It was reported that a letter had been sent to the Ministry of Transport suggesting that a meeting be convened to discuss radio communication procedure when a ship is reported overdue. Special reference had been made to the loss of the steam trawler "Milford Viscount".

Investment.

It was reported that Barclays Bank Ltd. had purchased, on behalf of the Society, £4,000 of 3% Savings Bonds 1955-1965 at a total cost, including commission, of £4,020.12.0.

Corporate Membership Certificate.

Resolved to accept an estimate from Bradbury Wilkinson & Co. Ltd. in the sum of £65.8.0 (including £18.17.6 engraving and £6.15.0 for Purchase Tax) for producing 3,000 copies of a new design of Corporate Membership certificate.

Membership.

Resolved—

- To elect 79 Corporate Members, 19 Associates and 4 Junior Associates. (Total elected 102.)
- To grant Corporate Membership to 4 Associates who had applied for transfer.
- To grant Life Membership to Mr. L. W. Smith, G2FSI.

Representation

Resolved to appoint to the offices recommended by the respective Regional Representatives the members whose names had been listed by the Secretary.

Festival of Britain.

It was reported that the Society had been invited by the Festival of Britain authorities to organise the operation of an Amateur Radio station at the Land Travelling Exhibition, when it visits Manchester, Leeds, Birmingham and Nottingham during 1951.

Resolved to inquire from the Representatives for Regions 1, 2, 3 and 4 whether they would be prepared to undertake either personally or by delegation the work necessary to the organisation and operation of an Amateur Radio station when the Land Travelling Exhibition visits their particular Region.

It was agreed to emphasise to the R.R.s that the services of first-class operators would be required if it is decided to proceed with the project.

Amateur Television.

It was reported that Mr. C. I. Orr-Ewing, M.P., had written to the Postmaster-General asking him to give further consideration to an application of the Society that amateurs should be permitted to make television transmissions.

Radio Leopoldville.

It was reported that the Belgian National Broadcasting Service had offered to transmit special programmes of interest to Society members over Radio Leopoldville. Mr. Cooper was deputed to communicate with the Director of the Service and to report further to the Council.

Amateur Radio Exhibition.

It was reported that Mr. Hugh Pocock had accepted the invitation of the Council to open the 4th Annual Amateur Radio Exhibition.

Technical Congress.

The Council received a letter from the General Purposes Committee of Birmingham University stating that, due to other commitments, space for a Technical Congress could not be provided during the period which had been suggested.

Resolved regretfully to abandon the project for the current year and to give consideration early in 1951 to the question of holding a Technical Congress during the autumn of that year.

National Institute for the Blind.

Further to the discussion which had taken place at the previous meeting, the Secretary reported that he had received from the Institute a semi-technical description of the Talking Books scheme which he proposed, subject to the approval of the Council, to publish in the September or October issue of the BULLETIN. In the same issue members willing to give advice to present and future users of the Talking Book machines would be invited to register their name and address with the Institute. The Secretary's actions were approved.

The Secretary then explained some of the problems which would arise if an attempt is made to produce a set of Talking Book records based on the Amateur Radio Handbook. He also gave information on an earlier attempt made by the Institute to produce a Braille Edition of the Handbook to meet the requirements of sightless persons interested in Amateur Radio. The Secretary stated that the Institute authorities had agreed to provide him with an estimate of the cost likely to be involved in producing either a set of Talking Book records based on the Handbook or additional copies of the Braille Edition. They had also agreed to discuss the technical problems involved with their colleagues in the U.S.A.

London Meetings.

Messrs. Allen and Mathews submitted a list of lecturers and subjects which they suggested would prove of interest to members. It was agreed to extend an invitation to the persons whose names had been listed.

I.A.R.U. Congress.

The General Secretary reported at length upon the recent I.A.R.U. Congress held in Paris.

Resolved—

- To publish a comprehensive Report of the Congress prepared by Messrs. Lewer and Hammans in an early issue of the BULLETIN.
- To issue to all I.A.R.U. Societies a detailed Report prepared by the Secretary covering the work of the Administrative Committee.
- To hold a Special Meeting of the Council to consider the decisions reached at the Congress and to invite Messrs. Hammans, Lewer and Marcuse to attend.

Regional Representatives' Conference.

Resolved to hold a Regional Representatives' Conference in London on Saturday, October 7, 1950.

National Convention, 1951.

Resolved—

- To authorise the National Convention, 1951, Committee to accept a catering offer from Lyons Coventry Street Corner House.
- To forward to the Workers' Travel Association a deposit of £50 as a token of good will in consideration of that Association reserving 150 rooms for Convention visitors at the Imperial Hotel, Southampton Row, London, W.C.1.

The meeting terminated at 9.50 p.m.

Representation

Messrs. W. J. Butler, G5LJ and H. T. Scotton, BRS. 16486, have resigned as Town Representatives for Birmingham North and Ilford respectively. Nominations for their successors should be made in the prescribed form in the September, 1949, issue of the BULLETIN and sent to reach the General Secretary by September 30, 1950.

* * *

St. Albans

As no replies have been received from recent correspondence addressed to Mr. A. K. Browning, G8TK, he is deemed to have resigned from the office of St. Albans Town Representative.

Nominations for his successor should be made in the manner prescribed in the September, 1949, issue of the BULLETIN and sent to reach the General Secretary by September 30, 1950.

FORTHCOMING EVENTS

- Details of meetings should be forwarded to the appropriate REGIONAL REPRESENTATIVE not later than the 20th of the month preceding publication.

(For addresses see March, 1950, BULLETIN)

AROUND THE REGIONS

Bradford Amateur Radio Society

The Society's A.G.M. will be held at 66 Little Horton Lane on September 12 at 7.30 p.m. Present, past and prospective members should make a special note of the above date. After the A.G.M., fortnightly meetings will be resumed and an attractive syllabus has been arranged for the season 1950-51.

SOUTH-WESTERN REGIONAL MEETING

SUNDAY, SEPTEMBER 24th, 1950

AT THE CONTINENTAL HOTEL, PLYMOUTH

Assemble	11.30 a.m.
Lunch	12.30 p.m.
Business Meeting	2 p.m.
Tea and Raffle	4.30 p.m.
Station Visits	6 p.m.

Inclusive charge 8/6. Tickets from J. Eddy, 55 Greenbank Avenue, Plymouth, or C. Wheatcroft, 27 Lower Weir Road, Exeter.

Chester and District Amateur Radio Society

Meetings take place on Tuesdays at 7.30 p.m. in the Quonset Hut in the Y.M.C.A. grounds. Morse classes are also held on Tuesday evenings from 6.30 p.m.

Reports on transmissions from the Club station, G3GIZ, will be welcomed. The Hon. Secretary is R. C. Windsor, 17 Hough Green, Chester.

Coventry

Highlight of July was the 2 metre Field Day, when members of the Group assisted G3ABA/P. Simultaneously other members carried out a series of tests on 70 cms. under the call G5PP/P. VUTAB was a welcome visitor. As a result of experience gained during this field day an all-night event is to be held in September. Activity will be on 2 metres and 70 cms. as well as on the lower frequency bands. Further details next month.

EAST SCOTLAND REGIONAL MEETING

SUNDAY, OCTOBER 22, 1950

**SCOTIA HOTEL,
7 GREAT KING STREET, EDINBURGH**

Assemble	2 p.m.
Business Meeting	2.30 p.m.
Supper	5 p.m.
Informal Discussion	6 p.m.

Tickets, 7/6 each, from Mr. W. Baker, G3AFL, 4 Devon Terrace, Berwick-on-Tweed, very early please, or from GM5YX, GM3KR, GM6SR, GM3EGW, & GM3EFH.

Coventry Amateur Radio Society

The election of old-timer Freddy Miles (G5ML)—licensed 1924—as President of the Coventry Amateur Radio Society was recently announced: he succeeds Councillor W. H. Malcolm, J.P. (G6WX). A combined Field Day to be held in conjunction with the Midland Amateur Radio Society has been arranged for August 19 and 20 at Oaken End Farm, Alesley. Future meetings—to which new members are invited—will be held at the B.T.H. Social Club, Holyhead Road (7.45 p.m.), on August 28, September 11 and 25 (A.G.M.).

Gateshead & District Amateur Radio Club

The club has been pleased to welcome a DX member, Mr. R. Watts, G3FED, of Birmingham. Though he has lived in Birmingham since 1936, Mr. Watts is still interested in his home town and so asked to be made a member of its local society. As well as regular Morse classes, the club has organised a series of lectures on the fundamental principles of radio. Plans are afoot for the construction of club gear for the use of members.

Medway Hamfest

A Hamfest, held at the Headquarters of the Medway Amateur Receiving and Transmitting Society, Chatham, on July 16 attracted an attendance of 200, including 100 licensed amateurs. Several parties came considerable distances to help swell the ranks of local members. R.S.G.B. representatives included G2MI, G2UJ, G6KT and G3CAZ. Other welcome visitors included old-timers G2KT and G5BS. The lively programme of social activities—raffles, competitions and auctions—were smoothly presented and were also much appreciated by the many ladies and friends present. Several amateurs expressed astonishment when they heard their own voices on recordings made by G3FMB. First prize in the raffle—a receiver—was won by G5FN.

R.A.F. Amateur Radio Society

The Headquarters Station of the Royal Air Force Amateur Radio Society was exhibited in operation under the call G8FC/A at the recent R.A.F. display at Farnborough. Numerous stations were contacted on 3.5 Mc/s. telephony, providing the general public with a fine demonstration of Amateur Radio transmissions. The operators were most grateful for the excellent co-operation received from all stations.

Richmond and District Radio Society

A visit to the National Physical Laboratory—the final function of the 1949-50 session of the Richmond and District Radio Society—was made by members and friends on July 8. Of particular interest were the D/F apparatus used for locating thunderstorms and the electronic computing machines. The 1950-51 programme is now being arranged. Local R.S.G.B. members are cordially invited to communicate with the Hon. Secretary, Mr. W. Crossland, G5CI, 1 Spring Grove Road, Richmond, Surrey.

Slade Radio Society

Forthcoming events include a D/F Test on August 20, followed by a midnight D/F Test on September 17. Several interesting lectures have been arranged for September: "Constructing the Viewmaster Television" (September 1); "Applications of Selenium Rectifiers" (September 15); and "The Cathode Ray Oscilloscope" (September 29). Visitors are always most welcome at the meetings, which are held at the Parochial Hall, Broomfield Road, Erdington, Birmingham 23 (7.45 p.m.).

Slough

"Top Band" and 144 Mc/s. equipment, operated by members of the Slough R.S.G.B. Group at the recent Langley Sports Fete, attracted many visitors—including the Mayor of Slough. The transport of apparatus by means of a perambulator, however, gave rise to false rumours that G3FSO was testing a new form of mobile operation!

Sussex Bucket and Spade Party

Members are reminded that the annual Bucket and Spade Party for amateurs and their families will take place on Sunday, August 27. The venue will be the sands in front of the Beach House, Worthing. Numerous Groups and Clubs have already notified the organisers—the Worthing and District Amateur Radio Club—that their members intend to be present. Details can be obtained from local R.S.G.B. Representatives or from the Committee, Brackencote, Uplands Avenue, High Salvington, Worthing.

Thames Valley A.R.T. Society

A lecture and demonstration on V.H.F. transmitting and receiving equipment, including mobile apparatus, is to be given by the Marconi Wireless Telegraph Company at the September meeting. An interesting lecture on "Electronic Computers" was given recently by Dr. F. Aughtie, B.Sc. (G6AT), of the National Physical Laboratory.

Warrington & District Radio Society

R.S.G.B. members are to take part in the Region 1 Field Day on August 27, using the club call sign G3CKR/P. Meetings are held on the first and third Monday of each month at 7.30 p.m. at the Sea Cadet Corps H.Q., Wilderspool Causeway.

A Call From Gambia

Mr. I. N. Davies, BERS. 468, 9 Hope Street (P.O. Box 65), Bathurst, Gambia, would like to exchange correspondence with any member interested in technical problems of not too advanced a nature.

**Mention the Bulletin when
writing to Advertisers**

—LONDON MEETING— FRIDAY, SEPTEMBER 29th, 1950

at the
INSTITUTION OF ELECTRICAL ENGINEERS,
SAVOY PLACE,
VICTORIA EMBANKMENT

LECTURE—DEMONSTRATION "AERIAL SYSTEMS—LARGE OR SMALL"

by F. CHARMAN, B.E.M.(G6CJ)
(Acting Vice-President)

Buffet Tea 5.30 p.m. Lecture Commences 6.30 p.m.

Region 7 and 8 Boundaries

To meet the wishes of members living in that part of Surrey which is in Region 8, the Council has agreed that the whole of Surrey shall be transferred to Region 7.

Surrey members residing more than 25 miles from Charing Cross will continue to rank as Country Members.

EMPIRE DX CERTIFICATES

1. G6RH	17. ZL1HY	33. G6LX
2. G2PL	18. G8TD	34. G8QX
3. G6ZO	19. G6QB	35. G2VD
4. G2MI	20. G6CL	36. G5YV
5. G8IG	21. G3BI	37. G5BD
6. G16TK	22. G2FSR	38. G3ATU
7. G6RB	23. G8KP	39. VK4HR
8. G2AJ	24. G8II	40. G5PP
9. G6KS	25. W2QHH	41. G2LB
10. PAoGN	26. G2EC	42. G5HH
11. G8IL	27. VK2DI	43. GM6MD
12. G3DO	28. GW4CX	44. G6GN
13. G6YR	29. W3BE5	45. GM3CSM
14. G6WY	30. G4CI	46. GM3AVA
15. G4JZ	31. LA7Y	47. G3CCO
16. G5BJ	32. G2AKQ	

TELEPHONY ENDORSEMENTS

1. GM2UU	4. G2PL	7. HB9DS
2. VQ4ERR	5. G8IG	8. G3CCO
3. G3DO	6. WINWO	9. VQ4SC

No. 1 Signal Depot, R.A.F., West Drayton. Second Reunion Dinner

Those who were associated during the 1939-45 war with the Test Dept. at No. 1 Signals Depot R.A.F. are invited to support a reunion dinner to be held at the Lotus Restaurant (The Captain's Cabin), Norris Street, Haymarket, London, S.W.1, on October 21. Full details can be obtained from Mr. H. G. Coker, c/o 5 Turnpike Parade, London, N.15. (Tel.: Bowes Park 4201.)

EXPERIMENTAL STANDARD FREQUENCY TRANSMISSIONS

GB1RS

The Headquarters' Station, GB1RS, transmits daily for two minutes at each hour from 1800 B.S.T. to 0900 B.S.T. on a frequency of

3500.25 kc/s

when the following message is sent automatically in Morse Code at a speed of 12 words per minute:

CQ de GB1RS QRG 3500.25 kc/s VA GB1RS

Overseas members are invited to report on the reception of these transmissions.

R.S.G.B. Slow Morse Transmissions

B.S.T.	Call	kc/s.	Town
Sundays			
09.30	G6NA	1750	Guildford
10.00	G5XB	1950	Reading
22.00	G2FXA	1900	Stockton-on-Tees
Mondays			
13.00	G3AXN	1870	Southend-on-Sea
19.00	G3NC	1825	Swindon
19.30	G3AIX	1760	Birmingham
19.30	G3ESP	1850	Wakefield, Yorks
20.00	G2AJU	1900	Stutton, Ipswich
20.00	G3DSR	1750	Derby
20.00	G2CLD	1775	Tunbridge Wells
21.00	G2BLN	1900	Bournemouth
21.00	G8VR	1850	London, S.E.2
21.00	G3BHS	1820	Eastleigh, Hants
22.00	G8TL	1896	Ilford
Tuesdays			
13.00	G3AXN	1870	Southend-on-Sea
19.00	G5XB	1905	Reading
19.30	G2AVK	1850	Ossett, Yorks
20.00	G12HLT	1900	Belfast
21.00	G3EFA	1855	Southport
22.00	G3ELG	1772	Rotherham
22.00	G2FXA	1900	Stockton-on-Tees
22.30	G6JB	1820	Salcombe, Devon
Wednesdays			
20.00	G2NY	1850	Preston
20.00	G3AFD	1783	Southampton
22.00	G6NA	1840	Guildford
22.00	G3DLC	1800	Grays, Essex
Thursdays			
18.00	G3AXN	1870	Southend-on-Sea
19.00	G3NC	1825	Swindon
19.30	G2AQN	1850	Ossett, Yorks
20.00	G3NT	1805	Northallerton
21.30	G6DL	1760	Birmingham
22.00	G2FXA	1900	Stockton-on-Tees
22.00	G3ARU	1990	Wanstead
22.30	G3OB	1803	Manchester
Fridays			
13.00	G3AXN	1870	Southend-on-Sea
19.00	G3BLN	1900	Bournemouth
19.30	G3DMP	1850	Wakefield, Yorks
20.00	G2AJU	1900	Stutton, Ipswich
20.00	G3AKW	1860	Wirral
20.30	G8LZ	1868	Gravesend
21.00	G3BHS	1820	Eastleigh, Hants
22.30	G6JB	1820	Salcombe, Devon
Saturdays			
10.00	G3FPS	1800	East Molesey
23.00	G2FXA	1900	Stockton-on-Tees

OTHER AMATEURS ARE ASKED TO AVOID CAUSING INTERFERENCE TO THESE TRANSMISSIONS

Volunteers in districts not covered are invited to write to: Mr. C. H. L. Edwards, G8TL, 10 Chepstow Crescent, Newbury Park, Ilford, Essex.

Ten Minute Quiz

Answers to the questions set on page 69.

1. Push-pull class A1 triodes.
2. The ratio of the rate of change of plate voltage to the change of grid voltage, the plate current being constant.
3. First letter, heater; second letter, type of valve; third letter, type of valve (if necessary); figure, type of base.
4. 3,635 kc/s. to 3,685 kc/s.
5. Aircraft radio altimeters.
6. Es or sporadic E.
7. Ammonium bi-fluoride.
8. They are free to qualified American citizens.
9. 10-125 kc/s.
10. They are all members of the 1950 Council of the R.S.G.B.

NEW BOOKS

RADIO CONTROL FOR MODELS. By G. Honnest-Redlich. Published by "Harborough" Publications. 128 pages; 8s. 6d.

This new publication, believed to be the first in the English language devoted exclusively to model control, will be warmly welcomed by all who require a thoroughly practical introduction to this fascinating branch of radio for a modest outlay. The author, who has had wide experience of the radio control of model aircraft, has wisely concentrated on the fundamental knowledge required by the novice, keeping theoretical discussion to a minimum. Full constructional details are provided on the standard forms of 27 Mc/s. equipment, while a 465 Mc/s. experimental transmitter and receiver are also described. Most amateurs will find the chapters on "intergear", "servos" and control mechanism especially valuable; several progressive control systems are explained, including useful notes on the tuned-reed system for controlling a number of separate operations with one radio channel. The book is particularly well-illustrated with many examples of successful British, Continental and American models providing an excellent guide to current techniques.

While the author and publishers deserve high praise for producing this pioneer work, it must be recorded that the book suffers considerably from lack of attention to detail. A few errors have crept into the diagrams and there is a noticeable tendency to over-simplify the technical explanations. The use of inconsistent and unconventional abbreviations and phrases—such as "milliamperes meter"—is also likely to prove a minor source of irritation to the more technically minded. It seems a great pity that no clear statement of current G.P.O. regulations appears—nor is any information given on the calculation of power input to a transmitter! A stronger warning of the possible danger to other services of off-frequency operation might also be desirable, particularly as the apparatus described will undoubtedly be constructed by many modellers with scanty knowledge of the havoc which can be caused by even low-power transmitters.

These few criticisms aside, this publication should be high on the list of priorities of anyone contemplating radio control experiments. J.P.H.

TESTING RADIO SETS (Fifth and Revised Edition). By J. H. Reynier, B.Sc., A.C.G.I., D.I.C., M.I.E.E. Published by Chapman & Hall. 215 pages, fully illustrated; 22s. 6d.

The author has endeavoured, successfully, to present the fundamental principles of set testing, including a certain amount of design information to assist the reader's understanding and so help him in the exercise of deductive reasoning which is the basis of servicing.

The current edition embodies a great deal of new information on testing equipment, much of which is amplified by illustrations. There are 13 chapters and three appendices.

Testing Radio Sets remains one of the best practical books on the subject.

AN INTRODUCTION TO ELECTRONICS. By J. Yarwood, M.Sc. Published by Chapman & Hall. 329 pages, 121 illustrations; 28s.

The book is intended chiefly to serve the needs of physics and engineering students who, on leaving college to enter industry, often need an account of the subject at an intermediate standard. The author is Senior Assistant in Physics at the Polytechnic, London.

There are 13 chapters (ranging from Fundamental Electricity and Magnetism to U.H.F. Thermionic Tubes) and three appendices.

TELEVISION IN YOUR HOME. By W. E. Miller, M.A. (Cantab). Published by Iliffe & Sons Ltd. 62 pages, 30 diagrams; 2s.

Designed to provide all the information the viewer needs before and after he purchases a receiver. Non-technical and assumes no previous knowledge whatever of television.

THE PRINCIPLES OF TELEVISION RECEPTION. By A. W. Keen, M.I.R.E., A.M.Brit.I.R.E. Published by Pitman. 314 pages, profusely illustrated; 30s.

The purpose of this book is to provide technicians and service engineers with a qualitative introduction to the theory underlying the design of television receivers. It will also prove most useful to students taking any examination of which the syllabus includes television principles.

British and American practices are covered and all modern developments including colour transmission are given adequate treatment. The descriptive treatment is lucid and the production of a high standard.

SHORT WAVE RADIO AND THE IONOSPHERE (Second Edition). By T. W. Beddington. Published by Iliffe & Sons Ltd. 138 pages, 61 illustrations; 10s. 6d.

Of special interest to radio amateurs and all who carry on radio communication over long distances by short waves.

The current edition is to all intents and purposes a new book, having been completely rewritten since the first edition appeared six years ago. The ten chapters cover a wide range of subjects, including Ionospheric Variations, Multi-hop Transmission and Forecasting, Amateur Transmission on High Frequencies, Ionospheric Storms, etc.

The author is a member of the Engineering Division of the B.B.C. and an acknowledged expert on Ionospheric Predictions.

A book for the amateur's desk, not for his bookcase.

YOUR RADIO AND TELEVISION. Published by Odhams Press. 128 pages; 3s. 6d.

A topical "behind the scenes" account of modern radio and television brightly compiled by nine expert contributors including Wynford Vaughan Thomas, Frank Phillips and Cecil Madden. Distinctly readable.

RADIO OPERATING QUESTIONS AND ANSWERS. By J. L. Horning. Published by McGraw-Hill. 588 pages; 42s. 6d.

This is the tenth edition of a book which is widely used and widely known in the U.S. The current edition answers 1,763 questions likely to be set for the F.C.C. Commercial Radio Operator's Examinations. Much of the information would interest candidates for the Radio Amateurs' Examination.

RADIO SERVICING EQUIPMENT. By E. J. G. Lewis, M.Brit.I.R.E. Published by Chapman & Hall. 370 pages, 194 illustrations; 25s.

It is the purpose of this book to assist all users of radio servicing equipment to obtain a sound working knowledge of their test gear and so to get the utmost service from it. Contains a wealth of most valuable practical information enhanced by numerous skilfully drawn diagrams.

Should prove invaluable to students and all who sit for examinations for certificates which enable the holder to be recognised as a qualified radio service engineer.

HOW TO BECOME A RADIO AMATEUR (Eleventh Edition, 1950).

Published by the American Radio Relay League. Completely rewritten and expanded. 70 pages, including 13-page advertising section, 65 diagrams and photographs, 9 tables; 4s. 6d. post free. Available from R.S.G.B. Headquarters, delivery 4-6 weeks.

This new expanded edition of *How to Become a Radio Amateur*, just published by the A.R.R.L., is a practical beginner's guide to the hobby of Amateur Radio. Although written from an American viewpoint, there is much valuable advice for all who intend to learn about the hobby the sensible way: by operating home-constructed transmitters and receivers. This book will show them how to set about it, from learning the Morse code and radio theory to designing complete stations.

As with all A.R.R.L. publications the constructional side is extremely well presented. Full details are given on: a simple one-valve receiver; a four-valve superhet receiver and power supply; an economical 6V6 single-stage transmitter and power supply; a two-stage 30-watt transmitter for 3.5 and 7 Mc/s.; and a complete 'phone/C.W. transmitter and efficient two-valve converter for 144 Mc/s.

Around the Trade

The General Electric Co. Ltd. announces the addition of Type G.E.X. 45 (price 16s.) to its range of germanium crystal rectifiers. This rectifier has been introduced to meet the needs of designers who wish for a low reverse current but do not require the exceptionally low reverse current of the more expensive type GEX. 55. Electrical characteristics of the GEX. 45 are: Forward current, 8 mA. approximately (at +1 volt). Reverse current, 10-30 μ A. (at -10 volts). Turn-over voltage, greater than 60 volts. Shunt capacitance, 1 μ F. approximately.

Clydesdale Supply Co., Ltd., 2 Bridge Street, Glasgow, have just published (price 6d.) a 236-page illustrated catalogue of components, valves and equipments.

The catalogue, which contains a wealth of useful technical information, is one of the most comprehensive ever issued by British radio retailers.

V.H.F. TECHNIQUE

Indispensable to all V.H.F. Enthusiasts

PRICE 3/6 (By post 3/9)

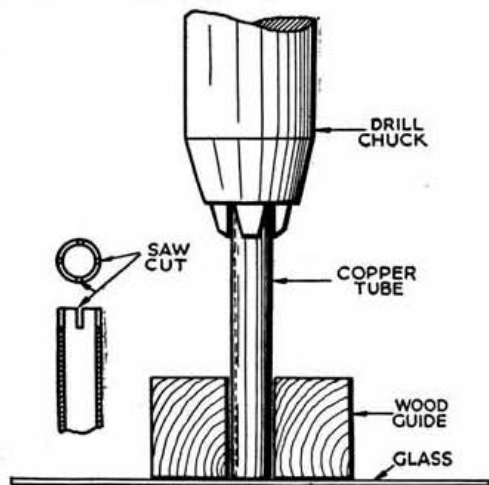
FROM R.S.G.B. HEADQUARTERS



Drilling Glass

DEAR SIR.—In a recent Workshop Practice article, "Donex" gave some hints for drilling holes in glass by using a three-cornered file made into a grinding cutter. Although this method is much recommended, there is an even more simple method available.

All that is required is a short length of copper tube, the outside diameter being the diameter of the hole required. One end of the tube is levelled-off and two small slots about $\frac{1}{16}$ in. deep are cut in the end of the tube. These form pockets for the grinding paste. For the initial cutting of the hole it is necessary to provide a guide, which can be made from a small block of wood with a hole through it to give clearance to the copper tube. A small quantity of grinding paste is inserted into the tube, and a little smeared over the glass where it is to be drilled. The tube is then fitted into a hand brace, using the wooden block as a guide. A few revolutions will provide sufficient indentation in the glass to enable the wooden guide to be removed. The brace should be rotated backwards and forwards and lifted quite frequently away from the glass in a similar manner as is done when grinding an internal combustion engine valve.



When the copper cutter has progressed about three-quarters of its way through, the glass should be turned over and the drilling operation repeated from the opposite side. If this is not done there is a slight danger of splashing of the glass. A hole cut by this method has a fine ground surface which obviously is a great advantage. Incidentally I have frequently drilled $\frac{3}{16}$ in. plate glass with a small hand brace; a $\frac{1}{16}$ in. hole taking approximately ten minutes.

For those who are fortunate enough to possess a power-driven bench drill, the copper cutter can be used in just the same way at speeds between 300-500 r.p.m. By continually lifting the drill-feed up and down, a smooth hole can be obtained very rapidly.

It may sound ridiculous to suggest that soft copper can cut hard glass, but apparently what happens is that the small particles of grinding compound embed themselves into the soft copper and these act as multiple cutters which grind, rather than drill, the glass away. The sketch is self-explanatory.

Yours faithfully,
J. S. ORME, BRS. 18688.

Allestree, Derby.

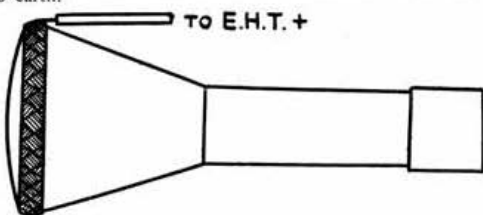
"Donex" comments:—

"The method suggested by Mr. Orme is more applicable when the glass is on the bench, than in a window, which was the main idea in my suggested method. It is too slow to operate standing on a ladder or chair."

C.R.T. Bulb Charges

DEAR SIR.—Readers may be interested in the under-mentioned method of dispersing bulb charges from C.R.T.s such as VCR97, 517, etc., when these tubes are used for T.V. purposes.

Bulb charges are induced in a random manner on the surface of the glass and their presence can be noted by dark areas on the raster which becomes distorted and in severe cases there may be no fluorescence at all. The effect is naturally more pronounced when the final anode is connected to earth.



The following simple method of overcoming these bulb charges has been found to be effective: A band of flexible braid (such as the screening on shielded wire) is placed around the tube screen and is connected to EHT+ (as shown in the sketch).

When EHT+ is not earthed, the band has to be insulated from the chassis or framework, but as the majority of tube screens fit into rubber masks, this presents no problem.

Yours faithfully,

T. N. J. ARCHARD, G3COK (2nd Op.).

Taunton, Somerset.

VK/ZL International DX Contest, 1950

There are a number of changes in the 1950 rules for this popular annual DX contest, which this year is being organised by the New Zealand society. A summary of the more important rules is given below:

Dates: 1201 G.M.T., September 22 to 11.59 G.M.T., September 24—C.W.; 1201 G.M.T., September 29 to 11.59 G.M.T., October 1—Telephony; 1201 G.M.T., October 6 to 11.59 G.M.T., October 8—C.W.; 1201 G.M.T., October 13 to 11.59 G.M.T., October 15—Telephony.

Rules: There are three main sections: (a) C.W.; (b) Telephony; and (c) Receiving ('phone and C.W.). Sections (a) and (b) are open to all licensed amateurs, and section (c) to all members of any S.W.L. society. Only one amateur is permitted to operate a station. All amateur bands may be used. The same station may be contacted on any particular band once during each weekend.

Serial Numbers: Serial numbers must be exchanged and acknowledged before points can be obtained. These will consist of five or six figures made up of RS or RST reports plus three figures which may begin with any number between 001 and 100 for the first contact and which will increase in value by one for each successive contact.

Scoring: (Similar to B.E.R.U.) Fifteen points for the first contact on a specific band with any particular VK/ZL district, fourteen points for the second contact on the same band, decreasing to one point for contacts after the fourteenth. Scoring procedure to be repeated on each band and for each district. The VK/ZL districts are: VK 1, 2, 3, 4, 5, 6, 7, 9 and ZL 1, 2, 3, 4.

Logs: Logs must show in this order: date; time (G.M.T.); band; call of station worked; serial number sent; serial number received; points claimed. A separate log and analysis sheet (showing number of contacts and points claimed for each district) must be submitted for each band. In addition a summary sheet should show: (1) call-sign; (2) name and address; (3) telephony or C.W.; (4) points claimed for each band; (5) grand total; (6) brief description of equipment; and (7) a declaration that all contest rules and licence regulations have been observed and that the log is correct and true to the best of the entrant's belief.

Awards: Certificates will be awarded to the leading stations in each country.

Receiving Section: Stations may be logged over the whole period of the contest. To count for points, the call-sign of the station being called, the strength and tone of the calling station, together with the serial number sent by the calling station must be recorded. It is not sufficient to log a station calling CQ. Points and logs are similar to those for the transmitting sections. Overseas stations will log only VK and ZL stations heard operating in the contest.

Entries: Entries should be marked "VK/ZL Test" and forwarded to reach N.Z.A.R.T., Box 489, Wellington, New Zealand, by January 14, 1951.

TRANSMITTER INTERFERENCE

Will solve your B.C.L. or T.V.I. worries

PRICE 1/3 (By post 1/6)
FROM R.S.G.B. HEADQUARTERS

NEW MEMBERS

The following have been elected to membership:—

Corporate Members (Licensed)

- G2AZC †E. L. WILLS, 17 Cowick Lane, Exeter.
 G2BSN R. E. SEDGWICK, 61 Mildmay Road, Romford, Essex.
 G2HDK C. G. WILEMAN, 161 Broadway East, Northampton.
 G3CQH †C. W. FLEMING, Brockhampton Court, Brockhampton, Andoverford, Glos.
 G3BGF R. WINKWORTH, 181 Broadway, Didcot, Berks.
 G3DQM W. R. ALLEN, Cross Hands, Lydney, Glos.
 G3DZA V. E. ANDREWS, 15 Bearwood Hill Road, Winshall, Burton-on-Trent, Staffs.
 G3EJH *W. R. PEATMAN, The Bungalow, Marton Road, Chilwell, Notts.
 GW3ENC K. R. C. CARVILL, 21 The Grove, Barry, Glam.
 G3FBP G. A. PERRINS, 51 Cemetery Road, Heckmondwike, Yorks.
 G3FGT L. F. CROSBY, 616 Church Road, Yardley, Birmingham, 25.
 G3FLI R. N. S. LISNEY, 6A Ongar Road, Fulham, London, S.W.6.
 G3FMG M. G. BUSSELL, 31 Potters Road, New Barnet, Herts.
 GM3FOL J. D. DICK, 5 Ross Street, Macduff, Banffshire, Scotland.
 G3GAV W. B. NICOLL, 166 Stanmore Lane, Winchester, Hants.
 G3GCE P. T. GORDON, G.C.R.S., Woodcock Hill, Sandridge, St. Albans, Herts.
 G3GGF C. ATKINSON, 8 Bain Street, Swinton, Lancs.
 GM3GIF F. MIDDLETON, 103 Pittodrie Place, Aberdeen, Scotland.
 G3GKB G. RADFORD, 27a High Street, Wealdstone, Middlesex.
 G3GKQ *A. ROBERTS, 23 Mytton View, Clitheroe, Lancs.
 G3GMJ J. HAWKER, Holmesfield, Mead Gate Lane, N. Essex.
 GM3GNB K. G. REID, Brainley, Torphins, Aberdeenshire.
 G3GNM †A. C. W. BIDDLE, 114 Kingshill Avenue, Kenton, Harrow, Middlesex.
 G3GNT P. A. C. WOOD, Sgts. Mess, R.A.F. Stn., Hendon, London, N.W.9.
 G3GRB N. H. J. CLIFF, 155 St. Mark's Road, Wolverhampton, Staffs.
 G3GRV G. L. HALSE, 26 Monmouth Road, Hayes, Middlesex.
 G3GSF E. R. JENNINGS, 93 Merlin Grove, Beckenham, Kent.
 G3GST G. E. MCCracken, 471 Hawthorne Road, Bootle, Liverpool, 20.
 G13GTG *J. E. EGAR, 2 Fortfield Villas, Shore Road, Greenisland, Co. Antrim, N. Ireland.
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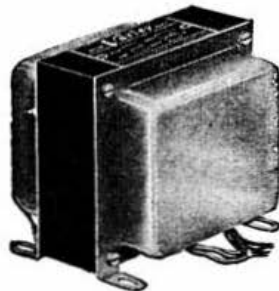
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