THE T&R
BULLETIN
A JOURNAL FOR
RADIO EXPERIMENTERS

Vol. 14 No. 4 OCTOBER 1938 (Copyright) Price 1/6

FOR ACCURACY AND RELIABILITY

1939 PRICE LIST OF FREQUENCY CONTROL UNITS

for Amateur Transmission Frequencies

Our 1939 range of crystal units have been designed around a new totally enclosed crystal holder (Type U), which is described below. This holder is used for the S5, P5 and Q5 frequency control units. It is of entirely new design incorporating every modern improvement and to encourage the use of correctly mounted units the price has been fixed at slightly less than the prices of the crystal and mount if purchased separately. This has enabled us to increase the calibration accuracy of all units to 0.025 per cent. An official Certificate of Frequency is sent with each Q.C.C. frequency control unit giving the exact frequency under stated operating conditions and this certificate is acceptable as evidence of accuracy of calibration by the G.P.O. and other licensing authorities throughout the world.

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The standard X cut crystal, with a temperature co-efficient of approximately 23 cycles per Mc. per degree Centigrade temperature change. Maximum R.F. crystal current—100 mA. When used with any of the normal pentode valves used for C.O. work, this unit will give in excess of 5 watts R.F. output on the fundamental frequency. Supplied to within 5 kcs. of your specified frequency in the 1.7, 3.5 and 7.0 Mc. amateur bands. Crystal is supplied mounted and tested in the type U totally enclosed holder as described below.

PRICE. *Type* **S5 Unit** **20/-**
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Q.C.C. FREQUENCY CONTROL UNIT— Type Q5

An entirely new crystal of the low temperature co-efficient type which brings to the amateur transmitter a degree of accuracy and stability hitherto unattainable without complicated temperature control equipment. The temperature co-efficient is less than 4 cycles per Mc. per degree Centigrade change and the new cut used produces a powerful highly active crystal. Maximum R.F. Crystal current—150 mA. Suitable for use in all types of C.O. circuits and the 1.7 and 3.5 Mc. types can be safely used in air gap type holders to give a continuously variable frequency change of more than 6 kcs. in the case of 3·5 Mc. crystals and more than 3 kcs. in the case of 1.7 Mc. crystals. The unit is normally supplied and tested in the type U totally enclosed holder. Supplied to within 5 kcs. of your specified frequency in the 1.7, 3.5 and 7.0 Mc. bands.

PRICE. *Type* **Q5 Unit** **27/6**
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Type A. The well-known type A holder is continued for the new season in unchanged form. It is an open-type holder with ground plates. ... ... Price **4/6**

Type B. A totally enclosed dust-proof holder, too well known to need detailed description. This holder has been improved for 1939 by the fitting of ground stainless steel electrodes. ... ... Price, with base **8/6**

Type AG. An adjustable air-gap crystal holder for use with 1.7 Mc. and 3.5 Mc. low temperature cut crystals. This holder will give enough frequency shift to dodge QRM, an invaluable feature on crowded amateur bands.
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The well-known Q.C.C. Power cut crystal, with a temperature co-efficient of approximately 20 cycles per Mc. per degree Centigrade change. Maximum R.F. crystal current—140 mA. Recommended for use in Tritet and other similar circuits where the crystal current is higher than normal. Used with the 6L6 or similar valve, this unit will deliver over 10 watts R.F. on the fundamental frequency and from 6 to 8 watts on its second harmonic in the Tritet circuit, without exceeding the rated crystal current. Supplied to within 5 kcs. of your specified frequency in the 1.7, 3.5 and 7.0 Mc. bands. Crystal is supplied mounted and tested in the type U crystal holder described below.

PRICE. *Type* **P5 Unit** **25/-**
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This unit is an improved version of our well-known 100 kcs. bar. It forms the ideal frequency of sub-standard for amateur use. The crystal is ground to within 25 cycles of 100.0 kcs. and is supplied mounted in a modified form of the type U holder, using a fixed air gap to provide constancy of calibration. This crystal cannot be supplied unmounted.

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Type U. An entirely new design plug-in holder. The holder consists of turned Keramot body, ground stainless steel electrodes and resilient contact pins, with ¾-in. spacing, for plugging in to the standard U.S.A. 5-pin valve-holder. It is extremely compact and neat and measures only 1½ ins. in diameter and ½ in. in depth, and excluding pin length. It has a smart nickel and black enamel cover plate with space for the crystal serial number and frequency. When this holder is purchased as an integral part of the S5, P5 or Q5 Frequency Control Units the operating frequency is neatly stamped on the cover, as is shown in the illustration above. ... ... PRICE **6/-**

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THE INCORPORATED
RADIO SOCIETY OF GREAT BRITAIN
53, VICTORIA STREET,
LONDON, S.W.1.

VOL. 14. No. 4.

THE T. & R. Bulletin is published on or about the 15th day in each month, and a copy is despatched free of charge to each member. Changes of address should be communicated promptly to the Headquarters of the Society.

THE Secretary-Editor will be pleased to consider for publication, articles of technical or general interest. Intending contributors are requested to indicate in advance the scope to be covered by the article under consideration.

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THE T. & R. BULLETIN

OFFICIAL JOURNAL OF THE RADIO SOCIETY OF GREAT BRITAIN

DEVOTED TO THE SCIENCE AND ADVANCEMENT OF AMATEUR RADIO

Hon. Editor: H. BEVAN SWIFT. General Editor: JOHN CLARRICOATS

Advertising Manager: HORACE FREEMAN

Vol. XIV. No. 4. OCTOBER 1938

CONTENTS

THE TENSION RELAXES

WRITING on the morning of Friday, September 30, with the good news from Munich ringing in our ears, we can scarcely believe that the crisis which hung so heavily over the world for days past has been averted. To we radio amateurs the threatened war brought home to us more forcefully than to most the enormous power for good or evil which now lies at the command of those responsible for broadcasting.

We should be failing in our duty if we neglected to record our wholehearted admiration for those who, without emotion and with what must have been at times great personal restraint, gave clear and unbiased broadcast announcements over the National and Regional transmitters. The B.B.C. was called upon to fulfil the greatest task in its existence. How well it responded history may never reveal.

* * * *

The crisis, too, brought into prominence the two Wireless Reserves which have had the support of the R.S.G.B. The new R.A.F. Civilian Wireless Reserve had had no time to even find its feet before many of its members had received notices advising them what to do if a state of emergency was declared. Some, we believe, were somewhat surprised to find that they would require to be attested as, presumably, ordinary aircraftsmen. We have the assurance, however, of the Chief Instructor of the Civilian Wireless Reserve that although attestation would have been imperative, many of those who received notices had been "ear-marked" on a supplementary list for special Air Force duties which would undoubtedly have carried commissioned rank.

It is indeed satisfactory to know that the Air Ministry recognises the fact that many of our members, particularly those with good technical ability and good education, would make efficient R.A.F. Officers, if the need should arise.

The Services need have no fear that the radio amateurs of Great Britain will fail them if the call ever comes; evidence of their desire to serve was clearly demonstrated during the critical days of late September, when Society Headquarters were inundated with enquiries and offers to help.

J.C.

Olympia and Our Thirteenth Convention

By J. CLARRICOATS (G6CL)

FOR the first time since Radio Exhibitions have been held in London the Society was compelled to exhibit on the ground floor at Olympia, a change brought about through the decision of the Radio Manufacturers Association to dispense with gallery stands. Although the new arrangement proved satisfactory we cannot help thinking that members missed the friendly atmosphere of the old gallery sites, for downstairs individuality seemed harder to obtain. Maybe this was due to the presence in the main hall of the larger commercial concerns, coupled with the fact that unusually wide gangways were the order of the day.

The Society's stand, unique as usual, came in for much favourable comment, for included therein were numerous examples of high grade amateur built apparatus. Particular interest was shown in the 56 Mc. gear which had been constructed by Mr. J. N. Walker, G5JU, Mr. W. J. Parker, G6WJ, and Mr. E. A. Dedman, G2NH. An outstanding item was a signal generator constructed by Mr. J. E. Bryden, 2BOL. The care with which this instrument has been built would do credit to any professional.

Among the other items displayed was an all-British communications transmitter developed by Mr. S. Buckingham, G5QF, shortly to be described in this Journal. In passing it is worthy of record that this transmitter embodies the new *Tungsram* 6V6G valves in the early stages and the new *Standard Telephones* R.F. Pentode Type 4052A in the final amplifier.

Mr. Chiffey, 2DKZ, kindly loaned his recently built transmitter which had been used by District 13 during N.F.D., whilst Mr. Shackleton, G6SN, displayed his thermal agitation type of field strength meter described in the August BULLETIN. Mr. Addie's frequency meter, also described in that issue, was on display, as was the Utility Two Transmitter described by Mr. J. N. Walker.

Due to the fact that the Society's new Handbook is not scheduled to appear until November, it was decided to publish a new popular priced booklet in time for the opening of Olympia. Described as *The Helping Hand to Amateur Radio*, this publication contains some 60 pages of information based on *The Helping Hand* articles which had previously appeared in the BULLETIN. An indication of its appeal can be gathered from the fact that nearly 8,000 copies were sold in 10 days.

AN IMPRESSION OF THE STAND AT RADIOLYMPIA.
Capt. Thorpe, ex ZS1AH, lends a "Helping Hand" to Miss Buckingham.

In addition to this publication, various American handbooks were on display, and in spite of the large stocks which had been obtained in advance, practically everything was sold out before the Exhibition finished.

Thanks to the kindness of Mr. F. G. S. Wise close-up photographs of G6UN, G2NM, G5VM and G2YL were displayed in panels; whilst the right-hand side of the stand rapidly assumed the appearance of a QSL Bureau. Many hundreds of members left their cards, which were mounted in an effective manner.

The success of the stand was, however, due primarily to those members who volunteered to do stand duty. In particular we would mention the following who gave up many hours of their time to assist the Society:—Capt. S. W. Thorpe (ex ZS1AH); Messrs. Salmon, 2CKM; Blaber, 2BMH; Allen, G2UJ; Parker, G3GD; Kershaw, G2WV; Wilkins, G6WN; Spencer, G8MH; Bryden, 2BOL; Chiffey, 2DKZ; Coleman, 2DHL; Smith, BRS3229; Broadbent, 2DZO; Casey, G8JC; Isaacs, 2DNY; Simmons, G3AD; Tourle, G8RT; Mathews, G6QM; Loveland, 2ARU; Schofield, 2ALH; Batt, 2BHO; Sparkes, 2DCT; and Miss Schadla, BRS3253.

In addition members of Council were in attendance most evenings, whilst many other members put in valuable hours after completing their normal business day.

Convention Visits

The visits arranged were as varied as they were interesting. On the Thursday a party of 24 were, through the kindness of the Astronomer Royal, permitted to visit the Royal Observatory, Greenwich, whilst another party of 12 were privileged to make the first R.S.G.B. visit to the Alexandra Palace Television Station.

In the evening the usual gathering of members took place at Olympia, and although the Society had a bigger stand than in past years, it is interesting to record that the writer and many others found it impossible to get on to the stand for nearly an hour.

Early on Friday, September 2, a second party of six visited Alexandra Palace, whilst at 1.30 p.m. a party of 15 were shown over Broadcasting House. At 2.30 some 50 members arrived at the General Electric Research Laboratories at Wembley where, thanks to the courtesy of the Director, Mr. C. C. Paterson, one of the most interesting of all Convention visits took place. For several hours the

party were taken around the various departments, and as a *finale* an excellent tea was provided. Our Executive Vice-President, Mr. Gay, G6NF, at the conclusion of the visit conveyed the thanks of all present to Mr. Paterson and his staff.

The Conversazione

Never before has this feature of Convention been better supported. Past experience had indicated an attendance of 170, but when the final check was made, it was found that this figure had been exceeded by over 60. Congestion there was in plenty, especially at the film show, but everyone seemed to be enjoying himself or herself (oh yes! there were a number of lady members present, including Miss Corry, G2YL, Miss Hall, G8LY, and Miss Bryan, G5YL). The "ragchew" which took place in the main dining-room from 6 p.m. until 8 p.m., was probably the most successful Society function ever arranged. Old faces and new, QRO

Photo: G2UJ.

The Convention visit to General Electric Co. Research Laboratories, Wembley.

and QRP, phone "merchants" and avowed C.W. men, DX Century Clubbers, and those who spend all their spare time on the bench, D.R's and T.R's, old timers and G3's, these and all others mingled together in the spirit of Convention. How silent 14 Mc. must have been that evening with G5ML, GM6RG, G6WY and a score of other QRO men safely tucked away inside The Florence.

At 8.15 p.m. the long awaited film display commenced. In introducing the show the Secretary paid a tribute to the *Agfa Film Co.* for providing the N.F.D. film, and also thanked Mr. Stockon for arranging the projection. Mention was also made of the fact that Mr. F. G. S. Wise had been responsible for a film entitled "R.S.G.B. Scrapbook for 1938," showing various activities of the Society during the year.

At the conclusion of the official films, Mr. Arthur Watts displayed and commented upon films taken by him during the time he was in Cairo for the International Radio Conference. These films were most highly apppreciated, and it is hoped that at a later date it will be possible for excerpts to be shown in the provinces.

Technical Discussion Groups

Bright and early on Saturday, September 3, some 70 members gathered at the Institution of Electrical Engineers to take part in the Technical Discussion Groups. Timed to commence at 10 a.m. it was 45 minutes after that hour before our President decided to break up the informal parties scattered around the building, and put the groups to work on their various tasks.

Before this took place Mr. A. M. Houston Fergus, G2ZC, spoke briefly on the aims and objects of the Experimental Section, stressing in particular the need for Individual members to transfer to Groups wherever possible. He also emphasised that the real object behind the Experimental Section was to show to the world at large, through publication of articles in the BULLETIN, that the Society possesses many members capable of undertaking serious study.

Four groups were then formed under the leadership of Mr. W. A. Scarr, G2WS (56 Mc. and above), Mr. Garnett, G6XL (Aerials), Mr. W. Craig, GM6JJ (Propagation) and Mr. Heap, G5HF (Receivers).

Without question these group discussions proved very popular and it is hoped next year to devote more time to this phase of interest, it being realised that many members living in the provinces welcome the opportunity of obtaining advice from, and exchanging views with, others engaged on kindred problems.

Business Meeting

Reluctantly, it seemed, the Technical Groups ceased their discussions at 10.45 a.m., to attend a business meeting.

The first matter to be dealt with was the arranging of Provincial District Meetings and Conventionettes for 1939.

The President emphasised the need for restricting the number of official meetings to five, pointing out that the health and domestic arrangements of the Secretary had to be considered by the Council. Mr. Watts went on to suggest that it would be in the interests of those living in towns fairly remote from the venue fixed for their nearest P.D.M., if they arranged for one or two local members to attend in order to take notes and report to their colleagues on the various matters discussed.

Mr. Parry, G6PY (District 2 representative), in order to provoke discussion and to obtain views, recommended that no P.D.M.'s be held during 1939. He explained that D.R.'s often experience difficulty in arranging these events and in his opinion he believed it would be good policy to forgo them for one year. Mr. Watts pointed out that the P.D.M.'s enabled some hundreds of keen provincial members to be kept in touch with Society activities.

Mr. Scarr, G2WS (District 4 representative),

READY FOR THE "FLICKS."
Left to right:—G6OS, 6OO, 2VQ.

gave it as his opinion that if the meetings were discontinued the first to complain would be those who seldom, if ever, attend. Mr. Noden, G6TW (District 1 representative) suggested that a letter be published in the BULLETIN based on Mr. Parry's suggestion, but it was generally agreed that such a course would almost certainly prove futile.

After general discussion it was unanimously decided to proceed with the fixing of dates and the following were agreed :—

Provincial District Meetings

Date.	*Venue.*	*Districts.*
April 2	Birmingham	3 and 4
,, 23	York	2, 17 and 18
May 7	Bristol or Cardiff	5 and 10
,, 21	Chester	1, 3 and 11
June 18	South of England	7, 13, 15 and 16

Conventionettes

April 22	Stockton *	19
July 2	Cambridge	8, 9, 12 and 14
,, 16	Dorchester	6 and 7

* Tentative arrangement if required by the members in District 19.

Field Days

In addition to the above it was agreed to assign the following dates for Field events :—

June 4, National Field Day.
July 9, Annual 56 Mc. Field Day.

B.E.R.U. Contests

A discussion then took place concerning a suggestion made at the D.R.'s Conference, held in April, that the 1939 B.E.R.U. Contests should be run concurrently over a nine-day period in February with a limited number of hours for individual operation.

Mr. Parry recommended that a joint contest be held over two week-ends of 36 hours each. Mr. Gay supported the original suggestion, pointing out that two week-ends of poor conditions would ruin the whole Contest. Mr. Lee, G6GL, and Mr. Cant, G6FU, supported Mr. Gay, but suggested that the power for the Contest be limited to 25 watts. It was pointed out, however, that the minimum power allotted to amateurs in certain countries was more than 25 watts, therefore it was unlikely that such amateurs would be willing to compete.

Jack Sang, GI6TB, collects the N.F.D. shield on behalf of Northern Ireland.

Seymour Buckingham, G5QF, popular District 12 Representative, winner of the Wortley-Talbot Trophy for 1938-9.

Mr. Garnett, G6XL, favoured two week-ends of 30 hours each, but Mr. Charman, G6CJ, considered that the original idea would produce more interesting results, as it would enable an operator to show his skill by selected best periods. He felt that week-end contests caused unnecessary congestion, and that they were responsible for many would-be competitors losing heart. He considered a 60 to 70 hour period would be sound. Concentration for a 30 hour period at week-ends was in his opinion too severe a strain on those who follow normal business lives.

Mr. Emary, G5GH, ex VS6AX, favoured week-end operation and suggested that the views of overseas members be obtained. An attempt to test the feeling of the meeting proved ineffective, only 24 members out of 80 present recording a vote, 18 of whom were in favour of the suggestion to run the contests concurrently over a nine-day period.

Mr. Forsyth, G6FO, District 10 representative, concluded the discussion by recommending that Council be asked to make such arrangements, as they consider to be equitable to all interested.

Cairo Comments

Mr. Watts then gave a brief outline of the decisions reached at the Cairo Conference, explaining the various difficulties which had been encountered. He also gave a résumé of the arrangements in force at such conferences, explaining the methods adopted of dealing with proposals. The language difficulties were mentioned and an example quoted of the type of mistake likely to occur when a proposal is translated from the official Conference language (French) into English.

[Photo by "Lincoln"

THIRTEENTH ANNUAL CONVENTION

Front row.—From left to right: A. M. H. Fergus (G2ZC), Miss A. Lake (BRS3078), J. W. Mathews (G6LL), H. A. M. Clark (G6OT), J. D. Chisholm (G2CX), H. C. Page (G6PA), Miss A. M. Gadsden, J. Clarricoats (G6CL), Air Commodore C.W. Nutting, O.B.E., A. E. Watts (G6UN), A. D. Gay (G6NF), A. O. Milne (G2MI), H. Bevan Swift (G2TI), G. C. Price (GW2OP), F. Charman (G6CJ), G. Marcuse (G2NM), E. A. Dedman (G2NH), A. J. Forsyth (G6FO), V. M. Desmond (G5VM).

Standing at extreme left: J. N. Walker (G5JU), J. B. Kershaw (G2WV), W. E. Marsh (SU1WM), W. B. Sydenham (G5SY), J. Noden (G6TW). Extreme right: H. V. Wilkins (G6WN).

In regard to the 3.5 Mc. band, Mr. Watts explained that the Council were hopeful of obtaining the full allocation of 225 kc. in two channels instead of three as at first seemed likely. He was also optimistic enough to believe that subject to the protection of any B.B.C. allocation British amateurs would continue to use 7,200-7,300 kc. In regard to the 56 Mc. band he pointed out that, subject to Television requirements, he believed that those already licensed for the full band (less tolerances) would continue to be allowed to use it, but in the case of new licences it seemed that the G.P.O. proposed to assign only the high frequency half. Although permission to use the band 112-120 Mc. was being denied to British amateurs, Mr. Watts expressed the view that a channel between 234 and 240 Mc. would be allotted.

At this point the meeting terminated, no time being left for a discussion of Town Representative arrangements or N.F.D. plans for 1939.

Afternoon Meeting

Prior to the afternoon meeting the usual Convention photograph was taken outside the I.E.E. As our reproduction on another page shows, the photographer was compelled to use a wide angle lens to bring into a group the very large gathering—easily a record.

Presidential greetings followed, as each member entered the lecture theatre.

After formally opening the meeting Mr. Watts called upon the Secretary to read messages of greeting which had been received from the following :—

Miss J. Burns (GM2IA), Messrs. H. J. Barton Chapple, R. Keating (SU1RK), W. E. Rice (W1IKT), J. MacIntosh (VS1AA), L. Deane (VK5LD), H. N. Bowman (VK5FM), C. Johnson (W9BUY), R. W. Rogers (G6YR), T. Martin (G2LB), J. Hunter (GM6ZV), J. Davies (G2OA), R. Stanton (ZL3AZ), F. G. Whitmore (ZE1JI), A. C. Young (VR6AY), F. W. Perks (H.M.V.), A. V. Hichinson (Westinghouse), and G. Parr (Ediswan Electric). A message of greetings was sent by amateur radio to the A.R.R.L. Convention in Chicago which was held concurrently with our own.

THE SERVICES WERE THERE.

Air Commodore Nutting, O.B.E., Director of Signals, Royal Air Force, with our President and Secretary, outside the Institution of Electrical Engineers.

Presentation of Trophies

The magnificent display of Society trophies must, we believe, have impressed everyone attending his or her first Convention. In making the presentations, which were announced individually by the Secretary, Mr. Watts offered a few words of congratulation to each winner. Due to illness, Mr. T. Martin, G2LB, was prevented from accepting the B.E.R.U. Junior Trophy, whilst Mr. Bourke, winner of the B.E.R.U. Receiving Contest, was also absent.

Loud applause greeted each recipient as he accepted his well-earned reward and, as will be seen from the photographs here reproduced, Mr. Wise was at hand to make a permanent record of a unique ceremony. It was with pleasure we noticed Capt. G. C. Price present to watch for the first time the awarding of his trophy to Mr. F. W. Garnett, G6XL. A very special ovation was given to Mr. John Sang, GI6TB, when he accepted, on behalf of Northern Ireland, the N.F.D. Trophy.

At the conclusion of the presentations, which

RAF'ED IN THOUGHT.

Listening to the Air Commodore's speech at the I.E.E.

included Research Awards and Certificates of Merit, the President introduced Air Commodore Nutting, O.B.E., D.S.C., Director of Signals, Royal Air Force, who had been invited by the Council to speak on the new R.A.F. Civilian Wireless Reserve. In a clear and concise manner the Commodore explained the reasons for forming the reserve and then spoke of his own association with amateurs. Particularly interesting was his reference to an early meeting with Mr. Paul Godley, famous for his early Transatlantic experiments, and to the fact that he had encountered the word "ham" in pre-war days whilst in South America.

(The Air Commodore's speech was reprinted in full in our last issue.)

PRESIDENTS.
Mr. W. Marsh, SU1WM, President of the Experimental Radio Society of Egypt, with Mr. Arthur Watts, G6UN, President of the R.S.G.B.

Following the speech, members were invited to ask questions, and among others who took advantage of this offer we noted: Messrs. Paddon, G2IS; G. E. Dakin, G8DN; Cullen, G5KH; Sadler, G2XS; Butcher, G6AN; Jones, G5JO; Wilkins, G6WN; Allen, GI6YW; and Noblett, EI9D.

In answer to one question concerning the power to be used by Reserve stations the Air Commodore brought down the house when he said "the R.A.F. has unlimited power!" When describing the various privileges to be gained as morse proficiency increases, general laughter greeted a reference to a badge when a speed of six words a minute has been attained, a little less hilarity accompanied the reference to 12 w.p.m. and the announcement that a special allowance would be made when a speed of 18 w.p.m. had been reached, appeared to pass unnoticed judging by the silence that followed. Maybe we were wrong, but it *did* seem that 18 w.p.m. was more than a joke, at least for some who were present!

Valve Expert Corfield, G5CD, peers through "bullrushes" at The Florence.

The Commodore was only "stumped" once—and then when Capt. Noblett, M.C., EI9D, asked whether amateurs living in Eire could join the Reserve!

At the conclusion of the discussion Mr. H. A. M. Clark, G6OT, commenced what must surely have been the most entertaining technical lecture ever given to Convention. Choosing as his title "A Technical Pot-pourri," Mr. Clark took us on an imaginary motor trip to well-known amateur stations in London and the Home Counties. At each station he had seen some feature which had interested him, and as the lecture proceeded, he gave a brief description of each in turn, ranging from the noise silencer at G6WU to the dual channel superhet at G6CJ, and from the heterotone receiver at G6PA, to the microphone polarising device at G6CL. Space limitations prevent a detailed account being given of the many useful tips and ideas which were so ably passed on by the lecturer, but we hope that those which have not, as yet, been fully described in the BULLETIN, will ultimately appear. In addition to the four stations already mentioned the tour covered special features at G8MU, 5JO and 6LL.

Mr. Clark undoubtedly opened up a new field for Convention lectures and we are sure he will be glad to hear from members who would be interested in a second lecture of a similar type at a later date.

HEAVENLY S'MILES! Freddy, of G5ML, thinks of the DX he is missing.

The meeting then adjourned for tea, some 250 members having been recorded as present—easily the biggest afternoon gathering in our history.

The Dinner

The new arrangements made to avoid congestion worked very smoothly indeed, except for the few who forgot their tickets! The main dining room was uncomfortably full with 225 seated, whilst the overflow met in another room under the chairmanship of Mr. H. V. Wilkins.

The Council are fully alive to the fact that the time has now arrived when larger accommodation must be sought, but in defence of existing arrangements, we would remind members that no large restaurant in Central London will accept a booking at the low price which we have been accustomed to pay. However, with 265 present on this occasion and extreme congestion at the door during the latter part of the evening, a fresh venue must be sought—but at a higher price.

It should be recorded that although a very large number of prominent overseas members were in England at Convention time, only a mere half-dozen

or so found it convenient to attend the dinner. Those who were present included Mr. W. E. Marsh (SU1WM), Mr. H. J. Walker (VQ4CRC), Mr. J. D. Burgess (VS7JB), Mr. E. A. Boyce (VP1NB), Mr.

EMPTY PLATES.
Walter Sydenham, G5SY, and Herb Bartlett, G5QA, two of Devonshire's "he men" with Jimmy Watson, G6CT, and H. B. Dent, G2MC, ready for anything.

Robertson (VK5RN), Mr. H. E. Gurney (VQ4SNA), and Mr. Cazazis (SV1CA).

The Draw

High spot of the dinner was the draw for component parts, books, subscriptions, etc., donated by numerous firms, who once again responded most generously.

Before commencing the draw proper, the Secretary mentioned that the coat badges (which had been presented earlier in the evening to all who had reserved accommodation in the main dining room) were a gift from *Strattons* of Birmingham. At very short notice Mr. G. S. Laughton, managing director of that company, arranged for 225 wooden badges to be supplied, each individually inscribed with the member's call sign or BRS number.

H. J. Walker, VQ4CRC, of Kenya.

The following companies contributed gifts to the draw:—

Messrs. Radiomart, Electradix Radio, British Mechanical Productions, Ltd., Premier Supplies, Ltd., Adgil Company, The 362 Radio Valve Company, Iliffe & Sons, Ltd., The Edison Swan Electric Co., Ltd., The High Vacuum Valve Co., Ltd., The General Electric Co., Ltd., Wilkins & Wright, Ltd., Sound Sales, Ltd., Barnes & Humby, Ltd., Radio Construction Service, The Mullard Wireless Service Co., Ltd., Stratton & Co., Ltd., A. F. Bulgin and Co., Ltd., The Weston Instrument Co., Ltd., Tillotson Bros., Dubilier Condenser Co., Ltd., N. E. Read, Telegraph Condenser Co., Ltd., Sir Isaac Pitman & Sons, Ltd., A.C.S. Radio, Ltd., Webbs Radio, E. R. Martin, Wingrove & Rogers, Jackson Bros., Quartz Crystal Co., Ltd., McGraw-Hill Publishing Co., Ltd., Oliver Pell Control, Ltd., Short Wave Radio, Tungsram Electric Lamp Works, Ltd.

A total of over 80 items were included in the draw, which took over an hour to complete. We take this opportunity of thanking all who supported this project and trust that each concern in its own field will benefit materially from the publicity given on the occasion of the dinner.

The Toasts

During the dinner numerous informal toasts were drunk, including one proposed by Mr. Bevan Swift, to those who had attended every Convention. The small number who responded provided concrete proof of the rapidly changing membership.

One of Eire's representatives, J. D. Taheny, of EI5J

The first toast of the evening, that to the Society, was proposed by Mr. Leslie McMichael, founder and vice-president, who warmly congratulated the President, Council and members on the rapid progress made in recent years. Mr. Bevan Swift, in his reply, paid a tribute to those who had, by their foresight, in the early days of wireless, seen the wisdom of bonding themselves together as a bulwark against difficulties affecting their common interest.

Mr. H. A. M. Whyte (G6WY), in proposing the toast of the Society overseas, mentioned the importance of a strong Empire link network and drew attention to the invaluable services which had in past years been rendered by such well-known E.L.S. as VS1AJ, which station had been brought into being by the personal efforts of Squadron-Leader Stewart, R.A.F., one of the Society's guests at the dinner. Mr. Whyte asked the overseas representatives present to take back to their colleagues the well wishes of all home members. Mr. Marsh, president of the Experimental Radio Society of Egypt, replied and thanked the Society on behalf of all its overseas members for the many valuable services rendered to them in past years. He expressed his pleasure at having been associated with Mr. Watts during the Cairo Conference.

(Ca-g/Cg-f) and on the maximum safe crystal voltage or current.

Triodes

In the case of triodes, those with both a low Ca-g and Cg-f, such as the LS5b, 35T, T20, etc., will give a higher output and allow a higher anode voltage to be used for a given crystal voltage than those whose characteristics are the reverse. These valves, which incidentally have thoriated filaments, have very long lives and are suited to maintain even the highest frequency crystals.

Pentodes and Tetrodes

In the case of multi-element valves, the effective Ca-g is reduced by the earthed screen-grids interposed between the anode and control grid, while the effective Cg-f is increased by the capacity of the control grid to these other grids. This results in a much lower tap on the potential divider, consequently less energy is supplied to the crystal. This condition is entirely satisfactory with low-frequency crystals, where the virtual grid current effect is negligible, but at the higher frequencies there is a marked falling off in performance due to the high earth capacity of the control grid and the high mutual conductance which is present. Hence, for low frequencies (up to 7 or 8 Mc.) the tetrode or pentode is superior to the triode because of its greater power sensitivity and adjustment of feed-back, but at higher frequencies the difference is not marked, and may even be in the other direction, unless special valves become available.

Having thus considered the points in the design of a C.O., it is clear that, for a straight crystal oscillator, we need a good mounted crystal, a good grid choke, a high resistance grid-leak, and, in the case of a low-frequency oscillator the valve should be a pentode or beam tetrode, while for a high frequency oscillator a low-capacity triode should be used.

The Tritet Oscillator

The Tritet circuit, which has swept the amateur world, is, when properly designed and built, a great blessing, though many who have not taken proper care, have had trouble with parasitic oscillations, cracked crystals, and off-band working.

The circuit itself has been fully described elsewhere, and it only remains for the writer to mention a few points that are often overlooked :—

(*a*) The screen and plate are effectively in parallel to crystal frequency (since the anode tuned circuit has negligible impedance to this frequency), and they together form the anode of a triode oscillator.

(*b*) The voltage on the anode of this oscillator is grossly excessive, and the only way to make it at all tolerable to the crystal is to de-tune the cathode of the Tritet, and reduce the screen voltage, thus increasing the impedance of the triode and reducing mutual conductance. Note that this does not affect the R.F. potential of the screen grid, or its capacity to the other electrodes.

From this, it will be seen that we have in the Tritet arrangement a triode oscillator with a high inter-electrode capacity and a higher mutual conductance than that given by the valve-makers, since we are now concerned with the ratio of grid volts to the combined anode and screen currents. This triode is then asked to work with any voltage up to 500 on its anode.

Perhaps these remarks will explain how certain crystals have given up the ghost, and why there is such a strong recommendation never to tune the cathode to crystal frequency !

Look again at the conventional circuit diagram of the Tritet, and note its resemblance to the T.P.T.G. oscillator. Little wonder, therefore, that when the cathode is tuned to a higher frequency than the anode, the circuit begins to work as a T.P.T.G. ! The obvious safeguard then is to use such a small cathode tuning capacity that it can neither tune down as far as the crystal frequency, or up as far as the anode frequency. If this be done without band-spread, there is a high L/C ratio and both the inductive and capacitative arms offer a fairly high impedance to anode frequency, as well as to crystal frequency. This causes excessive feed-back, as well as damping the anode circuit and reducing its output. The solution is to use a small cathode coil with a fixed capacity across it, and only enough variable capacity to allow for variations of crystal activity.

Crystal fractures and parasites having thus we hope been disposed of, there still remains the problem of preventing the wrong harmonic from appearing in the output. Put briefly this can only be avoided by the use of common sense and an absorption frequency meter.

The above discourse should make it clear that the use of the Tritet circuit is unsound practice for fundamental operation, because although the dynamic resistance of the anode tank prevents the anode taking up the same potential as the screen, or *vice versa*, the crystal can be removed or fractured and output still obtained by reason of the frequency of the cathode circuit being higher than that of the anode circuit, thus resulting in T.P.T.G. oscillation.

Other types of crystal oscillators are sometimes used, and if the demand exists they will be dealt with in a later article, but for the present a word or two about crystals themselves seems appropriate.

Crystal Cuts

Several cuts are available in this country and are named after the axis from which they are derived. The Y cut is usually the cheapest, but it will not stand much power. It has a tendency to oscillate on two frequencies simultaneously, or its frequency may jump from one to the other and back during a QSO. In addition it drifts badly, but has the advantage of oscillating readily under pressure.

The X cut overcomes the jumps in frequency, and will handle rather more power, hence it is sometimes described as the "power cut." Unfortunately it is not such a ready oscillator as the Y cut, and should for preference be used in an air-gap holder. Its frequency drift is of the order of 23 p.p.m./°C.

An AT cut crystal is ideal for the 1.7 and 3.5 Mc. bands, since it will handle twice the power of an X cut. At the same time it is a much more ready oscillator under pressure and in addition its drift is only about one-tenth of that of an X cut crystal. Further, it can be made to change its frequency several kilocycles merely by varying the air-gap.

The BT cut, which is similar, is sufficiently thick to allow the cutting of 7 Mc. crystals, but, unfortunately, it has not quite the same power handling ability as the AT cut.

The V cut is similar to the BT cut in every respect.

(*Continued on page* 254.)

Physical Properties of Sunspots

By R. J. BALDWIN * (2CBL).

MUCH has been written recently concerning the progress of knowledge of the earth's ionised layers and on the related variations of the state of the layers and wireless wave propagation. Little has appeared in the wireless press and in the T. & R. BULLETIN upon the controllers of the layers—the sunspots and disturbing magnetic fields on the sun. The author therefore wishes to outline the chief known facts in connection with the spots and their cycle with special reference to the details concerning radio propagation.

The spots have been under telescopic observation from the year 1610 when Galileo turned his newly-made telescope to the sun, although naked eye spots were known to the Chinese in the third century A.D. The chief observed cycle is of 11¼ years average duration, although it has been as short as 9 and as long as 15 years! Other periods of 33⅓, 8.36 and 4.76 years have been suspected but it is doubtful if they really exist. The rise from minimum to maximum takes about four years—the fall takes about seven. In each hemisphere after minimum the spots reappear in high latitudes—about 30° from the equator and steadily appear nearer the sun's equator as maximum approaches. Although the spot zone moves in this way individual spots show no perceptible motion towards the equator during the weeks or months they are in evidence. One of the chief reasons for discounting the minor cycles mentioned above is that the great latitude shift takes no account of them.

In 1908 Professor Hale of Mt. Wilson observatory, U.S.A., demonstrated that sunspots are gigantic cyclones, often covering billions of square miles, occurring at the end of a vortex probably going far into the core of the sun. The fact that they are cyclonic is shown clearly by the pictures taken of the sun in hydrogen light when the big "whorls" of the hydrogen flocculi are plainly seen. The cyclonic rotation of two adjacent spots is often opposite. Sunspots have a lower temperature than the remainder of the sun's surface and "prominences" (ejected streams of incandescent gas) frequently form above a spot.

Extremely strong magnetic fields radial to the sun often occur in sunspots. The fields are detected and measured by means of the Zeeman Effect (the doubling or tripling of the Fraunhofer lines in the sunspot spectra) an effect produced when light traverses a strong magnetic field. These fields, which often occur where no visual sunspot can be seen, increase with the depth of the sunspot and often run up to 3,000 gauss. The strength of the earth's magnetic field is about 1.8 gauss!

Since one of the ionising agents of the earth's upper layers is believed to be streams of charged atom groups ("Corpuscles") the propulsive effects of such gigantic fields probably plays a large part in sending the corpuscles to the earth. The radial field sends the corpuscles out on a line between the spot and the sun's centre and it is when the earth comes close to or on the extension of this hypothetical line that the effect of the spot on radio conditions is most marked. Since, however, the corpuscles travel at a speed considerably less than that of light about a day elapses before the effect becomes noticed.

There seems to be a great tendency for the most prominent groups of spots in the Northern and Southern Hemispheres to show opposite magnetic polarity. In the above-mentioned case of two spots with oppositely revolving hydrogen flocculi the magnetic polarity would in nearly every case be opposite.

From minimum to minimum the polarity shown by leading spots in one hemisphere remains the same. At the sunspot minimum of 1912 the polarity of the Northern and Southern Hemispheres changed sign, the polarity of the Northern Hemisphere spots then corresponding to the north magnetic pole of the earth. At the next minimum a second change occurred. Unfortunately, the author has been unable to ascertain whether the same thing occurred at the last minimum several years ago. Such a change might conceivably affect radio propagation in the earth's two hemispheres giving the same place on the earth's surface the same long-period conditions in alternate cycles. This might be noticed especially on the higher frequencies such as 28 Mc. where sunspot effects are most marked. On this band it has been noticed that propagation conditions are often widely different for the Northern and Southern Hemispheres at one given time.

It is soon noticed when observations are taken that one or more sunspots in the correct spot to have the maximum effect on radio conditions (see above) will have greater effect than fairly high sunspot activity where no sunspot is in the correct position.

As instance of this: On July 30, 1938, the French Observatory at Meudon gave the general sunspot activity as 2 (in a code where the activity of spots is expressed by a figure from 0-5) activity was therefore quite low for this time when the spot cycle is still only a year from the peak. On that day, however, the remnants of two groups which had crossed the sun's central meridian earlier in the month and caused a small magnetic storm on the 4th had made a complete revolution and were again on the central meridian. Although 20 Mc. conditions on the previous day had been good, on the 30th, of four 20 Mc. stations (W1A, W2XE, WQA and LSO2) under observation at the same time each day only LSO_2 was audible at S1-2. Conditions were very quiet on all frequencies and (the author is indebted to G2XC for this) "after sunset there were signs of flutter fade on the higher frequencies and an almost complete absence of Ws on 14 Mc."

In other words, although general sunspot activity on the whole was low, the effect of the two groups on the central meridian was enough to counterbalance this and give all the symptoms generally associated with high activity.

* South Hants Radio Transmitters Society

Flutter and Echo on 1.7 Mc.

By E. H. Jones (G3CJ).

READERS will no doubt have noticed that from time to time signals in the 1.7 Mc. band, in common with those on higher frequencies, suffer from "flutter" or "shimmer" after dark, and occasionally are even accompanied by an echo. As the writer has not seen any accounts of observations of these effects, the following notes may be of interest.

Observations by the writer, mostly after dark, during the past twelve months, have resulted in the following effects being noted:—

(1) "Echo" on 1.7 Mc. is closely connected with the Dellinger "fade-out," but whereas the latter phenomenon is of comparatively short duration the former persists (apparently as an after-effect) for several hours, and possibly days.

(2) "Shimmer" or "flutter" effect accompanies the echo effect, and when the former becomes severe, the latter begins to become noticeable. It would appear that the same conditions produce both effects, and that the first-mentioned may be regarded as a milder form of the second, which occurs much less frequently.

(3) Distant signals (*i.e.*, from upwards of about 170 miles away) are first affected, but apparently as the phenomenon increases in intensity, the effect is noticed on signals from points nearer and nearer. On two or three occasions signals from G3CJ have been reported as "shimmery" at points 40 miles away, and this is also the nearest point from which "shimmery" signals have been received to date.

(4) Observations of 1.7 Mc. during ordinary "magnetic storms" have failed to give any evidence of this effect, including the evening of the aurora borealis display on January 25, 1938, and during the period of the magnetic storm on April 17 and subsequent days, when the H.F. bands were dead—this, incidentally, approximately $3 \times 27 = 81$ days after January 25. Unfortunately no observations were made during the Dellinger fade-out of April 16.

It should be noted that there are two types of "fade-out"—the "magnetic storm" type and the Dellinger effect, and both often occur together. The former is frequently accompanied by auroral displays, develops slowly and lasts for a period of several days, and affects the higher frequencies most. It appears to be due to a falling off of the reflecting (or refracting) power of the F layers, apparently due to de-ionisation by particles, probably electrons, emitted from the sun. The Dellinger fade-out, on the other hand, occurs suddenly, and is of short duration (an hour or two only), the lower frequencies (above about 1.5 Mc.) being affected most. It is apparently due to a sudden increase in the ionising power of the sun's radiation, the reflecting layers of the atmosphere becoming more dense, and the fade-out occurs when the lower layers become sufficiently dense to "blanket," those above, with consequent disappearance of the signals which would normally be reflected from them. It has been reported that on these occasions when the effect is particularly severe, another lower layer is formed, below the ordinary layers, which effectively "blankets" all signals above about 1.5 Mc. (except, of course, for the "ground-wave"), and the writer is of the opinion that the 1.7 Mc. echo and flutter effects are evidence of the presence of this layer.

A so-called "echo" is, of course, due to a signal arriving in two or more parts, one or more lagging behind, or preceding the main signal, due to having taken a longer or shorter path respectively. As the writer has no recording apparatus it has not been possible to determine conclusively whether the 1·7 Mc. echo is of the former or latter type, but it is suspected to be due to the latter. This would mean that the extra signal had arrived by a shorter route, which, of course, would be the case if additional reflection occurred at a lower layer than usual. Flutter or shimmer is also due to multiple reflection, and the fact that signals can acquire this property in a distance of 40 miles (which is normally covered by the ground-wave only) strongly suggests reflection from a layer much lower in the atmosphere than usual.

It might be argued that intense ionisation would cause reflection, at a much steeper angle, from a higher layer, but it is improbable that the ray would penetrate the usual layer during a period of intense ionisation when at ordinary times it is impenetrable.

The foregoing explanations are necessarily incomplete as yet, but the subject offers a very interesting field of study.

In particular the writer would suggest that those interested in ultra-high frequency work should keep up observations of the 1.7 Mc. band, as it would be extremely interesting to know whether, by using low angle radiation on 56 Mc. it is possible to detect reflection from the lower layers when echo or flutter effects are detectable on 1.7 Mc. signals. Possibly it is at periods such as these that long distance 56 Mc. working will become possible. For the purpose of these observations, when insufficient 1.7 Mc. amateur signals are available, the signals from the police transmitters on 125-150 metres, are extremely useful.

Recent Observations

Since the foregoing was written the 56 Mc. contact of July 2 between G5MQ and I1AS has taken place, and in view of the above remarks on the possibility of 56 Mc DX working during periods of "fade-out" conditions on the low frequency bands (which were made on purely theoretical grounds) it is interesting to note that the contact occurred during a period of successive Dellinger fade-outs on July 1, 2, 3, 5, 7 and 10. It is also interesting to note that in the 28 Mc R.E.S. Group "A" report in the August Bulletin, it is stated that ultra-high frequency conditions were exceptionally good on June 12, the date of a fade-out on the lower frequency bands.—G3CJ.

The Greenwich Visit

ONE of the most instructive and interesting Convention visits was that to the Royal Observatory, Greenwich, whither some 25 members were transported by coach in the afternoon of Thursday, September 1.

This commentator's astronomical knowledge being nil, he can only describe the trip from the point of view of a layman thirsting for information, and those several members present who were evidently quite *au fait* with some of the apparatus we saw are asked to overlook the shortcomings in this brief account.

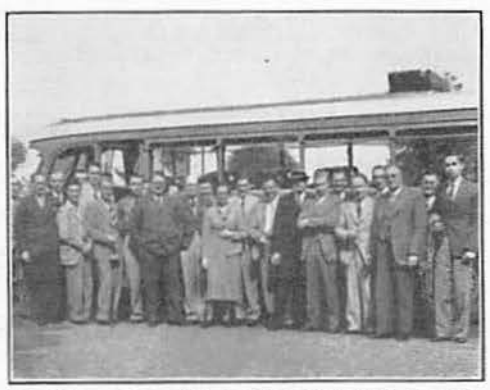
Greenwich Observatory is not concerned with astronomical work in the way most people think of it. That is, its primary function is the accurate determination of time ; second in importance being the making and keeping of continuous meteorological records and the obtaining of data on sun-spots and allied subjects, all of which have a definite commercial as well as a scientific value.

The Transit Circle

Probably the most interesting instrument is the Transit Circle, lined up on the Meridian of Greenwich, and used for observing those distant stars on which the world's time is based. A regular watch is maintained, provided the atmosphere is clear enough, and the work goes on night and day all the year round. Each observer is tested for his " personal error " by means of apparatus set up in the grounds of the Observatory, since no two people will agree exactly in accurate scale reading.

A story is told of how, in the very early days, one assistant persistently differed from the then Astronomer-Royal's own readings by quite a large, though a consistent, amount. As it was before the existence of " personal error " was realised, the assistant concerned was discharged for insubordination.

Further to ensure the accuracy in the operation of the Transit Circle, the mean is taken of several " shots " by different observers, so that the resulting figure is correct to a very minute fraction of a second. The instrument itself is a large telescope, which can be moved in the vertical plane only, the transit of the star being watched across a graduated scale. The instant at which the star cuts the central hair is referred to a clock which controls the standard time-keepers, this process being carried out electrically.



The Convention visit to Greenwich Observatory. Miss C. Hall, G8LY, in foreground.

Allowing for the Earth's Rotation

The other telescopes with which the Royal Observatory is provided are not only extremely interesting from the point of view of the work they perform, but also have a special mechanical feature to which it is difficult to do justice in so many words.

Briefly, these instruments move not only in the vertical plane, but also horizontally, the motion being of course a rotating one. The horizontal movement is actuated by a complex gear train controlled by a clock keeping accurate time, the result being that the telescope can be sighted on a star, and left keeping that star in view, as the clock moves the instrument in a direction opposite to the rotation of the earth. There is even a means of correcting automatically any deviation which would tend to throw the star off the centre-line of the mirror.

These telescopes are used chiefly for photographic observation of the sun and moon, and the stars within range. They are not as big as some of those in other parts of the world, but the location of the Royal Observatory does not lend itself to long-distance work such as is carried out at Mount Wilson in America. The obvious difficulty is, of course, the opaque nature of the atmosphere in this country.

Sun-spots

We were shown some very instructive photographs of sun-spots, and one of the most important tasks at Greenwich is to keep the G.P.O., B.B.C. and other radio-operating services informed of what the sun is doing, in order that alterations of frequency can be made in anticipation of a change in conditions. This works out very well in practice, and the data collected at Greenwich has come to be regarded as an essential factor in maintaining communication.

We were, unfortunately, not able to see some of the more delicate instruments, such as the Standard Time Clock, as these have to be carefully nursed in underground chambers and resent the presence of more than about two people at once. Apparatus of this kind is so delicately balanced and adjusted that the slightest disturbance in the neighbourhood immediately introduces an error.

A variety of other apparatus was on view, including an unpopular instrument floating in mercury, which has to be operated by pulling a string. The staff have to train themselves to pull the string and read at the same time.

Historical Note

To one member of the party at least, the collection of original equipment was almost as interesting as anything else. It is amazing that, with apparatus which looks so crude to modern eyes, the astronomers of those early days—the Royal Observatory was founded by King Charles to determine correct time for mariners, and is still under the nominal control of the Board of Admiralty—were able to lay the foundations of an exact science which has now resolved itself largely into an improvement in detail.

(*Continued on page* 254)

Two Months in the United States

By Robert Jardine (G6QX).

Mr. Jardine has just returned from a visit to the United States and at our invitation he has prepared an article giving his impressions of North American Amateur Radio.—Editor.

THE purpose of my trip was not connected with Radio, but advantage was taken of leisure hours to become acquainted with as many American amateurs as time would permit.

The passage out was made on the Cunard M.V. *Britannic*, the original passage by *Queen Mary* having to be cancelled at the last moment. Leaving Southampton April 30, with Le Havre and Cobh as intermediate stops, New York was reached on May 8.

During the voyage, the cabin steward had noticed a copy of "QST" on the dresser, and when he heard a G was on board, I was soon drawn into the short wave activities of the vessel, spending considerable time with an ACR155 and RME69 owned by two of the officers. I found, however, that clearer reception could be had on the Purser's *Emerson* Allwave 5, the communication receivers being too sensitive, hash from the ship's auxiliary machinery spoiling code and phone reception.

I did learn, however, that much time is spent listening to amateur phone, and G5ML and W2IXY were very well known by their consistently good signals. A certain G6 caused considerable amusement on one occasion by repeating "Helen, where are you, are you there, Helen?" Certain guesses were made by these hardboiled marine listeners where Helen was and some caustic remarks were made as to the use of the short waves for such conversation. One of the radio officers made a statement that "if amateurs lost any of their allocations in the spectrum they had themselves to blame. They did not make correct use of the medium at their disposal to consolidate the high opinion professional radio men had of them by reason of their early work in the short wave field."

As the clock went back 5 hours, it was interesting to note that very few G's burnt the midnight oil on 14 Mc., although SP, YR and PA seemed to be on the air all night (B.S.T. hours).

Central and South American stations were very loud most of the way over, but G's were mostly weak, although standing out a mile for clear cut distinctive crystal signals.

Looking Round

Docking on Sunday, May 8, and after settling down in the Commodore Hotel at Grand Central Station, a phone call to W2IOP brought an invitation to drop along for supper and a look round the bands—W2IOP is a DX country chaser with 96 to his credit and running 750 watts to a Windom on the roof—350 ft. or so high. Conditions on 14 Mc. were quiet, but G8HN was worked. I was now in a DX location, and in a position to appreciate the U.S. aspect. Using a NC101X receiver, I rather liked the bandspread, but QRN was tough, and just how tough it could be I was to learn as I travelled westwards later. At W2IOP, located in a block of residential flats, there was QRN from lifts, electric razors, fans, autos on West End Avenue outside, and, at times, from diathermy apparatus, the latter resembling machine-gun chatter at close hand. I was forced to admit to W2IOP that we were not quite so handicapped in England—yet.

The next personal contact was with J. B. Carter, Assistant Manager for *Radio*, located on Fifth Avenue just around the corner from the Commodore. J. B. was born in Liverpool, England, and he and his wife drove me around New York City by night. We called on W2FF in Brooklyn. FF is an executive engineer with RCA and had, of course, a very modern layout feeding a beam aerial. When we parted in the early hours, he gave me, as a souvenir, a kit of resistors, which subsequently caused fun with a Customs Official in Southampton, who laboriously checked my count of 76 "all told."

Business now called me to Philadelphia, Pa., and a very nice radio itinerary was not fulfilled owing to social engagements in connection with business.

At A.R.R.L. Headquarters

Hartford, Conn., was the next stop, and here again only 3 hours or so could be allowed for the visit to Headquarters A.R.R.L. I spent the morning of May 19 there, and was received by Treasurer Hebert, meeting in turn, Houghton, Beaudin, Budlong, Rodiman, Goodman, K. B. Warner, and Mrs. Lee, daughter of the late Hiram Percy Maxim.

A.R.R.L. Headquarters is located in a two-storey flat-roofed building with a narrow frontage to La Salle Road, but extending deep, the reception room containing many historic museum pieces connected with radio. The layout is remarkably neat, and the equipment modern; an envelope-slitting machine was demonstrated by Hebert who said a morning mail of 300 envelopes was not exceptional. After inspecting the laboratories, executive, accounts, and mailing departments, I was "grilled" by Budlong, Goodman and Rodiman on topics connected with Amateur Radio, DX, conditions, contests, QRO versus QRP, QSL's, etc. Budlong surprised me by proudly giving his power as 25 watts, he being a QRP advocate. A large map on the wall near his desk is flagged with the towns covered by him in his contact trips all over the U.S. G6WY is highly thought of as "DX'er No. 1," and they wondered how he accumulated the QSL's which made him top of the DX Century Club list. Had he a special system or what? I heard later that "Ham" had published data on "How to get the elusive QSL," but I must confess I haven't seen that yet. It was thought by H.Q. that the QSL situation was improving by the institution of the DX Century Club, stations realising that to get rare cards they had also to give.

GM6RG was considered the best heard British Isles 28 Mc. station and G5ML the best on 14 Mc. phone. After promising Budlong I would try

and defer a business appointment, I drove with Rodiman and Goodman to BC station WTIC to make a record for a convention code copying contest.

At WTIC I met W1HPI and W1NI, and watched their efforts to produce a record which would later be used at the New England Convention. Rodiman was to key a single tube oscillator whilst Randall W1HPI would fade in and out such records as (1) Hissing Steam, (2) House on Fire, (3) Street Noises, or whatever the Effects Department had in the way of "Noises off!" The keying from the oscillator was also to be faded in and out with the other noises. I did not hear the final record, but whoever wins the contest will be an able operator, if the trial was anything to go by. The friendly spirit existing between H.Q. and the BCL engineers was good to see, but then these engineers were also amateurs. I learnt that W1HPI had been attached to my R.F.C. squadron in France at one time—the world is surely a small place.

A full week could easily have been spent at Hartford, viewing the many activities of this fine organisation. Members of the A.R.R.L. can rest assured that their interests are in the hands of an organisation of energetic 100 per cent. Amateurs no matter what criticism may appear in print from time to time. I was not able to take advantage of Treasurer Hebert's invitation to inspect the new memorial station to H. P. Maxim, and left Hartford cherishing the hope that I might be able to return later. K. B. Warner impressed me as a calm, level-headed business man, striking just the right balance to lead the younger members of the organisation.

Among the W8's

My next contact with amateur radio was at Rochester, N.Y., after business stops at Albany and Syracuse, N.Y. Here I was collected by W8BOX, W8DWO (XYL W8BOX) W8NCM, and driven to W8RKR—Perry Preston, ex W2GOX, a real old-timer with a long record of good work as a contact station for expeditions.

Preston had a rotatable aerial, motor driven and geared up to two globes oriented on Rochester. By switching on at the operating desk, *any* direction for transmission could be aimed from the rotating globes with remarkable accuracy. I worked a G from here but conditions were poor and the QSO was not 100 per cent., in fact, up to this time (May 22) 14 Mc. had been most disappointing. The camaraderie existing amongst the Rochester amateurs was good to see, and W8RKR had to contend with much good natured banter in connection with this "aimed aerial."

A visit was paid to BC station WHEC after midnight, W8BOX acting as guide.

Next contact was at Jamestown, N.Y., following non-radio visits to Buffalo, Niagara Falls, and Welland Canal in Canada. The young man on the newspaper stand at the Jamestown Hotel spotted my R.S.G.B. badge and introduced himself as W8NUX. Station visits followed at W8NUX, DNW, PLR, BDC, PMZ, ATJ, and BC Station WJTN.

Here again, as at all places visited, one was struck by the intense enthusiasm of the fraternity, despite the handicaps under which most of them operated. Never have I seen such networks of power lines, and in most of the spaces adjoining the stations it was almost impossible to get a decent run for the aerial.

Up to this time (May 30) very little activity on 56 Mc. had been noticed, but the boot was soon to be on the other foot.

Arriving in Cleveland, Ohio, June 2, after business visits to Warren and Youngstown, Ohio, W8OQV, POQ, FHE, OPG, LIR, OBG were visited. W8POQ was by far the best station seen in the whole of the trip—BC stations included. This station is run by Ralph K. (Bunny) Rex, who owing to a serious illness was advised by his physician to take up some interest which did not involve physical exertion. Expense being no object, his stations took eight months to build, and the result is truly a remarkable layout.

Two bands are used, 3.5 and 14 Mc., and switches on the control panel operate relays which effect band switching, power reduction from 750 to 175 watts carrier, crystal selection, oscilloscope switching, and beam aerial selection. Two 14 Mc. full wave W8JK beams at right angles supported on 70 feet cedar poles gave a useful radiation pattern, and the engineering was of the highest conceivable

A view of W8POQ, one of the many well-designed U.S.A. stations visited by the author.

quality everywhere. Wherever possible, components had been assembled, buffed and silver-plated, even to the ¼ inch diameter solid aerial leads from the rig through the lead-in bowls to the relay boxes outside. Many attempts were made to hook up with G5ML who was engaged in a 3 way with G6WX and a VP, but the former wanted to get to bed, so we were eventually QSO Cambridge at S9, 100 per cent. readable. This was my first phone QSO from the U.S. side. I am afraid the phone bug bit on that day in Cleveland, Ohio, and it will not be very long before QX gets going on speech! (Another good man going *West!* —Ed.) Just to push a button and talk, then release the button and listen seemed an effortless way to work DX compared to pounding brass.

On the following day I had rather an unusual experience. A prominent executive of the Republic Steel Corporation had called to give me a motor car trip round Cleveland and as far as Akron, where the Zeppelin shed still stands. On the way we dropped into his flat for a refresher, and switched on his all-wave BC set for a background to "refresh" against. Tuning across 14 Mc. and at BC volume, a voice said "G6QX was here yesterday," and rather amazed we heard Bunny Rex telling a G all about our visit of the day before. We were astounded at the one in a million chance of such a thing happening under the circumstances, and

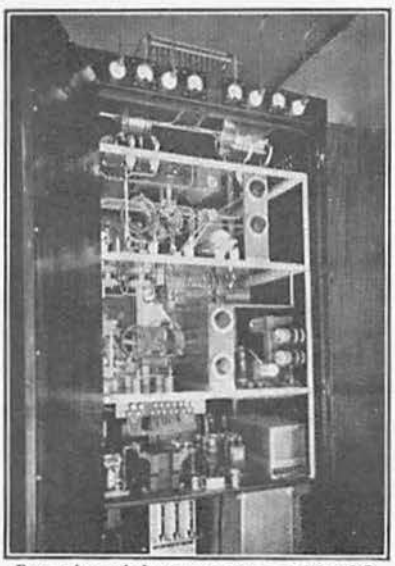
agreed that amateur radio certainly provides that element of surprise which makes it so interesting.

56 Mc Opened for DX

From Cleveland, Ohio, *via* Canton and Detroit, Mich., I arrived at Grand Rapids, Mich., and with Ralph Babcock W8DWB as guide, visited W8DWB, AHM, RJC, LNW, OTG, GEL, ROF, DRB, CYW, and eventually a hamfest at which 140 active Michigan amateurs with their ladies were present. Here I stepped right into the 56 Mc. Group with a vengeance, for they had all been working 1,000 mile DX right at that time. Conditions had been exceptional, and at W8OTG I saw 100 QSL's for 56 Mc. contacts received in a few days from places over 1,000 miles away. OTG was using 125 watts CC on 57.4 Mc. and the band had been wide open from 2330-0100 G.M.T., it being impossible to log all the stations heard. " A good time had by all " hardly does credit to the hamfest, a G6 was a novelty to the gang in that locality !

I was " grilled " again, signed autograph books for an hour, and could have imbibed gallons of beer, had I not wished to remain " compus." It was a novel experience to be with the Michigan lads on this occasion, and I suspect that as the raffle progressed towards the valuable prizes, many hoped a T55 or mike would find a home in G, judging by the hints dropped by the gang to those making the draw.

Some of the rigs on 56 Mc. were of the simplest construction, reminding one of the early days here on 28 Mc. The opening up of 56 Mc. about this time had aroused tremendous excitement in this district, and I had an opportunity of working OTG's 125 watt phone rig far into the early hours following the hamfest. OTG would pick up the mike and say " Hello, gang, anybody want to work a G6 on five ? " Then the fun began. I was sorry to disappoint one amateur, who was not in the wheeze, he thought he had worked across, his voice trembling with excitement. I must pay tribute here to Ralph Badcock W8DWB, who gave me two days of his time and must have used ten gallons of " gas " taking me around.



Rear view of the transmitter at W8POQ.

Next stop was Muskegon, Mich., where W8GXH was visited ; this is also a very fine station with cost a secondary factor. Another souvenir was collected here, a Lamb " noise silencer " complete ready to use, this was from a business acquaintance who on marriage had given up amateur radio for yachting.

Muskegon was the last link with radio, although Chicago, Cleveland (return visit), Newark, N.J., and N.Y.C. were again visited.

It was now necessary to use the airlines to get the itinerary completed, so radio visits ceased very regretfully I must say, because the experience had been thoroughly enjoyable.

I was unable to take advantage of Herb Becker's invitation to fly to California for a DX round-up he wanted to organise in my honour. Everywhere it was impossible to overstay one's welcome, the guide could always find another station so that one would arrive back at the hotel in the small hours.

The return to G by the *Aquitania* was uneventful except for some fun with the Customs.

Impressions

Reviewing the trip, one is impressed with :—

1. The tremendous enthusiasm of the U.S. amateurs and the hospitality given to foreign amateurs.
2. The QRN situation, due to the availability of electrical household devices at low cost and on time payment plans. This phase is a menace to short-wave reception, and unless legislation is passed in this country compelling manufacturers to fit suppression devices to washing machines, razors and the like, sales of short-wave receivers will be retarded, no matter how cheaply they are marketed.
3. The availability of standardised components such as steel racks, panels and sub-bases, tank coil assemblies, final amplifier assembly kits, etc., at very low prices, gives the American amateur less scope in individual construction, and there is a less tendency than here to experiment for the best layout.
4. R.F. power losses are not studied as in G. When a full kilowatt is available, 250 watts loss is considered neither here nor there. Poor aerial lead ins, poor insulation, and proximity of kilowatt tank coils to metal panels must, in many cases seen, absorb much R.F. energy which could easily be conserved for the aerial.
5. Commercial interests cater for the amateur to the nth degree, particularly as regards valves. As each problem develops, so a valve becomes available at very low prices.
6. The safety problem is acute due to the kilowatt licence. Voltages of 3,000 are commonplace, but there was an absence of precautions taken to ensure safety. In one case the 3,000 volt leads from a transformer were taken to a cheap DPDT switch of the sixpenny variety, and, perhaps, fortunately for the amateur concerned, this switch exploded when he was demonstrating the rig to me. A little missionary work was accomplished right on the spot. K. B. Warner was very much concerned on safety precautions.

(*Continued on page* 254.)

COSMIC

BY COURTESY OF

JULY, 1938. ALL TIMES G.M.T.

Day	MAGNETIC: Recorded at Cheltenham, U.S.A.	Average Mag. Character. h. h. 0 to 12	Average Mag. Character. h. h. 12 to 24	Recorded at Kakioka, Japan.	W=Mount Wilson, J=Tokyo, Japan. Number of Groups.	Number of Spots.	Meudon. Sunspots. Activity.	Sunspots. Quadrant.	Days from C.M.	Meudon. Calcium Hydrogen Faculæ Activity.
1	Slightly disturbed till 0400, moderately disturbed till 1100, slightly disturbed till 2200, moderately disturbed.	0.7	0.6	Slight disturbance.	W 9	140	—			—
2	Slightly disturbed till 0400, moderately disturbed till 0700, slightly disturbed.	0.6	0.1	Slight disturbance.	W 10	135	Fairly strong.	S.W. S.W.	0 0	Fairly Strong.
3	Quiet till 0500, slightly disturbed till 0600, then quiet.	0.1	0.0	Rather calm.	W 9	150	—			—
4	Quiet till 1204, mod. disturbed irreg. oscillations with greater part of activity occurring between 2000 and 2200.	0.2	1.6	Storm of rather sudden commencement.	W 9	155	—			—
5	Moderately disturbed, irreg. osc. till 0700, quiet till 1100, then slightly disturbed.	0.9	0.6	Slight disturbance.	W 12	95	Very strong.	‡		Strong.
6	Slightly disturbed till 1800, then quiet.	0.8	0.4	Rather calm.	W 14 J 11	150 243	Very strong.	†		Strong.
7	Quiet.	0.0	0.1	Calm.	W 17	130	Very strong.	*		Strong.
8	Quiet.	0.0	0.0	Rather calm.	W 17	100	Very strong.	N.W. S.E. S.E.	1 2 4	Strong.
9	D and Z quiet, H quiet till 1954, then moderately disturbed, irregular oscillations.	0.0	0.6	Storm of rather sudden commencement.	W 15 J 12	160 208	Very strong.	N.W S.E. S.E.	2 1 3	Strong.
10	Moderately disturbed irregular oscillations.	0.9	0.9	Slight disturbance.	W 15	180	—			Strong.
11	Quiet.	0.0	0.1	Calm.	W 14	360	—			—
12	Quiet.	0.2	0.2	Rather calm.	W 14	310	—			—
13	Slightly disturbed till 2004, then moderately disturbed, irregular oscillations.	0.2	0.9	Storm of rather sudden commencement.	W 14 J 12	305 348	Very strong.	S.W. S.E.	3 2	Very strong.
14	Moderately disturbed, irregular oscillation till 0600, then slightly disturbed.	0.6	0.6	Rather calm.	W 15	310	Very strong.	S.W. S.E.	4 1	Very strong.
15	Slightly disturbed until 0315, then mod. disturbed irres. osc. till 1700, greatly disturbed till 2400. Both H and Z high during greatly disturbed period.	1.1	1.6	Storm of rather sudden commencement.	W 16	205	—			—
16	Moderately disturbed, irreg. osc. all day.	1.1	1.1	Rather calm.	W 15 J 11	125 87	Very strong.	S.W. S.W.	3 1	Strong.
17	Moderately disturbed, irreg. osc. till 0700, then quiet.	0.4	0.1	Rather calm.	J 10	110	Strong.	S.W.	2	Strong.
18	Quiet.	0.0	0.0	Calm.	W 11 J 11	110 189	—			—
19	Slightly disturbed.	0.2	0.0	Rather calm.	W 15 J 12	70 142	—			—
20	Slightly disturbed.	0.0	0.1	Calm.	W 13 J 13	50 151	Strong	S.W.	5	Strong.
21	Quiet.	0.0	0.1	Calm.	W 17 J 10	80 110	Fairly strong.			Fairly strong.
22	Quiet.	0.1	0.1	Calm.	W 14 J 10	105 103	Medium.			Fairly strong.
23	Quiet.	0.1	0.1	Calm.	W 17 J 13	165 103	Fairly strong.			Fairly strong.
24	Quiet.	0.0.	0.1	Calm.	W 15 J 13	110 193	Strong.			Strong.
25	Quiet.	0.1	0.0	Calm.	W 15 J 15	175 232	Strong			Strong.
26	Quiet.	0.0	0.0	Calm.	W 13 J 13	? 254	—			—
27	Quiet.	0.1	0.1	Calm.	W 11	?	Fairly Strong			Strong.
28	Quiet.	0.0	0.0	Calm.	W 14	?	Fairly Strong			Strong
29	Quiet till 0500, then slightly disturbed.	0.1	0.4	Calm.	W 12 J 12	110 174	Medium			Strong
30	See below. §	1.6	0.9	Storm of rather sudden commencement.	W 9 J 12	100 137	Medium			Fairly strong.
31	Slightly disturbed till 0400, then quiet.	0.2	0.0	Calm.	W 8	70	Medium			Fairly strong.

§ July 30. Slightly disturbed till 0436, then greatly disturbed irreg. osc. till 1100, then moderately disturbed till 1300, then slightly disturbed till 1930, then moderately disturbed. Approximate ranges as follows:—
D=39.6 minutes, H=200 gammas, Z=249 gammas.

* Asst. Man. R.E.S.

DATA

"SCIENCE SERVICE," U.S.A. DECODED BY J. C. ELMER, A.C.G.I., D.I.C. (G2GD)*

SOLAR

France.

Proturbances on Disc. Activity.	Quadrant.	Days from G.M.	Lat.	Protuberances on edge Activity.
—				—
Fairly strong				Strong. N.W. Low or Mel.
				—
—				—
Fairly strong.				Medium
Medium				Feeble.
Medium				Feeble.
Fairly strong.				Feeble.
Medium.				Medium.
Medium.				Medium.
—				—
—				—
Fairly strong.				Medium.
Fairly strong.				Fairly strong.
—				—
Fairly strong.				Medium.
Strong.				Feeble.
—				—
—				—
Strong.				Medium.
Strong.				Feeble.
Strong.				Feeble.
Strong.				Feeble.
Strong.				Feeble.
Strong.				Feeble.
—				—
Strong.				Medium.
Fairly strong				Very Strong S.W. Low or Medium. None.
Strong.				
Fairly strong				Medium.
Fairly strong				Medium.

Japan.

Prominences. East No.	Limb. Area Units.	West No.	Limb Area Units.
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
7-8	5-15	5-6	5-15
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
9-10	15-25	11-12	15-25
—	—	—	—
—	—	—	—
9-10	5-15	5-6	5-15
7-8	5-15	5-6	15-25
7-8	5-15	7-8	15-25
—	—	—	—
7-8	15-25	7-8	5-15
5-6	5-15	9-10	5-15
9-10	15-25	9-10	15-25
—	—	—	—
7-8	35-45	11-12	15-25
—	—	—	—
—	—	—	—
9-10	25-35	9-10	25-35
7-8	15-25	13-14	25-35
—	—	—	—

Fade-outs. Japan. Time.

0730
0040
0010
0440
0310
2335
0545
2230
0610
0359
0140
0150
0813

KENNELLY-HEAVISIDE LAYERS

Bureau of Standards, Washington at 1700.

July 6. Frequency kc/s.	Hght. kms.	July 13. Frequency kc/s.	Hght. kms.	July 20. Frequency ks/s.	Hght. kms.	July 27. Frequency kc/s.	Hght. kms.
2500	120	2500	120	2500	110	2500	110
4200	120	4100	120	4800	120	3500	110
4200	220	4200	120	5000	250	4000	150
4400	120	4200	270	5800	410	4050	—
4400	210	4200	120	6000	410	4200	110
5400	390	4300	200	6600	380	4600	230
5800	440	5000	260	7000	400	5400	360
6400	410	5400	600	7800	430	5600	350
7200	450	5800	430	7800	470	6400	350
7200	510	6400	460	8200	460	6800	420
7400	440	6800	500	8200	640	7200	430
7400	700	7000	450	8800	500	7200	460
7800	460	7000	560	9000	—	7600	440
8000	510	7400	480			7600	610
8200	—	7800	590			8000	460
		8000	—			8200	500
						8400	—

Tokyo, Japan, at 0300.

No. obs.	At 0400 4000 No. obs.	4000	150	4000	140
4000					
6000	130	6000	410	6000	470	6000	140
8000	500	8000	450	8000	540	8000	140
10000	—	10000	—	10000	? 170	10000	600
				12000	—	12000	—

‡ July 5.

Quad.	Days.
S.W.	4
S.W.	3
N.W.	4
N.E.	2
S.E.	5

† July 6.

Quad.	Days.
S.W.	5
S.W.	4
N.W.	5
N.E.	1
S.E.	4

*July 7.

Quad.	Days.
S.W.	6
S.W.	5
N.W.	0
S.E.	3

Organising a Local R.S.G.B. Group—Some Suggestions

By Austin Forsyth (G6FO)

THE following remarks are inspired by a query which recently reached the writer, and the treatment of the subject is restated here as it may be of interest to the membership at large, whom it directly concerns. This little article is not intended to be a dogmatic laying-down of the law, but rather a statement of faith in that it suggests in what way T.R.'s (and also D.R.'s) can be really useful. It is based on the writer's own experience in both capacities off and on during the last seven or eight years.

The organisation of a local group requires careful attention and treatment if it is to be successful. Where none exists, the first step is to call a meeting of all members within reasonable distance, and suggest to them that, owing to the increase of interest in Amateur Radio and the possibility of new members coming in, it would be advisable to organise and hold regular meetings. This involves the election of a local representative, which it is the duty of the membership to appoint from among themselves. When this nomination has been obtained and accepted—and if there is no other selection, which would involve a ballot—the member's name should be sent forward as the elected representative. If the area is already part of an R.S.G.B. district, it goes to the D.R. of that District; if no other local organisation exists, it should be sent in to R.S.G.B. Headquarters.

The member concerned will then receive a copy of the Circular outlining his duties as a T.R. (Town or Area Representative). Briefly, these are to keep in touch with all the local members and potential amateurs, to organise and hold regular meetings of which minutes should be kept, and to forward to the D.R. or R.S.G.B. Headquarters by the 25th of each month a short report covering the local activities; about 50 words is ample, which should summarise quite briefly what is happening in the area. This report will be published in THE BULLETIN, though not necessarily in full.

Choosing the T.R.

As regards the choice of a member to carry out these duties, the mistake is often made of electing the one who happens to be the most prominent amateur transmitter, on the assumption that he will also be a good T.R. Actually, it is not at all necessary that a representative should have a profound knowledge of Amateur Radio from the technical point of view. What is wanted is a man who can carry out the job of T.R. effectively and who is keen on seeing that the right type of amateur is encouraged to join the R.S.G.B. and take his part in the local activities.

The further object of the T.R. must be to keep all expenses—apart from the R.S.G.B. subscription—down to an absolute minimum, and any group expenses should be shared by all members equally. With a local membership of a dozen or fifteen, the average attendance at meetings will not usually exceed eight or nine, so that the question of a club-room should be treated with caution unless there is a large and active membership fully prepared to do their share on the financial side and with a clear idea of the obligations involved. Generally speaking, at least 25 paying members are required to make a club-room a success, since it is not only a meeting-place for which rent has to be paid and heat and light provided, but to draw members to the meetings gear must be installed. All this is rather difficult on a shilling a head per week, remembering that each member is also paying 15s. R.S.G.B. subscription in a lump sum annually.

With a small local group of the number mentioned, meetings can most conveniently (and economically) be held at a café where a private room is available for the price of what is spent on coffee and sandwiches; in the off-season, this is quite easily arranged. Further steps in connection with a club-room will then depend on the enthusiasm of the membership and its growth.

Alternatively, when there are six or eight only, a good plan is to have the meetings at each one's home in turn, with the understanding that a minimum in the way of refreshments is expected. However, the question of arranging things in this way will rest upon the discretion of the T.R., as there will often be members unable to offer any hospitality at all, and they will naturally be shy of attending meetings at the others' houses. The great advantage of meeting under these conditions is that there is nearly always gear available and it is easy to get a discussion going and otherwise have an interesting evening.

An arranged meeting once a fortnight is usually ample, and in the summer can be extended to once a month. Weekly meetings will only be attended by a few members once the first flush of enthusiasm is over and things settle down to a regular routine.

Running a Letter Budget

Another duty of the T.R. is that he should, at his discretion and if the support is available, institute a Letter Budget. This is specially valuable if the membership is scattered and all are unable to come to every meeting. A Letter Budget consists of a monthly contribution from each member which is sent in to the T.R. He puts them together, and the Budget then goes round to all contributors in turn, this being arranged by having a mailing list of all the names and addresses added to the Budget by the T.R., with spaces for initials and date of receipt and despatch. There are certain simple rules which are essential to make the Budget a success; all members must support it and have their contributions in by a set date; letters should be written on one side of the paper only; the Budget should not be kept by any member for more than three days, and spare sheets should be added for comments on other contributions.

When starting a Letter Budget, it is important that the T.R. should make it clear that long, highly technical contributions are neither expected nor wanted. The Budget should be regarded as a means of discussing problems and difficulties, comparing results, putting forward ideas, and as an Exchange and Mart. There are always people who feel unable to express themselves in writing, and if the standard is too high contributions will be

few, unless it is understood that the Budget exists to help every member. Many an amateur has developed a very useful faculty of self-expression through having contributed to a Letter Budget which he has the comfort of realising only circulates among people known to him personally.

The T.R. must at all times be ready to help and advise beginners, and he will find that he has a fairly considerable correspondence if the group is a large and active one; this, indeed, is the measure of his success. His other duties and responsibilities are to act as his group's representative in airing grievances, and any suggestions or criticisms should be probed to the bottom; to organise local participation in events like N.F.D., where the work should be divided amongst all those taking part; and to keep members in touch with the work and organisation of the Society.

In practice, it will be found quite a big job to follow the general idea contained in this article, because, no matter how keen the T.R. may be, he will inevitably find some members of his group apathetic and apparently disinterested. This is often because such people do not take well to organisation, however slight it may be. Members in this category require particular attention; they forget their monthly reports; they want the Budget but cannot be bothered to contribute to it, and so on.

Things should be taken quietly, and anything concerning the group as a whole should be thoroughly discussed at a meeting, and the decision arrived at entered in the minutes. There can then be no trouble afterwards.

All this can be done in a few hours' work a month, and for anyone having Amateur Radio at heart is well worth while. It is very satisfying to be able to look back over the year and feel that the increase in membership or in the new licences granted is in no small measure due to one's own efforts at help and encouragement. It is no less gratifying to know that the local group pull together and are on good terms with one another, for if the T.R. is slack and does no more than he is bound to, dissatisfaction arises sooner or later, there is a split in the membership which leads to much unnecessary bad feeling, and the area, instead of going ahead, begins to fall back.

A great responsibility therefore rests on the T.R., and if he can keep his group together and show progress, he has something of which to be proud.

A SILENT KEY.

It is with very deep regret we record the death of Ross Hull, Editor of *QST*, and one of the most brilliant technicians in amateur radio circles.

Mr. Hull met his death whilst experimenting with television equipment.

Born in Melbourne, Australia, in 1902, he was educated in the public schools there, and studied to become an architect. When radio was in its infancy, he took a deep interest in it, and by 1922 was recognised as one of the outstanding radio amateurs of that country. He was the first amateur in Australia to receive signals from amateur stations in the United States.

He became technical editor of *Wireless Weekly*, Australian radio magazine, a few years later. In 1926, as a representative of that magazine, he took a world tour, visiting radio amateurs and interesting himself in their work. While visiting A.R.R.L. headquarters he was asked by Mr. K. B. Warner to become a member of the League's technical staff. Seeing an opportunity to further his radio theories and work, he accepted the offer.

When the A.R.R.L.'s Technical Development Programme was instigated, to meet new conditions established by the Washington Convention of 1928, Mr. Hull was appointed director of the Programme. Under his leadership, and due mainly to his intenseness and amazing energy, great technical progress was made. Through his efforts new standards were set. Among the contributions were high-C stabilised self-excited oscillators, peaked-audio receivers for C.W. and superheterodynes for 'phone selectivity, improved m.o.p.a. design, improved self-rectified oscillators, frequency measurement and monitoring, and the possibilities of the 28 Mc. band. He returned to Australia in 1929, where he resumed his position with *Wireless Weekly*, but came back to the United States in 1930 and became Associate Editor of *QST*. In the early part of 1938 he became its Editor.

Mr. Hull edited the *Radio Amateur's Handbook* from the fourth to the fourteenth edition and was engaged in editing the fifteenth edition.

A highly versatile man, with exceptional ability as an amateur photographer, pianist and amateur astronomer, his investigations in radio included work with ultra-high frequency propagation, resulting in his now accepted theory of "air-wave bending," the development of the "super-infra-generator" receiver, and practical radio control of model aircraft. During the past year a great deal of his spare time was devoted to investigating the possibilities of amateur television, as well as its long-distance reception. He was successful in receiving good pictures from New York City, over one hundred miles away, and had amazed professionals with this performance. He was well on his way towards developing simplified television gear that could be built and used by amateurs.

We, the Radio Amateurs of Great Britain, mourn the passing of a fine amateur, and offer to his relatives and his many friends our sincerest condolences.

May the results of his labours long remain as a memorial to his foresight and technical ability.

ABRIDGED SPECIFICATION OF "HIS MASTER'S VOICE"

MODEL 469 RECEIVER FOR A.C. MAINS

• 8 VALVES • 4 WAVEBANDS • 5 WATTS OUTPUT • FLUID-LIGHT TUNING

"H.M.V." Model 469 AC
15 GNS.
or by hire purchase


Model 469

GENERAL SPECIFICATION

Features—Four wavebands:
(1) 11.3—35 metres. (2) 35—100 metres.
(3) 195—580 „ (4) 725—2,000 „
Circuit—8 valves. R.F. Amp.—mixer—oscillator—I.F. Amp.—twin diodes—L.F. stage — output stage — rectifier. Separate bass and treble controls. Electronic tuning indicator—Undistorted output 5 watts.

CONTROLS LAYOUT . . . .

1. Brilliance and two-position selectivity.
2. Wavechange switch.
3. (centre) Two-speed tuner.
4. Volume control and on-off switch.
5. Bass control.

The wavechange switch operates the wavescale indicator located in the top left-hand corner of the scale by means of a spring-loaded chain. In the opposite corner is found the electronic tuning indicator which has a variable-mu characteristic to avoid overlap.
The field winding of the electromagnetic loud-speaker is used for smoothing purposes in conjunction with an additional choke and three electrolytic condensers. These latter items are heat-insulated from the speaker frame.

SIGNAL FREQUENCY AMPLIFIER

The signal-frequency amplifier, W63, amplifies the incoming transmission at its original frequency and this stage is provided to ensure a good signal noise ratio, some degree of selectivity, and freedom from self-generated whistles.
The aerial is coupled to this valve by means of the series-connected aerial coils which are wound adjacent to their respective tuned circuits. The fact that these aerial windings are connected in series whilst the tuned circuits are not, has no particular significance as it was done to effect certain economies in switching. Tappings are brought out from the tuned circuits and taken to the anti-static aerial socket so that line matching is effected without the use of a separate transformer.
The signal-frequency amplifier is coupled to the frequency-changer, X.64, by the conventional tuned-anode method which enables maximum gain to be obtained from this stage, with much simplification of coil assemblies and switching. Even so, the coils tend to become complicated when as many as four bands are wound on the same former.

FREQUENCY CHANGER & OSCILLATOR

As its name implies, the frequency-changer, X.64, serves the purpose of converting the signal frequency into that of the intermediate frequency, namely, 465 KC/S, and a separate oscillator, Z.63, tuned by this amount above the signal frequency is coupled to the oscillator grid of the X.64.
This system of using a separate oscillator is fast becoming standard practice in the better type of receiver, as it is usually easier to obtain the relatively large voltage output, minimises interaction between signal and oscillator circuits (pulling) and permits the use of circuit arrangements giving great frequency stability—a point of importance when going down as low as 11.3 metres.

I.F. AMPLIFIER & VARIABLE SELECTIVITY . . . . . .

Signals of intermediate frequency appearing in the anode circuit of the X.64 are passed on to the grid of the I.F. amplifier, W.63, via one of the new iron dust-cored transformers and thence, after amplification to one diode of a twin diode valve, D63, for detection.
These I.F. transformers provide genuine variable selectivity which has no deleterious effect in the Selective position and affords a nicely flat-topped resonance curve in the Quality position.
The variable selectivity is actuated by the Brilliance control and is, in fact, a D.P.D.T. switch arranged so that maximum fidelity is obtained when this knob is turned fully anti-clockwise. A small movement in the other direction operates the switch and gives high selectivity. Further rotation in the same direction results in an increasing cut of the higher audio frequencies.

A.V.C. . . . . .

The signal and A.V.C. diodes are used in a conventional manner, care being taken, however, to proportion the AC/DC load of the former correctly to avoid all distortion of deeply modulated passages.
The A.V.C diode is fed from the same I.F. coil tapping through a small condenser, and its load is split so that the I.F. valve can be provided with half the available voltage drop; it must be remembered that this valve handles a considerable voltage swing particularly when receiving local stations which is where the backing-off voltage is greatest, and a large amount of distortion can easily be introduced if the valve is not working on a relatively straight part of its characteristic.

L.F. STAGE & AUDIO TONE CONTROLS

A Z63 with its anode and screen grid strapped is used in the L.F. or driver stage, the result being a medium-impedance triode.
The bass-cutting control consists of a small condenser in series with a larger one whereby the effect of the former is varied. Variation in top response is obtained by controlling the effective capacity across the L.F. transformer secondary.

If you would like to receive a copy of the "H.M.V." *illustrated catalogue of* RADIO *receivers and Radio-gramophones write to* "HIS MASTER'S VOICE", 108P Clerkenwell Road, E.C.1.

THE HELPING HAND

By J. N. WALKER (G5JU).

Part XIV.—R.F. INTER-STAGE COUPLING

WE now come to the various methods available for transferring the radio-frequency power generated in the anode circuit of any particular valve to the grid circuit of the following stage. For convenience it will be assumed, in the text which follows, that the crystal oscillator output is being fed to a frequency doubler or buffer amplifier, but the information given applies equally well to the later stages of a transmitter. Some of the methods given also apply to the transference of energy from the tank circuit of a power amplifier to the aerial, but as conditions in this case may be somewhat different, particular attention will be given to them at a later stage.

The Degree of Coupling

Before actually discussing coupling methods it will be well briefly to indicate the reasons why different degrees of coupling are necessary. The first is that in order to obtain maximum effective output from the oscillator, the load resistance into which the valve conveys its R.F. energy must be a particular stated value. In practice the load is the resistance of the input grid circuit of the following valve plus the resistance represented by the losses in both associated circuits. As the combination of these resistances will rarely result in the exact value of load resistance required by the valve, adjustment of the coupling, turns ratio of coils, etc., is necessary, so that accurate matching may be secured. This really means that the power drawn from the oscillator must be neither less nor more than it can efficiently generate under working conditions. Often, of course, the oscillator is capable of giving considerably more power than is necessary efficiently to drive the following stage, and in this case the coupling will be adjusted so that the latter is receiving the correct excitation. The fact that the oscillator is loaded below optimum is beneficial and will increase the frequency stability. As far as that goes, it is undesirable to have any stage working under conditions where all the R.F. energy is required to drive the following stage, although it is realised that this cannot always be helped, especially in cases where only batteries or D.C. mains are available.

It is very bad practice to load up the oscillator to such a degree that most of the R.F. in its anode circuit disappears, as shown by any of the usual visual indicators. What happens, in effect, is that the load resistance has been reduced much below that required by the valve and under this condition the power output falls off rapidly, especially where high-impedance valves (including pentodes) are concerned. The anode current will probably rise, indicating increased power *input*, but the increase is being dissipated as internal heat in the valve and does the latter no good.

From the foregoing it follows that when any method of coupling is employed a certain amount of experiment is desirable to ensure that the actual coupling is somewhere near the correct degree, and it is by means of such experiments that the A.A. licensee can obtain valuable experience.

Capacity Coupling

Coupling by means of a condenser (C3), as shown in Fig. 1, is probably the most common method in use at the present time, and has much to commend it, particularly where the lower amateur frequencies are concerned. It is simple and, as it utilises the minimum of components, is also economical. There are several reasons for its successful functioning on the lower frequencies, one being that the input impedance of any valve depends on the frequency, so that V2 imposes a lesser load on the oscillator V1, whilst the latter functions at good efficiency and probably produces, without strain, more R.F. energy than V2 requires.

The degree of coupling may be varied in a very simple manner by varying the capacity of C3. It may be either of a continuously variable type or

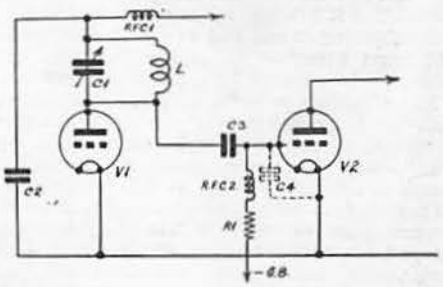


Fig. 1.—The R.F. Voltage applied to the grid of V2 depends on the ratio of the reactances of C3 and C4.

various values of capacity may be tried, and the results tabulated.

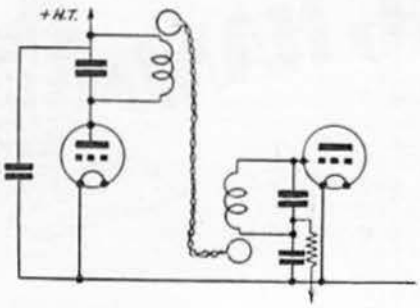


Fig. 2a.—Link coupling both stages single-ended.

Care must be exercised in the choice of C3 as it is at high R.F. potential and, with a poor component, high losses will be introduced. Undoubtedly the best condenser to employ is one of the fixed-air dielectric types manufactured by several of the firms which advertise in this journal (*Bulgin, J.B.*, etc.), and the writer has known of a 50 per cent. increase in output resulting solely from the substitution of one of these. Next comes the

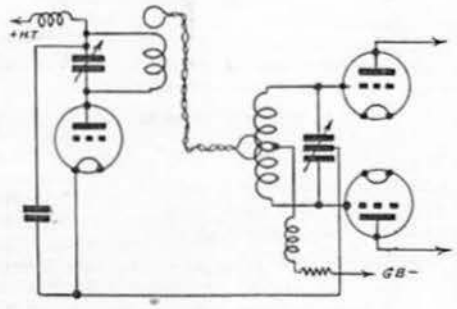


Fig. 2b.—Single-ended to push-pull.

ceramic type, available in capacities up to 100 μμF from *T.C.C.* and up to 1,000 μμF from *Dubilier*. The low losses and very small capacity to earth of these comparatively tiny condensers make them especially suitable. The choice finally lies in one of the tag, or wire end, small mica condensers. C3 must be mounted well away from earthed metal parts. The R.F. choke in the grid circuit (R.F.C.2) is also subjected at one end to a high R.F. potential, and must therefore be of good quality, so that minimum losses may be introduced.

Many readers will be aware, from experience, that the capacity coupling method falls off as the frequency is increased, and results above 14 Mc. (and often below) are likely to be poor. The reason is not far to seek. It may be thought that C3 passes on to the grid of V2 the total R.F. voltage appearing at the anode of V1, but this is not the case. C3 actually forms one side of a potentiometer, the other side comprising the internal capacities of the grid of V2 (*i.e.*, the grid-anode and grid-filament capacities, plus the extraneous capacities introduced across the valveholders, R.F. chokes, wiring, etc.). These are indicated in Fig. 1 as a lumped capacity C4 and the actual value will depend largely on the type of valve used at V2. It therefore varies considerably and may range from about 10 μμF, in the case of a modern low capacity triode, to 25 μμF, in the case of a pentode.

The actual voltage impressed on the grid of V2 is consequently dependent on the ratio of the reactances of condensers C3 and C4. As the frequency is increased, the reactance of a condenser decreases, and the impedance offered by C4 to ultra-high frequencies will be quite low, so that comparatively little voltage to drive V2 is developed across it.

Again, the capacity of C3 and C4 in series is across the tuned anode circuit of V1 and, added

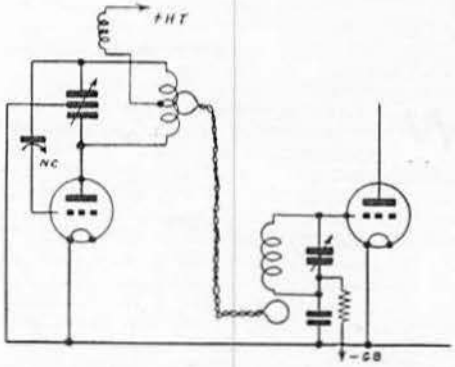


Fig. 2c.—Balanced single-ended to unbalanced single-ended.

to the existing minimum capacity, make it difficult to obtain a high L/C ratio, so that the original voltage developed is less than it would otherwise be.

Link Coupling

The disadvantages of capacity coupling may be removed by adopting link coupling and, in addition, other advantages are obtained.

The basic circuit showing link coupling is given in Fig. 2a from which it will be observed that the grid of V2 is now connected to its own tuned circuit, which is isolated electrically from the anode circuit of V1. The coupling between the two is magnetic and is effected by means of a two-wire link of low

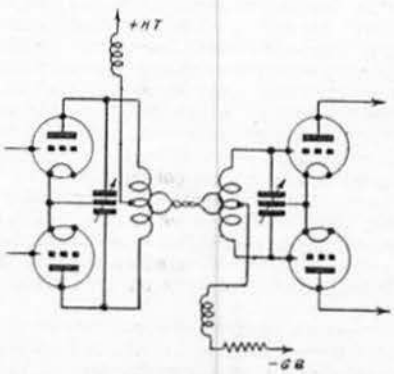


Fig. 2d.—Push-pull to push-pull.

impedance. The latter carries a comparatively high current at a low voltage and, provided a sufficiently thick conductor is employed, the losses are very small. No particular attention need be paid to the thickness or quality of the insulation of the link, except possibly at the higher frequencies. Twin flex (power type) or 18-gauge enamelled wire (both wires through one piece of systoflex) are effective; for 56 and 28 Mc. two 18 gauge wires running parallel and separated ½ in. or so by means of tiny ebonite spacing pieces are very suitable. The length of the link is not important—in practice it may often run from one tier of a rack to another—but may, if desired, go round a room, with little additional loss introduced.

The link winding is coupled to the output and input circuits by means of one or two turns (best determined experimentally) wound around the low-potential (R.F.) end of the coil, in the case of a single-ended stage, or around the centre of the coil when a balanced circuit is incorporated.

The various circuits likely to be encountered are shown in Fig. 2a-d together with the appropriate methods of arranging the link winding. Where the latter is at one end of the tuned circuit winding, variation of coupling may be readily obtained by either varying the distance between them or by adjusting the number of turns comprising the link. Where the tuned circuit is centre-tapped, the winding should be made in two sections and the link winding placed equidistant between them. The degree of coupling can only be altered by suitable adjustment of the number of turns used for the link and, when it is desired to adjust the coupling to a nicety, it may be necessary to arrange a fractional turn.

It will be appreciated that the link method of coupling is particularly convenient when it is desired to couple an unbalanced single-ended stage to a symmetrically balanced amplifying stage or *vice versa*. The balanced stage may be either one employing two valves in push-pull or a single valve with anode or grid neutralisation.

With capacitative coupling, the R.F. voltage applied to the grid of the following valve consists not only of that on the fundamental frequency of the tuned anode circuit, but also those of the harmonic outputs produced in the latter. These are therefore likely to be amplified and radiated by the aerial, especially where capacitative coupling is used throughout, with the aerial connected directly to the final circuit. Besides harmonics, the fundamental frequencies of the earlier stages may also be radiated. One of the advantages of link coupling is that these undesirable effects are largely eliminated, provided that the link is placed at the low potential part of each tuned circuit. If placed near the " hot " ends, a certain amount of capacitative coupling is likely to occur, in addition to the inductive coupling.

The coils themselves can conveniently be wound on low-loss ribbed formers. The four-pin type is suitable for the single-ended circuits and six-pin for those where a centre tap is necessary. It is desirable to use coils and arrangements in which the correct coupling, once found, is more or less permanently set. Those which necessitate loose link coils being adjusted afresh every time the coils are changed should be avoided, otherwise much time may be lost arriving at the proper setting when the band is changed.

Aperiodic Coupling

Aperiodic coupling is the term given to the system wherein the grid circuit of the driven stage is inductively coupled to the anode circuit of the previous stage, but, instead of being separately tuned, it is arranged to be broadly resonant over a band of frequencies. In the case under discussion, this will be any particular amateur band. To obtain this effect, the gauge of wire employed in the grid winding must be fairly small and the turns close wound. The use of thin wire does not result in appreciable losses as the radio frequency current is small. The losses are also reduced owing to the fact that nothing, except possibly one side of a neutralising condenser, need be connected to the " hot " end of the grid winding and the grid of the valve, since the grid by-pass condenser and resistance are inserted at the lower (earthy) end of the coil. No R.F. choke is necessary and the potentiometer effect mentioned when capacitative coupling was being discussed, is absent.

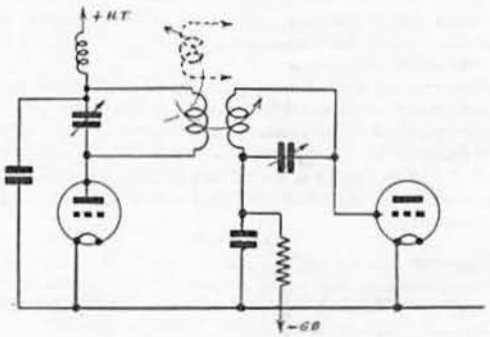


Fig. 3.—Direct Inductive Coupling between two stages.

A certain amount of trouble must be taken to find the correct number of turns in the grid coil which will give optimum results over the whole of any one band, the actual number varying with the type of valve. That is to say, the number will be greater in the case of a low capacity triode than with a pentode, but the efficiency and economy of this method of coupling, combined with the ease with which band changing may be effected, will commend it to many who can adopt a lay-out which permits of its being incorporated.

Practical details of its application may be found in the article dealing with the " Utility " Transmitter published in the August BULLETIN.

Direct Inductive Coupling

As illustrated in Fig. 3, the anode and grid coils of any two successive stages may be coupled so that the field of one acts directly on the turns of the other. The arrangement may literally be as shown in the diagram, *i.e.* the two coils placed side by side with their axes parallel, this resulting in a considerable degree of coupling. Alternatively the coils may be in line, as indicated by dotted lines in Fig. 3, with the low potential ends nearest each other. Some means must be provided for altering the distance or angle between the coils in order to vary the coupling.

This method introduces very low losses, providing good quality coils are used, and is therefore probably the most efficient of any, but it is not very popular, possibly owing to the inconvenience of suitably arranging the coils and the lay-out. Band changing is also a slower operation, but where activity is confined mainly to one band, and where it is desired to get the utmost efficiency possible from the combination of valves and voltages employed, this method might well be used.

Unity Coupling

Finally, there is the method known as "Unity Coupling." In its most usual form, it consists of two coils very tightly coupled together though well insulated from each other and is generally employed on the ultra-high frequencies to obtain the maximum output from a self-excited transmitter. Often, a length of copper tube forms the anode coil, and through it is threaded a wire which forms the grid coil. One coil only is tuned, the second being forced to resonate with it owing to the very tight coupling.

A variation is found wherein the wires of both coils are wound simultaneously on the same former, this method being adopted when it is desired to use a directly-heated valve in a tritet or E.C.O. circuit.

Unity coupling finds little application otherwise, so further information concerning it is hardly necessary.

Conclusions

From the foregoing, the reader will realise that each method has both advantages and disadvantages, and the choice will depend largely on individual circumstances such as the lay-out it is proposed to adopt, *i.e.* breadboard, rack or a combination of both. In general, it may be said that capacitative coupling is suitable on the lower frequency bands where the circuit losses are lower and valves tend to work more efficiently, but it is desirable to use one or other of the inductive methods described on the higher frequency bands. It is essential to do so on the ultra-high frequencies.

Cosmic Notes

Sunspots

During the period August 30 to September 30 cloudy weather conditions made regular observations impossible. On September 4 the sun's disc showed several average sized groups, the largest being of C.M.P. September 5 to 6. A period of very low sunspot activity followed, there being one or two days around the 11th of the month when no spots at all were visible at the writer's station. These conditions seem to have continued until about the 20th, with the exception of one average group which was observed near the central meridian on September 15. Later in the month a rather large centre of activity crossed the central meridian on September 25 and 26, followed by one or two smaller groups on succeeding days.

Magnetic Data

The following data is for the period August 16 to September 25. Disturbances occurred on the following dates: The afternoon of August 22 and the following day, September 13 (commencing suddenly at 18.38 G.M.T.), to September 16, morning of September 22. On September 15 the disturbance reached the magnitude of a small storm.

Special Note

It was generally reported in the Sunday press of September 11 and elsewhere that a solar disturbance of unusual severity was likely to occur during the following few days. As the writer's observations gave no indication of this, an enquiry was made at Greenwich Observatory. The following is an extract from the reply received from the Astronomer Royal (who has kindly consented to the publication of his statement in this journal):—

"No unusual phenomena have been observed at Greenwich during the period September 11-18. A small magnetic storm was recorded at our Abinger station on September 15 giving extreme ranges in declination of 56′ in horizontal force of 265 gammas and in vertical force of 260 gamma. The disturbed conditions first set in rather abruptly on September 13 at 18 h. 40m. U.T."

G2XC.

TRADE NOTICES

Leonard Heys, Faraday House, Blackpool, has sent us for examination a copy of the new 200-page Raytheon Valve Data Book. Measuring 9¼ ins. by 4½ ins, this book will prove an invaluable pocket compendium to every amateur using American valves.

Details of all Raytheon valves are given, together with characteristic curves and line drawings of each valve and its base connections.

The price from the above supplier is 2s. 3d. post free, abroad 3s.

* * *

The same firm have sent us a copy of a new R.C.A. publication entitled "Handbook of Amateur Tube Uses." This unique publication contains a wealth of detail concerning the R.C.A. range of valves and includes diagrams of all valves described. The book is divided into sections covering the selection of a tube, its manufacture, classification, ratings, etc. A novel introduction is a colour chart showing the plate operating temperatures of various valves.

This publication is available from the above address, price 4s. post free in Great Britain, and 4s. 6d. abroad.

* * *

A novel Radio World Time Indicator is now available, price 2s. 8d. post free, from *Holiday and Hemmerdinger*, 74-78, Hardman Street, Manchester 3. This indicator has been devised by E. Lyford and A. A. Ghiraldi, of U.S.A., and is arranged to give instantly the time in any part of the world. Of pocket size, the device should prove useful to all amateurs not in possession of a time zone map.

A list of short-wave broadcast stations, with their time zones, is printed at the back, while full instructions are packed with each copy.

Our only criticism is that stiffer material could with advantage have been used.

Stray

Mr. J. H. Collins (2BNC), 3, Tyisaf Road, Ystrad, Rhondda, asks where hollow nose pliers are obtainable. Can any reader help?

Experimental Section

Manager: A. M. H. FERGUS (G2ZC).

Convention

CONVENTION gave us the opportunity for holding conversations on matters affecting the Experimental Section, with a view to increasing the efficiency of the organisation, and a happy thought led the G.M.s to sit together at the dinner where many points were discussed. Our President and Secretary were good enough to give the Section much time and thought, and we should like to express our gratitude to them, and to all those who were kind enough to lend us their aid. From such conversations, plans are now being formed for the future, and it is refreshing to find a great deal of keenness to place the Experimental Section where it should be, namely, on the serious side of R.S.G.B. activity.

Cosmic Data

Very detailed tabulated Cosmic data have appeared in the last two issues of the T. & R. BULLETIN, compiled by G2GD, and the Experimental Section Manager is most anxious to ascertain to what extent they are being used by members of the R.S.G.B. He would therefore ask *every* amateur (whether a member of R.E.S. or not) who is using the information published to send him a postcard to this effect. Members please note this is a definite appeal asked for a specific reason. A postcard will not entail trouble, and this should be sent to G2ZC, Sunnyside, Wood Road, Hindhead, Surrey.

* * *

Aerial Group

G2IM has taken over as Group Manager and is in the process of organising the various groups. Until this has been done there will be little activity to report.

* * *

Propagation Group

Of all the work done by the various Propagation Groups during the last month, special mention must be made of the 24-hour tests carried out by members of the 3.5/1.7 Mc. Group on the low-frequency bands. Although the first test yielded no revolutionary results, it is felt that a continuance of them will lead to a material increase in our knowledge of propagation on the top bands.

Congratulations to the Auroral Group who accurately forecast the very poor DX conditions which occurred at the middle of September. This month's issue of *Aurora* contains much of interest, and a portion of it is reprinted below :—

"When is the next sunspot maximum due ? If the answer to this question were as simple as adding the eleven years, the average length of the solar cycle to the date of the last maximum, then the next maximum would be due in 1939. There are good reasons, however, for believing that this is not the best prediction, as study of the sunspot records of the last 180 years will show.

"There have been sixteen completed cycles since the well-determined minimum of 1755. The average length of time from one sunspot maximum to the next during this period is just over eleven years, but it is a surprise and a bit disconcerting to find that on only four occasions was the interval eleven years. There were two twelve-year intervals and three each of ten and thirteen years. Twice the interval was eight years, and there was one instance of sixteen years elapsing between two adjacent maxima. Thus it would seem that the next maximum might occur any time from eight to sixteen years after the last one in July, 1928. There is only one chance in four that the interval will be eleven years.

"Strange isn't it that there is still so much guesswork in predicting sunspots when astronomers can predict an eclipse of the sun years in advance to an accuracy of a second or two. Predicting eclipses and predicting sunspots, however, are hardly in the same category. We know perfectly the laws of motion of the sun, the earth and the moon, and determining the time of an eclipse is just a matter of calculation, but we are still very ignorant of the fundamental laws governing sunspot behaviour."

GM6JJ.

* * *

Receiver Group

The Group Manager is particularly anxious to form one or more groups dealing with super-hets, and has vacancies in other groups. Receiver design and operation is the first step in the life of every amateur, therefore these problems should have a wider appeal than appears to be the case at present. While the Receiver Group falls far short of the other three groups in numbers, no one can truthfully say that the last word has been written, nor has the perfect receiver yet been designed. Can we read in this lack of support the fact that the British amateur is no longer interested in building, or in experimenting with a home-made set, now that it has become "fashionable" to buy a professionally built receiver? The high standard of efficiency of the modern commercial receiver is not denied, but it would indeed be unfortunate if British amateurs lost the impetus to "experiment," for surely the receiver offers the biggest field for exploration.

Members of the R.S.G.B. or R.E.S. are asked to give their assistance and experience in showing that some of the remaining difficulties can and will be overcome.

There is little of publishable value this month, but a technical letter budget is circulating to obtain information on Attenuators for 56 Mc. and comparison experiments on various types of receivers used for Microwaves, etc.

G5HF.

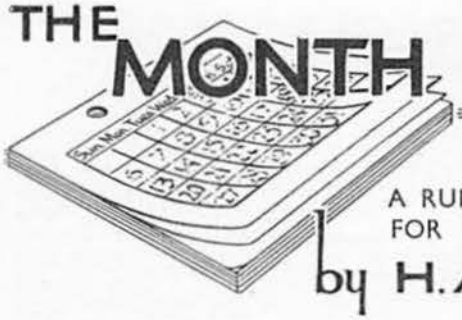
* * *

Transmitter Group

Reports of activity are to hand from all Groups (except Nos. 4 and 5), and several articles have been submitted for publication in the T. & R. BULLETIN. Interest has been thoroughly aroused in the 1.7/3.5 Mc. Group, who will be conducting experiments throughout the winter. No. 3 Group are now issuing their own magazine, which is an

(*Continued on page* 254.)

THE MONTH ON THE AIR



A RUNNING COMMENTARY OF RADIO CONDITIONS FOR THE MONTH OF . . . . . SEPTEMBER, 1938

by H.A.M. WHYTE (G6WY.)

FOR many of us this column might well be called "The Month off the Air," in fact it was very nearly not written at all. We will not prolong our opening longer than to say that it is our earnest hope that the world will never again be asked to face such a crisis.

G2ZQ has pointed out the absurd position in the LF portion of the 14 Mc. band. Is there any *logical* reason why the CW stations should vacate this important slice of the band because it is largely occupied by telephony stations? One is forced to believe that the QRM caused by these 'phones has proved too much for unselective receivers, but speaking as a user of a single signal receiver, we feel that this action, taken over a lengthy period, is to the detriment of the users of 14 Mc. as a whole. Some days, one can tune over this part of the spectrum and hear a half a dozen 'phones and *no* CW stations at all, but the condition between 14,250 and 14,400 is an entirely different story. If only a few more "rare" DX stations would once again operate between 14,000-14,150 kc., we know the situation would rapidly rectify itself. More CQs on LF 14 please!

We are glad to receive news of two interesting stations; firstly, VQ3TOM, who is, or was GM2TM, writes to tell us that he has been very little on the air since he arrived in Tanganyika about a year ago owing to the fact that no AC mains were available. His first transmitter was a small self-excited affair which did not prove very satisfactory, however a CO-PA and CO-FD were constructed for 14 and 28 Mc. operation respectively, and very good results have been obtained—the first CQ on 28 Mc. raised a G. The input runs up to 30 watts, and those who have heard his signal know the strength at which it is received. Mount Kilimanjaro is only about 20 miles from his 66′ vertical aerial, and he thinks that some screening is taking place to prevent VK and ZL stations reaching him, although some of the former have been worked on 7 Mc. Up to September 4, QSO's were made with W, VK, ZS, ZE, G, F, PA, D, and VU on 28 Mc.

An interesting letter from VK9VG in New Guinea was forwarded by 2AOU in Jersey, C.I. This letter confirmed reception in C.I. and states that it is the first received from Great Britain. He is now building his transmitter for QRO and has ordered a NC101X receiver, so we hope that many G contacts will be made available to DX workers. Other active amateurs in New Guinea are VK9DM and VK9BW. There are quite a few more, but most of them are off the air, and are therefore not interested in DX.

The most noteworthy contact of the month must undoubtedly be that of G8LT who worked VK4KC for the first Great Britain-Papua contact. This took place on September 3 at 18.00 G.M.T. and was immediately confirmed by air mail. Congratulations Mr. Addie! Other DX by G8LT includes KA1FG, XU8GW, PK1RI and 3EM. From another unusual country we are grateful to Eric Trebilcock for an extract from a letter received from YJ1RV, who states, "There are no such places as Br. New Hebrides and Fr. New Hebrides. The New Hebrides must only be counted as one country, and therefore any lists showing two countries are in error. The different prefixes merely indicate that one is either a British or a French owner/operator. '*Radio*' and *Call Book*" please note.

BERS195 has been concentrating on 28 Mc. and up to September 15 had logged 5 continents and 15 countries. G6QX was the first European heard and G5EH was heard telling a D that he was a "phoney," but is suspected of being a ham afloat. BERS195 achieved "HAC" in 3 minutes—a world record. The stations received in order were:—J5CC, VK5JS, G8UG, VP3AA, ST6KR, and W2AV, and it was arranged thus:—twenty minutes prior to this record, he had heard all continents except Asia in 2.3 minutes, but suddenly J5CC was heard and a quick retune to the frequencies of the others gave him their calls, fortunately signed quickly, in 3 minutes. Cards are now to hand from FU8AA (New Hebrides), G8OK (C.I.) and VP2LB (St. Lucia) to bring his total of confirmed countries to 130 out of a total of 163 heard, which works out at 80 per cent. return. Rare stations heard include MX3A, P.O. Box 30, Shinkyo, Manchukuo, XU9NT, P.O. Box 15, Changsha, China, CE3BF, 3DG, I7AA, EA7AV, VP5BR, VQ3HJP, ZD2H, and PY's, all on 14 Mc., whereas 7 Mc. yielded, FA8ZZ, K6NVJ (Jarvis), G8UK, OH5ON and SP1IE.

We are asked to publish the following statement from the Reseau Luxembourgeois des Amateurs D'Ondes Courtes, R.L., in other words the LX organisation:—"The QSL Bureau of the R.L.A.O.C., Luxemburgian Section of the I.A.R.U., has been receiving lately a large number of QSL's from foreign amateurs addressed to LX stations confirming QSO's on CW. In this country there is not one single LX station working on CW at the present time, and the so-called LX stations on CW are simply foreign pirates using LX calls. Signed, J. Kesseler, LX1AI." You will remember that this confirms what we said in May on this subject.

VP9X is genuine. His address furnished by Mr. Fowler of Bridgeport, Conn., is as follows :— Horace A. Futh, c/o Dept. of Health, Hamilton, Bermuda. 2DCG of West Derby informs us that " Paget East " may be added to the above address for greater detail, as he has seen the card at G6KS. Incidentally, 2DCG has now heard 82 countries on a two-valve receiver. And now, here is some news of VR6AY forwarded by W8OQF. He worked Pitcairn while W1BES was operating, and has received the card. VR6AY would rather have New Zealand or British stamps sent for confirmation than coupons which cannot be changed on the Island. YV2CU, PJ1BV, and RJ3CO, all believed to be in Curaçao do not appear to QSL, but forward copies of their logs to the A.R.R.L. for confirmation purposes. If anyone has received a card from any of these three stations, W8OQF would appreciate information.

G6ZO spent his holidays in Cornwall operating a portable G6ZOP. Using 9 watts from dry batteries he managed to work W1, 2, 3 and NY1AD, while 7 Mc. produced a contact with UNKL who claimed to be a Russian Whaler in harbour at Harbin, Norway. PX1A was worked and 6ZO is anxious to know if anyone has obtained a card from this mysterious station, while other new countries were LZ1ID, VQ3HJP and CX1CX. Unusual stations heard at G6ZO include, PK3AA 14360, XU's 6AW, 6ST, 6W, 6TL, 6OH, 8DJ (all self-excited on HF 14), HH4AS 14395, VR6AY on CW), CN1AA 14330, KA1AA and 1RP, YI2BA, CE3EE, 3DG and 3AJ, and VQ4CT who appears to be a bootlegger. HC1PZ on 14420 was called frequently by G6ZO without success, but a G8 in North London QSYed to 14430 with a T3 note, called him and raised him at once. This is not amateur radio, it's piracy of one's privileges. We are informed by G5ZT that he worked VU2FO which is the new call of our old friend G2DC. His QRA is C/o Royal Signals, Jubbulpore. XU6TL informed 5ZT that QSL's for this station should be sent *via* XU6AA, but G6ZO states that cards for all XU6 stations can be sent *via* Box 132, Canton. PY8AG using 'phone, listens for CW replies which is indeed a refreshing reminder of the old days on 14 Mc. !

G8DA reports working XU's 8CM, 6TL and 6ST ; the latter gave G2MI a new country and gave his QRA as c/o Central Bank, Canton ; VP4TK was also worked on 'phone by 8DA and this Trinidad station QSL's, in fact, we believe all VP4's are noble in this respect.

And now a little news of 7 Mc. from G8UA, who worked XOH2WK (Finnish s.s. " Diana ") off Aalesund, Norway bound for London, which port he should reach by October 15. SV2KX is a new one in Greece. F4VAL was heard calling " CQ Asie " and G8UA would like some information. Austria and Saar still count as separate countries, providing they are worked under the prefix OE and TS or EZ, respectively ; the new German district denomination letter for Austria is believed to be " W." 2AOU has now reached the " 154 countries heard " mark by receiving UX1CP, VK4KC, VK9VG and VK9DM. Cards have arrived from the two last-mentioned, FI8AC and J8CD, while 2AOU tells all aspirants for the HBE award that he has heard 45 different Empire zones and has cards from 40 of them and can only presume that the non-success of others in obtaining the necessary cards must be due to the fact that the reports contain insufficient material to warrant a reply. 2AOU can still hold his head above BERS195 on 28 Mc., as his total of countries heard reached 51 when FB8AA was tuned in, while unusual calls on 14 Mc. included MX3A, XZ2KR, VP5Q (doubtful), VP8AD, and ZA2E (also doubtful). If HP1TX on 14,420 is genuine, he will be welcomed by all, as HP1A has been carrying the full load of the Republic of Panama on his shoulders for years !

G3CY has added three—ZD4AB, VQ3ALT and YM4BE, while G2TR was very pleased when VP7NS replied to him on 'phone. Of interest is the fact that G2TR heard PK6XX on 14,000 at about 06.30 G.M.T. at S5-6, but it seems impossible to make him listen for any other country than U.S.A. ! G3IG reports a contact with VQ2MI, a new call in Northern Rhodesia on 14,300, and G5UM with a strict 10 watts added North Dakota and China. G8HA raised XU6ST, VP8AD, PK1PK 14,000, PK3EM 14,300, and POPI, who is well known to some of us ! LDUC was heard in Antarctic waters with W2MQ at the key.

K6PMP, in Agana, Guam, on 14,300 has caused many extra heartbeats to Europeans, and stations known to have worked him include ZB1R, G6CJ, G5RV, G3BS qnd G6WY. ST6KR writes a most interesting letter and tells us that cards have arrived in Sudan for the following bogus ST's : 2KH, 6AL, 1LW, 5BA, 1MT and 1AU, so cross these off your list. ST6KR requires details of any QRA's given, as he is most anxious to assist the local P.O. authorities to stamp out any forms of piracy in Sudan. We feel sure that these calls did not originate from ST, so there will not be much useful data available to track them down. At the present time, 6KR and 2CM are the *only* licensed amateurs in Sudan. On August 18 a QSO was made with ZD4AB, and ST6KR is wondering if this is the first contact between Gold Coast and Sudan ? OY1AA was also worked, but we feel sceptical as other OY calls have not turned up trumps. ST6KR champions the work of ZD2H and ZD4AB as he knows the tremendous difficulties encountered when amateurs put a station into operation in remote parts ; we all join in this sentiment and we feel that a little thanks is due to all stations situated as they are, for their skill and untiring efforts of great benefit to all. ST6KR is trying series modulated 'phone and worked VK4UD to achieve his 'phone WAC ; he believes he is the first ST ever to use telephony, as the old-timers of Sudan, namely, ST2C, 2D and 6HL, were believed to have used the key exclusively. Finally, he wishes everyone to know that each new station worked will receive a card ; some delay has been caused recently by having a new batch printed and requests have been received for a QSL when one has already been sent *via* the bureau ; he can only presume that envelopes are not kept ready.

ZD2H reports working on the H.F. end of 14 Mc. the following DX : CE3DG, CM2AO, CX1NE, FM8AD, KA7AF, KA7OS, K6BAZ, NY2AB, VP4TI, VP6LN, YV5AP, XU8NR and ZC6AQ. VU2EU, who is ex-VU2CR, is very active and worked XZ2KR, J2XA (who is unlicensed), ZS4H and XU's 6TL, 6OH and 6ST. EA7FM was heard calling CQ and signing " Radio Malaga." In two months 43 countries were worked and VU2EU is

interested to know if this constitutes a record. G2UX raised ZB2B, who said he could be found c/o Box 72, Belias, Nigeria, but the sound of the town gives rise to a good leg-pull!

G6QS informs us that he has received a reply from the A.R.R.L. to the effect that cards for W.A.S. claim must be sent to America for checking and they cannot permit any other body to do this for them. (The same ruling applies to the DX Century Club award.—ED.) A card has at last been received by G6QS from VE5LD at Coppermine, N.W.T., for QSOs in 1937. G5ND asks if XZ counts as separate from India (which is Dominion) for the BERTA. The answer is "Yes," as Burma is considered to be a "Colonial Area." On the other hand, VU2AN is in India and ZB2-OXVC cannot count for Gibraltar as the call originates from a ship, even though it is actually tied up to the Rock. By the way, ZD4AB will be home in G for six months from March next.

G8DM was prompted to write to us because of a really good piece of DX working by a newly licensed friend—G3RI. The morning following the issue of his licence he went on 14 Mc. 'phone with 9.5 watts and worked VK2NQ and VK3PE, using an "8JK" beam. G8DM himself, using a similar aerial, has made contacts with such stations as VS7GJ, VS7RF, KA7EF, KA1CS, PK4JD, HK3LC, HI7G, YV1AQ, and the usual run of commoner 'phone DX on 14 Mc. GW5BI sends along some details of XOH1WW mentioned in last month's notes. The call originates from the Finnish s.s. "Gertrud," bound from England to Egypt. When the ship docked in Cardiff, 5BI had the pleasure of meeting the operator and inspecting the equipment. The transmitter is a commercial job using two 809's in the final driven by a 6L6 on 7,185 kc., and he is to be heard every night at 22.30 G.M.T.

We regret that a few reports have not been mentioned but these are being held until next month, when it is hoped that we can extract the meat from them.

In Search of B.E.R.T.A.

Call.	Dominion Districts.	Colonies.	Total.
G5HH	23	12	35
G5ND	22	10	32
G8HA	22	9	31
G6ZO	20	11	31

YA5XX

Just before we went to press we received from the operator of the above station (which is located at Herat, Afghanistan) a list of amateur stations worked by him between July 20 and August 26, 1938.

To G5AN goes the credit for what is presumably the first YA—G contact. Other Gs to figure in the list are G5ZT, 6RB, 6BT, 8WF, GM6BM, G5QY and 8TC.

The operator is an American, but due to local regulations he has to transmit under cover.

We shall be glad to confirm individual contacts made by our members who have worked YA5XX.

THE 28 Mc. BAND

BY NELLY CORRY (G2YL).

STATIONS in over fifty countries were heard last month, and in most continents there was a distinct increase in the number active as compared with September, 1937. But conditions on the whole were inferior, particularly from September 12 to 18, when magnetic disturbances caused the band to be completely dead for long periods. The hiss was heard at various times on September 19, 21 and 22, and the reception of "Extended Ground Waves" or "Pre-skip" signals was again reported from many sources. With reference to last month's report of VU2AN having heard the hiss at 1307 G.M.T. on July 31, G6YL reports that, while listening on 56 Mc. that day, she also heard it, at 1305 G.M.T., for several minutes.

Australian signals, which included VK2GU, 3BQ, 3CP, 3XP, 4BB, 4HR, 5DA and 5KO, were logged on September 4, 11, 24 and 25, and 2DQS heard ZL1MR at 1910 G.M.T. on September 4. BERS195, of Northern VK, heard G6QX and several other Europeans on the same day, and YR5CF on September 11. He also heard a few African and Asiatic stations during the month, but East Coast W's were inaudible, though W6's were numerous. In Asia the usual stations in U9, VS7 and VU were active, and XU7LY (possibly a harmonic) was logged by G6YL. About thirty different African stations in CN, FA, FB, SU, VQ3, ZE1, ZS1, 2, 4, 5 and 6 were heard at various times, many of them using 'phone.

From South America signals were not quite so regular as during the previous month, but one or two were heard on at least 13 days during the month. Those logged included CX1FB, HC1FG, VP3AA, YV1AP and YV1AQ, as well as the usual LU's and PY's. Stations in every W district, VE1–4 and VO, were heard at some time or another, but W7's were scarce, and most signals were less consistent than in September, 1937.

A good variety of Central American and West Indian prefixes could be heard on the band, and the 16 stations reported included CM7AC, FM8AA, HH2B, TI2RC, TI3AV and VP9G. VP1DM, who is particularly anxious for G contacts, uses 'phone and C.W. on 28,470 and 28,644 kc., and is active on Sundays after 1500 G.M.T.

European signals from 20 countries were heard at various distances and strengths, but as usual at this time of year the best signals came from OH, U, etc. Western Europeans were usually weak, and audible when DX conditions were good. A new 28 Mc. ship station is W6NWK portable, heard on 'phone while off the coast of VK, by BERS195. G6YL also reports reception (possibly harmonic) of LDUC, s.s. *Wyatt Earp*, of the Ellsworth 1938-39 Antarctic Expedition.

Reports are gratefully acknowledged from G2XC, 6DH, 6KS, 6QX, 6YL, 2DQS, BRS3003, BRS3179 and BERS195. Those which arrived on or before the 18th of the month were especially appreciated!

Stray

G5BW, Willingdon, Eastbourne, would like to hear from any member who is obtaining consistent T9 reports using a 6L6 as electron coupled oscillator.

THE 56 Mc. BAND

By J. M. R. Sutton, B.Sc. (GW2NG).

THIS month sees the continuation of this important feature under new direction, and the writer would like to place on record his appreciation, not only of Mr. Blundell's past work, but also the careful way in which all records have been kept and transferred. The writer also wishes to thank all those members who have sent in such carefully prepared records, and to express a hope that the support so generously afforded to Mr. Blundell may be continued.

DX Schedule

The most important news this month concerns a 56 Mc. DX schedule between Europe and the U.S.A. G2YL has forwarded all details to societies in F, ON, PA, OK, OH, SM, HB, etc., and it is hoped that the British amateurs will put up a good show in this organised effort. The details have been arranged by W9FM, and are as follows :—

The basic schedule is to concentrate activity in the hour between 1500 and 1600 G.M.T. (1000 to 1100 E.S.T.) on each Saturday and Sunday during November. Ten-minute transmitting and receiving periods have been arranged as below :—

Europeans transmit 1500 to 1510 G.M.T.
Americans transmit 1510 to 1520 G.M.T.
Europeans transmit 1520 to 1530 G.M.T., etc.

The same schedule can be maintained on weekdays and at earlier or later hours, if time permits. November is expected to be the month of maximum F_2 layer ionisation for the balance of this year, and it is pointed out that communication may be expected when the time at the mid-point between the transmitting and receiving stations is noon, or a little later, local time, for essentially east-west transmission.

It is hoped that numerous transmitters will be in operation (especially G's !), and if signals are heard an immediate attempt to QSO should be made, without further regard to the schedule. If a DX contact is established a request to complete it on plain CW may be made, for a score in the R.S.G.B. International Contest. Relatively little two-way straight CW work has been done so far this year—a few trans-oceanic contacts may yet produce a winning score. Now then, British 56 Mc. workers, what about it ?

American Activity

A few notes forwarded on the sheet giving details of this important DX schedule say that W6DNS worked W1EYM, W8CIR, etc. ; W6PEX worked W8CIR and others, all on July 24, and the band was open on all but four days in July.

W9TPI, of Indianopolis, is looking for DX, and will be active each week-end in October and November between 1500 and 1700 G.M.T. on Saturdays and Sundays. He will follow the ten-minute periods as above, and will use 'phone and CW on frequencies of 57,176 and 57,520 kc., with an input of 75-100 watts. Besides these definite times he is willing to arrange individual schedules with any interested transmitter. He is free except during the hours 0800 to 1730 American Central Time, Monday to Friday inclusive. His receiver is a new *Hallicrafter* Skyrider for 28 and 56 Mc. only, and will receive straight CW, which he prefers to use. The aerial is a vertical Sterba curtain fed by 600 ohms line, beamed on England for receiving and transmitting. Any offers of schedules ? QRA from 2NG.

Contest Results from U.S.A.

W9NY sends in his usual extensive log, which is his seventh monthly report in the International Contest. He claims 21 points for the month of July, for distances between 625 and 860 miles bringing his total to 39 points. The DX stations worked in July were W1BRL, CSR, EHT, IJ, IZY, W2KLZ, W3AIR, BZJ, DBC, GJU, GKW, GQS, HI, HKM, RL, VX, W5AJG, CSU, EHM, W8AGU, W9CLH. DX stations were heard in W1 (11), W2 (7), W3 (5), W5 (2), W8 (2). He has operated CW on the band every single day since before the contest started until July 9, when he had to go to Washington D.C. for an F.C.C. hearing. He then went on vacation and missed plenty of DX, as the band was open each day. It closed up the day he returned ! A local station has worked W4' but he has never heard one on 56 Mc., and wants W4, 6, 7 for all districts.

He wishes more stations would use plain CW, as 'phone and modulated CW are still below the noise level. W9NY hears many W2 stations, but questions their receivers as they do not answer his calls, and he is still looking for G signals. It appears that W9NY is now reaping the reward of extraordinarily consistent activity on the band, and thoroughly deserves his 39 points.

British Reports

It is very encouraging to find that, almost every morning since the publication of the September issue of the Bulletin, bulky envelopes arrived by post. To those who have spent many hours with the pen the writer tenders his grateful thanks and assures them that every care will be taken in the

FORECAST FULFILLED

In the August issue of "Aurora," published by the Auroral Group R.E.S., it was forecast that a very severe "fade-out" would occur during mid-September.

How accurate was their prophecy all active amateurs now know.

Can the Auroral Group forecast a *good* period for next year's B.E.R.U. contest ?

perusal of their reports and all matters of importance given due mention. Space, however, is a matter of consideration, and so, of necessity, quite a "condensed" form must be adopted in reporting these excellent contributions to 56 Mc. research.

G6YL continues her watch on the higher frequencies, but was QRT from August 20 to September 20, and was disappointed to miss the GW contest. This station is now again active and hopes for DX on 28 and 56 Mc. She wishes to correct a statement in the August issue. The harmonic of IRX was heard on 60 Mc., not on 70 Mc., and has never been heard as high as 70 Mc. On August 1 contact was made with G5QY from 1940 to 2035 G.M.T. at 56XTone, QRB 25 miles. On August 2 a harmonic of 56X (3.5 Mc. R.A.F. station) was heard on approximately 58,200 kc. at 564, QRB 35 miles. An unidentified carrier (S6 T5) was heard between 2102 and 2106 on 59,900 kc., and the harmonic of IBE was heard on 56,000 kc. on August 20 at 1522 at 559, QRB 1,200 miles. Several telephony carriers were heard on the same day between 1531 and 1542. These were just inside the LF end of the band and averaged S5/6, with T9 characteristics. IBE on 56,000 kc. reappeared at 1544 at 559 and by 1600 the band was dead. It was raining at the time. At 1745 a 'phone carrier on 58,600 kc. was S4 T9, and a commercial harmonic sending automatic (TFC), with S5, modulated C.C. signals, appeared just outside the H.F. end of the band at 1750. At 1816 there was an S5 'phone carrier just inside the L.F. end of the band. The weather had become sunny again.

G3CX, as T.R., sends in a report of G2AO's 56 Mc. activities, as a request for information was made in District 16 notes. 2AO first heard ON4AP on June 15 at 2025 at S4/8 and again at the same times on the three following evenings. No contact was established. On June 27 at 2148 F8AA was heard at S7, with no QSO, but a report of S8 was received later, by card, from F8AA. June 28 saw PA0DO received at 335 at 2220. All these stations have been heard since and G2HG is heard regularly. The receiver is an Ultra Skyrider, with Pre-selector and the aerial is a Television di-pole 70 feet above ground, fed with concentric cable. These stations are heard from 2100 G.M.T. onwards.

BRS2601 says the best day in August was the 24th. G8JV was received at 549 at 1845 (120 miles). There were no other DX signals, but all stations heard were especially strong. August 25 gave him a weak signal, with QSB, calling CQ Ten, but call was unreadable. On September 3 IBE was 559 but then fell to normal. G6FO (118 miles) was heard at 568, no QSB, at 2150, with 2UJP (32 miles) and 6ZVP (30 miles). 6FO was heard again on September 11 with the same report, 0945, but was 448 at 2140. No more DX stations have been heard up to the time of posting.

G5JU has little to report for July. He is only able to operate on Sundays, and was away on the first three Sundays in July. July 24 gave him numerous signals but only one weak signal on CW. This was heard at 1430 calling "Test" at the L.F. end and was definitely G8. It seems probable that it was G8DF (Hampshire), who was using a rotating beam aerial that day. Most 'phone carriers were C.C., but too weakly modulated. The only exception was an overmodulated carrier in the middle of the band. Deep fading was responsible for lack of identification, and this signal was only heard on the omni-directional aerial and not on the W8JK east-west beam. It was probably G6IH of Malvern or a Cheltenham station. G6FO was contacted eight times, and both stations found that they were hearing the same stations, and both operators are confident of certain identification of those signals if C.W. had been used. In view of increased activity to the north and south the omni-directional aerial will be used in future.

G8LY sent in a very comprehensive report and only a bare summary can be given here. Quite a number of new contacts have been made, but details will be given here of conditions on the band. G6XM was heard and worked for the first time on July 2 and 3, while on July 3 both G2GG and 8LY heard new stations for the first time, during the same listening periods. The band was dead on July 6 and conditions were very poor on the 7th and 8th, with short skip (GM) obtaining on 14 Mc. Local stations continued to be worked on July 10, 12, 13 and 14 and a report was received from BRS3322 and 2DFG at Brighton. Harmonics were heard by 8DF and 2XC on July 15, while 8LY heard 6FO at 329 at 1042 on July 17, while 6FO was heard at 568 at 1801 on July 19. At 1820 he was 55/08. 2XC was worked for the first time on July 22 at 2045. Various schedules were arranged with 6FO, but contact was not established. The noise level was very high from 0940 to 2120 on July 24. On July 30 more efforts were made to contact 6FO, but without avail. The band was dead all day on July 30 and up to 1200 on July 31.

G2MV has received a *genuine* W6 56 Mc. 'phone report. We should like details from 2MV.

G6QZ had a report from G6DH, of Clacton, for September 9, and they have since carried out tests, with the result of three QSOs to date, viz., September 13, 21 and 23. 6DH heard 6QZ on the 15th, but was not able to establish contact. The QSOs took place at 2140, and no contact has been made yet between 0600 and 0700. The distance is 60 miles. 6QZ uses 20 watts to a W8JK flat top horizontal beam with 1-v-1 and 6DH uses a 66-ft. Hertz and a Superhet. with Acorn valves in two stages. Average strength at 6DH is S4, and at 6QZ S2, but 6DH cannot hear QZ at all on a 1-v-1 similar to that at 6QZ! There have been no results with tests to the Midlands from 6QZ.

G2ZV has sent results for the GW Trophy and Snowdon tests. He was portable on Bury Hill, Sussex, 500 ft. above sea level, with 2CDL and 2DDD. Stations worked were G5BY, 2QY, 2XC, 6XM, 5MA, 5MAP, 2KI and 6FU. Stations heard were G6DH (438) at 0900 and ON4DJ (448) at 0950, and again at 1125, when his signals peaked and remained steady at 568. ON4DJ was sending "V's." G6GO was heard at 358 at 1258. Conditions improved from 0830, peaking at 1100, which coincided with the reception of ON4DJ. Conditions then fell off slightly, but improved later, with London stations coming in very well. G6GO was received in this period. Conditions then became average. Weather was ideal, except for bad mist until 1000. The transmitter was 6L6 ECO driving 6L6 Final, modulated by 6N7 in Class B. Power supply was from a rotary convertor delivering AC to a 350-volt power pack. The receivers were 0-v-1's. The aerials were a half-wave dipole, with reflector

and director beamed on GW without result ! and two long-wire (135 ft.) radiators, 26 ft. high, N.-S. and E.-W. These gave the best results, with the N.-S. radiator best of all.

G2UJ forwards an account of his station in the Snowdon Tests. He was portable on Argos Hill, near Mayfield, Sussex, 600-ft. A.S.L., and about seven miles south of Tunbridge Wells. There was a clear view in almost all directions. The transmitter was ECO/FD-FD, with two 6V6G valves, with power from a *Bulgin* vibrator unit, giving an input of 6.6 watts. The receiver was 1-v-1, with 6J7-6C6-42, and optional quench from one 56 valve as a 50 kc. oscillator, and another as a quench wave-form distorting stage. The aerial was a W8JK full-wave beam, but had to be completed in a hurry, and so a good match to the 80-ohm feeder was not obtained. 56 Mc. signals are rare at his home QRA, even with a good 45-ft. high aerial, so it says much for the portable QRA that results were as good as they were, with the handicap of an inefficient aerial system. Stations heard were G5BY, 5RF, 6OT, 2ZVP, 6XS (?), 6XM, 8KZ, 2KI, 2NHP, 5MAP, 5CD, and a very distorted harmonic of Fecamp on 56 Mc., only heard with the quench in. Stations worked were G2QY, 2XC, 2AO, 8OS, and 2JK. 2UJ has received reports from BRS2601 (30 miles), G6DH (62 miles), 5CD (43 miles), and a very interesting report from 2DFG and 2BIL, who were on Ditchling Beacon, 17 miles (W.S.-W.) away. This report gave variations of signal strength with variations of the beam.

Suggested Schedule Scheme

The writer has in mind a scheme which would co-ordinate activity on the 56 Mc. band. All members interested in the scheme are asked to forward a post card to him signifying their approval or otherwise of this scheme before October 25. Briefly, it is proposed to make up and circulate a schedule of activity on the band. This circular would include such details as call, QRA, exact schedules or likely transmitting times, types of transmission, aerial systems, where reports should be sent, etc. Details for receiving stations would include call, etc., type of receiver, listening times, aerial systems. If a halfpenny stamp could be sent at the same time as the information required, the writer would send on the circular. Members who do not contribute to the circular could also receive a copy on receipt of stamp and QRA. Alterations to the circular could be notified each month in these notes, and it could be completely revised when required. What about it ? It is up to you !

Contemporary Literature

By L. Fryer (GM2FR).

The DX "Band-Hopper." *Radio*. July, 1938.

A description of a band-switching 100-watt transmitter for the C.W. man. Working on 7, 14, and 28 Mc., it consists of a Dynapush exciter inductively coupled by means of untuned pick-up coils to a TZ40 neutralised amplifier. Valves used are 6L6, two 6L6G's and a TZ40.

Full constructional details, theoretical circuit diagram and operating data are given.

* * *

The Barrage Antenna. Ray L. Dawley (W6DHG). *Radio*, July, 1938.

A very interesting article dealing with adaptations of the aerial developed by E. J. Sterba, of the Bell Telephone Laboratories, for use on trans-atlantic Radio Telephone circuits. The article deals with methods of feed and installation of arrays suitable for the amateur bands.

* * *

Versatile Portable Receiver. John Bolmarich, Jr. (W3AKX). *Radio*, July, 1938.

The author describes the alterations he made to an old automobile radio receiver as a result of which he now has a good 28 Mc. superhet, a 28 Mc. super-regenerative, a 56 Mc. superregenerative, a 1.7 Mc. receiver, a marine band receiver and a good broadcast set. And if desired the receiver may also be used as a superhet on 56 Mc. by using plug-in coils in the mixer stage.

* * *

The Mighty Mite. John R. Griggs (W6KW). *Radio*, July, 1938.

An article of interest to low-power amateurs describing an All-band, 20-watt, 'phone-C.W. Transmitter, that is as efficient on 56 Mc. as it is on 1.7 Mc. The transmitter is a small compact outfit with both 'phone and C.W. available on all bands and has proved to be extremely flexible in operation, band-changing being accomplished in 30 seconds.

The transmitter uses plug-in coils, high efficiency being obtained by a simple arrangement which keeps the L/C ratio close to correctness on all bands. The R.F. portion uses a 6F6G as crystal oscillator followed by an 807 as final amplifier, the speech amplifier and modulator consist of a 6F5, 6C5 and two 6N7's, the power supply using a 5Z3.

Metering is done by a single 0-100 mA. meter which by means of a new type of switch indicates the plate currents of the oscillator, final amplifier or modulator at will.

The complete transmitter and power supply is built on a metal chassis measuring $10'' \times 17'' \times 3''$ and excluding valves, microphone and crystal was built at a total cost not exceeding $35.

* * *

Long Range DX Prediction. E. H. Conklin. *Radio*, July, 1938.

A discussion on the use of data relating to Ionosphere measurements, Sunspots, and Magnetic measurements for forecasting radio conditions.

* * *

A 9-10 Meter Mobile Unit. F. R. Gonsett. (W6VR). *Radio*, July, 1938.

A description of a unit delivering between 4 and 5 watts of fully modulated carrier with excellent intelligibility. The circuit arrangement is a 6V6g crystal oscillator, a second 6V6g used as a plate

and screen modulated frequency doubler and a pair of 6V6g's connected AB as modulators. The unit requires a power supply of 250 volts at 100 mA.

* * *

BETTER PHONE QUALITY WITH BASS SUPPRESSION. J. N. A. HAWKINS (W6AAR). *Radio*, July, 1938.

An interesting discussion on improving the quality of 'phone transmitters by means of dialogue equalisation, or as the author prefers to term it " Bass suppression." Suggestions as to circuits are given.

* * *

APPLICATIONS FOR THE CATHODE RAY 'SCOPE. Part 1. *Radio*, July, 1938.

An article well illustrated by diagrams and photographs, dealing with some of the uses of the simple, reasonably priced oscilloscopes described in the June issue of *Radio*.

" OLYMPIA AND OUR 13th CONVENTION "

The photographs illustrating this article, except the main Convention Group and that taken at the G.E.Co., are reproduced through the courtesy of Mr. F. G. S. Wise, 46, Prospect Road, Barnet, Herts, to whom application should be made for copies.

Mounted copies of the main Group can be obtained from " Lincoln," 3-4, Lincoln's Inn Fields, London, W.C.2, price 3s. each post free.

STREAMLINED IS THE WORD. Frank Frimerman (W2FZ). *Radio*, July, 1938.

An article of interest to the man who from force of circumstances cannot have the use of a separate room for his gear.

The author describes a complete station, plus a gramophone to work through the speech amplifier of the modulator for domestic use, the whole being built into a mahogany *secretaire* the external dimensions of which are 47" × 34½" × 14".

The transmitter uses a 6L6g crystal oscillator, 807 buffer-doubler and an 814 or RK-47 as final, and is crystal controlled on eight frequencies in either the 14 or 28 Mc. bands, with an output of about 300 watts.

When the front of the *secretaire* is closed the outfit is indistinguishable from an ordinary article of furniture.

* * *

A MODERN 35 WATT EXCITER. Harry D. Hooton (W8KPX). *Short Wave and Television* (Amer.), August, 1938.

The exciter which may also be used as a 25- to 35-watt transmitter unit on all bands down to 28 Mc. is built on a 17" × 8" × 5" aluminium chassis, and uses a 6C5 crystal oscillator, 6L6 buffer-doubler and an RK-39 output with a 5U4g rectifier in the power supply.

* * *

A THREE-TUBE SUPER FOR PORTABLE OR EMERGENCY WORK. George Grammer (W1DF). *QST*, August, 1938.

A description of a three valve superhet for use on the 1.75, 3.5 and 7 Mc. bands. The set is light and compact and is easy on both L.T. and H.T. batteries. The valves used are 6K8 oscillator-mixer, a 6K7 I.F. amplifier at 460 kc. and a 6C8g combined second detector and beat oscillator, and the set complete with valves and three sets of coils can be built for about $16.

* * *

A 250-WATT OUTPUT CRYSTAL-CONTROLLED 28 AND 56 MC. TRANSMITTER. Abe Hass (W2KPX). *QST*, August, 1938.

A well-designed transmitter using standard valves in time-tried circuits, the layout being 6V6g crystal oscillator, RK-49 doubler or quadrupler according to the output frequency desired, 809 doubler, followed by a pair of 800's in push-pull as a straight amplifier and a final stage consisting of a pair of HF-100's in push-pull. The whole is mounted on a standard 10 × 23 inch chassis and forms a neat self-contained R.F. unit.

* * *

WHICH DIRECTIVE SYSTEM? Hugo Romandef (W2NB). *QST*, August, 1938.

A short discussion on the factors influencing the choice of directive aerial arrangements, a table is given comparing the decibel gain both backwards and forwards of various types of aerials with that of a simple doublet.

* * *

IMPROVING THE STABILITY OF THE E.C.O. *QST*, August, 1938.

A short article giving the details of three two-valve E.C. oscillators which promise improved stability in the frequency generating section, and greater independence between the oscillator and following circuits.

* * *

A FOUR-BAND 75-WATT OUTPUT 'PHONE-C.W. TRANSMITTER. Frederick F. Sylvester (Ex-W2ACU) and Richard S. Briggs (W1BVL). *QST*, August, 1938.

The transmitter outlined in the article is capable of delivering in excess of 75 watts of good quality 'phone or C.W. signals on all bands from 3.5 to 28 Mc. and the actual cost including everything except the microphone is approximately $75 or one watt output per dollar invested.

The crystal stage uses a type HY60 beam tetrode and operates as either a straight crystal oscillator, crystal oscillator-doubler, or crystal-oscillator quadrupler, three crystals and three sets of coils covering the four bands.

The crystal oscillator is followed by an HY61 buffer or buffer-doubler stage driving the final class C amplifier which uses two HY25 high-mu triodes.

The modulator employs a 76 speech amplifier transformer coupled to a pair of 46's in class A, which are in turn transformer coupled to a pair of HY25's operating in class B.

The power supply uses four 866 Juniors and one 83.

Japanese Technical Literature

Mr. H. R. Heap (Receiver Group Manager), informs us that the annual subscription to *Nippon Electrical Communication Engineering* is three U.S. dollars. This publication, which is highly recommended by Mr. Heap, can be obtained from Maruzen & Co., Ltd., Nihonbashi-ku, Tokyo.

The First Scottish Convention

By J. B. Duncan (GM6JD).

THE Empire Exhibition, Glasgow, was the picturesque setting chosen for the opening of the first Scottish Convention on Saturday, September 17, and on the terrace of the Amusement Park Restaurant by 5 o'clock some forty members, including Messrs. A. E. Watts (G6UN), A. D. Gay (G6NF), A. O. Milne (G2MI), J. Clarricoats (G6CL) and J. Wyllie (GM5YG) had assembled for an informal tea and general "get-together." Fortunately the weather—which had been particularly bad all day—decided to give us a break during the evening. No official programme had been arranged as it was considered that the difficulty of shepherding a large company through the dense Saturday crowd would be impracticable, therefore members were allowed to "gang their ain gate" and visit the pavilions which most appealed to them. The wireless exhibits of course proved to be a big attraction, and the G.P.O. and U.K. pavilions were soon resounding with test and CQ calls. To finish off the evening the Amusement Park was the general choice.

The great day was Sunday, and at 10.45 a.m. approximately 100 members and a few friends boarded the L.M.S.R. motor-vessel *Ashton* for a sail down the Clyde to view the giant Cunard-White Star liner *Queen Elizabeth* on the stocks, all set for her launch on September 27. Many famous shipbuilding yards and other interesting features of the river were seen. When the liner was reached the *Ashton* was manœuvred in such a way that an excellent close-up view was obtained, and those with cameras took advantage of this fact.

At one o'clock 110 members, including representatives from every Scottish District assembled for lunch at the Grand Hotel, Charing Cross, where many personal contacts were made and tongue clicks created a terrific background of QRM. The Loyal Toast was given by Mr. Wyllie (GM5YG). Following this, Mr. Tyre (GM5TY) proposed the toast of the Radio Society of Great Britain, to which the President, Mr. Arthur Watts, replied. Messages of good wishes were then read by Mr. Hunter (GM6ZV) from Messrs. J. D. Chisholm (G2CX), "Dud" Charman (G6CJ), J. B. Kershaw (G2WV), George Noblett (EI9D) and D. Taheny (EI5J).

A pleasant surprise was the introduction by Mr. Wyllie (GM5YG), of Squadron Leader H. W. St. John, who had travelled specially from London to address us and outline the scheme of the R.A.F. Civilian Wireless Reserve. He was given an enthusiastic reception, and members took advantage of the opportunity given to ask questions regarding the scheme.

Scottish Convention.
A general view of the gathering at the Grand Hotel, Glasgow.

This being the first Scottish Convention, autograph hunting was prevalent, and members of Council were inundated with requests for their signature, and at one time the Council table was laden with menus for this purpose.

The serious business of lunch now being over, we foregathered in an adjoining room for the business meeting, which was opened by our Resident Vice-President, Mr. Wyllie (GM5YG), with a short address of welcome. Thereafter the "Chieftains" of each district, namely:

"A"—D. M. Tyre (GM5TY)
"B"—G. W. McDonald (GM2OX)
"C"—C. J. G. Halley (GM8CF)

"D"—S. W. Rowden (GM6SR)
"E"—H. McConnell (2ACQ)
"F"—D. M. K. Harrower (GM6NX)
"G"—D. S. Bruce (GM3NI)
"H"—A. W. Lawson (2ANL)

gave a short résumé of the activities of his "Clansmen"—such as membership, geographical areas and difficulties connected therewith, arrangements regarding local meetings, method of conducting and

At the Scottish Convention.

From left to right: Mr. A. E. Watts, G6UN (President), Mr. J. Wyllie, GM5YG (Vice-President), Mr. J. Hunter, GM6ZV (Scottish Records Office), and Mr. J. Clarricoats, G6CL (Secretary).

frequency of same. Reference was made to National Field Day, and one D.O. stated, amidst laughter, that although N.F.D. in his district, from a scoring point of view, had been a failure, it was socially a "staggering" success!

"We have been here two days, and it is still raining." This was "Clarry's" opening remark in his speech and for sixty minutes with the aid of "yon" little black book, he told us exactly what he thought of us! Amongst other things, G6CL dealt with the eternal problem of QSL cards at Headquarters and difficulties engendered by the thoughtlessness of members such as delay in notifying change of address, etc. He also paid a high tribute to the work and untiring energy of the Scottish Records Officer, Mr. James Hunter (GM6ZV), and judging by the applause, this was heartily endorsed by everyone.

Scottish Personalities.

On the left, GM6VH, on the right GM6WD.

Mr. Arthur Watts gave a most interesting account of the Cairo Conference, and illustrated some of the difficulties they had to surmount and impressed upon us the desirability of being fully prepared for the Rome Conference in 1942.

Our Executive Vice-President, Mr. A. D. Gay, discussed crystal calibration and the use of 100 kc. bars, emphasising the necessity of knowing whether the calibration tolerance was plus or minus—especially when using E.C.O. and working near the edge of the band. Advice was given as to the best method of packing crystals for despatch to his section for calibration.

The Hon. Treasurer, Mr. A. O. Milne, gave us an indication of his many and varied duties at Headquarters. In addition to his work connected with Band Monitoring, he is BULLETIN draughtsman, and while on this subject he reminded us that contributors of technical articles could greatly assist preparation of circuits for publication by adhering to recognised symbols. He also touched on the proposed new rules for B.E.R.U., 1939, which are still under discussion by the Awards Committee.

The time allotted for questions had, unfortunately, to be curtailed as we were somewhat behind schedule and with this the business meeting concluded.

There followed at 5 o'clock that Scottish Institution—High Tea, after which members of the Council, "Clarry," GM5YG, GM6ZV and all District Officers adjourned for an informal meeting and discussion, relative to various Society matters, while the others indulged in the usual "rag-chew" and DX yarns. Squadron-Leader St. John remained to talk with us, and very kindly answered the numerous questions submitted to him.

Shortly after 8 p.m. the meeting came to an end, as many had to be on their way—some having to travel as far north as Aberdeen that evening. Good-bye's were said, and thus ended a most delightful week-end, and the first Scottish Convention, which, in view of the very fine support it received, promises to become an annual event.

Max Tyre, GM5TY, Scottish "A" District Officer.

Editorial Note.—We should like to offer our sincere thanks to those who travelled from all parts of Scotland, and in so doing ensured the success of the Convention. Thanks are also due to the Committee: D. M. Tyre (GM5TY), J. Hunter (GM6ZV), F. H. Goldsmith (GM6VH), G. Zech (GM8TT), R. Sneddon (GM8AH), J. G. Kerr (GM8QD) and J. B. Duncan (GM6JD), whodid their job exceedingly well.

Strays

Mr. H. E. James, G5JM, 230, Sydney Road, London, N.10, asks us to mention that he has had the misfortune to lose a sheet of his rough log covering the period June 12 to July 10, 1938. He will be glad if all readers who contacted him during that period will confirm the fact.

Mr. S. R. McDowell, VU2FV-FZ, informs us that his stations were closed down as from September 30. Readers who have contacted him but have not received his QSL should write to him *via* R.S.G.B. Mr. McDowell hopes to meet many of the British amateurs he has worked on his return to England this month.

HEADQUARTERS CALLING

Forthcoming I.E.E. Lectures

We are pleased to announce that Mr. Denis Heightman, G6DH, has accepted an invitation to give a lecture at the Institution of Electrical Engineers on Friday, October 28. Mr. Heightman has recently returned from a visit to the U.S.A. and Canada, and his experiences will form the subject of his lecture, which will be entitled "Across the Pond in Person."

The I.E.E. will be open at 5 p.m. for informal discussions, tea will be served free of charge from 6 p.m., and the lecture will commence at 6.45 p.m.

* * *

At the November meeting, Mr. K. Frost, Standard Telephones & Cables, Ltd., will lecture on Recent Valve Developments. This meeting will be held on *Wednesday*, November 23, and not on a Friday, as is usual.

Town Representatives, 1939

In accordance with a Council ruling, Town Representatives may be nominated for any town in the British Isles providing the R.S.G.B. membership within a 10 miles radius of the town centre exceeds five in number.

Nominations must be made on the form enclosed in this issue, which form should be sent to the local District Representative not later than November 25, 1938. This arrangement will allow D.R.'s to keep in touch with the progress of the nominations, and will also enable them to make plans for comprehensive representation in their District.

In the event of more than one person being nominated for a specific town, a ballot form for voting purposes will be included in the December issue of this journal.

Only members resident in a particular town area may nominate their local representative.

If no T.R. has been nominated for a particular town prior to December 31, 1938, the Council reserve the right to appoint a member to serve for the coming year.

District 19 Representative

Council are pleased to announce that Mr. R. J. Bradley, G2FO, "High Crest," Yarm Road, Eaglescliffe, Co. Durham, has accepted their invitation to act as District Representative for North-East England.

For some months this area has not been represented in the BULLETIN, but it is hoped that under Mr. Bradley's guidance, this will be remedied.

R.S.G.B. Slow Morse Practices

Details appear below of the slow Morse practices organised by the Society for those members wishing to learn or improve their code. As usual, test matter will be taken from recent issues of the T. & R. BULLETIN. The page number and month of issue will be given at the end of each test—by telephony. A telephony announcement will also be given at the commencement of each test to assist those interested in tuning in the sending station. It is emphasised that reports will be appreciated and are desired in order to ascertain useful range and numbers utilising the service. If, however, a reply is desired, a stamp should be sent. Will stations in areas not at present served offer their services to Mr. T. A. St. Johnston (G6UT), "Normandale," Little Hallingbury, Essex. Tel : Bishops Stortford 785.

	B.S.T.	*kc.*	*Station.*	*Location.*
Sundays ...	0900	1755	G8NF	Manchester
	0930	1792	G8AB	Loughton
	1000	1800	G8PR	Staffordshire
	1015	1920	G6VC	Northfleet
	1230	1850	G6VD	Leicester
Mondays ...	2315	1741	GI6XS	Bangor
Tuesdays ...	2215	1792	G8PZ	Colchester
Wednesdays	2315	1741	GI6XS	Bangor
Thursday	2215	1792	G8PZ	Colchester

R.S.G.B. Philatelic Section

Members interested in Philately should note that Mr. L. Wise, G6XF, 13, Charles Road West, St. Leonards, Sussex, has taken over the Secretaryship of the above Section in the place of Mr. M. Williams, G6PP, who has, for business reasons, been compelled to resign.

Exchange packets are distributed monthly and already some 20 members are taking advantage of this method of improving their collections. Overseas members are cordially invited to join the section.

Full details can be obtained from Mr. Wise at the above address.

The "GW 56 Mc. Trophy" Contest

This event coincided with a spell of good conditions and the results achieved by those taking part in the contest were, on the whole, remarkably good. The number of entries is considerable and although he would much like to do so Mr. Walker (G5JU) finds it impossible to acknowledge each separately. He thanks all who took part in the contest, including those who sent in logs of stations received. It is hoped that a full report will appear in the next issue.

N.F.D. 1938

In our report covering the above event, an error occurred on Page 78 when listing the leading stations on 7 Mc. Reference to Page 79 will show that the District 10 Station, operated at Blackwood under the call GW8CT, scored 169 points, one point more than GM8AHP, the station listed as third.

We regret the mistake, and for the purposes of record give details of the gear used at GW8CT.

Transmitter :	Tritet (6L6) P.A. (T2O).
Receiver :	1-v-1.
Aerial :	133 ft. single wire feed and earth.
Power :	Generator giving 20 watts to final.

We also wish to apologise to Northern Ireland for omitting a reference to the fact that their 1.7 Mc. station contacted the French station F8RJ.

Members in general will, we believe, appreciate that the task of preparing Contest reports is not an easy one, and whilst care is always taken in presenting information it is difficult to avoid a mistake occasionally.

Trinidad and Tobago Licences

Mr. S. E. Knowles, wireless officer at Port of Spain, Trinidad, sends us the following revised list of the licensed wireless amateurs of the Colony of Trinidad and Tobago, B.W.I. :—

VP4TC—Diogo Serrao, 1, Broome Street, Port of Spain.
VP4TF—Frank A. Herbert, 163, Tragerete Road, Port of Spain.
VP4TH—Ethelbert G. Gibbs, 52, Duke Street, Port of Spain.
VP4TI—Stanley E. Knowles, 2D, Dere Street, Port of Spain.
VP4TJ—J. A. Dos Santos, 45, French Street, Port of Spain.
VP4TK—Paul Alonzo, 74, Duke Street, Port of Spain.
VP4TL—Neville W. Robertson, 15, Fitt Street, Woodbrook.
VP4TM—Peter Leicester (ex-PK5PL), Vistabella, San Fernando.
VP4TN—Eric Robert Duff, 28, Deverteuil Street, Woodbrook.
VP4TO—D. Gordon Bagg (ex-G6BD), Bungalow 60, Pointe A Pierre.
VP4TP—Colin Fraser, 62, Mucurapo Road, St. James.

NEW MEMBERS

HOME CORPORATES.

P. F. CUNDY (G2MQ), "Marula," Plumpton Green, Sussex.
C. V. STEAD (G2UZ), 2, Cliff Road Gardens, Hyde Park, Leeds, 6, Yorks.
J. J. MACBETH (GM3CG), c/o Turnbull, Station House, Burghead, Elgin, Scotland.
J. ELLIS (G3GM), 32, Melrose Road, Merton Park, London, S.W.19.
A. HOUCHIN (G3GZ), 35, Stoke Road, Slough, Bucks.
R. BIGGS (G3IQ), 21, Mill Lane, Enderby, Leicester.
D. WALE (G3MW), 38, Morris Avenue, Coventry, Warwicks.
C. W. BASSFORD (G3PH), 80, Long Street, Dordon, near Tamworth, Staffs.
E. AMRIDING (G3PJ), 20, Nevett Street, Preston, Lancs.
P. H. LAWRENCE (G3PN), 38, Market Street, Tamworth, Staffs.
E. ORCHARD (G3PU), 14, Norwich Road, Weymouth, Dorset.
J. S. OWEN (GW3QN), "Trafford," Clarence Road, Craig-y-don, Llandudno.
R. M. DENHAM (G3RP), 181, Ecclesall Road South, Sheffield, 11, Yorks.
E. LAWDEN (G3SS), 256, Stockfield Road, South Yardley, Birmingham.
F. N. F. BEWLEY (G8HX), 116, Westfield Lane, Mansfield, Notts.
L. BERRYMAN (2AHN), The Cottage, The Spa, Scarborough, Yorks.
C. L. LISTER (2ARL), 3, Devonshire Road, Morecambe, Lancs.
A. A. UFFINGTON (2BAR), 6, Stapleton Road, Bristol, 2, Glos.
T. W. COPLESTON (2BQF), 27, Borough Grove, Flint, North Wales.
R. G. LANE (2BYA), Lynn, Dagden Road, Shalfold, Surrey.
M. REVIE (2BYL), c/o Grant, 17, Robson Street, Glasgow, S.2, Scotland.
D. CLARK (2BZD), 21, Fitzgeorge Avenue, Kensington, London, W.14.
J. L. BOWES (2CGZ), 20, Broomfield Road, Bexley Heath, Kent.
R. HOLDEN (2CNQ), 28, Queen Street, Whalley, Lancs.
B. C. COOPER (2CSF), 62, Ringstead Crescent, Crosspool, Sheffield, 10.
C. A. SIMMONS (2CWX), "Penwarden," North Road, Haveringatte-Bower, Romford, Essex.
D. C. HORWOOD (2CYB), 39, Forburg Road, Stoke Newington, London, N.16.
C. V. WHITTAKER (2DBH), 12, Terry Street, Dudley, Worcs.
L. RICHARDS (2DGM), 11, Pennard Road, Shepherds Bush, London, W.12.
L. B. FISHER (2DTK), 32, Margaret Street, Greenock, W., Renfrewshire.
W. L. RIMMINGTON (2DVD), 175, Hammersmith Grove, London, W.6.
G. STANWORTH (2DXM), 15, Reedley Grove, Burnley, Lancs.
I. ANSTRUTHER (2FAR), Strachur Park, Strachur, Argyll, Scotland.
H. C. DOHERTY (2FBZ), Little Shortbridge, Uckfield, Sussex.
N. F. UNDERHILL (2FDC), 112, George Street, Coventry.
G. C. LIDSTONE (2FDN), 18, Chalton Drive, London, N.2.
A. H. GREENHALGH (2FHG), 28, Gynsill Lane, Anstey, Leicester.
A. C. A. NEWMAN (2FIX), 21, West Street, Wilton, near Salisbury, Wilts.
P. R. DINHAM (BRS3395), 2, Philip Street, Bedminster, Bristol, 3, Glos.
J. W. GIBBS (BRS3396), Bleak House, Wansford, Peterborough, Northants.
R. BURSTON (BRS3397), 4, Shalcomb Street, London, S.W.10.
C. C. RUSH (BRS3398), 15, Mayeswood Gardens, Western Avenue, Dagenham, Essex.
C. F. A. MOORE (BRS3399), 16, Harrington Gardens, London, S.W.7.
I. G. MCFADYEN (BRS3400), c/o McKnight, 35, Ardrossan Road, Saltcoats, Ayr, Scotland.
R. S. BROOM (BRS3401), Thatcher Lee, Bay Mount, Paignton, Devon.
W. S. NEWSOME (BRS3402), 9, White Road, Blackburn, Lancs.
W. A. ROSS (BRS3403), Shrewton, Wilts.
R. E. SIMMS (BRS3404), 139, Binley Road, Stoke, Coventry, Warwicks.
B. BENNETT (BRS3405), 154, West Parade, Lincoln.
V. COLLINS (BRS3406), River Green, Thorpe St. Andrew, Norwich.
F. R. RAWSON (BRS3407), 373, Anlaby Road, Hull, E. Yorks.
F. BARKER (BRS3408), 1, Stratford Road, Heaton, Newcastle-on-Tyne.
J. E. JAGO (BRS3409), 51, Whipton Lane, Exeter, Devon.
R. BULLOCK (BRS3410), 66, Earlspark Avenue, Newlands, Glasgow, Scotland.
D. BRECHNER (BRS3411), 4, Emerson Avenue, Linthorpe, Middlesbrough.
C. A. ADAMS (BRS3412), 18, Sandfield Road, St. Albans, Herts.
P. W. SIMMONDS (BRS3413), 4, Warren Head, Warren Road, Epsom, Surrey.
J. D. GILLIES (BRS3414), 3, Berridlae Avenue, Cathcart, Glasgow, S.4.
F. H. CHAMBERS (BRS3415), 185, Birchfield Road, Redditch.
P. W. PARKER (BRS3416), "Jordans," Bretley Lane, Burton-on-Trent.
Lieut.-Col. H. LEE-WRIGHT (BRS3417), Court Way, Newton Ferrers, South Devon.
J. H. GARSIDE (BRS3418), "Farcroft," Honley, Huddersfield, Yorks.
J. TAYLOR (BRS3419), The Pharmacy, Main Street, Methilhill, Fife.
R. P. MUNN (BRS3420), "Whitenest," Sandgate Lane, Sullington, near Storrington, Sussex.
M. HOLDAWAY (BRS3421), 31, Barrack Road, Exeter, Devon.
H. J. RITCHIE (BRS3422), 76, Hurst Grove, Bedford, Beds.

DOMINION AND FOREIGN.

A. CAZAZIS (SV1CA), 15, Syrou Street, Athens, Greece.
E. METCALF (BRS452), Jamaica Public Service Co., Ltd., Kingston, Jamaica, B.W.I.
H. RODER (DE6521/T), Frankfurt on Main, Raimundstr, 151, Germany.

Reports Wanted

G3PV (Berkhamsted, Herts) on his 7088 kc. C.W. transmissions.

G3SB (Minehead, Som.) on his 1745, 1969.5 and 7120 kc. 'phone and C.W. transmissions.

G3RZ (Sheffield) on his 7 and 14 Mc. C.W. transmissions. All reports will be acknowledged.

To The Editor

R.F. OUTPUT METER

To the Editor of T. & R. BULLETIN

DEAR SIR,—With reference to Mr. Woollatt's article in the T. & R. BULLETIN dated June, 1938, I believe members would be interested in knowing the probable percentage accuracy of the device assuming careful manipulation.

Possibly Mr. Corfield would give us further information in this respect.

Yours faithfully,
R. KIRLEW (G6KW).

To the Editor of T. & R. BULLETIN.

DEAR SIR,—In reference to Mr. Kirlew's letter enquiring into the accuracy of the method of R.F. output measurement described by 2DGB and to amplify my Editorial comments. I should like first to mention the point of keeping the lamps at equal brightness; this is most important as it is very difficult to use a grease-spot photometer where the light on either side of the screen is of appreciably different colour.

The accuracy of a good commercial photometer to B.S. Specification is 15 per cent.; the probable error of the grease-spot type is likely to be about 20 per cent., allowing for experimental errors. Individual lamps of the same wattage and make are permitted to vary about ±10 per cent. in lumens/watt to B.S. Specification. This gives a possible error of 30 per cent. The variation in light with variation in applied watts for an E.L.M.A. gas-filled lamp is nearly according to a square law, *i.e.*, half the watts produce quarter the light. The variation in light with variation in applied volts for a similar lamp is according to a cube law, *i.e.*, half the volts gives one-eighth the light. The above information is contained in B.S.S.161. The laws above do not enter into the calculation if the lamps are adjusted to equal brightness and the screen is midway between, the only additional error being that of the meters used to ascertain the watts in L_1. On the other hand, the method used as indicated by 2DGB for gas-filled lamps is best quoted by an example:—If $L_1=100$ lumens, $D_1=2$ feet, $D_2=1$ foot, then—

$$\frac{L_1}{L_2}=\frac{D_1^2}{D_2^2}, \text{ } i.e., \text{ } L_2=25 \text{ lumens.}$$

Now, if they are similar lamps and are gas-filled they are about 10 lumens/watt (actually 12); therefore the watts in L_1, if we take 10 as the figure, equals 10, but in L_2 the watts will be 5 not 2.5, as 2DGB suggests, due to the square law existing between lumens and watts.

In other words, Mr. Woollatt's transmitter in this case gives twice the output he thought it did! The trouble is that L_1 and L_2 in 2DGB's formula should be in lumens or candlepower not watts. For his method the correct formula is—

$$\frac{W_1}{W_2}=\frac{D_1}{D_2} \text{ where } W_1 \text{ and } W_2 \text{ are in } \textit{watts}.$$

This is only true for lamps whose law is square law. Where the law is other than square law (for example carbon lamps) the formula becomes—

$$\frac{W_1^x}{W_2^x}=\frac{D_1^2}{D_2^2} \text{ where } x \text{ is the law connecting watts and lumens.}$$

The above, I hope, covers the doubts of G6KW and gives an idea of the probable accuracy of the method.

D. N. CORFIELD (G5CD).

QSL's FROM LISTENERS

To the Editor of T. & R. BULLETIN.

DEAR SIR,—I feel sure there is a need for a general rule of indicating that listener reports are required when sending on C.W., such as the insertion of the word "QSL" when test calls are sent out.

It would assist the listener in avoiding the waste of time and money, besides the disappointment involved in reporting to C.W. stations (generally high power) to whom such reports are of no value and not required.

When using telephony, it is a simple matter to ask for reports when these are required and one generally gets them (!), whereas the experience of many amateurs shows that reports of C.W. reception are very few and far between—in my own case I have received two C.W. reports in five years.

Even allowing for the smaller number of listeners able to read C.W., there must be many, especially overseas, who would report if they knew the transmitter desired and was prepared to acknowledge them—this especially applies to the QRP man whose signals must often be passed over by the listener who sends a valueless report to the QRO station.

Lastly, a word of thanks to Mr. Trebilcock and others who take the trouble to send their "Calls Heard" lists to the BULLETIN. I am surprised that we do not see more lists from some of our many B.E.R.S. members.

Yours faithfully,
JOHN H. PAYTON (G2JB).

SCATHING, BUT FORTUNATELY NOT QUITE TRUE!

To the Editor of THE T. & R. BULLETIN.

DEAR SIR,—Your Editorial in the August issue is the cause of these remarks.

I sincerely hope that every visitor to Olympia was interested in short-wave amateur radio. All of them were not quite sure about the *progress*.

What are "the needs of British amateurs"? So far as I can find, they are very simple: ability to scrape through the telegraphy test and a fat bank balance. The cash is necessary to pay for the latest "Bultitoob Z Super-super," the "250 Wattplus" transmitter, and to pay for the extra charge for a high-power licence. (Quite a sum should be reserved for fancy QSL cards.)

In 1921 G2JK wrote: "The aim of the true wireless experimenter should not be merely to purchase a complete installation or to build one up from a complete set of working drawings, but rather to *design* his set. . . ."

One more question: Could any of the transmitters on Stand No. 10 *get down* to ten watts? If so, at what efficiency? I could name a well-known amateur who uses a valve on 1.7 Mc. which

(*Continued on page* 254)

BOOK REVIEWS

TELEVISION OPTICS. Second Edition. By L. M. Myers. 362 pages and 226 illustrations. Published by Sir Isaac Pitman & Sons, Ltd., London. Price 30s. net.

It is proof of the appreciative reception of this admirable book that it has reached a second edition so soon.

Some slight alterations have been made to the earlier part of the text, and a number of misprints and errors have been corrected.

There have been considerable additions to the last chapter—electron optical scanning systems. In this section one or two tables and curves have been added, such as, curves of brightness for fluorescent screens, and a table of aberrations, their causes, and pictures of their appearance. Also, there are valuable additions to the text. Foremost in these come the theory of the cylinder lens and its variations, and the general equation of electron motion in crossed fields. There is also a consideration of the possibility of using metal foil screens.

The writer has no hesitation in again bringing to the notice of readers this valuable text, in its revised form.

T. P. A.

BROADCASTING FROM WITHIN. By S. W. Smithers, of the B.B.C. 99 pages and 24 photographs. Published by Sir Isaac Pitman & Sons, Ltd., London. Price 2s. 6d. net.

This delightful little book takes the listener behind the scenes at the B.B.C. He is introduced to many of the personalities which have only been names to him, or even unknown, and he is permitted to watch them at work. Their problems, their successes, their moments of light relief, are all appreciated as one passes with the author through the departments. And the reader is taken through the whole place from the outside broadcast to the television transmission.

The writer read this book with very great enjoyment, even though he did not bring to the book a completely uninformed curiosity. The book was interesting, refreshing, and informative, and at times very amusing. The photographs are good, and the frontispiece of the new D.G. is one of the best the writer has seen.

The book is confidently recommended to all listeners, and is very well worth its modest price.

T. P. A.

The Admiralty Handbook

This, the most famous of all wireless text-books, comes to us now in a new guise. Previous editions (the last appeared in 1931) have comprised a single volume, but the 1938 edition has arrived in two cloth-covered volumes, and in a page format nearly equal in area to that used for *The Wireless World*.

These extensions in sizes, which will be welcomed by Service people and radio men alike, have become necessary in order to keep abreast with technical development. How well the compilers (H.M. Signal School) have done their job can be seen from even a cursory examination of the contents of the two volumes.

The first volume contains eight sections dealing with theory. Following a general introduction to wavemotion, etc., electricity and magnetism, inductance and capacity, alternators, generators and motors, alternating currents, transformers and measuring instruments, oscillatory circuits, three-phase and polyphase A.C. systems are dealt with in an exhaustive manner. Appendices cover definitions of the Decibel and the Neper.

The second volume, nearly twice as thick as its companion, deals with wireless telegraphy theory in eleven sections. Spark Transmitters, Valves, Reception, Amplification, Power Supplies, Valve Transmitters, Radio Telephony (Sound Reproduction), Propogation, Aerials, Feeders and Directional Arrays, Direction Finding, R.F. Measurements are the section headings. Five appendices are also included, together with numerous standard reference tables.

It is interesting to note that in order to bring the unit of capacity into line with commercial practice the Admiralty have decreed that the use of the "jar" is to be considered as obsolescent for a few years; the farad and its sub-multiples gradually replacing it as the practical unit of capacity in the service, a decision which will be universally welcomed.

The Handbook is profusely illustrated with line diagrams, and although the pages are not consecutively numbered, each section is divided into numbered paragraphs, thereby facilitating easy reference by means of the comprehensive index which appears at the end of each volume.

Examination papers follow at the end of each chapter. These are frequently based on questions set in recent City and Guilds examinations.

Volume 1 is priced at 4s., and Volume 2 at 6s. (in both cases postage is extra). The Handbook is available from H.M.S.O., London, or from any bookseller.

* * *

The Eddystone Short-Wave Manual, No. 4, introduced itself to the short-wave fraternity during Radiolympia. The 1938-39 edition includes fully illustrated articles for building a complete amateur transmitting station as well as apparatus for the experimenter interested in reception. Beginning with sound two and four-valve receiver designs, the book passes on to give a description of a miniature 10 to 20 watt station. A useful pre-selector for A.C. mains covering from 31 to 4.5 Mc. is followed by a description of a general purpose absorption wavemeter of novel design.

A Field Strength Indicator; Cathode Ray Oscilloscope, and Key Click Eliminator are dealt with in that order.

Then follows a description of a new 9-valve A.C. Amateur Communications Receiver of the super-het type, with a wave-range from 9-200 metres. 1,600 kc. I.F.s are employed.

A most useful chapter devoted to aerial systems for ultra-short wave use brings this very useful little book to an end.

Priced at 1s., and obtainable from *Stratton and Co.*, Bromsgrove Street, Birmingham, it should find a place in every "ham" shack.

NOTES and NEWS from the BRITISH ISLES

DISTRICT REPRESENTATIVES.

DISTRICT 1 (North-Western).
(Cumberland, Westmorland, Cheshire, Lancashire.)
Mr. J. NODEN (G6TW), Fern Villa, Coppice Road, Willaston, near Nantwich, Cheshire.

DISTRICT 2 (North-Eastern).
Yorkshire (West Riding, and part of North Riding).
Mr. L. W. PARRY (G6PY), 13, Huddersfield Road, Barnsley, Yorks.

DISTRICT 3 (West Midlands).
(Warwick, Worcester, Staffordshire, Shropshire.)
Mr. V. M. DESMOND (G5VM), 199, Russell Road, Moseley, Birmingham.

DISTRICT 4 (East Midlands).
(Derby, Leicester, Northants, Notts.)
MR. W. A. SCARR, M.A., (G2WS), Wharfedale, Heanor Road, Ilkeston, Derbyshire.

DISTRICT 5 (Western).
(Hereford, Wiltshire, Gloucester.)
MR. J. N. WALKER (G5JU), 4, Frenchay Road, Downend, Bristol.

DISTRICT 6 (South-Western).
(Cornwall, Devon, Dorset, Somerset.)
Mr. W. B. SYDENHAM (G5SY), "Sherrington," Cleveland Road, Torquay.

DISTRICT 7 (Southern).
(Oxfordshire, Berkshire, Hampshire, Surrey.)
MR. E. A. DEDMAN (G2NH), 75, Woodlands Avenue, Coombe, New Maiden, Surrey.

DISTRICT 8 (Home Counties).
(Beds., Cambs., Hunts and the towns of Peterborough and Newmarket.)
Mr. S. J. GRANFIELD (G5BQ), 47, Warren Road, Milton Road Cambridge.

DISTRICT 9 (East Anglia).
(Norfolk and Suffolk.)
MR. H. W. SADLER (G2XS), "The Warren Farm," South Wootton, King's Lynn, Norfolk.

DISTRICT 10 (South Wales and Monmouth).
MR. A. J. FORSYTH (G6FO), 29, Stow Park Avenue, Newport, Mon

DISTRICT 11 (North Wales).
(Anglesey, Carnarvon, Denbighshire, Flintshire, Merioneth, Montgomery, Radnorshire.)
MR. D. S. MITCHELL (GW6AA), "The Flagstaff," Colwyn Bay, Denbighshire.

DISTRICT 12 (London North and Hertford).
(North London Postal Districts and Hertford, together with the area known as North Middlesex.)
Mr. S. BUCKINGHAM (G5QF), 41, Brunswick Park Road, New Southgate, N.11.

DISTRICT 13 (London South).
MR. J. B. KERSHAW (G2WV), 13, Montpelier Row, Blackheath S.E.3.

DISTRICT 14 (Eastern)
(East London and Essex.)
MR. T. A. ST. JOHNSTON (G6UT), "Normandale," New Barn Lane, Little Hallingbury, Bishops Stortford.

DISTRICT 15 (London West).
(West London Postal Districts, Bucks, and that part of Middlesex not included in District 12.)
MR. H. V. WILKINS (G6WN), 539, Oldfield Lane, Sudbury Hill, Greenford, Middlesex.

DISTRICT 16 (South-Eastern).
(Kent and Sussex).
Mr. W. H. ALLEN (G2UJ), 32, Earls Road, Tunbridge Wells

DISTRICT 17 (Mid-East).
(Lincolnshire and Rutland.)
Mr. W. GRIEVE (G5GS), "Summerford," New Waltham, Lincs.

DISTRICT 18 (East Yorkshire).
(East Riding and part of North Riding.)
Mr. W. A. CLARK (G5FV), "Lynton," Hull Road, Keyingham, E. Yorks.

DISTRICT 19 (Northern).
(Northumberland, Durham, and North Yorks.)
MR. R. J. BRADLEY (G2FO), "High Crest," Yarm Road, Eaglescliffe, Co. Durham.

SCOTLAND.
MR. JAMES HUNTER (GM6ZV), Records Office, 51, Campbill Avenue, Langside, Glasgow.

NORTHERN IRELAND.
Mr. A. J. SANG (GI6TB), 22, Stranmillis Gardens, Belfast.

NEW MEMBERS ARE CORDIALLY INVITED TO WRITE TO THEIR LOCAL DISTRICT REPRESENTATIVE.

DISTRICT 1 (North-Western)

BLACKBURN.—The last three meetings held at the T.R.'s house have been overcrowded, an average attendance of 25 being recorded. It has been decided to hold a dinner on Saturday, November 19, to commemorate the first anniversary of the Blackburn Group, which to-day comprises 25 R.S.G.B. members and six others who have practically paid their subscriptions! An invitation is extended to amateurs in other towns and full particulars can be obtained from the T.R. Three or four week-end outings with portable gear are to be organised, and the members concerned are willing to collaborate with any other group on any band. G2HW, who has been granted a portable licence, will be chief operator.

G2HW, 8FI and 8JA are working very good DX on 14 Mc. as their latest QSLs prove. (Who will join Century Club first?) Three or four members are waiting for full licences. 6BH is awaiting his new gear. Most of the other members are rebuilding for winter activity.

Burnley.—G8TD qualified for W.B.E. and W.A.C. with 137-ft. Zepp and 10 watts input. He has just received a 25-watt permit. Congratulations to 2CVI now G3SJ, BRS2951 now 2FFO, BRS3268 now 2FBI, and BRS3369 now 2FIA. 5ZN will be on 3.5 Mc. again this winter.

Liverpool.—An excellent attendance was recorded at the September meeting. It is proposed that a special attempt be made to secure the presence of all members in this area at the next meeting to be held on the third Wednesday of October with the object of discussing the possibility of arranging an amalgamation of all local clubs and the setting up of a club room complete with transmitters and other gear. All local members are asked to support this meeting. A sale of disused apparatus will be

FORTHCOMING EVENTS

Oct. 19.—Scotland " E " District, Display of 1938 Society Films, 7.30 p.m. Fleury Meng's, 48, Newmarket Street, Ayr.
,, 19.—District 14 (East Essex Section), 8 p.m., at G6CT, 23, Eastwood Boulevard, Westcliff-on-Sea.
,, 20.—District 6 (Exeter Section), 8 p.m., at Y.W.C.A., Exeter.
,, 20.—District 6 (Torquay Section), 8 p.m., at G5SY, " Sherrington," Cleveland Road, Torquay.
,, 20.—District 13, 8 p.m., Brotherhood Hall, West Norwood. Junk Sale.
,, 21.—District 12, 7.30 p.m., at the Orpheum Cinema, N.W.11. Lecture by G. Parr, Esq., Ediswan Electric.
,, 23.—District 11, 6.30 p.m., at GW6AA, The Flagstaff, Colwyn Bay.
,, 23.—District 4, 3.30 p.m., at Trent Bridge Hotel, Nottingham.
,, 26.—Scotland " A " District. Display of Society Films, 7.30 p.m. Room " A," Institution of Engineers and Shipbuilders, 39, Elmbank Crescent, Glasgow.
,, 26.—District 14 (East London Section), 7.30 p.m., at G5AR, 59, Gordon Road, Woodford, E.18.
,, 26.—*District 15, 7.30 p.m., at G8MA, 43, Eversley Crescent, Ruislip, Middlesex.
,, 27.—District 12 (Watford Section), 7.30 p.m., at G8MH, 11, Nightingale Road, Bushey, Herts.
,, 28.—London Meeting at I.E.E. Tea at 6 p.m. Commence 6.45 p.m. Lecture by Mr. D. W. Heightman, G6DH. Subject: " Across the Pond in Person."
Nov. 2.—S.L.D.R.T.S., 8 p.m., Brotherhood Hall, West Norwood.
,, 3.—District 14 (Colchester Section), 7.30 p.m., at G8PZ, 19-21, Artillery Street, Colchester.
,, 3.—District 6 (Exeter Section), 8 p.m., at Y.W.C.A., Exeter.
,, 4.—District 8, meeting in Cambridge.
,, 6.—District 7, 2.30 p.m., at Royal Hotel, Stoughton, Guildford, Surrey.
,, 9. *—District 15, 7.30 p.m., at T.V. A.R.T.S., The Albany, Twickenham, Middlesex (outside Twickenham Station).
,, 17.—District 10, 8 p.m., at Globe Hotel, Duke Street, opposite Castle, Cardiff.
,, 17.—District 6 (Exeter Section), 8 p.m., at Y.W.C.A., Exeter.
,, 17.—District 6 (Torquay Section), 8 p.m., at G5SY, Sherrington, Cleveland Road, Torquay.

* Sale of disused apparatus at these meetings.

held in order to start a fund for acquiring the necessary premises and apparatus.

Preston.—G3JR has been carrying out exhaustive tests with a new type of aerial, and it is hoped that his results will be published in the form of a BULLETIN article. 2CSM is now G2PS, and 2DBR is G3QP. Activities are normal at 5AX and 5UG, whilst 5RU and 6FC have been heard occasionally.

DISTRICT 4 (East Midlands)

Recent events have inevitably retarded the commencement of that period of autumnal enthusiasm which is generally evident in most shacks, but signs of activity are now to be seen here and there. The " Notting-hams " are tuning up for the VK contest, and several of the 28 Mc. men in the District have been sampling the improved conditions on that band.

It is hoped that all members who possibly can will attend the first district meeting of the season to be held at the Trent Bridge Hotel, Nottingham, at 3 p.m. on October 23. A full discussion on future meetings, plans for district activities, etc., will take place. Tea will be served at 4.30 p.m.

DISTRICT 5 (Western)

At the usual monthly meeting of the Bristol section, on September 1, Mr. F. J. Rumary (G2YT) was the speaker. He gave an interesting address on " Man-made Radio Interference," and described the measures adopted by the G.P.O. to combat it. Several pieces of apparatus used in this connection were examined by the members. The attendance at this meeting was a record for the year, nearly forty being present.

On Sunday, September 26, a party of about thirty members and friends visited the Burnham Radio Station, where they were shown the receivers in operation and the remote control of the G.P.O. transmitting station at Portishead.

G2IW, of Bath, and others have noticed lately a curious noise which has a periodicity of 400 to 500 c.p.s., and audible from 6,300 to 10,000 kilocycles. At first it was put down to ignition, but as apparently it has been heard simultaneously by stations all over the country, its actual origin is a mystery.

G8JQ has erected a rotary beam aerial for 28 Mc., and, with its aid, is getting good contacts and reports.

G2BI, of Calne, is active on 56 Mc., and has heard G6VF, of Bristol. No reports have been received from other centres in the District.

DISTRICT 6 (South Western)

The 56 Mc. Direction Finding Field Day which was duly held on Sunday, September 18, proved extremely interesting. The transmitter was located near Bovey Tracy on fairly high ground and rather near the moors. No one succeeded in finding the transmitter, but the subsequent examination of maps and readings revealed a rather startling fact, and here we definitely consider we have broken new ground. Those readings which were taken a long distance away showed remarkable accuracy, but it was found that on approaching the location, they took on a definite deflection towards the west. This became so pronounced that members were actually led *past* the station after which point readings became muddled. There was every evidence that the moors possessed the property of either deflecting or reflecting the signals so as to

make them appear to come from directions differing by as much as 45 degrees from the true bearing. At a later date tests will be arranged to investigate this effect.

The above account might well have been considered as part of the activities of Torquay because little support came from elsewhere. It is hoped, however, that as time goes on members will appreciate the fact that these field days are open to all.

Torquay.—It is intended that meetings shall start again at G5SY on Thursday, October 20, at 8 p.m. Will members bring along to the first meeting suggestions as to talks or discussions for the winter session ? At this meeting the D.R. will open a discussion on aerials.

Exeter.—We should like to emphasise that Morse classes are held at Exeter meetings from 8 p.m. to 9 p.m. Details from the T.R. The two meetings held in September were well attended, and most members report active. There is one new call, G3SN, but the owner is leaving for North Tawton.

North Devon.—Although there is nothing of special interest to report, all stations report active, and many are overhauling gear for the coming winter session.

An R.S.G.B. meeting was held at G3GH, which was well attended. Local members join in wishing VS6AH and Mrs. Merriman the best of good luck on their return to Hong Kong, a sentiment echoed by all members in No. 6. We welcome BRS3383 as a new member.

Taunton.—A meeting was held at G2JM (North Petherton) but thunderstorms kept the attendance low. 2JM made members very welcome and entertained them by demonstrating his new transmitter. Mrs. 2JM is thanked for her part in supplying refreshments.

DISTRICT 7 (Southern)

The November monthly meeting will be held at the Royal Hotel, Stoughton, Guildford, on Sunday, November 6, 1938, commencing at 2.30 p.m. In view of the amount of 56 Mc. activity in the district the D.R. asks all those with 56 Mc. gear, that is any way portable, to bring it along in order that a general discussion on the subject can take place.

Kingston.—Local societies are showing activity, and although no individual reports are to hand, the following are known to be active. G2GK, 3AV, 3BF, 3DZ, 3MF, 3OR, 5LC, 6MB, 6PK, 8HA, 8MY, 8SM, 8TX, 2CXI, 2DOK, 2DOP.

Guildford.—Congratulations to G6NA, who has received a confirmed report from YR on his 56 Mc. c.w. This is believed to be the most easterly reception of 56 Mc. signals from G yet reported. G5MA continues to be active on 56 Mc., including portable working, and is getting good results. From his home QRA at Ashtead he has heard 6FO at Newport, Mon. Welcome to newcomer G5YA. Active stations are G3HH, 6NA, 6YZ, 8IX, 8LT, 8UG, and 5WP.

Portsmouth.—At the September meeting of the South Hants R.T.S. and local R.S.G.B. members, it was agreed that G2XC should continue as TR for the remainder of the year. Following the business meeting G2XC gave a general talk on the " Propagation of Wireless Waves," a subject which appears to be of considerable interest locally. At the Meeting on November 3, 2CBL has promised to talk on " Sunspots." Portsmouth 56 Mc. stations have recently made contacts up to 100 miles, using c.c. c.w. The following report active : 2XC, 2ZR, 5XY, 8BD, 8JB, 6YK, 8LO, 8WC, 3CN, 2AHA, 2CBL, 2DJF, 2DJY, BRS3182.

Bournemouth.—Local members have not been very active due to summer attractions, and news has been scarce. 8KX has moved to Southampton. 2TR, 2NS, 3BM and 5OH have all been active in bursts. W1HKK, VS2AK, F8WL and many Gs have visited the town. Bournemouth members who are interested in the new R.A.F. scheme are asked to get in touch with 5OH as soon as possible. 5OH wishes to carry out tests with other stations and BRS on 1.7 Mc. c.w. using a maximum input of 4 watts and AOG aerials. Local activity reports to G5OH by the 25th please !

DISTRICT 8 (Home Counties).

District Representative : S. J. Granfield (G5BQ) St. Luke's, 47, Warren Road, Cambridge. Tel. 54644.

Town Representatives :

Bedford : H. R. Jeakings (G5FO), c/o Jeakings & Son, Mill Street.

Cambridge : L. W. Jones (G5JO), " Mella Loona," 16, Leys Road.

St. Ives : C. D. Whaley (G6WA), " Danum," Ramsey Road.

Peterborough : W. Carter (G2NJ), 1, Gladstone Street.

The Monthly District Meeting was held at the Fitzroy Arms, Cambridge, on September 9, with Mr. L. W. Jones (G5JO) in the chair. The Chairman dealt at some length on the splendid work done for the District, and the R.S.G.B. generally, by Mr. Gerald Jeapes (G2XV), the retiring D.R. On behalf of the District he welcomed the new D.R. (G5BQ) to office and asked for the continued loyal support of all members. A vote of thanks to G2XV was carried with acclamation. The rest of the evening was devoted to a discussion on ways and means of further livening district activities, and to a junk sale of goods provided by G5DR.

Reports this month announce the erection of new masts and aerials in several parts of the district.

G2XV now has two 50 ft. poles pointing skywards, thanks to the efforts of the local " polegang," comprising G8SY, 5PU, and 2CDW. The aerial is a three-element vertical beam, and reports on reception (14,140 kc.) will be welcome from all parts of the world.

G5JO, 5DR, and 5OV continue their DX activities, in spite of the rather patchy conditions. G5DQ has migrated to 14 Mc. and worked his first W on this band. 5BQ also has a new mast with improved directional properties. G5DR is progressing with a rotary beam. G8SY, 8FF, and 2PL are all active. 8ST is with G.E.C. at Wembley.

From Peterborough comes the news that G3DY is constructing a rotary beam. 2UQ is now using a Zepp on 7 Mc. 5NP finds it is impossible to erect his 55 ft. poles in the small space available, and has reluctantly had to dispose of them. 2NJ is experimenting with a W3EDP aerial on 14 Mc.

ON4SW has been on a visit to G5BQ and made an enjoyable round of the Cambridge stations during his stay.

The D.R. would like to get in touch with all new members or those who have recently come to District 8.

DISTRICT 9 (East Anglia)

District Representative.—H. W. Sadler (G2XS), Warren Farm, South Wootton, King's Lynn, Norfolk.

District Scribe.—F. L. C. Firmin (G5QO), 2, Hall Park Villas, Oulton Road, Lowestoft, Suffolk.

Town Representatives :—

Ipswich.—S. G. Keeble (G2AN), 139, Sidegate Lane, Ipswich.

Lowestoft.—F. L. C. Firmin, as above.

Norwich.—A. G. Parker (G6QZ), 84, Cecil Road, Norwich.

Ipswich.—The weekly " rag-chew " still continues to be well attended, although general activity does not appear very high. Congratulations to 2CWZ, now G3OJ, who is very active. Other stations known to be active include G2JD, 2AN, 3NQ, 8AG, 8MU, 8IS and 8KB.

Norwich.—G6QZ continues tests on 56 Mc. and has now both horizontal and vertical beam aerials erected for that band. G2MN is erecting a Kraus beam for 14 Mc. G5IX expects to be testing by the time these notes are in print. His new station will be entirely independent of any mains supply.

Great Yarmouth.—Mr. Davey (2BND) now licensed as G3RW, is testing daily on 7 and 14 Mc. ; reports or contacts will be very welcome. The remainder of the Yarmouth Group are active.

Lowestoft and District.—G5QO is active only on 56 Mc. bench tests. 2CTR (Beccles), now G3RK, is testing daily on 14 Mc. G8WI (Orford) welcomes contacts on 7 Mc. CW. G8DD has now moved to Beeston, Notts, and will shortly be testing on 7 Mc. He will particularly welcome contacts with stations in No. 9 District.

G2MN and 5IX at the 3.5 Mc. N.F.D. Station operated by District 9 (North Tuddenham). All gear was transported in an 8 h.p. car !

DISTRICT 10 (South Wales and Monmouthshire)

Your D.R. must first apologise for the error in last month's Notes in working out the individual placings of our N.F.D. stations. G2JLP (1.7 Mc.) goes down to 5th, and GW8CTP (7 Mc.) comes up to 3rd. A moment of mental aberration can be the only excuse, and a word is due to 8CT for pointing it out.

Swansea.—The D.R. attended a meeting here on September 14, at which were present G2JL, 2UL, 3AX, 3RV, 5ZL, 6FO, 6GJ, 8HI, 2AMA and 2CAK. The presence of many others who could have been there was missed, as important business came up for discussion. First, we have to express our regret at the impending retirement as T.R. of GW2UL, who is not only one of the oldest members of the Society in the district, but has also done a great deal for it. Many members licensed during the last two or three years have him to thank for very valuable assistance. 2UL contemplates taking up extra work which will make such inroads on his spare time as to prevent him from attending properly to Society activities.

The office of T.R. for Swansea is now open, and it is hoped that members in that town and all others in the district will forward nominations as set out on the form contained in this issue.

Other matters discussed at the meeting were area organisation generally and the C.W.R. Finally a lively *post-mortem* was held on the conduct of the 3.5 Mc. N.F.D. station.

Speaking frankly, the D.R. feels it is high time the Swansea members showed a little more of the " ham spirit " and a little less of the tendency for " cliquey-ness " which is now making things somewhat unhappy down there. Practically every R.S.G.B. member in Swansea or anywhere else, owes at least part of his progress and most of his initial success to assistance from someone already holding a ticket, and this fact should be remembered by all concerned.

Cardiff.—The meeting on September 15, also attended by the D.R., drew a very fine gathering of 26 members and 7 non-members. Present were GW2BG, 2JL, 2NG, 2UH, 2XZ, 3AJ, 3AX, 5XN, 5WU, 6FO, 6PF, 6YJ, 8AM, 8NP, 8UH, 8WU, 2AXT, 2BQB, 2BUF, 2CAF, 2CPA, 2DOS, 2DOZ, 2DHM, 2DSD, 2DYB. The D.R. gave the meeting a brief account of the Convention business, and there was a useful general discussion on the C.W.R. After this, the GW men of Monmouthshire put forward their views through GW2NG. He made out a good case, and argued ably that the present situation was intolerable, and only to be resolved by quick action ! Moreover, he had irrefutable proof that Monmouthshire is actually in Wales. In the ensuing debate, it became clear that certain other members had equally positive proof that Monmouthshire is in fact an English county, and the matter was further complicated by some of the Cardiff group intimating that they were not at all sure that they wanted Monmouthshire in Wales anyhow. GW5WU made the point that as the question had been argued for centuries without any definite conclusion being reached, the best thing to do was to leave it to Council to decide, who had in any case already given a ruling which all concerned should respect. The D.R. undertook to re-open the matter with H.Q., but warned those interested that he could see no adequate reason for upsetting what had become an accepted fact in world DX circles—that Monmouthshire is in England—and that any alteration, even for radio purposes, would lead to trouble and expense which was unjustified in view of the small number of members concerned. Speaking seriously for a moment, we would in fact ask Monmouthshire members to forgo the GW prefix, which is scarcely justified in the circumstances.

Blackwood.—G6BK reports steady activity, with good DX being worked by several members (including someone still pirating his call). 8CT is

interested in 56 Mc., and 2BG continues the investigation of 1.7 Mc. propagation.

Newport.—G2JL is making himself responsible for a number of "new starters," which promises to improve local membership; there is evidently a good deal of untapped latent interest in the area. G6FO made some "DX" QSOs on 56 Mc.; during the week-end September 8-11, two-way contact was held with G5RD (Watford, 113 miles), G5BY (Croydon, 126 miles), G6XM (Farnborough, 96 miles), G2XC (Portsmouth, 96 miles) and G3HW (Teignmouth, 76 miles). Input was 24 watts, CC on 57480 kc, and a large number of reports have been received from all over the south-east of England. One of the most interesting came from a suburb of London, where G6FO's signals were heard consistently during daylight and darkness with both vertical and horizontal aerials.

LONDON MEETING

Friday, October 28th, 1938

at

I.E.E., SAVOY PLACE,

Victoria Embankment

Tea, 6 p.m. Commence 6.45 p.m.

LECTURE:—

"ACROSS THE POND IN PERSON"

By D. HEIGHTMAN (G6DH)

DISTRICT 11 (North Wales).

As winter is creeping upon us, the monthly district meetings, which were suspended for the summer period, will recommence with a gathering at GW6AA on October 23. Will all members do their best to be present, particularly those interested in 56 Mc. work? The results obtained on this band during the summer will provide a very interesting topic for discussion.

GW3KY, of Holyhead, was successful in hearing G5ML on 56 Mc. on September 11 for a brief period when 5ML was at his peak strength on Snowdon.

GW6AA while on Snowdon in September worked 27 stations on 56 Mc., a number over 100 miles distant. In addition to many nearer reports, 6AA received reports on his c.c. signals from G6OT (208 miles), G6XN (178 miles) and G2GH (165 miles). All the longest distant reception reports were from amateurs using "straight" or super-het receivers.

The following are known to be active on various bands: GW2NF, 2GV, 3GL, 3JI, 3KY, 5YB, 6AA, 6OK, 8HZ, 5FU.

DISTRICT 12 (London North and Hertford)

Thirty-eight members attended the first meeting of the season at the Orpheum Cinema on September 16, when, in the unavoidable absence of the D.R., G2AI took the chair. The speaker for the evening was Mr. H. W. Pope, who, although the owner of a fairly recent call-sign (G3HT), was licensed in the days before the War. He gave an interesting chat on the conditions and apparatus used at that time, and his references to coherers, electrolytic detectors, helixes and such-like gear provided a fund of reminiscences for the older "hams" present, and was also of considerable interest to the more recently licensed members.

The District Scribe-cum-Treasurer was able to announce that after all N.F.D. expenses had been met there was still a substantial balance in hand—a great improvement on previous years.

We were pleased to see Capt. Thorpe (ex-ZS1AH) at his first District 12 meeting, and we hope he will be a regular attender at future events.

At the November meeting Mr. Adams (G2NO) of *Webb's Radio*, will display and describe several new types of American receivers. A good attendance is anticipated.

DISTRICT 13 (London South)

The month of October brings us to our Autumn Junk Sale and full District Meeting. This will be held on the 20th, and we would ask all members of the District to make a special effort to be present. News of importance within South London is small, and the following are the only reports received. G2UX, 3DF and 5PY have all been on holiday, but are active again by this time; 3CU continues his experiments on the 56 Mc. band; 2WV and 3GU are active. We offer our congratulations to 2JK and 6FU on obtaining R.S.G.B. awards at Convention.

An unexpected position has arisen in regard to the South London Trophy; the D.R. has himself won it for the year 1938. It may be well to mention that the B.E.R.U. entries were well checked by a member of Council before this fact was ascertained!

In conclusion, please be present on October 20, and bring your junk.

DISTRICT 14 (Eastern)

East Essex.—Attendance at the September meeting held at G2LC. Leigh-on-Sea was 16, including EI6M of Valentia Island. Considerable interest was displayed in the R.A.F. Civilian Wireless Reserve.

The latest full call is G3TS of Laindon, ex-2ALH. G2KH has worked a number of unusual DX stations on 14 Mc. recently (this information should be sent to G6WY.—ED.). Members in this area are requested to consider whom they propose to nominate as T.R. in succession to G2LC who is relinquishing his duties next month.

Brentwood.—G3JW, using W3EDP on 7 Mc. 2DRI working on single side band transmission also writing up an article on his special modulator. G3LA doing well on 14 Mc. also using W3EDP aerial, his call is being pirated on 7 Mc. G8RC has been in Holland staying with PA0YN. Was given a great welcome in Zutphen and visited or met PA0GI, GA, WM, TK, ANI, WO, DK and many receiving stations.

East London.—G8JM is observing, on 14 Mc., the effect of barometer pressure, and general weather conditions, as affecting signal strength on DX stations. The slow morse classes run by 2CID are still in session. 2DHA of Thaxted now G3SI, has started up on 7 Mc. Owing to the extreme tension the attendance at the September meeting held at G8AB, Loughton, was very small.

DISTRICT 15 (London West, Middlesex and Buckinghamshire).

The September meeting in High Wycombe was attended by 18 members, including some new faces. We hope they will continue to support us. Dates for the next two meetings will be found under "Forthcoming Events."

The October meeting, at the time of writing, has not been confirmed, but it is anticipated that it will be held at G8MA. As the November meeting is due to be held in conjunction with the T.V.A.R.T.S., it has been necessary to alter the date from that published earlier in the year, so please make a note of it now.

No reports whatever have come to hand except a note from G2NN concerning the T.V.A.R.T.S. meetings. On September 14 a lecture was given by S. R. Wilkins, Esq., of *The Automatic Coil Winder and Electrical Equipment Co., Ltd.*, on "Electrical Measurements and Measuring Instruments." On September 17 a party visited the Tatsfield Receiving Station of the B.B.C., when diversity reception was explained. The annual general meeting was fixed for October 12, when N.F.D. and T.V. Society films were to be shown.

Our congratulations to G6CO (our T.R. for West London) and Mrs. CO on the arrival of a baby girl as junior op.

DISTRICT 16 (South-Eastern).

The D.R. was very pleased indeed to meet so many members of the District, both at the Radio Exhibition and at Convention, and would like to take this opportunity of thanking them for their support.

Ashford.—Congratulations to 2DCL on obtaining his full licence, G3SL, G2JV, 2QT, 3SL and 8RK are active.

Brighton and Hove.—On September 1, Mr. E. R. Radford (G2IM), of Edgware, gave a talk on "Aerials." This was followed by a discussion on the merits of home-built versus commercial receivers. Capt. Thorpe, ex-ZS1AH, late of Cape Town, was the lecturer on September 22. His subject was "Conditions and Difficulties of Amateur Transmitting and DX in Cape Town." His many interesting and instructive remarks were enjoyed by an appreciative audience. Most stations are active, those reporting being: G3JF, 6CY, 6RM, and 2CTO.

Eastbourne.—The T.R. apologises for the non-appearance of the notes last month owing to his illness. We are glad to learn that he is again fit. Stations active: G2AO, 3CX, 5BW and 2AVQ. 3AT is welcomed as a visitor.

Heathfield.—We offer our hearty congratulations to G5AQ on his recent marriage. BRS1173 has heard the following stations on 56 Mc.: G2AO, 2HG, 2JK, 2LC, 2UJP, 2XC, 2XI, 2XIP, 2ZV, 5BY, 5JZ, 5MAP, 5RD, 6FO, 6XM, 8DM, 8OQ, 8OS. Active: 5JZ, 2BRI, 2CJZ.

Maidstone.—The M.A.R.S. is very active. A number of lectures have been arranged for the winter session, and a radiating licence has been applied for on behalf of the Club. Active: 5XB, 8UC, 2BXW, 2834.

Tunbridge Wells.—Active: 2UJ, 5KV, 6OB, 2AKQ, 2CUS and 2DIC. 2UJ operated portable during the Snowdon 56 Mc. Tests, from Argos Hill, near Mayfield, Sussex. Although power was very low, and the aerial not as well matched as it might have been, results far exceeded expectations. The "DX" was G2XC of Portsmouth, and an S5/6 report from G6DH at Clacton.

West Sussex.—An interesting programme is being arranged by this club, and details will be available shortly. Active: 2ZV, 2CDL and 2DDD.

DISTRICT 17 (Mid-East)

Reports are very scarce due to activities in other directions. The District Meeting, which was scheduled to take place at Lincoln, had to be cancelled, but it is hoped to make arrangements for another to be called at an early date. All T.R.'s will be notified in due course.

Will those responsible for the collection of notes please make every effort to forward information to the Scribe in good time for inclusion in the BULLETIN?

District members interested in 56 Mc. are asked to forward information and news regarding the results of their experiments.

DISTRICT 19 (Northern).

The writer is glad to advise members in District 19 that he has accepted Council's invitation to take office as D.R. and from now on it is hoped to show through these columns that the North Eastern area of England is as active as any other.

News and notes from the T.R.s will be welcomed, but attention is drawn to the fact that only items of general interest can be published.

G2FO.

Darlington.—The following are known to be active, G8HQ, 8SN and 2CKN. 2BNZ of Saltburn has visited local amateurs.

Stockton.—G2FO and 8PS have new superhets, the former an 8 valver. Others active are G3JN, 3NT, 5QU, 5XT, 6DR, 8CL and 2CZO. 2DGQ has passed his morse test (Congrats.).

No activity reports are to hand from other Town Centres.

Scotland

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

"*A*" *District*, comprising Glasgow and the counties of Renfrew, Lanark, Dumbarton and Argyll:
D.O. D. M. J. Tyre (GM5TY), 71, Waverley Street, Glasgow, S.1.

"*B*" *District*, comprising North of Scotland, Aberdeen, etc.
D.O. G. W. McDonald, 122, John Street, Aberdeen.

"*C*" *District*, comprising Dundee, Angus, Forfar, Perthshire, etc.:
D.O. J. G. Halley (GM8CF), 180, Lochee Road, Dundee.

"*D*" *District*, comprising Edinburgh and Midlothian, etc.
D.O. S. W. Rowden (GM6SR), "Rosebank," Pilrig Street, Edinburgh.

"*E*" *District*, comprising counties of Ayr, Dumfries, Wigton and Kirkcudbright:
D.O. Hugh McConnell, Jun. (2ACQ), "Ashgrove," 23, Carrick Road, Ayr.

"*F*" *District*, comprising Stirlingshire:
D.O. D. M. K. Harrower (GM6NX), 22, Waverley Crescent, Stirling.

"*G*" *District*, comprising Borders:
D.O. D. S. Bruce (GM3NI), 39, High Street, Galashiels.
"*H*" *District*, comprising Fifeshire, etc.:
D.O. A. W. Lawson (2ANL), "Makora," Kinghorn, Fife.

"*A*" *District*.—The first meeting of the new season was held on September 28, when there was a good attendance of members. Various matters were discussed and it was decided to try a new method of payment for meetings. The suggested new regulations for B.E.R.U. were discussed and it was decided to advise H.Q. that the district agreed that the new rules be given a trial. The C.W.R. was also discussed. At the October meeting the Society Films and N.F.D., 1938, will be displayed and it is hoped that there will be a big turn-out of members. The question of a second monthly meeting is in abeyance, but it is hoped to have something definitely fixed soon.

The "Bull" arrives in Scotland. Bryan Groom, GM6RG, discusses his latest article with G6CL.

"*B*" *District*.—A meeting was held in the district's clubroom on September 2, when 15 members attended to discuss various Society matters. The members present decided to take drastic action against any unlicensed station in the district, and it is to be hoped that this will see the end of illicit operation. It was decided to protest to the Council and Awards Committee against the use of excessive power handling equipment being used in Society Contests. The new operating times for the forthcoming B.E.R.U. Contest were fully discussed, and those interested suggest that the Contests be run concurrently, over two week-end periods, or alternatively, as separate contests over the four week-ends as before. The meeting concluded with talks by various transmitting members on lines of experiment for those applying for transmitting facilities. Five prospective A.A. members were present and it is hoped that they derived some benefit from the talks. Members have pleasure in looking forward to the next meeting, when Mr. E. G. Ingram (GM6IZ) will lecture on "Amateur Radio in the Past." General activity in the distict is as usual, good, but no outstanding experimental work has been reported.

Mr. D. J. Shaw, 2AJB, is now GM3RL.

"*D*" *District*.—The District held their first meeting on September 28, when there was a good attendance. It was suggested that the district should acquire a clubroom of their own. All stations are more or less active but find conditions very patchy.

"*E*" *District*.—The district was well represented at the Scottish Convention, five members being present. The first meeting of the season was held in Fleury Meng's 48, Newmarket Street, Ayr, on September 21. Considering the widespread nature of the district there was a very satisfactory turn-out. GM2UU, 2BIK, 2FKV, 2ACQ, BRS1925, 2916, 3198 and three visitors were present, together with Mr. J. Hunter, GM6ZV, Scottish Records Officer. The 1937 N.F.D. films and also the Society's film "British Amateur Stations" were shown, and these proved of great interest. Our thanks are due to Mr. A. Fairbairn (BRS2474), who kindly loaned the projection apparatus. A course of morse instruction has been arranged, starting immediately. Mr. Peden is now 2FKV. The next meeting will take place at Fleury Meng's, at 7.30 p.m., on Wednesday, October 19.

"*G*" *District*.—The district was honoured by a visit from our Secretary, G6CL, during his recent visit to Scotland. A very pleasant evening was spent, and we hope it will not be too long before we again welcome him over the border. Another meeting was held on September 25, when many schemes were discussed with a view to making the district meetings more interesting and to increasing membership. It was suggested that we have a clubroom of our own, where constructional work could be carried out. Other suggestions, when tried will be put forward for the benefit of other districts. Until further notice meetings will be held in the "King's Temperance Hotel," Galashiels, fortnightly, on Sunday evenings.

Northern Ireland

Only one report has been received—and that from GI5UR. GI members please note!

Trade Notice

We learn from the *Mullard Wireless Service Co.* that the demand for their small oscillograph tube type E.40-G3 has been such that they have decided to reduce the price to 55s. as from October 1.

In addition they announce that a new Cathode Ray tube with a screen diameter of 3 cms. (which has been produced as a monitor tube) will shortly be introduced. The price will be in the neighbourhood of 30s.

British Isles Calls Heard

ERIC W. TREBILCOCK (BERS195), Telegraph Station, Powell Creek, North Australia. August 19 to September 14, 1938.

14 Mc. Phone.—G2hk, 3ln, 3pc, 5dr, 6jl, 6wx, 6yu, 8lp, Gi5zy. 7 Mc. C.W.—G8uk. 14 Mc. C.W.—G2by, 2dk, 2fz, 2io, 2jg, 2kh, 2lk, 2ma, 2nn, 2pl, 2qo, 2zq, 3bu, 3ih, 3iq, 3pg, 3sd, 5ac, 5an, 5gq, 5iv, 5ll, 5ms, 5qy, 5ru, 5sr, 5ug, 5yv, 6kp, 6ku, 6mk, 6td, 6wr, 6xa, 6yr, 8dn, 8it, 8jb, 8md, 8mk, 8qz, 8tc, 8ug, 8us, 8wc, gm2jf, 3qh, 3rl, 6hz, 8mj, 8sv, ei6g, 8f. 28 Mc. C.W.—G6qx.

BRITISH EMPIRE NOTES AND NEWS

Australia (Western)

By VK6WZ.

CONDITIONS during August-September have been patchy—good during the latter part of August and poor during September. 7 Mc. is becoming noisy in the evenings, but DX still persists there. 14 Mc. has been disappointing lately, but shows signs of returning to its former condition. During August, stations in W, ZS, VU, VS, ZL, G, in addition to "local DX" (J, PK and KA) were worked by several VK6s active on 14 Mc. At the time of writing, however, W signals are few and ZS entirely absent. British and European signals are heard during afternoons here and, occasionally, again late at night corresponding, respectively, to morning and afternoon periods in Britain.

28 Mc. is picking up, and at the best period (from about 8 a.m. till midday) signals are heard, often at great strength, from W, K6, Eastern VK and ZL. Commercial harmonics in and near the band are mainly from places to the north. The writer has endeavoured to locate 9-metre American police transmissions, but so far has had no success. These are heard frequently in Eastern Australia.

Activities during the period included the August Field Day organised by the W.A. Division of the W.I.A. and won by VK6AF with a score of 30 points. Other scores were: VK6RW, 23; VK6BW, 22; VK6GM, VK6AB, VK6DA, each 21; VK6BB, 15; and VK6KO, 14. November 6 is the date of the next outing, which is to take the form of a DF Hunt.

The "Transmitters' Development Section" of W.I.A. has made an auspicious start by inaugurating a Question Box service for Transmitting members, by taking steps to increase 56 Mc. activity and by organising a VK6 DX Contest to take place during November.

The usual "regulars" are still among the active stations, and include VK6SA, VK6GB, VK6FL, VK6HT, VK6AF, VK6MW and VK6CP. VK6AG—a real old-timer—made a reappearance with a 7 Mc. mobile rig installed in a car. VK6SA was recognised as the operator. VK6LJ's absence is explained—the erection of a tower and rotary W8JK beam. It is nearly complete as these notes are being written, and should be on the air by the time they see print. VK6MV's beam is working out nicely, and VK6WS is following suit, and already has the lattice tower mounted on his roof. A novel QRP rig is that of VK6AW, situated at Boulder. The transmitter has two 6K7's in push-pull running ten watts input plate modulated. He does very well with it too on 7 Mc. A new arrival recently was VK6HB, formerly of VK5.

During September G6HB passed through Fremantle as op. aboard the *Ulysses* from Liverpool.

British West Africa

By ZD2H

Conditions recently have shown a gradual decline and except for North and South America, DX QRK's are rather on the low side, with Europe becoming increasingly difficult to contact.

Nigeria.—ZD2G reports that his rig is slowly approaching completion. Although active nightly ZD2H has worked no DX worthy of special mention. Luckily, however, he is WAC and WBE, 4HK obliging from that rarest of rare countries, Australia. Is this the first VK-ZD2 QSO?

BERS440 in a welcome report says that between spots of DX listening on a TRF receiver he is brushing up his morse. Due for leave in October he hopes to settle down to intensive morse practice on his return. His application for a closed circuit licence has been rejected on the ground that the local Administration does not issue such permits.

Gold Coast.—ZD4AB, who is experiencing similar conditions to those detailed above reports a temporary slacking off of activity. Endeavour is being made, without much success, to run a reliable sked with ZD2H.

Malta

By ZB1E.

No reports have been received this month, but it is known that little activity obtained owing to holidays.

Conditions on both 7 and 14 Mc. have been rather good lately around 0500 to 0800 G.M.T. and 1700 and 2100 G.M.T.; VK, W and ZL being worked at about S6. Since the storm on September 24 QRN has at times been heavy on 7 Mc. and moderate on 14 Mc. Only an occasional European signal is heard on 28 Mc.

Mauritius

By VQ8AF.

The winter period this year has proved definitely worse than that of 1937 as far as 14 Mc. propagation is concerned.

VQ8AA is practically off the air, but never before has he received so many QSL's, specially from the States. Cards are pouring in to Box 163, Port Louis, and 8AA wishes he could lay his hands on the person who is pirating his call. He asks that everyone should wait for his card before they QSL. VQ8AB, recently located on Flat Island, is now on the mainland once again, but he is QRT until the end of the year. VQ8AF, who is testing an RK49 Tritet, will be pleased to acknowledge reports on his 14,298 kc. transmissions. He has recently worked with 20 input watts FB8, ZS, 17, YR, VU, VS7, J and W.

Northern India

By VU2AN *via* G5OV

With the approach of winter, DX seekers are again being rewarded, and several stations report QSO's with VE the most difficult part of the Empire to contact from here with the exception of B.W.I.

The 28 Mc. band is greatly improved, but 7 Mc. is as usual almost unworkable through commercial QRM. May we ask the local 7 and 14 Mc. amateur broadcast stations to curtail their programmes during the winter when the bands are open for DX?

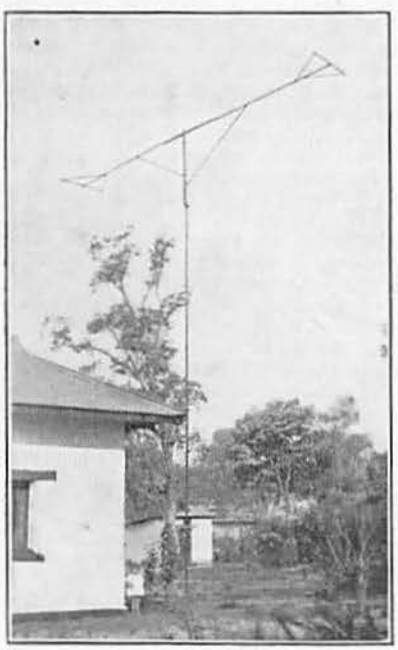
VU2FV reports making 12844 points in the DJDC contest for 169 QSO's, this with his portable rig under call VU2FZ. Transmitter input was around 5 watts from dry batteries and WAC was also made with this outfit. VU2FV will be returning to G in October. 2ED is now worrying over aerial problems. 2LU made WAC in five weeks from getting his call having contacted 39 countries including VE5. 2EO finds conditions very poor in occasional spells at the receiver. 2FX reports contacting CX and VE5 using a new matched impedance aerial. 2AN built an ECO using a 6K7, but mains voltage and transmitter frequency drifted in unison, so the 6K7 is now a regenerative preselector on 28 Mc.

As VU2LK is the official QSL Bureau for India members are urged to send him stamped addressed envelopes for their cards.

A new call is VU2FO (ex-G2DC), while Captain Nepean (ex-AC4YN) is hoping to be active soon under his old call of VU2YN. Both stations are in Jubbulpore.

The Rotating Beam at VQ2HC

In response to requests from members the writer has pleasure in giving details of the beam aerial which he has recently installed at Nkana, Northern Rhodesia. The elements are a ½ wave doublet cut



A general view of the rotating beam in use at VQ2HC.

to the frequency of the crystal in use, and a director cut 1" per foot shorter than the radiator and spaced 6' 6" in front of same.

The feeders, which are made of bridle wire, are linked to the final tank coil with one turn. Since this aerial system has been in operation reports from DX stations have improved from S5 to S9, and it is of interest to record that contacts are now possible with the U.S.A. which were impossible prior to its erection. The station has qualified for W.A.C. and W.B.E. on 'phone and cards for confirmation are now awaited.

VQ2HC.

Then and Now at G6IH

THE two chief points of interest at G6IH are, first, the station has been in existence since 1922 and, second, all the present gear is for 56 and 112 Mc. operation.

The station in 1922 consisted of a two-valve transmitter. This is seen rather indistinctly on the right of Fig. 1 and used a Marconi TI valve as oscillator in a Hartley circuit. The coils, which were wound with 14/36 wire on teak formers, can be seen above and to the left of the transmitter. Grid modulation was used and the H.T. supply was originally made up from cells of the type now fitted to cycle lamp batteries, and later from the popular Electrolytic Rectifier, which was economical but a nuisance to keep in order. The microphone was a G.P.O. solid-back carbon type, and the grid modulation transformer was rewound from out of a scrap light meter!

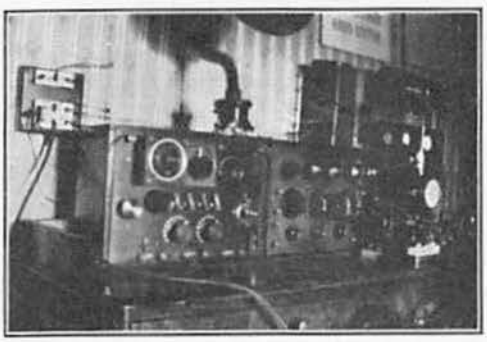


Fig. 1.—The writer's station in 1922, when the call was then 2TM.

The receiver was in two units, that on the left containing the tuner proper, having either two tuned and loose-coupled circuits or a stand-by, straight through connection for searching. A coupled circuit condenser was used, and this was marked in wavelengths, so that a frequency check could be kept on the other station. A carborundum detector was also incorporated in case the valve portion "packed up."

The valve portion consisted of H.F. amplifier, regenerative detector with loose-coupled coils, and two stages of transformer coupled A.F. amplification, the 'phones being connected to the third stage. The tuning range of this receiver went to 6,500 metres.

The present rig has a 7 Mc. crystal in a temperature-controlled box, the C.O. valve being an R.K.25 This is doubled through three F.D. stages, the third being an Eimac 35T, and this feeds the P.A.,

another 35T, biased to three times cut-off and plate neutralised. The input to the final stage is 50 watts.

Modulation is by a three-stage amplifier with two KT66 in push-pull, Class " AB " for the final stage, and is itself fed by a one-stage pre-amplifier, which

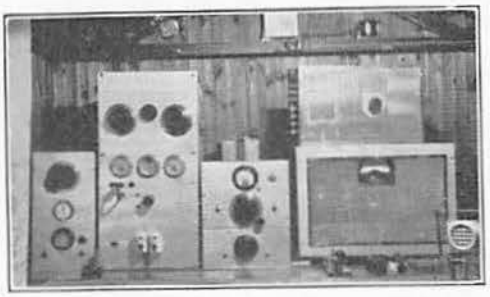


Fig. 2.—A view of the present G6IH, showing the transmitting equipment. From left to right: Temperature controlled C.O., main transmitter, frequency check unit, modulator, and, on top, its associated power supply.

also contains the miniature neon tube oscillator, used for I.C.W., and gain controls for the microphone.

The transmitter is connected to the aerial by a modified Collin's coupler, and will put .7 ampere into a three-section matched impedance fed array. The present aerial consists of four half-wave sections voltage-fed, 70 ft. high, erected 370 ft. above sea level.

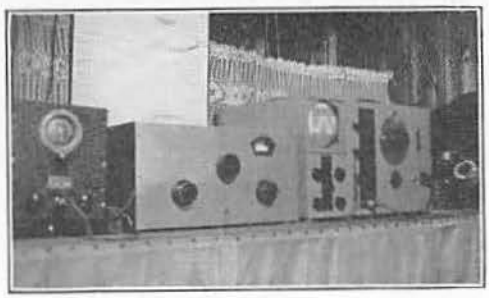


Fig. 3.—Receiving position, showing from the left a Peak receiver, home-made 7-stage super-het., and a cathode ray tube test set.

Three receivers are used, one for all-band work, a *National* 1-10, and a home-made seven-stage super-het. The latter was made for experimental work and has a stage of pre-selection and provision for 'phone operation in the final stage. Rather heavy smoothing is provided to give a completely quiet background when these are in use.

MORE
TECHNICAL ARTICLES
WANTED

First-Class Operators' Club

By R. WEBSTER (G5BW)

We have on hand a large number of applications for membership which so far have not received attention. This is due to the fact that the stations concerned are not active on local bands and consequently Committee members have had no chance to observe them. We ask those concerned to spend at least a short time each week on a local band in order that their applications may be dealt with. The writer himself will be pleased to " sked " any applicant on receipt of a postcard.

An interesting suggestion has been received from 2DRM. Briefly, his idea is that we should have two categories of membership—Full and Associate. This would enable us to maintain unaltered the present high standard required for full membership, but at the same time would enable us to admit equally keen but less-skilled amateurs to Associate membership. These Associates would be elected for a probationary period and given every encouragement and assistance by the full members to become first-class operators. We should welcome comments on this proposal from all interested readers and, in particular, F.O.C. members. The writer's personal opinion is that it would prove a " good thing," especially in view of the fact that there are so many amateurs who at present just fall below F.O.C. standard, although they are considerably above the average in ability.

A number of applications for membership have been received from persons who are apparently under the impression that the possession of a first-class P.M.G. Certificate provides a short-cut to F.O.C. membership. This is not the case, although the possession of such a certificate is naturally taken into favourable consideration when dealing with a candidate's application.

We still receive applications from various European countries, the United States and elsewhere. To save time and trouble may we emphasise that F.O.C. membership is open only to British amateurs, although it does not matter where they are located or under what call-signs they operate.

Finally, a word about our correspondence. This has increased sharply of late and the writer finds considerable difficulty in dealing with it promptly. A certain amount of delay is almost inevitable but we would assure all concerned that their letters are being answered as soon as possible. Enquiries need not be accompanied by a stamped addressed envelope, but a 1½d. stamp would be appreciated and would materially help to reduce the expense account!

Members elected during the month are: G8PQ, GM3BA, G8VG, GW5KJ and G2QO.

Please address all correspondence to Radio G5BW, Willingdon, Eastbourne.

The "Chronicle" Wireless Annual

The " Chronicle " Wireless Annual (Sixteenth Edition) is now on sale, price 1s.

The constructional side of this well-established radio handbook is again a strong feature, comprising mains and battery receivers for many purposes. A new section is designed to help beginners in set building. This offers three simple inexpensive designs, one being an ultra-selective crystal set and the others a single and a two-valve receiver.

INDEX TO DISPLAYED ADVERTISEMENTS

QRA Section

By H. A. M. Whyte (G6WY).

When sending in new, or changes of QRA, members are requested to print their names and addresses in block letters, as frequently signatures and names of streets are illegible. This necessitates reprinting the corrected address in the next issue of the Bulletin.

New QRA's

EI5F.—H. Hodgens, 2, Maretimo Place, Blackrock, Co. Dublin, Eire.
G2AW.—J. L. Hills, 21, Wood Ride, Petts Wood, Orpington, Kent.
G2JN.—Jas. G. Stonestreet, "Hamden," 12, Fenwick Drive, Hillmorton, Rugby, Warks.
G2KF.—J. A. Partridge, "Havencroft," Spitals Cross, Edenbridge, Kent.
GM2KP.—G. A. Raeburn, 21, Kilmailing Road, Cathcart, Glasgow, S.4, Scotland.
G2MQ.—P. F. Cundy, "Marula," Plumpton Green, Sussex.
G2UZ.—C. V. Stead, 2, Cliff Road Gardens, Hyde Park, Leeds,6.
G2XX.—F. T. Wilson, "Elettra," Bereweeks Avenue, Winchester, Hants.
G3AF.—N. Kenneth Sunter, 213, Seymour Grove, Manchester, 16.
G3BQ.—H. de L. Banting, 15, Park House Gardens, Twickenham Park, Middlesex.
GM3CG.—J. J. Macbeth, Dunedin, Auchterarder, Perthshire, Scotland.
G3DB.—E. A. Luckhurst, No. 6 M.Q., R.A.F., Hawkinge, Kent.
G3GM.—John Ellis, 32, Melrose Road, Merton Park, London, S.W.19.
G3GP.—C. H. Targett, Gravesend and District Amateur Radio Society, Portable Call, 97, Whitehill Road, Gravesend, Kent.
G3LD.—F. W. Foster, 562, Woodborough Road, Mapperley, Nottingham.
G3MW.—D. Wale, 38, Morris Avenue, Coventry, Warks.
G3OI.—Robert Wilson, 2, Vespasian Street, South Shields, Co. Durham.
GM3OL.—G. Percy, Westland, Pleasance Avenue, Dumfries, Scotland.
G3OW.—K. W. Fraser, 51, Summerhouse Drive, Bexley, Kent.
G3PH.—C. W. Bassford, 80, Long Street, Dordon, near Tamworth, Staffs.
G3PI.—J. F. Brown, 15, Collingwood Road, Northampton.
G3PJ.—Ed. Amriding, 20, Nevett Street, Preston, Lancs.
G3PN.—P. Harold Lawrence, 38, Market Street, Tamworth, Staffs.
G3PS.—Wm. McCann, Preston Junction, near Preston, Lancs.
G3PU.—E. W. Orchard, 14, Norwich Road, Weymouth, Dorset.
G3PZ.—R. Waite, "Sibelius," Westville, Hucknall, Notts.
G3QG.—N. C. Green, 27, Clark Street, Stourbridge, Worcs.
G3QO.—C. Ewens, "Glenhaven," Hawthorn Lane, Oaken, near Wolverhampton, Staffs.
GW3QN.—J. S. Owen, "Trafford," Clarence Road, Craig-y-don, Llandudno, Wales.
G3RF.—D. W. Harries, 99, Ardington Road, Northampton.
G3RG.—G. A. Houghton, Meon, Downs Way, Tadworth, Surrey.
G3RL.—G. C. Geddes, "St. Leo," 421, Portswood Road, Southampton.
G3RP.—R. M. Denham, 181, Ecclesall Road South, Sheffield, 11.
G3RQ.—D. F. Davies, 51, Theresa Avenue, Bishopston, Bristol, 7.
G3RW.—D. E. Davy, 59, East Road, Maygrove, Great Yarmouth, Norfolk.
G3RZ.—T. A. Appleby, 12, Montgomery Avenue, Sheffield, 7.
G3SB.—T. C. Bryant, Beaconwood Hotel, Minehead, Somerset.
G3SH.—E. F. Prior, 8, Alwyne Road, Canonbury, London, N.1.
G3SJ.—H. Whitaker, 10, Ighten Road, Burnley, Lancs.
G3SL.—T. N. Lloyd, 45, Romsey Road, Willesborough, Ashford, Kent.
G3SM.—D. W. Morgan, 66, The Drive, North Harrow, Middlesex.
G3SS.—E. F. Lawden, 256, Stockfield Road, South Yardley, Birmingham.
G3ST.—S. E. Langley, 62, Dumbarton Road, Brixton Hill, S.W.2.
G3SV.—C. A. Simmons, "Periwarden," North Road, Havering-atte-Bower, Romford, Essex.
GM3SW.—T. R. Nisbet, 35, Malcolm Street, Dunfermline, Fife, Scotland.
G5AK.—A. Kellaway, 86, Winchester Street, Taunton, Somerset.
G5CH.—C. Hampson, 23, Clifton Road, Flixton, Manchester.
G5NU.—W. H. Lord, "Cresent House," Brooklands Crescent, Brooklands, Cheshire.
G5OX.—C. Hubbard, 4, Silver Lane, West Wickham, Kent.
G6AY.—J. H. Chapman, 11, New Way Road, Leicester.
G6JB.—J. C. Payne, Porch Cottage, Salcombe, Devon.
G6MB.—F. Hicks-Arnold, Sixty-Four, Garrick Close, Walton-on-Thames, Surrey.
G6PG.—C. H. Targett, 97, Whitehill Road, Gravesend, Kent.
G6RW.—L. N. Wilkins, 81, Studland Road, Hanwell, London, W.7.
G6UP.—A. H. S. Scott, c/o Dr. Hay Scott, 5, King's Court, King's Road, London, S.W.19.
G6WN.—H. V. Wilkins, 539, Oldfield Lane, Sunbury Hill, Greenford, Middlesex.
G6WT.—Dr. J. R. Wortley-Talbot, "Woodburn," Manscombe Road, Livermead, Torquay, Devon.
G6YJ.—F. R. Canning, Crindau, Newport, Mon.
G8BM.—John Wylde, 58, St. Nicholas Road, Wallasey, Cheshire.
G8DP.—C. E. Williams, 105, Fishponds Road, Bristol, 5.
G8GR.—Hy. E. Marvell, "Ceres," 134, Queensboro Road, Sheerness, Kent.
G8JI.—Thos. F. Higgins, 391, Rednal Road, Northfield, Birmingham.
G8NX.—P. H. Hellier, 43, Heathmere Avenue, off Stoney Lane, Yardley, Birmingham.
G8QL.—H. B. Lambert, "Sawley House," Walton Road, Chesterfield, Derbys.
G8RX.—G. M. Thompson, B.Sc., 76, Ringstead Crescent, Sandy Gate, Sheffield.
G8VS.—G. Sellers, 37, Toftshaw Lane, Tong Street, Bradford, Yorks.
2ALU.—W. Lumb, Ivy Cottage, Wood Lane, Ashenhurst, Huddersfield, Yorks.
2ATD.—R. Hill, 101, Hurst Road, Erith, Kent.
2BHC.—C. H. Reed, 15, Victoria Square, Clifton, Bristol, 8.
2DAD.—J. Lomax, 135, Marlborough Road, Accrington, Lancs.
2DCG.—E. R. Dolman, 5, Tollerton Road, West Derby, Liverpool, 12.
2DDL.—J. W. Limmer, 65, The Fairway, Leigh-on-Sea, Essex.
2DFJ.—G. J. Carpenter, 6, Ashdown Road, Long Lane, Hillingdon, Middlesex.
2DHL.—H. Coleman, 213, Bedford Hill, Streatham, London, S.W.16.
2DQL.—Geo. D. Dixon, 19, Woodstock Road, Barnsley, Yorks.
2DVD.—W. L. Rimmington, 7, Pennard Road, Shepherd's Bush, London, W.12.
2DXF.—H. M. S. Green, Links View, 76, Barnet Way, Mill Hill, London, N.W.7.
2FAZ.—M. Keeting, 65, Northumberland Road, North Harrow, Middlesex.
2FCW.—C. Norwood, 22, Salmon Road, Belvedere, Kent.
2FHP.—G. Moon, 12, Arley Park, Redland, Bristol, 6.
2FIN.—I. C. Fletcher, 4, Cyril Road, Bexley Heath, Kent.
2FIH.—S. W. Allcorn, Leighton House, Holland Park Road, London, W.14.
2FIU.—D. F. Crouch, 7, Brook Street, Belvedere, Kent.
2FKF.—L. D. Cameron, 56, Newport Road, Barnstaple, Devon.
2FLQ.—W. D. Oliphant, "Jaraeldo," Burkitt Road, Woodbridge, Suffolk.

Cancelled.—2ABZ, 2APF, 2AXV, 2BKG, 2BND, 2BPN, 2BXZ, 2CAX, 2CBG, 2CDL, 2CRK, 2CSH, 2CSM, 2CVI, 2CWX, 2DBX, 2DCL, 2DDC, 2DIL.

CALIBRATION SECTION

Crystals and frequency meters of the heterodyne type can be accepted for calibration and these should be sent **direct** to the Calibration Manager :

Mr. A. D. Gay (G6NF),
156, Devonshire Way,
Shirley,
Croydon, Surrey.

Crystals should be enclosed in a small tin and securely packed to avoid loss in transit, whilst frequency meters should be packed in a wooden box or substantial cardboard container.

Return postage for crystals and frequency meters must be enclosed as stamps and not attached to the postal order. The Society cannot accept responsibility for any loss that might occur in sending apparatus for calibration through the post.

Calibration Fees

Crystals, 1.7, 3.5 and 7 Mc. types... 1s. 6d. each
Crystals, 100 kc. type ... ... 2s. 6d. ,,
Heterodyne frequency meters 5 points within the amateur bands ... 5s.
For each extra point at any desired interval 6d.

TRANSMITTER THEORY — (*Continued from page* 205).

There is yet another cut, used for 14 Mc. crystals (and by at least one firm for 7 Mc. as well) which is known as the " thick cut." These are really Y or similar cut crystals, oscillating on their third harmonic. They suffer from the same defects as the Y cut, but have the advantage of being three times thicker.

(*To be continued*)

TWO MONTHS IN THE U.S.A. — (*Continued from page* 213)

The gospel of safety was preached wherever we went, and we believe that visual inspection of our own scarred hands accomplished something in this respect.

7. There are districts where DX is unnaturally rare, and where it is an event to work even a G. We perhaps over here are blasé over QSO's with W, it being so easy to work the strong signals, but if we worked a few of the weak ones now and again, we should bring joy to some out of-the-way amateur who is trying to push out a signal from a location so criss-crossed with power lines as to resemble distributing station on the grid system.
8. Any G who has the good fortune to visit W can rest assured that wherever he goes he will meet with a reception that he will remember to the end of his days.

Tnx W gang, hope cuagn, 73, VA.

EXPERIMENTAL SECTION—(*Continued from page* 225)

excellent production, as it shows the main points extracted from the various letter budgets. Members thus have a copy beside them at all times, and reference can be made to points under discussion, without having to resort to a letter budget or to their memory. (This magazine is on similar lines to those already in publication by the Aurora Group and the Barometric Group in the Propagation Section, and the scheme might be copied by other groups with advantage. Copies are sent to the Experimental Section Manager, who circulates them round the Group Managers and Council, so that information of general interest is thus spread throughout the Experimental Section. Everyone who has seen these very excellent publications has remarked on their usefulness, and the Group Centres concerned have been widely congratulated on their production.—G2ZC.)

G5JU.

CORRESPONDENCE—(*Continued from page* 237)

takes 50 watts for filament heating ! The apparatus displayed was a job well done but only about 20 per cent. of our members could be legally interested in the transmitters.

Finally, this is not " sour grapes." I operated a 3 kW. transmitter on 18 metres in 1928. It will be no surprise, I am sure, for you to know that we WAC and WBE !

Yours sincerely,
G. C. OXLEY (G8MW).

23, Spa Croft,
Tibshelf,
Alfreton, Derbyshire.

NEW HIVAC PRODUCTS

To the Editor, T. & R. BULLETIN.

DEAR SIR,—We note on page 174 of your September issue a reference to our cathode ray tubes and valves, including types GR1 and GR2.

The printed matter supplied by us relating to these two valves unfortunately had a transposition of the type numbers : the GR1 is actually the mercury-filled rectifier, suitable for linear time base circuits for cathode ray oscilloscopes, and the GR2, argon filled, is intended for television sweep circuits.

Also, the Y230 is a replacement of the Mullard PM22D and Mazda Pen231 (not D231).

Yours faithfully,
For and on behalf of
THE HIGH VACUUM VALVE CO., LTD.,
G. W. C. S.,
Technical Service Department.

DISTRICT 18 ACTIVITIES

To the Editor, T. & R. BULLETIN.

DEAR SIR,—On searching the District Notes in both the July and August issues, I find a complete absence of any mention of District 18.

This District extends from Hull to beyond Whitby along the coast, and inland as far as York. There are over 30 licensed amateurs, besides A.A. and BRS in the District, and not one can give a report of any kind for two months.

To other Districts it must appear that No. 18 is either dead or dumb ; waking up for N.F.D. only, although near the bottom of *that* this year !

I know what a difficult and thankless job it is to collect the notes, as I have on occasions done this work myself. It is harder than borrowing money to get any information out of some members, who are usually the first to moan at the lack of notes.

Why should the T.R., or whoever is helping him, have to make personal visits for notes ? As far as Scarborough is concerned, everybody knows his address, and it is the duty of all to give a few facts each month without being asked.

Let us all work together to make District 18 notes the most interesting in the " BULL."—Yours sincerely,

L. TRANMER (G6TG).

GREENWICH VISIT—(*Continued from page* 210)

Thanks

We cannot close this somewhat sketchy account of a memorable visit without expressing the thanks of the Society to the Astronomer-Royal for allowing such an invasion, and to Mr. P. S. Laurie, a member of the Observatory staff, who not only went to the utmost pains to explain everything but also, we strongly suspect, gave up his free time to do it.

A. F.

MORE TECHNICAL ARTICLES WANTED

The Incorporated Radio Society of Great Britain

53, VICTORIA STREET, LONDON, S.W.1.

15th October, 1938.

DEAR SIR,

NOMINATIONS FOR COUNCIL, 1939.

In accordance with the Articles of Association, I have pleasure in submitting the names of the persons who have been nominated to serve on the 1939 Council.

Officers :

President	MR. A. E. WATTS (G6UN)
Executive Vice-President	MR. A. D. GAY (G6NF)
Honorary Treasurer	VISCOUNT CARLOW (G6XX)
Honorary Secretary	
Honorary Editor	MR. A. O. MILNE (G2MI)

Members :

Retiring Members eligible for Re-election	MR. F. CHARMAN (G6CJ) MR. J. D. CHISHOLM (G2CX) MR. H. A. M. CLARK (G6OT) MR. J. W. MATHEWS (G6LL)
New Nominations as per Article 43 ..	MR. W. H. ALLEN (G2UJ) MR. D. N. CORFIELD (G5CD) MR. J. B. KERSHAW (G2WV)

Not later than October 31st next, any ten Corporate members (but not more than ten) may nominate any other duly qualified person, by delivering their nomination in writing to me, together with the written consent of such person to accept office if elected, but each such nominator shall be debarred from nominating any other person for this election.

Yours faithfully,

J. CLARRICOATS,

Secretary.

LH1.20636 9/38

EXCHANGE AND MART.

RATES.

Members' private advertisements 1d. per word, minimum 1s. 6d, maximum 10/-. Trade advertisements 2d. per word, minimum 3s. First line, if desired, will be printed in capitals. One inch Semi-Display, 10s. per insertion. Terms: Cash with Order. All copy and payments to be sent direct to Advertising Manager, Parrs, 121, Kingsway, London, W.C.2, not later than the 30th of the month for the following month's issue.

BARGAINS.—National 81×1938 model, new; Turner model 505 0-7 thermo-ammeter; Raytheon Type 59's; large number of 2-volt valves; L.F. transformers; Rola M.C. speakers; condensers, etc. What offers?—Box 39, "PARRS," 121, Kingsway, London, W.C.2.

CATHODE RAY TUBES AND HOW TO USE THEM, by J. H. Reyner. 40 pages valuable practical data and 30 instructive photographs. 1s. 1d. post free.—FURZEHILL LABORATORIES, Borehamwood, Herts.

CRYSTALS wanted, between 7,050 and 7,195 kcs. Mounted or unmounted.—2DFJ, 6, Ashdown Road, Long Lane, Hillingdon, Uxbridge.

FOR SALE.—1937 SKY CHIEF, excellent condition; £8 10s. or offer. Also Lion Rotary Converter, 230 D.C.-230 A.C., 80-watts; £3 or offer. Both carriage paid.—G5BR, 6, Highbury Road, Streetly, Birmingham.

G2TD (North London), giving up, has for disposal beautifully built and fully metered phone and C.W. Transmitter for 7, 14 and 28 Mc. Adjustable power up to 90 watts. In crackle-finish cabinet complete with two crystals, all coils, key, mike, ready to WAC. First £15 gets it. Demonstration arranged. Phone Loughton 839 or write Box 40, "PARRS," 121, Kingsway, London, W.C.2.

G5KT.—ATTRACTIVE NEW DESIGNS QSL's. Finest quality, lowest prices, samples will convince.—State G, AA, BRS, SWL.—33, Howard Road, Westbury Park, Bristol, 6.

G5UC.—QRT. Fox 60-watt Modulator, crystal mike complete, latest design 1938. Hallicrafters "Sky-Challenger" 1937 model. What offers? All perfect. Cash.—Write OPERATOR, G5UC, c/o MAJOR E. ST. F. MOORE, 6, Cumberland Street, Woodbridge, Suffolk.

G6DS.—Known the world over for quality. QSL Cards and Log Books. Send for samples.—QRA, 14, Lambley Avenue, Mapperley, Nottingham.

OLD-TIMERS.—Have a special QSL. First Grade QSL's, new designs. State G.AA, BRS, SWL.—Samples from G6MN.

PAREX ALUMINIUM CABINETS CHASSIS, Transmitting Racks, etc., made to order.—E. PAROUSSI, 10, Featherstone Buildings, W.C.1. 'Phone: Chancery 7010.

QSL's.—250, 4s. 6d. 1,000, 9s. Post free. Samples gratis. State whether BRS, AA.—G. ATKINSON BROS., Printers, Elland.

SELL G.E.C. 3782 8-valve super, 16-550 meters, 4 bands, 6 watt U.D.O. 100-250 v. A.C., £12; cost £24. Or would exchange for 2, 5 meter transceivers or similar gear.—Box 38, "PARRS," 121, Kingsway, London, W.C.2.

THE FINAL WORD "—"Ham-Aid" QSL cards.—Samples from G6XT, TILLOTSON BROS., Commercial Street, Morley, Yorks.

"T. & R. BULLETINS" for sale. Volumes 1 to 9, complete and in good condition. 50/- or near offer.—Box 79, R.S.G.B., 53, Victoria Street, London, S.W.1

WANTED.—R.M.E. D.B.20. Cheap. Willing exchange for brand new 1939 All-Wave 5-valve A.C. superhet. H.M.V. 10½ guineas.—G5ZT, 69, Ribbleton Avenue, Preston.

1938/9 B.T.S. TROPHY FIVE BARGAINS. Two brand new Trophy Fives. £9. Cash £6 10s.—G5ZT, 109, New-Hall Lane, Preston, Lancs.

50-WATT 'PHONE C.W. Covers 7, 14 and 28 Mc.; separate power supplies; rack and panel; Ferranti meters, each stage, perfect condition; worth £65, first offer £25 secures.—L. GREGORY, 71, Uphill Grove, Mill Hill, N.W.7.

Patents and Trade Marks.

GEE & CO. (Established 1905). Patents and Trade Marks throughout the world.—H. T. P. GEE, Mem. R.S.G.B., A.M.I.R.E., etc., 51-52, Chancery Lane, London, W.C.2. (Two doors from Government Patent Office). 'Phone: Holborn 4547 (2 lines). Handbook free.

The R.S.G.B. Sales Department

53 Victoria Street, London, S.W.1

General

A.R.R.L. Handbook (1938 Edition)	5/6
Non-members	6/0
Hints and Kinks (Vol. II)	2/6
Non-members	2/9
Jones "Radio" Handbook (1938 Edition)	6/6
Non-members	7/0
"Radio" Antenna Handbook	3/6
Non-members	3/9
Radio Amateur Call Book...	6/0
Non-members	6/6
"Webbs Radio" Globe ...	27/6
"Webbs Radio" Map ...	4/6

R.S.G.B. Members Only

Call Sign Brooches ...	2/6
Car Plaques of Emblem ...	3/6
With Call Sign	4/6
Coat Badges of Emblem:	
Brooch Type	1/6
Lapel Type	1/6
Note Paper (100 Sheets—Quarto Size)	2/6
Rubber Stamps of Emblem	1/6

All the above are Post Free, but orders must be accompanied by a remittance.

Printed in Great Britain for the Int. Radio Society of Great Britain, 53, Victoria Street, London, S.W.1, by Loxley Brothers, Ltd., 50, Southwark Bridge Road, London, S.E.1.