

THE T. & R.

BULLETIN

THE INC.
RADIO SOCIETY
OF GT. BRITAINAND THE
BRITISH EMPIRE
RADIO UNION

Vol. 10 No. 7

JANUARY, 1935 (Copyright)

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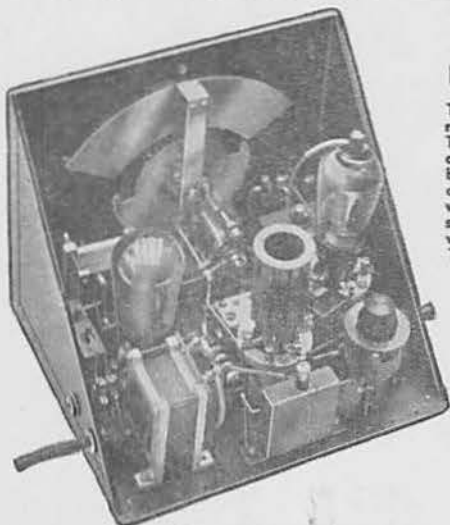
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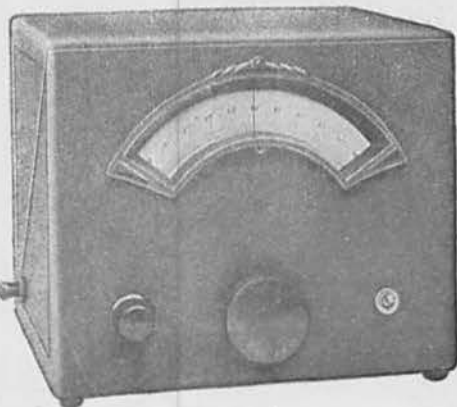
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THE T. & R. BULLETIN

CONTENTS.

Honorary Editor:—

H. Bevan Swift (G2TT)

Vol. 10

	Page
Editorial	241
The Year in Review	242
Annual General Meeting	244
The 3.5 MC. Band To-day	245
Directional Aerial Systems for 56 MC.	246
Across the High Voltage	248
Antenna R.F. Filter Networks	250
22½ Per Cent. Aerial Current Increment	251
Something New in Neutralising Condensers	252
New Valves Reviewed	253
Soliloquies from the Shack	254
Correspondence	255
Research and Experimental Section	257
Hic et Ubique	262
Notes and News from the British Isles	267
Empire News	274

Advertising Manager:—

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No. 7

“DANGER—HIGH VOLTAGE.”

THE above caption usually displayed in the form of a vividly coloured notice is often to be found in some prominent position in an amateur transmitting station. Whether it is there out of courtesy or as a genuine warning we do not presume to speculate, but we have known cases where its object was to prevent unofficial members of the household from interfering with sacred property! However, it is to the real object of this notice that we wish to refer.

Some years ago we drew attention in these columns to the indifference shown by many of our members with regard to the ever-present danger existing in their high-tension supply, and to the necessity of taking every precaution to guard against accidental contact with it. The need for such care is even more important now, for since the original warning was penned voltages in general use have increased, and the danger accordingly. We have been further prompted to refer to this subject by finding references made in the latest edition of the *Radio Amateur Handbook* to several fatal accidents which have occurred through this cause. So far as we know nothing of this kind has happened in this country, although we have heard of severe shocks being received by some of our members. The personal experiences quoted by the author of one of the articles appearing in this issue is a case in point.

A visit to the test room of any electrical factory will show that the most elaborate precautions are taken to guard against casualties which might occur. Flash tests up to 2,000 volts are only conducted by responsible testers who wear rubber gloves whilst applying the test, whilst in the case of higher voltages the tests are carried out in special cages where the current can only be applied after the cage has been evacuated and the door shut. Such care is brought about by the provisions of the Factory Act, and inspectors are constantly upon the watch to see that the regulations are fully complied with. If this care is necessary in the case of professional engineers, how much more necessary is it amongst amateurs?

So far the authorities who watch over our welfare whilst working in the test room have given little thought to what is happening in the amateur radio shack, but we can foresee them sitting up and taking notice after the first inquest has been held upon a radio amateur. The outcome would be obvious—we should find ourselves hedged in by compulsory precautions and rules which would involve such a heavy financial strain upon our resources as to put many stations out of commission.

To-day high-tension supplies are treated by many with the same indifference as is shown to supplies carrying only a few volts. On many occasions we have been horrified when visiting stations to observe the absolute lack of precaution on the part of members who think nothing

(Continued on page 278.)

THE YEAR IN REVIEW.*

By JOHN CLARRICOATS (Secretary).

THE year 1934 will be especially remembered as being the year during which the Society celebrated its Coming of Age, an event which aroused considerable interest at the time, and one which its members shared with pride and satisfaction. The formation in April of the Research and Experimental Section, and the announcement in August that improvements were to be made in licensing facilities, were two further landmarks in the Society's history.

Coming of Age.

The Society's coming of age was celebrated in material form by the publication of a special issue of the T. & R. BULLETIN, to which our Patron, H.R.H. The Prince of Wales, and distinguished members contributed messages of greeting. The historical articles and other features of interest assisted towards making the issue an unqualified success. A particularly warm reception was accorded it by all members, especially those resident abroad.

R.E.S.

The decision to form a Research and Experimental Section was made after a lengthy investigation into the past records of the Contact Bureau Section. It had become apparent that much of the published work of the C.B. members lacked originality, and it was considered that more technical progress could be made if the Section were organised on Research and Experimental lines. The experience gained during the past nine months has enabled the Section Manager, Mr. H. C. Page, to draw up improved methods of working, and these will be put into effect early in 1935.

Owing to increasing work in connection with the Section, Council in November appointed Dr. G. Bloomfield (G5MG) as Assistant R.E.S. Manager.

It is emphasised that more original research is desirable if the Society is to hold its own in a technical sense.

Improved Licensing Facilities.

The announcement regarding improvements in licensing facilities, made by Mr. Arthur Watts at Convention, is too fresh in mind to need little more than passing reference. It will be remembered that the outstanding improvements related to the reduction of tolerances at the fringes of the six amateur bands, the granting of transmitting permits for television experiments, an increase in the number of hours an amateur station may be operated each day, and improved wording in the terms of the licence itself.

From an executive point of view the most important feature of the negotiations which preceded the announcement was found in the fact that the Licensing Authorities showed a whole-hearted desire to meet the Society's wishes wherever possible. This gratifying state of affairs is due to the untiring efforts of our President, who during the past few years has built up an excellent liaison with the Post Office authorities.

*Being the Secretary's report read to the members present at the Annual General Meeting held on December 28, 1934.

Membership.

Reference will now be made to membership, the backbone of the Society.

The progress which has been reported in my last five reports has been more than maintained as the following figures showing nett membership at December 1 indicate:—

1931	...	...	1,537
1932	...	...	1,770
1933	...	...	1,978
1934	...	...	2,245

The first authentic check taken on January 1, 1930, showed a total of only 1,006 members. It will thus be seen that the membership has increased by well over 100 per cent. in the short space of five years, a sure indication that interest in amateur radio is on the up-grade.

A particularly pleasing feature is to be noted in the increase of overseas members, especially within the British Empire. The nett totals for the past four years taken on December 1 were as follows:—

1931	...	...	291
1932	...	...	353
1933	...	...	423
1934	...	...	496

During the current year about 600 new members were elected. The difference in gain over the year between the nett total and the number of new members elected is an indication that between 200 and 300 members have fallen out of association. This turnover which has been mentioned in previous reports appears to be unavoidable, and is probably common to all similar organisations.

In this connection tribute is paid to our Honorary Scottish Manager, and recently elected Vice-President, Mr. J. Wyllie, for his efforts in following up all overdue Scottish members. It is believed that success would follow similar personal action if extended to England, Wales and Ireland by the Society's District Representatives.

The "T. & R. Bulletin."

During the year every endeavour has been made to maintain the high quality of the Society's Journal. The technical standard has been kept as high as possible consistent with the material received, but it must be pointed out that in order to continue the present size of the Journal, a more steady flow of contributions is necessary. This point was emphasised in a recent editorial.

The Society has again been indebted to Mr. A. O. Milne for preparing the diagrams for T. & R. BULLETIN blocks.

Advertising.

It is felt that the revenue from T. & R. BULLETIN advertising should be greater, especially in view of the larger circulation, but we are cognisant of the fact that all radio journals are experiencing similar difficulties in this direction.

It is appreciated that the component market has suffered in recent years through the introduction of cheap sets, but the view is held that within a few years short wave components will be in even greater demand than in the past. The hope is

expressed that members will give support to T. & R. BULLETIN advertisers on every possible occasion.

The Society's thanks are due to all who have continued to support the T. & R. BULLETIN. The small advertisement section after a quiescent period is again receiving fairly good support.

Licence Matters.

As reported earlier, the closest possible contact has been maintained with the Radio Section of the G.P.O., and this occasion is opportune to record our thanks to the several officials concerned.

As in former years the Council have been requested to recommend members for increases in power, and for permission to operate on the 3.5 mc. band.

Authority was received from the G.P.O. to publish in the Society's Journal a précis of the regulations used by them in deciding whether an applicant has justified his request for additional power. This information appeared in the September issue of the T. & R. BULLETIN.

Technical Developments.

Whilst no outstanding technical developments can be reported it is certain that the information contained in the T. & R. BULLETIN has been of material assistance to members in helping them to improve the efficiency of their stations, a point which was recognised by the G.P.O. during the negotiations last summer.

The standard frequency transmissions have been continued by the Society's Calibration Manager, Mr. A. D. Gay, and it is interesting to record that the G.P.O. have on numerous occasions checked these transmissions, and have confirmed that they are correct to within a few parts in a million.

During the year 70 crystals and five frequency meters were calibrated by the Section Manager. It should be recorded that the G.P.O. are prepared to accept certificates of accuracy from the Calibration Section in respect to the frequency of members' crystals.

The 56 mc. band has received considerable attention and recent tests with directional aerial systems, and more stable oscillators are likely to lead to greater progress being made during the coming year.

The Society has sponsored several local and world-wide contests, including a 28 mc. International event, which is to continue for a period of 12 months.

Band Occupancy.

Two series of band occupancy checks were conducted during the year under the leadership of Mr. L. Hill. This invaluable service has enabled us to tabulate information which will prove of material benefit when licensing matters are discussed with the G.P.O.

Band Monitoring.

Towards the latter part of 1934 the Council set up a band monitoring group under the control of the Society's Calibration Manager. The primary duty of the monitoring station operators is to check the frequency of British transmitters operating near the fringes of the amateur bands. It is anticipated that very few stations will be reported outside the prescribed limits, but the inauguration of the group is a further indication of the Society's endeavour to safeguard the interests of its members.

B.E.R.U. Contests.

The fourth annual B.E.R.U. Contest was an

unqualified success, and the report of this contest appeared in the June issue of the T. & R. BULLETIN. The rules for the 1935 Contest have been considerably modified and have been issued to all members.

National Field Day.

The second annual National Field Day event, which was won by the Western District No. 5, was well supported by all Districts. An historical record has been preserved of the Field Day in the shape of a cinematograph film prepared by Mr. Watts. This film was shown at Convention and at several District meetings.

Convention and Radio Exhibition.

The ninth annual Convention held in August was attended by a record number of members, whilst the Society's stand at Olympia attracted considerable attention.

Publicity.

The second edition of "A Guide to Amateur Radio" had a remarkable sale on the stand at Olympia, when over 4,000 copies were disposed of within ten days. Thanks are due to those members who assisted in its production.

Well over 1,000 prospective members have been furnished with details of the Society's work during the year, and an endeavour has been made to attract the general public by placing the Guide on sale at bookstalls throughout the country. A new pamphlet setting out briefly the aims of the Society has been prepared, whilst Q.S.L. and R.E.S. section rules have been reprinted in leaflet form.

Assistance to Public Services.

Assistance has been rendered to the Royal National Lifeboat Institution by groups of members resident at coastal towns on the South Coast. Several members co-operated with Mr. John Grierson during his flight from Ireland to Canada, whilst other members have continued to assist local police forces by giving technical advice on radio matters.

Social Activities.

Social activities have been well catered for in each District, and Conventionettes were held in Birmingham, Newport, Plymouth, Larkfield, Bristol, Manchester, Southend, Weybridge, Leeds and St. Albans. Headquarters were represented at all of these meetings with the exception of that held at Plymouth, where only a very small attendance could be guaranteed. It is estimated that more than 600 members attended the 1934 Conventionettes. Monthly meetings have taken place in most of the larger towns under the auspices of Society members.

During the coming year five official Provincial meetings will be held in Birmingham, Bristol, Torquay, Leeds and Manchester. These meetings will be attended by the Secretary and, if possible, members of Council. The D.R.'s in those Districts where no official meetings are to be arranged will organise District Conventionettes as hitherto. (Details appear elsewhere in this issue).

Representatives.

All D.R.'s and C.R.'s have rendered valuable service to the Society during the year. The Secretary has maintained the closest possible personal touch with the former whilst regular monthly circulars have been issued from Headquarters in order to keep them advised of the progress being made.

Sectional Activities.

It is estimated that nearly 400,000 QSL cards were handled during the past year, under the direction of Mr. Chisholm, a figure unapproached by any other organisation operating a free service.

The recording of new and changed QRA's has again been undertaken by Mr. Pilpel, and this service has materially assisted the Radio Call Book Co. to keep their lists up to date.

The Tests and Awards Committee have been responsible for drawing up the rules of all contests, and checking entries, both most onerous tasks.

Slow Morse Practices and Reception Tests have again been organised by Mr. T. A. St. Johnston.

E.L.S. Work.

The E.L.S. network is at the moment under review, and it is anticipated that this will be completely reorganised during the coming year, as the present arrangements have been found from experience to be somewhat unwieldy in operation.

Headquarters.

During the autumn of 1934 extensive alterations were made to Headquarter's accommodation, including the provision of a lounge which has already proved a welcome addition to the amenities offered by the Society. Arrangements are being made to equip this room with showcases containing short-wave apparatus, a feature which should interest visitors. Some 500 visiting members were wel-

comed at Headquarters during the year, but it is regretted that on numerous occasions pressure of Society business made it impossible for the Secretary to devote more time to discussions with these members.

Sales Department.

This section has handled approximately 50 per cent. more orders than hitherto, especially large demands have been made for copies of the Radio Amateur Call Book, which is now obtained by the Society direct from the publishers.

Press Notices.

The Society has been given valuable publicity by the Radio and general Press on numerous occasions, and particularly during the B.E.R.U. Contest.

Committees.

The Society has been represented by its Secretary on the R.N.W.A.R. and the I.E.E. Radio Interference Committees.

The Joint Committee of the Radio Society of Great Britain and Wireless League, has now ceased to function.

Appreciations.

The Secretary desires to record his appreciations and thanks to the President, Vice-President, Honorary Editor and Council, for the assistance afforded him during the year. Particularly does he wish to pay tribute to the manner in which Mr. Watts has conducted negotiations with the G.P.O. and with many overseas organisations.

ANNUAL GENERAL MEETING

Minutes of the Annual General Meeting held at the Institution of Electrical Engineers on Friday, December 28, 1934. Present: Mr. A. E. Watts (President), Mr. E. Dawson Ostermeyer (Executive Vice-President), Mr. H. Bevan Swift (Past-President), Mr. John Claricoats (Secretary), and about 75 members.

The President moved that the minutes of the last annual general meeting be taken as read. The motion was carried.

Mr. E. D. Ostermeyer proposed, and Mr. A. W. Alliston seconded, that the Honorary Treasurer's report, and the annual balance sheet, be approved. Before the motion was put to the meeting, two members commented upon the fact that the interest derived from the deposit account appeared to be very small. The Treasurer stated that this matter had been discussed by Council, but to date no satisfactory arrangements had been made to invest the deposit account in such a way as to improve the rate of interest. The President assured the meeting that the Council would again give the matter careful consideration.

Mr. Milne suggested that a small sum of money be set aside each year for the purchase of new components, such as American type valves, in order that responsible members could conduct experiments. The President stated that the Council had that right, and mentioned that an order had been placed for a batch of new American valves which would be sent to the R.E.S.

A member made a comment regarding the sundry and convention expenses, which was answered by the Honorary Treasurer.

The proposition was then put to the meeting and carried unanimously.

The President moved a cordial vote of thanks

to the Honorary Treasurer, Mr. Ostermeyer, which was carried with acclamation.

The Secretary read his report, which, on a proposal made by Mr. Milne, and seconded by Mr. H. V. Wilkins, was adopted unanimously.

The President announced that Messrs. A. D. Gay, J. D. Chisholm, E. A. Dedman, T. A. St. Johnston, G. W. Thomas, A. O. Milne and H. B. Old had been elected to serve on Council for the coming year, together with Mr. A. E. Watts (President), Mr. E. D. Ostermeyer (Executive Vice-President and Honorary Treasurer), and Mr. H. Bevan Swift (Honorary Editor).

Messrs. Wilkins and Clark were unsuccessful candidates for election.

The President moved a hearty vote of thanks to the retiring Council, and recorded his appreciations to them for their loyal support during the year.

The motion was carried, as was a vote of thanks to the scrutineers, Messrs. L. O. Jones and J. B. Kershaw.

Mr. Ostermeyer proposed, and Mr. Dedman seconded, that Mr. Ockleshaw be invited to act as Honorary Auditor for the coming year. The motion was carried.

A cordial vote of thanks to the President and Council of the Institution of Electrical Engineers for permitting the Society to use their building for meetings was proposed by the President and carried.

At the conclusion of the business meeting the President presented R.E.S. awards to Messrs. Dedman, Gay and G. W. Thomas.

A lecture was then given by Mr. J. L. Howard, of the G.P.O. Research staff, on the subject of "The Properties of Wireless Waves."

THE 3.5 MC. BAND TO-DAY

By R. A. BARTLETT (G6RB).

The winner of our last 3.5 mc. Transmitting Contest tells us in this interesting contribution that DX can now be worked with comparative ease on that band every night. During the early part of December, Mr. Bartlett made 51 contacts with stations outside Europe, including VE3, W9, and SU.

AS the 3.5 mc. band appears to be again approaching a period of really good conditions, a few remarks based on observations taken recently may be helpful to many amateurs who either make no use whatever of this band, or only use it very occasionally.

A study of the state of affairs made during the past few weeks would seem to support the idea that this band has a great many of the characteristics we associate with the 7 mc. band, and would most certainly lead one to form the opinion that we are experiencing conditions comparable with the days of 1924, when the first International DX was accomplished on the old 90 metre band. In support of the above, it has been possible to receive such stations as VOSHK and VOSY at good strength as early as 19.45 G.M.T., and judging by the strength at which they are heard, it is possible that transatlantic signals are coming over even earlier, although the writer has not listened. In the morning it has recently been possible to easily copy U.S.A. signals as late as 10.00 G.M.T.

To both the "rag chewer" and the "DX enthusiast," this band should nowadays prove very attractive, and certainly a big improvement when compared with the almost incessant racket of "spitch," etc., to be found on 7 mc. during the great part of the day and night.

In the first instance, G stations can be worked for the great part of the 24 hours at signal strengths that make contacts a real pleasure instead of a nightmare. Skip effect makes itself noticeable after dark, but does not make inter-G working impossible even after midnight, although signal strength falls away to a certain extent making telephony work rather difficult. These conditions may not be the same all over the country, but they represent the state of affairs in this locality fairly accurately.

So much for local work, and now for DX upon which the writer has concentrated. DX can be worked between the hours of 22.00 and 09.00 G.M.T. as the writer has proved during the past few weeks. Such a statement may seem rather sweeping and exaggerated, but a few nights with a receiver on 3.5 mc. should convince anyone that for VE and W contacts this is the band.

A very noticeable feature is the absence of any serious fading, most signals being QSA5 apart from QRM caused by Continental "spitch," which is rather bad round about 23.00 G.M.T.

Contact with U.S.A. is somewhat difficult during the earlier part of the night owing to the terrific QRM over there, but this dies down about 05.00 G.M.T. and contacts are comparatively easy be-

tween 06.00 and 08.30 G.M.T., many American stations being QSA5 R8, and the reports obtained being almost as good.

From this station, with an input varying between 50 and 100 watts, contacts have been made with VOSHK at 23.00, and W8EUY at 07.00 on schedule day after day. Numerous other DX contacts include SU, VE3, and W9, also a report from VE5 which has yet to be confirmed. Other DX heard includes NY2AB, VE4, W5.

The early morning is certainly the best time for DX, and any efficient 25-watt station should be able to effect transatlantic communication round about 07.00 G.M.T., and from observations taken, VK and ZL signals can be looked for at the same time, although none have been heard this winter so far.

The apparatus in use at this station is quite commonplace, being simply a locked PA with an input ranging from 40 to 100 watts, but possibly the aerial system will be of interest, if only for the fact that it is so unconventional. After trying out various types of antennae, the writer has no hesitation in saying that the old system of aerial and counterpoise is the best, although the arrangement in use at G6RB would possibly not meet with the approval of those who used this system in the days before 7 and 14 mc. became popular. Briefly described, it is a makeshift, due to the fact that there is only room for one antenna. The antenna in use for 7 and 14 mc. is a Windom 66 ft. top and for the 3.5 mc. band this is coupled to a loose coupling coil, the other side of which is connected to a counterpoise of about 66 ft. A condenser of about .0005 mfd. is placed in series with the aerial, thus bringing the system into resonance.

To sum up, it seems pretty obvious that this much-neglected band can and will produce results which will justify a lot more time being spent on it than we are doing. Of course, results will not compare as favourably as those obtained on the higher frequencies as yet, but this apparent lack of results is due in no small measure to world-wide neglect. There is something lacking in amateur radio when we can let a band like 3.5 mc. go year after year without any effort being made to exploit it. During the period when DX was so plentiful in 1931, only a mere handful of G stations made any use whatsoever of the opportunities offered, and the same state of affairs appears to exist this winter, as during the past 14 days, with one exception (G6NF), no other G station has been heard during the hours of 06.00 and 08.30 G.M.T.

(Continued on page 278)

DIRECTIONAL AERIAL SYSTEMS FOR 56 MC.*

By E. A. DEDMAN (G2NH).

PART II.

Director Systems.

THE use of directors as aids to directional transmission has received little attention in this country, although a 56 mc. director system was described before an R.S.G.B. Convention meeting in September, 1927, by Mr. E. J. Simmonds (G2OD). The director was developed by a Japanese scientist named Yagi, and it is for this reason that aerial systems embodying director wires are usually known as Yagi arrays. Theoretical considerations show that directors should have capacitive reactance, i.e., they should be shorter than the aerial wire with which they are being used. Practical tests show that about 90 per cent. of a true half wavelength is the correct length.

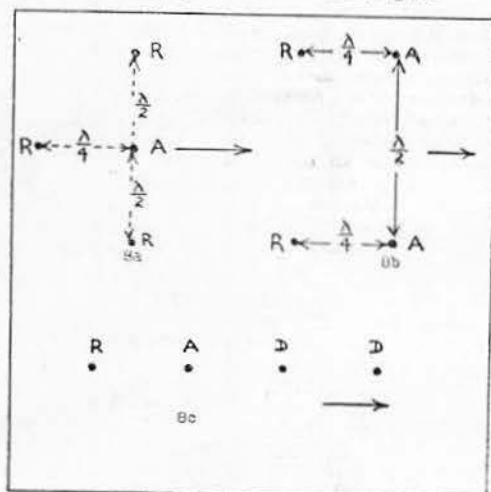


Fig. 8.
Some suggested Aerial arrays

Simple Arrays.

A study of the foregoing should enable any amateur to design an aerial array to suit his own purposes or location, and some typical examples of simple arrays are given in Fig. 8.

8a is a plan view of an array using a $\frac{1}{2}$ -wave vertical aerial, with three reflector wires, each $\frac{1}{2}$ -wave long, one being spaced $\frac{1}{2}$ -wave behind the aerial, and the other two $\frac{1}{2}$ -wave to each side. 8b shows a system consisting of two $\frac{1}{2}$ -wave vertical aerials, fed in phase, each provided with its own $\frac{1}{2}$ -wave reflector. Fig. 9 is a perspective view of this last array. It will be observed that the two aerials are connected together at their bases by a $\frac{1}{2}$ -wave wire, the feeder from the transmitter being connected to the mid-point of this wire. The method of feeding is that usually adopted for feeding the so-called Zeppelin aerial, and the feeder length should be some multiple of $\frac{1}{2}$ -wave. Further bays

can be added to any of these systems, and several multi-bay arrangements are described and illustrated in the 12th edition of the *A.R.R.L. Handbook*. A typical Yagi array is shown in Fig. 8c. A is a $\frac{1}{2}$ -wave vertical aerial, with R a $\frac{1}{2}$ -wave vertical reflector spaced $\frac{1}{2}$ -wave behind the aerial. D indicates director wires spaced $\frac{1}{2}$ -wave in front of the aerial and from each other.

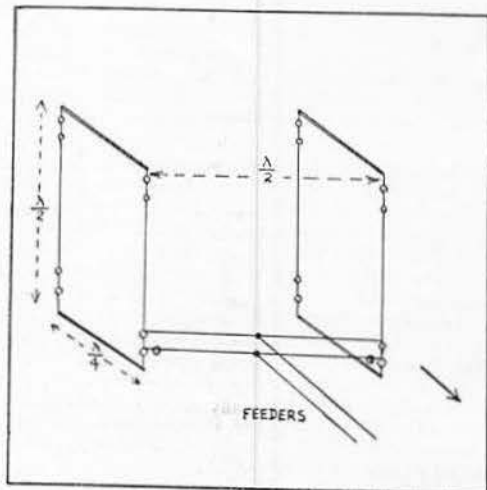


Fig. 9.
Constructional diagram of array shown in Fig. 8b.

The Franklin Uniform Aerial (British Patent No. 320245.)

All the systems previously described have employed single $\frac{1}{2}$ -wave elements, but it is possible to obtain very considerable directional gain by increasing the length of the aerial to several $\frac{1}{2}$ -wavelengths, and arranging for all the radiating portion of the aerial to be in phase.

Some methods of achieving this result when using a horizontal aerial, have already been described by the writer. (T. & R. BULLETIN, September, 1931.)

The Franklin Uniform Aerial uses a more efficient method of phasing, and is the type of aerial usually employed by the British beam services. In the case of a $\frac{1}{2}$ -wave aerial, most of the useful radiation is derived from the portion of the aerial carrying a high current, or in other words, the two ends of the aerial do not do much of the work. The Franklin aerial makes use of this property, and the second $\frac{1}{2}$ -wave section of a $1\frac{1}{2}$ -wave aerial is so folded that the middle $\frac{1}{2}$ -wave portion is in phase with the two end $\frac{1}{2}$ -wave sections. A study of Fig. 10 will help to make this explanation clear. The diagram shows an aerial $1\frac{1}{2}$ -wavelengths long, using one "trombone" only, but, naturally, the principle can be extended for use with any length of aerial by folding each alternate $\frac{1}{2}$ -wave section as shown.

*The first part of this article appeared in the November, 1934, issue of this Journal.

The following is quoted from the *Marconi Review*, January, 1930, and will help the reader to appreciate the benefits to be derived from the use of an aerial of this type for 56 mc. working.

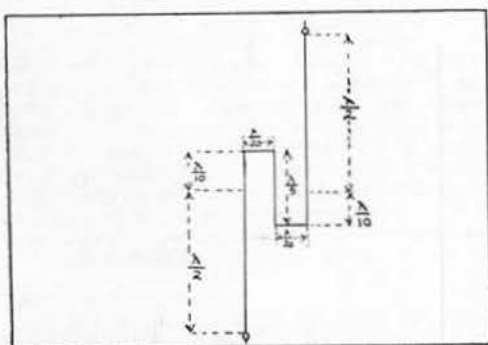


Fig. 10.
Franklin Uniform Aerial.

"In beam aeriels used prior to the uniform aerial, the radiation from alternate $\frac{1}{2}$ -wave-lengths was wholly, or in part, suppressed—so that the radiation from the adjacent parts of the aerial should be additive. The uniform aerial, however, has for its principal object the attainment of strongly marked directional qualities without any substantial suppression of radiation. In this aerial, which is long relative to the wavelength employed, the currents are mechanically reversed in direction at alternate $\frac{1}{2}$ -wave-lengths, the arrangement being such that the radiation from these sections of the aerial is added to that of the remaining $\frac{1}{2}$ -wave-lengths.

"In one form of construction, a vertical aerial is formed with its first, or lowest, $\frac{1}{2}$ -wavelength as a simple vertical wire. The second $\frac{1}{2}$ -wavelength proceeds for a distance equal to $\lambda/10$ as a prolongation of the first, after which it turns through a right angle and proceeds in a perpendicular direction for $\lambda/20$. It is then bent through a second right angle, and extends down through $\lambda/5$, after which it turns through a third right angle and proceeds perpendicularly away from the first $\frac{1}{2}$ -wavelength through a further $\lambda/20$. Finally it is bent again through a right angle and proceeds upwards through its final $\lambda/10$. The third $\frac{1}{2}$ -wavelength is formed as a vertical prolongation of the last portion of the second."

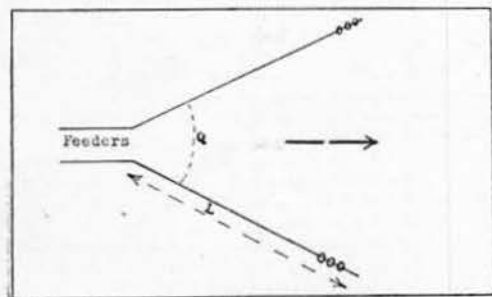


Fig. 11.
The R.C.A. Horizontal "V" Aerial.

The R.C.A. Horizontal V Aerial.

This aerial was developed by the Engineering Section of the Radio Corporation of America, and is another of the relatively simple types using a small number of long wires, rather than a larger number of phased $\frac{1}{2}$ -wave units.

Only a simple structure is required for its erection, and the aerial is very easy to adjust and tune. A general plan view of an aerial of this type is shown in Fig. 11. The principal factor controlling the action and directivity of the V-type aerial is the angle (Q) between the wires forming the V. This angle is variable and is fairly critical. The following table gives the correct angle for several lengths of wire (L).

L in wavelengths.	Q in degrees
2 $\frac{1}{2}$	75.
3 $\frac{1}{2}$	60.
5 $\frac{1}{2}$	47.
6 $\frac{1}{2}$	43.

The simplest way of feeding an aerial of this type is to make L an odd multiple of one $\frac{1}{2}$ -wavelength, and employ a resonant feeder line, with the feeders tuned to have a current maximum and the junction of the feeders with the aerial wires. The tuning process is then carried out in exactly the same manner as for any normal current feed aerial. This form of aerial is bi-directional along a line bisecting the angle between the wires. A reflector system exactly similar to the aerial, and erected $\frac{1}{4}$ -wave behind it, is necessary if it is desired to concentrate all the energy in a forward direction as shown by the arrow in Fig. 11.

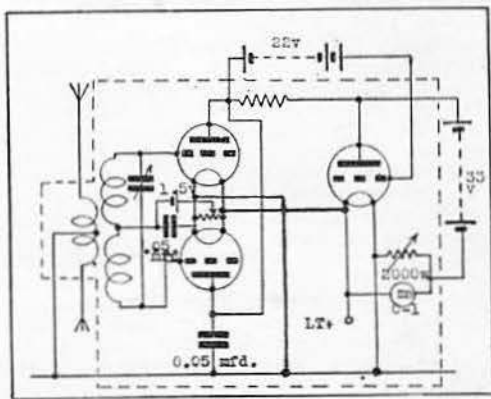


Fig. 12.
Linear Field-Strength Meter Range 0-0.5 volts.

Linear Field Strength Meter.

A field strength meter is almost essential in adjusting any form of directional aerial, and although the meter described in the first portion of this article is quite suitable for field work, it is desirable to use a more accurate type of meter when checking the adjustment of a permanent aerial erected at the home station. The circuit given in Fig. 12 is for a field strength meter that is practically linear over its working range of from 0 to 0.5 volt. The circuit is due to BRS877, and was originally given in the R.E.S. 56 mc. Groups letter budget. The first valve functions as a push-pull detector of the bias type, and a class B valve (Continued on page 278).

ACROSS THE HIGH VOLTAGE

By R. JARDINE, A.M.Inst.N.A. (G6QX).

An actual experience offered as a warning to all radio amateurs, by one who is still alive to relate the story.

THE amateur radio movement is growing beyond all expectations, as a comparison between successive issues of the call book shows. Technical advancements are becoming commonplace, but in all this the human factor remains the same. The human frame is vulnerable to potential difference, and no two human frames are alike as voltage resistors. Some humans can, without even a jump, pass a few hundred volts through their anatomies, whereas the same voltage applied to others would prove instantaneously fatal. It is not recommended that experiments of this nature become a regular part of the amateurs curriculum.

Variable factors are the thickness of the skin, natural oils and moisture in the form of perspiration, all of which affect the conductivity factor, whilst the general condition of the heart and nervous system is contributory to the reaction following high voltage application.

Prominence having been given to the "Windom" or single feeder hertz aerial in a recent edition of the BULLETIN, a note of warning regarding the adjustment of this and other direct-tapped aerials is not out of place, and a list of precautions will be given later, which, if considered and adopted as, shall we say, standard amateur practice will preclude risk of serious physical damage to amateur operators generally.

Now for the story.

In August, 1933, the writer carried out a series of experiments with the single feeder hertz or "Windom," following receipt of a high power permit. The direct-tap method was being used, and it is in the adjustment of the tap where the danger lies.

In the writer's case a relay makes and breaks, from one switch, the oscillator, doubler and amplifier filaments, also the plate voltage with the exception of the final amplifier, which is locked and therefore primary keyed.

50-watt red lamps were connected across the primaries of all plate voltage transformers, and placed in a prominent position in front of the actual transmitter. These lamps were the usual filament house-lighting type, and normally expected to give at least 500 hours life, but in the case of the transformer being keyed considerably less to be on the safe side.

To apply plate power for the amplifier it was necessary to load the key down, this being, it can be supposed, common practice where the operator is alone in the room, the red lamp being expected to indicate danger.

A stage was reached in the adjustment of the aerial tap where the note was sweet in the monitor, the take off in plate mills was good, the total mills were just right, and the amplifier valve had still a cold plate.

A moment's cogitation with the slide rule, checking the input and grid bias for record purposes, then a mental decision to try one other position to compare figures.

Switches off, all red lamps out, take hold of the aerial tap, then a struggle for life. A feeling of strangulation, intense pain, the head and body torn with horrible vibrations and cracklings, a

gurgled shout for help, then a feeling of warmth, so comfortable, everything so peaceful, this must be the Great Beyond, even better than the anaesthetic one had a few months before when the appendix became troublesome, then silence.

After a while violent shakings, someone calling my name, my wife coming towards me. An attempt to speak, she takes hold of my wrists and immediately catapults across the room. Where am I? I see the ceiling, I must be alive again. Then brandy, I am being carried, a doctor leans over me, he is tearing off my shirt, he orders the room to be cleared.

Then watching him busy with scissors cutting verdigris-coloured flesh from my fingers, and somehow I do not feel it, then bed and seven months of painful dressings, cauterising, and attempts to save one finger from amputation, the others yielding to treatment.

To-day, three scarred fingers on the right hand, a complete imprint of the aerial across from side to side, and on the left hand one distorted finger, and one little more than a bone with the leaders burnt out and useless as a finger, being stiff like whale-bone. All this because the filament of the red lamp had broken, the nice, heavy book on the key still doing a good job energising the high voltage transformer and consequently the amplifier plate and associated tank.

During the struggle to release the trapped right hand the left hand had come in contact with the earthed centretap, passing the voltage through the arms and shoulders to earth, the burns being more severe on the left or earthed side.

An inspection of the set later disclosed the fact that the heavy brass aerial clip has unsweated itself from the wire, so breaking the circuit and allowing the body to fall clear, apparently charged up as a condenser.

Utter carelessness, many wise ones will say; but take heed, fellows, and make sure the line is without voltage before making any change whatever in the set.

To emphasise the cost of this little incident just a shade further, the doctor's bill alone was exactly the cost of four brand new TY2-60 (T61D) valves.

The following rules are recommended for adoption by all amateurs using high voltage, and for those with high power aspirations, so that they may become "safety minded."

The Operator.

1. Wear 5,000 volt test rubber gloves when making adjustments. They cost about 10s. from the G.E.C. and fit so snug to the hands that they cause no inconvenience.

2. Procure a square yard or so of rubber flooring at least $\frac{1}{4}$ -in. thick and cover the floor immediately in front of the transmitter so that one's feet are insulated from the floor.

3. Use an insulated screwdriver for that awkward connection, preferably one with the insulation carried to within 1 in. of the point.

4. At all times use extreme care; never allow yourself to become rattled, and consequently careless, if the set is not functioning correctly. Better

leave it alone until another day; you might have many days to think over what is wrong, if you are lucky.

The Power Layout.

1. Fit a double pole protected switch breaking both lines where they go to the transformers, and use it.

2. Earth the cores of all power chokes, power and filament transformers. After a time insulation leakage may put the high voltage on the core and the outfit above earth potential.

Short of adding more leads from one unit to another, stand them on a steel plate and earth the plate, when one lead will do. (See that every component, however, is making reliable contact with the plate. A continuity test would be advisable.—Ed.)

3. Use only ignition cable or the like for carrying high voltage. Spark plug terminal tags are neat and easy to apply, being made for this type of cable. Frayed strands at terminals carry the same kick as the cable proper, and are not often noticeable.

4. Instal a good-class, all-insulated switch in each high voltage lead, and have the cap painted a brilliant red colour. Place this switch in an accessible position near the operating point. The writer now uses two in series, and of different manufacture, on the assumption that two switches of different make will not develop defects at one and the same time.

5. If primary keying is used instal a switch in the key lead, preferably with plug and socket, the plug, of course, on the key side, and remove the plug before touching the set, so that if you should leave the key loaded the high voltage primary is open.

6. Signal lamps across high voltage primaries should be located near the high voltage lead switches, and should be of the Neon type, say Osclims or the like.

7. If lead-covered cable is used anywhere in the room, earth the lead covering.

The Transmitter.

1. Mount all apparatus at high potential on substantial porcelain insulators, and never direct to baseboards or plywood panels, which tend to absorb moisture and leak.

Notes on Single-Ended P.A. Operation of Tri-tet Push-Pull Transmitter.

By G. McL. WILFORD (G2WD).

WITH further reference to the article in the November, 1934, issue of the BULLETIN regarding the Tritet transmitter, the writer has been carrying out a series of tests using an Osram D.E.T.1 and a Western Electric 4211E in the P.A. stage.

For these experiments the P.A. stage was rebuilt, the circuit being exactly similar to the sub-amplifier unit, the grid coils of the P.A. being to the same specification as the grid coil of the sub-amplifier, and a single section 50 mmf. condenser being used instead of the split stator used in the push-pull P.A.

It has been found possible to drive the D.E.T.1 straight from the amplifier of the Tritet oscillator amplifier unit, but the 4211E was not so good, due

2. Fit extension spindles at least 6 ins. long to tuning condensers, the set screw locking the dial to the condenser spindle is then not a hazard. In the majority of dials this set screw is either proud of or just flush with the knob right where the fingers are applied.

3. Earth the framing of relay rack, rack and panel transmitters, if of metal.

4. In taking measurements with millimeters and voltmeters fitted with prods do not do so with the sleeves rolled up. In your absorption the bare elbows might contact a danger spot.

Use care where the measurement you are taking completes the circuit and energises the equipment somewhere else in the set remote from where you are concentrating in mind and action.

The Aerial.

Do not tap direct to the plate coil; use tuned tank coupling instead. Cut the coil so that the condenser tunes to the amplifier tank frequency with the plates half way in. Tests with West Coast American stations give the same report with either method, but the note is sweeter and shock to BCL aeriels much less with the aerial coupled by the tuned-tank method.

If you insist on a direct tap insert a high voltage mica condenser value .002 or thereabouts in the feeder near the tank coil to keep D.C. inside the station.

Satisfy yourself that the aerial after it leaves the station is safe. The insulation at the lead-in should be good, preferably good-class porcelain or glass.

Much trouble is taken to generate the input to the skywire, give it a chance to radiate and not fritter itself away through dud ebonite lead-in tubes and other faulty insulating mediums.

Keep feeders clear of wire fences, wire clothes-lines, and all metallic objects, and do not operate the station while the window cleaner is making his weekly call.

Other precautions will occur to the "Safety-minded amateur," and the writer sincerely hopes that it will never be the lot of any brother amateur to get "across the high voltage."

Look your outfit over, fellows; the time will be well spent, and the DX will still be there when you press the key in absolute safety.

perhaps to the fact that it was not by any means a new one. However, when given greater excitation by employing the sub-amplifier stage, an output of 72 watts into an A.A. was obtained with only a 550-volt power supply. The filament supply voltage at the time of testing was slightly under 10 volts.

In spite of these disadvantages the writer was very gratified with the results, as similar outputs could be obtained on both 7 and 14 mc.

Link coupling was used in both tests, and although the 4211E is not designed for work much below 3.5 mc. the test proved that with link coupling it could be made to oscillate, and oscillate well down to 14 mc.

These notes are in the nature of additional information for those not possessing type 210 valves but who may have one or other of the types mentioned. They may also help others to appreciate that the Tritet oscillator amplifier unit, using type 59 valves, is of very great use in driving (either with or without the sub-amplifier) valves which are commonly used in British stations.

ANTENNA R.F. FILTER NETWORKS

By H. E. J. SMITH (CT2BK) *

In a recent issue of Q.S.T. there appeared a constructional article dealing with a type of impedance matching network. The filter principle as applied to low frequency or telephony practice is well understood, but the author of the above article was the first within the writer's knowledge to suggest its application to amateur radio technique. Fundamentally the network is merely a filter designed to operate over a wide impedance range, but with its circuit constants so arranged as to provide a sharp cut-off above the frequency which it must pass, in other words a low-pass filter.

The design of a filter to operate over a wide impedance range and yet afford high attenuation to harmonic frequencies, is not a particularly difficult matter, and quite effective operation can be obtained by using a single section filter. Looking from each end of the filter the impedance will be equal to the impedance at the other end, and the voltage developed at both ends will be the same independent of the load. In practice it is better to design the filter so that the generator impedance is more closely matched.

Measurements were made at this station, using as many as four sections in the filter, and the results obtained proved that in the immediate vicinity of the transmitter, which in itself is completely shielded, the attenuation to the third harmonic of the carrier frequency, was not sufficient to warrant the use of more than a two-section filter.

The Filter Overcomes Key Clicks.

From a more practical point of view the use of an antenna coupling device did more than any key thump filter in removing B.C.L. interference. Previous to the use of the filter all methods of eliminating key thumps were tried, and as a matter of interest best results were obtained using grid bias keying on the penultimate stage, the high grid bias giving complete cut-off of the P.A. stage. Even with this system, however, there was con-

siderable evidence of key thump in receivers located close to the transmitter. It should be mentioned that the receivers in question were invariably of the all-wave super-heterodyne type with high sensitivity. The clicks did not manifest themselves over the entire frequency range, but occurred in most unexpected places. At this time the writer was using a half wave 66-ft. Zepp-fed antenna with the usual series parallel combination at the transmitting end for 7 and 14 mc. work. The use of the filter in the feed line completely eliminated this trouble, even in a receiver connected to an antenna within 10 ft. of the transmitting system.

Attenuation of Harmonics.

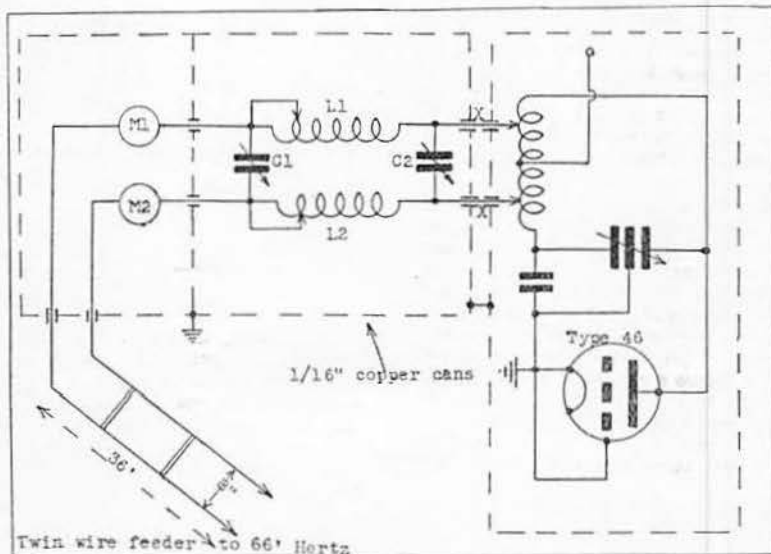
The attenuation of harmonics was also most important because most of these receivers were not provided with adequate preselection, consequently the net interference caused not only by straight harmonics, but also by image and second channel interference was considerable. It was found that there was only about one spot in the 7 mc. band where the transmitter could be operated without causing

undue interference in the 19, 25, 31 and 49 metre broadcast channels, and whilst the antenna filter did not entirely eliminate this, it reduced the range of interference from about three miles to a radius of about 100 ft., thus excluding most of the neighbouring B.C.L. sets except those immediately next door. A small series trap circuit tuned to 7 mc. and inserted in the receiving antenna on these last few receivers, however, completely overcame interference from CT2BK.

Other Advantages.

The advantages accruing from the use of this filter do not, however, stop with the elimination of B.C.L. troubles for careful measurements with thermo-galvanometers show an actual better transfer from the output circuit to the antenna of some 30 to 50 per cent. of power. The system tunes smoothly and appears to match all types of

(Continued on page 278).



Circuit of Antenna R.F. Network.

C1-C2.—.00025 mfd. (receiving type).

L1-L2.—Identical coils each 2 ins. diameter, 3 ins. long, wound with 18 turns solid No. 18 S.W.G. tinned copper; the coils are self-supporting, with a tap at the seventh turn for 14 mc. operation.

M1-M2.—Weston type 425 R.F. 0-200 milliammeters.

X-X.—Single-pole Switches to remove the load when tuning power amplifier stage.

* Calçada, Macra 23, Ponta Delgada, Azores.

22½ Per Cent. Aerial Current Increment

DURING several recent phone contacts, the writer has become more and more aware that the criterion of 100 per cent. modulation as accepted by the operator of the phone transmitter, is an increase in aerial current of 22½ per cent.

It is the purpose of this article to show roughly, the fallacy of this criterion; roughly, since no mathematical analysis is given, partly, because an exact analysis is impossible and partly because it is beyond the writer's capabilities to cope with much more than a pure sine wave. It does not attempt to go into the pros and cons and definitions of the usual modulation reports, since amateurs ought to have their own private opinions on these.

It is generally accepted that over-modulation is bad practice, and the racket has recently been shown up by *QST*. The conditions over here are nowhere near so bad; but just as it is better to change a worn-out tyre before it bursts, so it is better to prevent the racket assuming serious proportions.

It is well known that an aerial current increment of 22½ per cent. shows 100 per cent. modulation only when the modulating low frequency is a pure sine wave—i.e. of constant amplitude and single frequency. Speech and music are definitely not a pure sine wave. The inconstant amplitude gives an obvious limit to average modulation if over-modulation is to be prevented. A symphony orchestra is said to have a range of 60 db, i.e. a voltage ratio of 1,000:1. To prevent over-modulation, the average percentage should be in the region of 5 per cent. Speech has not such a wide range, but the varying amplitude is still there.

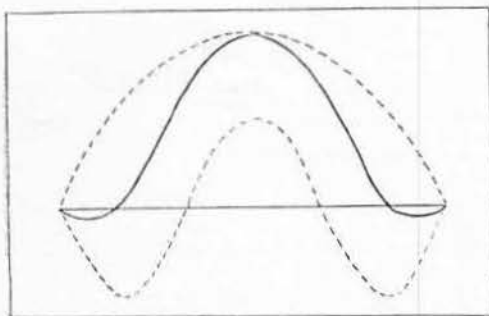


Fig. 1.

The effect of a collection of harmonics with the fundamental is more subtle. A fundamental, its third harmonic and the resultant (whose amplitude is reduced to a suitable value) is shown in Fig. 1. The degree of modulation produced by both the fundamental and the harmonic is the same. The noise produced after rectification (on which modulation reports are generally based) and the increment of aerial current are different, since these depend on the area of the curve and not the peak value. Music and speech are not limited to third har-

monics, and it would be possible (though not probable) to obtain, with harmonics of suitable order, phase and amplitude, wave-forms similar to those in Fig. 2, where the area is very small compared to the area of a pure sine wave, of a similar peak value. In the limit, it would be possible to obtain a 100 per cent. modulated carrier by an audible fundamental and an infinity of suitable harmonics which would produce no noise after rectification and no increment of aerial current.

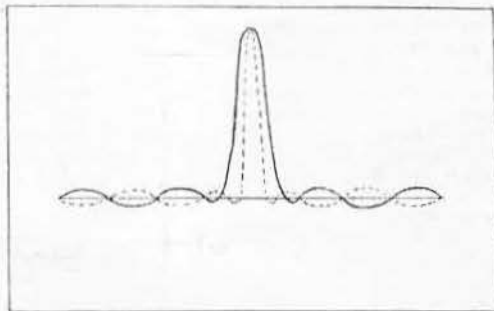


Fig. 2.

It is clear, therefore, that the combined effect of varying amplitude and wave-form seriously reduces the average modulation possible, if over-modulation is not to occur. This is well known but not practised. Practical proof is also forthcoming. An American station whose increment of aerial current was "only 20 per cent." found, as far as could be gathered, that his modulation was 400 per cent.

Two years ago, Kirke published an article in the *Wireless Engineer* giving details of a recording-modulation meter. For various reasons a logarithmic rectifier was used whose output, of course, depended on the wave-form of the low-frequency. The whole instrument was calibrated on pure sine wave modulation. Subsidiary experiments with peak voltmeters showed that a 30 per cent. modulation as indicated by the modulation meter was in reality 75 per cent. for ordinary speech wave-forms. That is, using wave-forms obtained in speech of constant amplitude, a 40 per cent. indication on the log-rectifier was really 100 per cent. This does not take into account the varying amplitude which the record would show up, but an aerial-ammeter would not, as its movement is too slow. It is clear, therefore, that when an aerial-ammeter indicates a percentage modulation of 40 per cent. maximum, the real modulation is over 100 per cent. A 3.9 per cent. increment shows 40 per cent. ! Phone operators must draw their own conclusions.

Absence of cathode ray apparatus prevents much useful practical information on modulated-carriers being obtained; it is suggested to those who have the necessary gear that they, could do worse than monitor their own and other transmissions and publish the results.

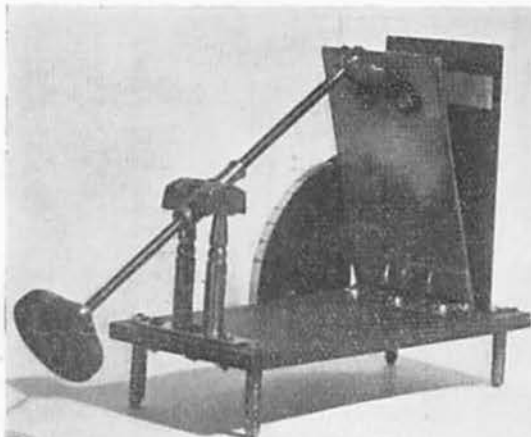
SOMETHING NEW IN NEUTRALISING CONDENSERS

BY "SCRUTATOR."

IN operating neutralised amplifiers, one of the bugbears of changing from QRP to QRO has always been the difficulty of obtaining a really good neutralising condenser for the power amplifier stage, at least for a reasonable outlay.

The writer has been QRO for a good many years and has tried all sorts, from interleaving three-by-two brass plates mounted on opposing porcelain stand-off insulators, to flocks of receiving variables in series. Both methods are cumbersome and "Heath Robinson-ish." With the idea, therefore, of obtaining something which would not outrage all the canons of radio decency and at the same time function properly, the condenser shown in the accompanying illustration was evolved.

This one, it may be said, is the third of its breed, each of its predecessors having been "improved upon."



Being from north of the Tweed and having a pocket, the bottom of which persists in coming to the top, cost was obviously a factor, as also is the fact that the writer is not any more handy with his "lilywhites" than the average.

The thing was first of all put on paper—yeah, about thirty times—and having obtained what appeared to be a suitable design, a visit was paid to the ubiquitous Messrs. Woolworth. As the result of this visit, Messrs. "W" were short of two perfectly good glass-cutters and a safety razor and the bold constructor poorer by one shilling and sixpence.

So far, so good. The junk box was next raided and an old ball-socket arrangement catswhisker salvaged to form the connection between the screwed rod and the moving plate of the condenser.

A further forage in the same receptacle yielded a 2½ in. brass hinge, a piece of sheet brass, 8 inches of 2BA threaded rod, some ebonite and a knurled ebonite knob, which items completed the "parts."

It is not proposed to go into constructional

details, as the illustration conveys all that is necessary.

In the foreground may be seen the two glass-cutters, mounted vertically side by side, and between them a portion of the safety razor handle pivoted by two pivot pins. This section of the razor handle is tapped to take the 2BA rod, to the distant end of which is sweated the ball of the ball-socket section of the catswhisker. The two "eyes" or bearings in which the ball rotates are bolted in turn to the moving plate, and with the knurled knob made fast to the other end of the rod, a delightfully smooth and slow movement of the moving plate results.

The plates consist of two pieces of 16 gauge brass, 6 ins. by 2½ ins., the fixed one having an additional turnover of three-quarters of an inch to permit of it being bolted rigidly to the ebonite base. The moving plate may be either bolted or sweated on to the brass hinge, and there you have the whole "works."

As a safety device to prevent a "short," which might be caused by screwing the moving plate too far in, it is quite a good idea to fix a strip of sorbo rubber to the top of the fixed plate. Alternatively, a stop may be sweated to the threaded rod.

When parallel, the two plates are spaced about a quarter of an inch and as the thing has been treated to a potential of 5,000 volts without getting its back up or spitting, it cannot be too bad. Do not ask its capacity, for the writer does not know it and is much too lazy to work it out.

The condenser has been used in circuits catering for Mullard SW1's, SW9's and the popular T61D, and the writer can assure you that it does the trick with the lot, and never a complaint.

Empire Calls Heard.

By BRS822, J. Alexander, 63, Tennyson Road, Small Heath, Birmingham, from October 26 to December 23, 1934 :—

3.5 mc.: su6hl (4.4.8), vo8hlc (3.4.9).

7 mc.: sulch (5.5.8.), 1nh (5.4.8.), 1sg (5.6.9.),
velet (5.5.8.), vk2da (3.4.9.), 2lz (5.5.9.), 3bw
(3.3.9.), 3hl (4.4.9.), 7jb (4.4.9.), vq4kta (4.5.9.),
zblc (4.5.8.), (QRA Malta), zlfzr (3.3.9.), 2ow
(4.4.9.), 3an (4.3.9.), 3bj (4.4.9.).

14 mc.: sulro (5.5.8), velaq (4.4.6), 1dq
(4.5.9), 1dv (4.4.Mod.), 1et (5.5.8), 1ge (4.4.6),
2aa (4.4.7), 2ca (4.5.9), 2dr (4.5.8), 2dv (5.5.9),
2ie (4.5.8), 3bt (4.5.9), 3gh (4.4.9), 3ll (3.4.9),
3qh (3.4.9), 4du (4.4.9), vk2xv (4.4.9), vo8aw
(4.5.8), 8h (5.5.8), vpb3b (4.5.8), zb1b (4.5.8),
zi2u (4.5.7), zi2kk (3.3.9), 3aj (4.4.9), zi2f (3.3.9).

0-v-1 receiver used. Figures in brackets denote signal strength.

GOOD GOING

G5YH tells us that he worked all nine U.S.A. districts in 2½ hours on the afternoon of Sunday, December 16.

NEW VALVES REVIEWED.

THE following valves are reported on this month:—Mazda L2/DD and Mazda TP.22, manufactured by the Edison Swan Electric Co., Ltd.

MAZDA L2/DD.

This is a battery double diode triode fitted with a five pin base, a push-on type top cap and a metallised bulb. The triode has characteristic of medium low impedance class.

Characteristics.	Makers.	Measured Sample.
Filament volts ...	2.0	2.0
" current (amps) ...	0.1	0.13
Anode volts (max.) ...	150	150
Amplification factor ...	16*	15†
Mutual conductance (ma/v) ...	1.6*	1.7†
Anode impedance (ohms) ...	10,000*	8,800†
* Measured at anode volts 100 grid volts 0		
† " " 150 " " -6		

Inter-electrode capacities :

Anode-grid mmf.4.0	} Not measured.
" filament " ...	...4.0
Grid " " ...	...3.25

The curves were checked and found to agree with makers.

This valve has unique diode construction, the diodes being situated in the anode electron stream and not directly around the filament as is usual. In consequence no diode current can be obtained unless a voltage is applied to the anode. This fact caused some difficulty because the particular construction was not realised until the first sample had been returned to the makers as defective and the replacement behaved in the same way.

The object of using this construction is to obtain as efficient a triode as possible, a normal construction would lower the available filament surface for the triode and lower the mutual conductance unless a more efficient filament coating or a heavier current filament was used.

Unfortunately there are difficulties in that the conductivity or volt drop of the diodes depend on the anode and grid voltages on the triode, the figures being:—

Anode volts.	Diode current for 10 volt drop	
	(1)	(2)
150	0.5 ma.	1.0 ma.
100	0.3 ma.	0.7 ma.

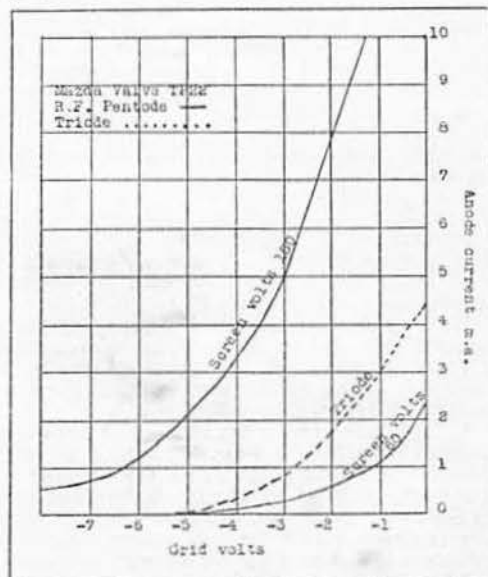
Changes in grid voltage produce a similar change in diode current, which means in practice that as we swing the grid with audio frequency the diode resistance changes, and likewise due to the R.M.S. audio anode voltage. These changes are in such a direction in general as to lower the gain on one $\frac{1}{2}$ cycle and raise it on the other, giving us 2nd harmonic distortion. Fortunately this effect in practice is not serious, providing we use a high value diode load resistance in order to swamp changes in diode resistance, values of $\frac{1}{2}$ to 1 megohm are advised; nevertheless such values may tend to give high note cut off. Further, the anode current should not be allowed to fall below 1.5 ma. for $\frac{1}{2}$ megohm load and 1.0 ma. for a 1 megohm load; this, of course, means that a rather low value of anode resistance must be used for R.C. coupling or a choke or directly fed transformer. The value is

not suitable for a Class B driver if the diodes are used, for the above reasons, but can be used satisfactorily as a normal 2nd detector and L.F. valve for A.V.C. super-heterodyne receivers.

Suitable circuits are shown in the leaflet supplied with the valve.

MAZDA TP.22.

This is a battery triode pentode fitted with a 9 pin base, push-on type top cap and a metallised bulb. The valve is designed as a frequency changer for super-heterodyne receivers, comprising a triode and a separate R.F. pentode with variable *mu* characteristics within one bulb.



Characteristics.	Makers.	Measured Sample.
Filament volts ...	2.0	2.0
" current (amps) ...	0.25	0.285
Pentode section :		
Max. anode volts ...	150*	150†
" screen " ...	150*	60†
Mutual conductance (ma/v) ...	1.3*	1.1
Anode impedance (ohms) ...	1,600,000*	—

* Measured at anode volts 150, screen volts 150.
† Measured at anode volts 150, screen volts 60, grid volts 1.5.

Triode section :

Max. anode volts ...	150	150
Amplification factor ...	34	30
Mutual conductance (ma/v) ...	1.4	1.4
Impedance (ohms) ...	24,000	21,500

No curves were supplied by the makers so our curves are appended and show the characteristics of the R.F. pentode at screen voltages of 150 and 60 volts and that of the triode at 150 volts on the anode. The characteristics of the triode are very satisfactory, the triode efficiency being such that no difficulty should be obtained in getting oscillation down to about 15 mc., although above that

(Continued on page 278.)

SOLILOQUIES FROM THE SHACK.

By UNCLE TOM.

(As yet unchastened by the progress of the years, the Stormy Petrel of amateur radio announces his policy for 1935.)

HAPPY New Year, YL's and OM's! And, considering that it's more or less in your own hands, whether it's happy or not, the wishes of your poor old Unc. won't make much difference one way or the other.

You will find me in somewhat different mood during 1935, as the result of a New Year resolution that I have made, and intend to keep. I am going to say *nothing*, in this page of mine, that I don't really and truly mean. I haven't said much that I don't mean in the past; but perhaps a thing or two has crept in here and there that might have been a little more pointed (had I stopped to think for better words); and perhaps a thing or two has been a little ruder than even I intended it to be.

But please believe me when I say this: that never, at any time, or on any subject, have I said anything that hasn't had a good substantial backing of truth to it. Never have I ticked off anyone unless that ticking off has been thoroughly and soundly deserved. So all you people with grievances against your harmless, innocent Uncle, may as well reflect that if he has ever said anything rude about you it has been entirely your own stupid, silly fault. So there!

Now, then, what of 1935? What contributions is the Ham going to make to the advance of radio? I, for one, hope that quite early in the year he will QSO that elusive island called DX, and thereafter waste a little less time calling him.

I should like to see a little more real work being done on the 1.7 and 3.5 mc. bands by some of the people who spend their whole life working one Yank after another on 14 mc. I should also like to see a little more work put in on receivers by the people who are admitting their own inability to make one by buying American commercial products.

Let's attack this question right away. I'm not belittling the performance of the commercial jobs that we're thinking about; not in the least. But isn't it undignified for an amateur to have to buy a complete receiver? And has he entirely lost the joy of making things for himself? How can one be proud of the results that one obtains on a set that has been made for one by somebody else?

We'll see how the B.E.R.U. scores come out, and I, for one, shall be pretty surprised if the owner of a commercial receiver always scores over the homely little det.-and-L.F. man.

Who will be the first "amateur" transmitter in this country to go one step further and instal a commercially-built transmitter? For it's only a very short step. And would such a transmitter be allowed to enter for a national contest? And, if so, why?

Now there will be such a chorus of moans as has seldom been heard before, and more vitriol will be poured over your Uncle. But does he care? He's used to it. That little remark he made, for instance, about amateur transmitters who play at radio and get the whole fraternity into disrepute—that was innocent enough, and justified enough, but what a row it started in one quarter!

One of the very people whom the cap seemed to fit best of all started a moan about the way in which

the "Bull," was being brought down; should this fatheaded correspondent who calls himself "Uncle Tom" be let loose at all? And all the rest of the junk. Anyone would think I was doing it for money. Let me repeat just what I said, by way of rubbing it in a little further: "Cut it out, brother hams! Forget this blessed, beastly, childish, snobbish craze for working DX! Who's DX, anyway? And what good does it do? Go back to your artificial aerials and do something worth doing, for the love of Mike, or you'll be responsible for killing off amateur transmission within the next ten years."

Don't think I'm belittling the thrill that one obtains from DX work. I'm merely laying it on to the man who has no time for anything else in radio. One blessed DX contact after another, and never the slightest pretence of experimental work on the receiver or transmitter. Surely there are other fields for such people's abilities. Why not DX on 7 and 14 mc., alternated with a little local 'phone on the other bands? They would find out that other thrills were obtainable from radio.

Well, well! So far it's been one long grouse, and one wouldn't think there was anything good to be said for the ham. Well, let me say some. The most useful hams in this country are, very often, those whose call-signs are seldom heard by the DX fraternity at all. I know one or two who are quietly working away at their own little problems; not discussing them with anybody, simply because nobody else is interested.

What about television, for instance? How many hams are really interested? And yet that's one of the lines that is going to be of the greatest interest of all in a few years' time.

Now, for a pleasant interlude, let us turn the old microscope on South London. Signs of life are plainly visible, and a concentration of activity is noticeable in certain quarters. Hams from the extreme edges of the specimen may be observed to move towards the centre at intervals of approximately one month, and this month's BULLETIN contains quite a number of reports. Bravissimo!

'S a funny thing, the way some hams expect their D.R. to go running after them. They just sit tight in their hutches and wait for someone to call in on them, and then moan about the lack of "co-operation." Lack of nursemaids!

It's up to the new ham to get straight into touch with his D.R., and if his D.R. doesn't take any notice of him, then it's time he got the sack. But to expect the D.R. to make a fuss of him, as soon as he hears indirectly of his existence, is a bit stiff. One D.R. that I know does go to the trouble of dropping a card to every new member that springs up in his district, telling him that he'll be very welcome if he likes to call. How much more than that *could* one do?

It seems to me that in most branches of amateur radio it is the moaners who have themselves to blame. (I'm not a moaner—I'm a shrieker.) People moan about bad conditions when they've got a rotten transmitter; about bad locations

(Continued on page 278)

CORRESPONDENCE

The Editor does not hold himself responsible for opinions expressed by correspondents. All correspondence must be accompanied by the writer's name and address, though not necessarily for publication.

R.S.T., R.W.T., U.C.S.

The Editor, T. & R. BULLETIN.

DEAR SIR,—The suggestions of Mr. Braaten and the comments of Mr. Samson in the December BULLETIN have raised points in which I have been interested, or shall I say involved, for the last ten years.

In the first place, with regard to signal strength, both writers have overlooked the fact that transmitting amateurs can be divided into two classes: i.e. research workers and just plain "hams."

Now in the case of the research worker it is only logical to assume that he is doing quantitative work, and that therefore he will require quantitative measurements on his strength, i.e., a definite m/v.m. figure. So far as readability is concerned he will presumably measure local noise level in the same manner, but so far as interference with his signals by other stations is concerned (QSA?) that will not affect the readings in which he is interested.

This is, I believe, the nearest approach to an absolute standard possible.

However, few of us are research workers pure and simple, and fewer still possess the apparatus necessary for making measurements of the above nature, so we are perforce compelled to use comparative measurements of signal strength.

Now, in this connection, I think that most of us have forgotten that in using the "R" code we are dealing with comparative measurement, and that even when using a receiver with calibrated output it is highly improbable that two receivers would have the same type of aerial, as this, of course, would vary in accordance with locality, height and angle of elevation.

Hence, in the main, it must rest with the discretion of the receiving operator.

Examining the suggestions of the two writers the difference merely seems that Mr. Braaten objects to R8 and R9, and that because they are so misused.

The definition of R8 and R9 in most tables is very misleading, and I should like to suggest that R9 be used only when the signal is so strong as to be difficult to heterodyne using autodyne receivers, and readable by "wipe-out" effect on those employing separate heterodynes when the separate valve is switched off. This condition of signal strength could be recognised by the veriest novice.

R8 could then be used when signals were not quite strong enough to satisfy this condition.

The rest of the code, R7 to R1, is reasonable, and seems most suitable for everyday use, but I do feel that R8 and R9 are still needed.

With regard to the QSA code, I think most Europeans rate it

QSA 1	...	20 per cent. readable
2	...	40 " "
3	...	60 " "
4	...	80 " "
5	...	100 " "

and if this is retained it should be useful to all.

The point to remember is that QSA5 should not be used, whatever the strength of the signal, unless every letter can be copied through the amount of interference prevalent at the time. Hence an R8 signal may be only QSA3-4, because other R8 signals interfere sufficiently to mar 100 per cent. perfect reception.

With regard to "T" codes, presumably the obvious reply to both writers is that the modulation (whether ripple or telephony) be measured at the transmitter, but failing that surely the opinion of the receiving man counts mainly, for, after all, he has to copy it. Here again, why not have T9 as entirely free from ripple, suitable for 100 per cent. modulation, T8 same with slight ripple, T7 pure D.C. but not a driven amplifier.

Finally, whilst strongly supporting the old system, may I humbly suggest that it is not a matter of QSA versus R.S.T. but of U.C.S.—use common sense!

I am, Sir,

Yours faithfully,

BASIL WARDMAN
(G5GQ-2BBW).

The Editor, T. & R. BULLETIN.

DEAR SIR,—Having adopted the RST system of reporting and given it a fair trial I should like to offer my views on the system in the hope that they will be confirmed or contradicted by others who have tried it, for only by general discussion can the merits and demerits be discovered.

The most obvious people to try it out on were the Americans themselves. Some were clearly delighted, and their delight was increased because, as they said, not many were using the system yet. Others were faintly amused, and gave me my report also in RST just to humour me, while a third category completely ignored my compliment to their nation, and reported to me in the old QSA, R, T system!

For the new readability and tone codes I have nothing but praise to record, but the signal strength code, I think, is far too vague. Admittedly, limiting the number of grades to five will ensure a greater measure of agreement in reports, but, to reduce it to absurdity, so would a limit of two grades—i.e., S1, only just there; S2 definitely there!

For instance, S4, as was pointed out to me by G2YL, seems to be taken by most people to mean anything between the old R5 and R7 though had a DX station which had previously reported me as R5 suddenly told me that I was R7, I should have patted myself on the back and smoked a cigarette. In order to be progressive SUIRO and I always use the RST system in our daily sked, but as I am drawing a graph of our signal strength, with other observations, the old QSK report is always added in order that the report may be of real use to me.

I agree that such qualifications as "coming through QRM and QRN" and "heard several feet from the fones" are ridiculous, and I have never taken them into account in reporting. In fact, I never think of the wording of the old R system at all, but take R9 as the loudest signals my receiver produces (excluding a 250-watt station

less than a quarter of a mile away from me!), R1 as signals which, if any fainter, wouldn't be there at all, and R5 as the half-way mark, and grade the others automatically in my mind as falling between these points in the various degrees.

Actually any written explanation of the signal strength system is bound to be misleading, for my idea of "good" may be someone else's idea of "rotten," but most people could estimate loudness within reasonable limits of agreement.

As an example of misleading wording: I think this letter is "good," but I am quite convinced that the Editor will regard it otherwise.

Yours truly,

C. S. POLLARD (G2GB).

R.S.T. v. QSA.

(No to be taken too seriously.)

The Editor, T. & R. BULLETIN.

DEAR SIR,—Just an irresponsible BRS's ideas, to whom the use of QSA has ever been a source of annoyance. With all the alphabet at his disposal why the amateur in search of a reporting code should choose a portion of the international code dealing with signal strength and use it for readability is really unaccountable, and there is no excuse for the continued misuse of QSA.

The more divisions there are to the "R" code the more likely is one liable to hear two figures given, as doubts would arise as to which category the signal belonged. If five headings are insufficient the fastidious could always employ a few plus or minus signs. We have twelve pennies to the shilling, but if one is unwilling to go the whole "bob" one can always stop at 11½d.

A note like an asthmatic frog would not be much different whether heard in the Canterbury of cathedral or that of frozen lamb fame. DX would not lend enough enchantment to introduce sufficient musicality to become T9.

Would not a few avuncular soliloquies on this subject be enlightening?—but perhaps the old worthy is too busy dealing with orders obtained through his "ad" in the December issue!

Yours truly,

E. BRIDGE.

WIRELESS "GHOSTS."

To the Editor, T. & R. BULLETIN.

DEAR SIR,—My attention has been recently drawn to the existence of "ghosts" of radio stations which provide a background to certain medium-wave broadcasting stations, although operating on entirely different wavelengths. As a concrete example I have frequently received Luxembourg as a background of the Vienna broadcasting station, the relative strengths on my own receiver being R3 and R8 respectively. This point has been raised in some of our contemporaries, but I have not yet seen any very plausible explanation.

I should be interested to know if the effect has been observed on the shorter wavelengths, and also if there is any satisfactory explanation. Might this not be a problem worthy of the attention of R.E.S. group No. 4?

Yours sincerely,

GEORGE F. BLOOMFIELD (G5MG).

The Editor, T. & R. BULLETIN.

DEAR SIR,—On behalf of my colleagues (VQ4KTA, VQ4CRR, BERS191 and BERS229) I should like to convey, through the medium of the BULLETIN, our sincere thanks and appreciation to all Home members for the welcome and hospitality extended to us at the various meetings, conventionettes and station visits during our leave in the Old Country last summer.

It was, indeed, a great pleasure to have so many personal QSOs at the annual convention with Gs and other overseas friends, and we all look forward to renewing those friendships over the air in the near future.

Yours faithfully,

W. E. LANE (VQ4CRH).

LOW POWER FEATS.

To the Editor of T. & R. BULLETIN.

DEAR SIR,—On page 144 of the BULLETIN for October, 1934, under "Miles per Watt," it is stated and made to appear that I made a claim to a record. This is not the case; I merely made an enquiry as to what the best record was. I should like you to correct this.

G2DQ's record will be hard to beat!

73,

JOSEPH LUNT (ZT1Q).

ATTENTION! BRS-BERS.

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

DEAR SIR,—I would esteem it a great favour if you would allow me to send an SOS to all BRS and BERS members of the Radio Society of Great Britain.

With the near approach of the B.E.R.U. contests for 1935 I would like to impress upon you receiving members the necessity for your entrance in the Receiving Contest. As one who almost lives for amateur radio I appeal to my fellow "receivers" to give the 1935 B.E.R.U. contest rules the "once over"; think hard, and say, "O.K., I will be a starter." Do not be afraid to enter because BRS250 and BERS195 will be in the "line-up"—there is nothing to say that we "old stagers" will sweep all before us. Both Mr. Allen and myself want to see all of you enter and submit scores. Even if you only score one point, send in your claim to headquarters for official recognition.

I would like to see more scores from BERS members—what a poor "team" (in numbers) we were in the 1934 contest! I want to see at least ten times as many scores from BERS in the 1935 contest as were submitted for the last contest.

Although beaten for first place in the 1934 contest I am not the least downhearted, and in February, 1935, I intend to give forth all I know—even to the last reserve—in order that I can wrest the B.E.R.U. "receiving" cup from the Mother Country and bring it to a Dominion for the first time! Arise! fellow BERS from your sleep—let us all be inspired with the spirit of enthusiasm, and here's hoping that the numerical strength of the entrants in the "receiving" section of the 1935 B.E.R.U. contest is a record one—one that will make jubilant the headquarters staff.

Cordial 73 to all.

ERIC W. TREBILCOCK (BERS195),
c/o Postal Staff, St. Peters,
South Australia.

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No. 2: 56 MC. WORK

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No. 3: ARTIFICIAL AERIALS

No. 4: ATMOSPHERE AND FADING

J. C. ELMER (G2GD), Aethelmar, Seabrook Road, Hythe, Kent.

No. 5: TELEVISION

C. W. SANDS (G5JZ), Springfield, Heathfield, Sussex.

No. 6: CONTEMPORARY LITERATURE

R. A. FEREDAY (PAOFY), Reinkenstr, 40, The Hague, Holland.

No. 7: RECEIVER DESIGN

E. N. ADCOCK (G2DV), 206, Atlantic Road, Kingstanding, Birmingham.

No. 8: TRANSMITTER DESIGN

A. E. LIVESEY (G6LI), Stourton Hall, Horncastle, Lincs.

No. 9: AERIAL DESIGN

F. CHARMAN (G6CJ), Orchard Cottage, Wexham Street, Stoke Poges, Bucks.

No. 10: VALVE RESEARCH

D. N. CORFIELD (G5CD), 10, Holders Hill Gardens, Hendon, N.W.4.

No. 11: 28 MC. WORK

W. A. CLARK (G5FV), "Lynton," Hull Road, Keyingham, Hull.

No. 12: AUXILIARY EQUIPMENT

A. O. MILNE (G2MI), "Southcot," Larkfield, Kent.

WE were extremely reluctant last month to accept the resignation of Mr. Dedman (G2NH) from his position as Group Manager of the 56 mc. Group. Mr. Dedman has rendered invaluable service to the Section and we are more than sorry to learn that he finds it necessary, owing to pressure of business, to give up the work. The opportunity is, however, taken of thanking him most cordially for the help he has so freely given.

Fortunately, we have been successful in obtaining Mr. T. Vickery, G5VY, as the new Group Manager, and I am sure his appointment will be a very popular one. G5VY is already well known as a keen experimenter on the ultra high frequencies, and he has unhesitatingly expressed his willingness to accept this rather onerous position. No 56 mc. group reports are to hand this month, but Mr. Vickery has been given the opportunity of outlining his ideas for reorganising the group, and these appear under the appropriate heading below.

Mr. Todd (G2KV), G.M. of the A.A. group, is also unable to continue his work owing to pressure of his studies at the University; we are indebted to Mr. Todd for having so successfully undertaken the organisation of what must always be essentially a "transitional" group and for the extremely interesting contributions which have appeared from his pen. By the time these notes appear in print it is anticipated that his successor will have been appointed.

There are but few reports to hand this month, undoubtedly due to preparation for the festive season. I have had one or two applications for membership of the Auxiliary Equipment Group, and must emphasise that members of this group can only be appointed at the request of the G.M., Mr. Milne (G2MI); members desirous of joining this group should therefore communicate with G2MI stating their qualifications and to what extent they are capable of genuine constructional work. I should like to emphasise once again that the services of this group are at the disposal of any member of the Society (see R.E.S. Notes in September BULLETIN), but please enclose a stamped addressed envelope with any letter of enquiry to G2MI.

G5MG.

1.7 and 3.5. MC. Group (No. 1).

Owing to continued inactivity, Groups 1B and 1E are being disbanded, although the members are not leaving R.E.S. If any of them wish to join up with an organised group again they are asked to write to me.

All Group 1 members are asked to observe the 1.7 mc. schedule every Friday at 22.00 G.M.T.

Group 1A.—G6YJ describes his experiences during the 3.5 mc. Contest. An outstanding observation was that the band exhibited marked directional effects, which changed almost hourly. After obtaining R6 from Canada, G6YJ could not raise Norway for a considerable period afterwards.

G5FI is using an unique aerial for 3.5 mc. which is 133 ft. long, and the feeder, operated on the matched impedance system, is tapped 48 ft. from the house end, i.e., 18 ft. from the centre. It gives almost omni-directional radiation on 3.5 mc., and from a chart supplied, seems to be very effective for distance work.

A non-group member, G5BI of Tredegar, reports the reception of WIDIK on 1.8 mc. phone as early as 01.00 hours. Reception took place on December 11, and the receiver was O.V.I. The American was followed solidly for three-quarters of an hour.

Group 1C.—In connection with the harmonic-overtone discussion, it should be mentioned that the data supplied by EI2B, in the December notes, can be absolutely relied on, as it was taken from an N.P.L. communication.

With reference to the formula given by G6CY in the November notes, F3AR states that there is an error. On the hypothesis of the second harmonic of the receiver (tuned to 1.7 mc.), beating with the transmitter fundamental on 3.5 mc., the frequency of the receiver, f_2 is $f_2 = \frac{f}{2}$; when one detunes the receiver to produce a note of 1,000 cycles, the frequency becomes $f_3: 2f_3 + f + 1$ or $f_3 + f_2 + 0.5$. The receiver must then be out of tune 0.5 kc. and NOT 2 kc.

He goes on to say: "I think that the discussion on overtones and harmonics can be put into the following terms: If the transmitter has no doubling stage, each stage working on the same frequency, it cannot by any means radiate energy on this

half frequency except by beating with the second harmonic of the receiver. This is only possible at a short distance when the transmitter is capable of actuating the receiver off tune. If, however, the transmitter incorporates a doubling stage, certain of its stages work on half the fundamental frequency and this half-frequency may get radiated through valve capacity. (This would particularly be so if the stages were not properly neutralised—G5WW.) This half-frequency could therefore be received on a receiver tuned to half the fundamental."

F3AR gives details of actual experience of this type of radiation.

BRS1173 (Sussex) reports the reception on 1.7 mc. of G2WD of Birmingham, working PA0FB on 3.5 mc.

G.C. G5WW is carrying out tests with a system of quiescent carrier telephony on 1.7 and 7 mc., and would be pleased to have reports when announced that this system is in use. He would also appreciate reports from the Nottingham district. Will any stations who can use 2 mc. during Thursday afternoons please communicate with G5WW.

Writing direct to the G.M., G2WK, of Reading, says: Harmonics and overtones are identical, *vide* (a) Nuttall's Standard Dictionary, (b) Admiralty Handbook, (c) Dowsett's Handbook of Technical Instruction. The word "overtone" is used in musical theory and describes the tone produced on a violin string by dividing it into aliquot parts, i.e., Middle C in "concert pitch" has a frequency of 273 c.p.s. If produced on a violin string the fundamental is 273 c.p.s., but if the finger is placed in the correct position on the same string a frequency of 2×273 c.p.s. can be produced—higher C, exactly one octave higher. Compare a Hertz aerial working on fundamental and on "harmonic." There is no doubt that when a 3.5 mc. transmitter is heard on 1.7 mc. band the reception is due to the second harmonic (i.e., not the first, which is the fundamental) beating with the signal in the aerial circuit. This can be easily proved in practice. In every case where the phenomenon is noted and the transmitter is at some distance from the receiver, it will be found that the receiver has an oscillating detector next the aerial. The inclusion of an S.G. stage in front of the detector stops the effect entirely, since it prevents the detector second harmonic reaching the aerial.

If, however, the transmitter is close to the receiver, a different state of affairs may obtain. A receiving circuit consisting of an aerial, inductance and earth will respond not only to oscillations of its own frequency (although such oscillations will have the maximum effect on it), but also to those having

frequencies of $\frac{\lambda}{3}, \frac{\lambda}{5}, \frac{\lambda}{7}$. A local transmitter will cause the receiver to oscillate by impulsing it. Should the aerial be a Hertz, then harmonics will be at even multiples of the fundamental. It is this effect which produces so much "mush" in the vicinity of powerful stations and the clue to the effect noticed by BRS207.

In my own experience the R.N.W.A.R. transmitter at the Admiralty, although operating in the 3.5 mc. band, comes in here strongly on 1.7 mc. when I use a receiver comprising an oscillating detector and pentode. On a superhet with a signal frequency S.G. stage there is not a whisper

of it. Conversely, G2NM at $1\frac{1}{2}$ miles, working on 7 mc. with 100 watts, gives me a strong signal on 14 mc. on a superhet, and a whole crop of harmonics on a Det-Pentode receiver which I can vary by taking the earth off the set!

Group 1D.—G6BS states that his members are endeavouring to develop an aerial that will work efficiently on both the low-frequency bands, but no concrete results are yet forthcoming. One member, through force of circumstances, is using a 33-ft. aerial and a 33-ft. counterpoise, with large coil and condenser to compensate for the lack of radiator, and gets quite good results. (I can confirm the possibilities of such a system myself, having been forced to use it for a number of years in the past.—G.M.)

Group 1F.—G5YD has set his group the task of designing low-power transmitters of a portable nature, but finds them discussing anything but the subject on hand. BRS250, however, does provide some interesting data on his own subject.

G5UM.

56 MC Group (No. 2.)

I am proposing to reorganise this group under a national scheme of local group centres, on whose shoulders will lie the sole responsibility for 56 mc. work in their respective districts. The present system of grouping will be abolished since I feel that only by the correlation of the work of local groups can any real progress be achieved on what is still purely a band for local working. It is also proposed to establish a National Research Group on this band. All relevant literature will be collected and circulated for perusal so that every member will become familiar with every new development; this literature *must* be returned to me; a note should be made of any article of interest, so that, should this article be required for reference at any future date, it may be obtained on application to me. A letter budget will circulate among the local group centres, each of whom must also circulate a local letter budget in order to keep local members informed of all activity of other groups. All that I shall require from the local group centre is a monthly report of the research and experimental work of his own local group, and these reports must reach me by the 25th of each month. Full details of this scheme have been sent to all D.R.'s, from whom information regarding the scheme may be obtained, and I should be glad to have the names of any willing to act as group centres of local groups.

I would like all members to know that I am willing to answer any question, technical or practical, relating to 56 mc. work, on application being made to me personally, enclosing a stamped addressed envelope.

G5VY.

A.A. Group (No. 3.)

In last month's report, the coupling and energy dissipating parts of an A.A. system were described. This month the measuring equipment is dealt with.

In general, the amateur merely requires an instrument to measure H.F. energy in arbitrary units, bearing a definite relation to the input to the A.A., and for this purpose the diode is eminently suitable (it has several other uses, as described in the "Guide"). Occasionally, however, the amount of H.F. energy is required in specific units, for which more elaborate apparatus is necessary. The unit

schedule of transmissions from G2GD will be radiated on Mondays, Wednesdays, Fridays, commencing Monday, January 21, as follows:—

18.45 G.M.T. to 18.50, on 1,789 kc.

TEST RES 4 DE G2GD G2GD G2GD 1.7 mc.

18.55 to 19.00, on 3,578 kc.

TEST RES 4 DE G2GD G2GD G2GD 3.5 mc.

19.05 to 19.10, on 7,156 kc.

TEST RES 4 DE G2GD G2GD G2GD 7 mc.

19.15 to 19.20, on 14,312 kc.

TEST RES 4 DE G2GD G2GD G2GD 14 mc.

Will all Group 4 members who receive these signals kindly report to their G.C.'s; reports from others will be welcomed by the G.M. The object of the test is to discover how signals which will be as standard as possible (10 watts to the P.A.), behave from day to day on the four bands, as nearly as can be approximated to simultaneously.

G2GD.

Aerial Group (No. 9)

In Group 9c, which deals with the lower frequencies, G6JX has started counterpoise experiments, which will probably result in a better understanding being obtained of how the Marconi system works.

2BYF has prepared a short article on a universal coupling system which will be published shortly.

G2HX finds that a doublet receiving aerial gives extra selectivity. The aerial consists of a 33-ft. top with twin flex connected directly in the centre. The coupling to the receiver depends on the length of the feeder, but a few turns may be tried for a start, and reduced if they will not allow reasonably close coupling. The extra selectivity depends on the resonant properties of the aerial, furthermore if the feeder is not fully matched, this will also assist matters. Considerable reduction of interference on a Det-LF from stations such as JNJ is claimed.

G6CJ.

28 MC. Group (No. 11)

Members from both Sub-groups report active.

Group 11A.

G2YL reports that only local G stations have been heard. She describes some interesting tests with her receiving aerials on the reception of G2HG's signals. On an aerial running E.-W. his signals are R3, but on making a change to one running N.N.E.-S.S.W. his signals jump to R8. G2HG is almost N.E. of her.

BRS25 raises the question of the distance over which ground wave signals can be expected to be received, and thinks that G5ML's, which he received some years ago over a distance of about 100 miles, were probably ground wave. He has not observed that receiving aerials on 28 mc. are particularly directional.

G2XS is finding things very quiet on "ten" in King's Lynn and only harmonics of 14 mc. signals are audible.

G2HG also finds that conditions have been very poor during the month, but has heard a few weak commercial harmonics. He is using a receiving aerial which runs up vertically for about half its height and then at an angle of about 45 degrees to the horizontal. This appears to be semi-directional and is an improvement over the vertical and horizontal aerials previously used.

He reports much activity south of the Thames and adds: "If things go on at the present rate of

progress, single signal supers will be a dire necessity."

During the month the G.M. received a 28 mc. report from the Society's calibration manager, G6NF, who, although not a group member, appears to be most interested in 28 mc. In the report he includes a list of harmonic and fundamental signals heard on 28 mc. on December 1 and 8, which shows that the ten metre band is not dead in London. Here is the list:—

Harmonics: GMR, R4 (Ongar), G6UT R5, G2AD R5, G2NK R5, G5HJ R4, G2TD R5, G2GB R7, G2YD R4, G2KI R4, G2NN R4, G6IO R4, G5YH R6.

Fundamental: G2YL, G2HG, G2MV, G5OJ.

G6NF states that his best report this year is from G6DH, Clacton, Essex, who received his signals at R4. The distance between the two stations being 60 miles.

G5SY has nothing of note to report this month, but suggests in his report that more practical use be made of the ground wave when DX and European contacts are out of the question. He is interested in S.S. supers.

Group 11B.

G6ZV sends in a long report and gives details of tests that he has conducted with the co-operation of G5YG. He states that a full-wave vertical antenna was found to be most suitable for ground wave work.

BRS1515 reports illness during the month, but hopes to become active again shortly.

G5FV has been active most of the month, but has nothing of note to report.

G5OJ, an individual member, sends in a most welcome report. He gives details of the gear he used during last summer and contributes some interesting remarks regarding a QSO he had with D4BMJ during complete darkness.

The International Contest seems to be receiving good support in the Antipodes judging by the following messages that have been received from VK2HC:—

(1) "Understand VK4BB was QSO VK6SA, VK6MN, ZL2BA, four VK3 and two VK2 stations on November 25. VK3JJ, VK3HK worked VK4BB on November 18 and VK4BB was QSO VK2LZ, VK2HY and VK2NO. VK6SA heard in VK2 at R4 at 00.30 G.M.T. on November 25 by VK2HZ, VK2NO and VK2YC, but no contacts made. All on 28 mc. VK2NO reports hearing harmonic on 28 mc. from K6EWQ on 14 mc."

(2) "Herewith details of tests carried out during January and February each Saturday, commencing 22.00 G.M.T. and finishing 10.00 G.M.T. Sunday. New Zealand stations will call during the first ten minutes of each hour. Eastern VK stations call during the second ten minutes of each hour. VK6 call during the third ten minutes. This leaves the second half of each hour vacant, which could be used for random work."

(3) "Have further news re 28 mc. Best results for years being obtained. Local stations are working Inter-State and ZL as late as 11.30 G.M.T. ZL1CD on 'phone reported R8 in V.K."

G5FV.

Auxiliary Apparatus Group (No. 12)

There is no general report for this month. It is, however, necessary to correct one of the diagrams published in the last issue.

The Group Manager takes full responsibility for an error in the diagram regarding the relay inter-action circuit, for driving the auto-sender.

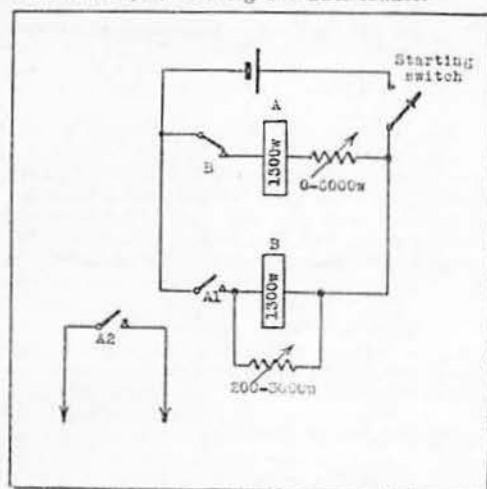


Fig. 2.
Speed Regulator for Auto-sender.

An amended circuit is shown in Fig. 2. When the start switch is operated, A relay operates via B contact normal. A operates B at A1. B in operating opens A's circuit at contact B, A releases, A1 releases B, thus giving A its circuit for re-operation, *ad infinitum*.

Obviously it would be impossible, in the circuit published last month, ever to have made any of the relays operate at all, as all contacts were shown normally open! In connection with this it is as well to mention that when relay contacts are shown on any diagram they are in their normal positions. That is, the relays are not energised.

The correct nomenclature being "Make" contact for one which closes on operation. "Break" for one which opens on operation and "change over" for a contact which breaks from one spring and makes on another. A fourth and less common type is "Make-before-break." This is a spring set which causes all three contacts to be "bunched" during the time the relay is operating. When the relay armature is fully attracted it becomes the same as a "break-make" or change over set in purpose.

It is as well for members to familiarise themselves with this procedure as in all future articles, standard telephone circuit practice will be adhered to where relays are involved.

OVERCOMING B.C.L. INTER-FERENCE

Mr. R. C. Miller (ZL1HA) in a recent issue of *Break In*, suggests the use of ordinary 1-watt resistors ranging from 750 up to 25,000 ohms, in the aerial lead of B.C. sets as a cure for B.C.L. interference from phone or c.w. transmissions. His original tests were made with a 30,000 ohm. car radio suppressor, but smaller types were found equally effective. A value between 10,000 and 15,000 ohms cured bad wipe out within a few years of his station. The R.S.G.B. Interference Committee will be pleased to hear from any member who has success with this method of overcoming interference.

DX ON 1.7 MC.

Mr. H. B. Old, G2VQ, reports that he has been regularly receiving telephony transmissions from U.S.A. police patrols working on about 172 metres. This news is confirmed by Mr. Collin, G2DQ, who sends a list of W calls heard, including W9LTA.

Any item of interest in regard to DX working on 1.7, 3.5 or 28 mc. should be sent to headquarters without delay.

PHONE TO CANADA ON 3.5 MC.

On the night of December 30-31, G5VL had a successful two-way 'phone QSO with VE1EI. G5VL, using an input of 65 watts, was reported R7 on L.S., and the Canadian, using 300 watts, was heard at R7 to 8, also on L.S. This is believed to be the first two-way G-VE telephony QSO on 3.5 mc. for many years. On the same evening G5SY heard W4RS at R7.

HAM PARODIES No. 5.

Cee Kew, Cee Kew, lend me your D.F.,
All along, down along, out along lee,
For I want for to hunt down a pirate to death,
Wi' Pip Eddy, Ack Emma, Iddy Umpty, Dit dit dah dit,

Yours truly, Don Tocs,
And old Uncle Tom at the wheel,
And old Uncle Tom at the wheel.

Now this pirate got wind of our jolly affair,
All along, down along, out along lee,
And he kept sending raspberries over the air,
At Pip Eddy, etc.

We got so annoyed at this insolent spitch,
All along, down along, out along lee,
That we all made a grab for Unc. Tom's rettysnitch,
Did Pip Eddy, etc.

We hunted him down and reduced him to tears,
All along, down along, out along lee,
And we left him screwed down to the key by his ears,
Did Pip Eddy, etc.

"Let this be a warning to hams one and all,
All along, down along, out along lee,
You'll share the same fate if you pinch someone's call,"

Said Pip Eddy, Ack Emma, Iddy Umpty, Dit dit dah dit,

Yours truly, Don Tocs,
And old Uncle Tom at the wheel,
And old Uncle Tom at the wheel.

"Pips."

APPRECIATIONS

The Secretary wishes to thank all members who sent him Christmas and New Year greetings. These were very much appreciated.

HIC ET UBIQUE.

Meetings—Contests—Calibration—Q.S.L. & Q.R.A. Sections— Slow Morse—Reception Tests.

I.E.E. Meetings

At the next London meeting to be held at 6.15 p.m. on Friday, January 25th, at the Institution of Electrical Engineers, Mr. John Grierson, the well-known pilot, will deliver a lecture dealing with his recent flights. Several members co-operated with Mr. Grierson during his flight from Ireland to Canada, last summer, and it is hoped that as many as possible of them will be present to hear a first-hand account of the radio problems which were faced on that occasion.

The subject for the February lecture to be held on WEDNESDAY, February 27th, will be announced in the next issue.

Provincial Meetings, 1935,

Council, in agreement with the D.R.'s, have decided that for the year 1935 five main Provincial Meetings will be held. The venues and provisional dates are as follows:—

Midland, March 24, Birmingham.
Western, April 7, Bristol.
South-Western, May 12, Torquay.
North-Eastern, June 23, Leeds or York.
North-Western, July 21, Manchester.

At each of these meetings Headquarters will be represented by the Secretary and probably other members of the Council.

In the event of this scheme proving successful, five different venues will be chosen for the 1936 meetings.

The Council wish to make it clear that D.R.'s in those Districts where no official meeting is being arranged, have the right to organise a local Conventionette, but official representation cannot be guaranteed at these meetings. The decision to reduce the number of official meetings has been made solely on the score that the Secretary cannot continue to attend every summer-time Conventionette. If the new plan does not prove completely successful, an endeavour will be made in 1936 to spread the meetings over a period of 12 months.

In regard to Districts in and around London, we have to announce that Mr. G. Featherby (D.R. No. 8) has agreed to organise a London and Home Counties summer outing on July 7. This will follow on similar lines to the highly successful St. Albans meeting of last summer. It is hoped to arrange a similar outing for members in districts South of the Thames if local Conventionettes are not held.

Binding Cases for The T. & R. Bulletin.

The desirability of providing a standard form of binding case for this Journal has again been raised. In the past the replies to our requests that interested members should communicate with Headquarters have been too small to warrant further attention to the matter, but with an increasing membership

we think the time may now be opportune to place an initial order.

We require a guarantee that at least 100 binders will be ordered. The price will not exceed 5s. each.

A postcard to the Secretary, indicating how many binders are required, will enable him to obtain a quotation. The bigger the original order, the smaller will be the cost.

QHM, QLM, QMH, QML

Many of us have reached the conclusion that the majority of replies to our Test Calls come from stations operating around our own frequency. The use of electron coupled oscillators makes this possibility even greater, because it is then an easy matter to QSY to the approximate or exact frequency of the calling station.

Frequently suggestions have been made that stations signing off from a Test or CQ call should state "Top" or "Bottom," indicating from which end of the band they intend to search on their receiver. This scheme was reasonably satisfactory until some of us began thinking in kilocycles instead of metres, for then the meaning of the expressions became reversed, and consequently "top" to one man was "bottom" to the next, because the first thought in kilocycles and the second in metres.

The suggestion has now been made that the following signing off abbreviations be put into vogue:—

QHM.—I will commence listening at the high-frequency end of this band, tuning towards the middle.

QLM.—I will commence listening at the low-frequency end of this band, tuning towards the middle.

QMH.—I will commence listening at the middle of this band, tuning towards the H.F. end.

QML.—I will commence listening at the middle of this band, tuning towards the L.F. end.

These suggestions have been made by W9FO, Editor of *Radio Amateur Call Book Magazine*, and will, we understand, be published in the March and subsequent issues of that book.

We think the scheme worthy of a trial during the B.E.R.U. Contest.

The 1935 R.E.F. Cup Contest.

On the occasion of the 10th anniversary of the formation of the "Réseau des Emetteurs Français," and upon its acceptance as a member-section of the I.A.R.U., the R.E.F. has pleasure in announcing an international contest, known as the "R.E.F. Cup Contest."

Rules.

1.—Points will be scored for each contact established with an amateur station located in France, its colonies or its protectorates (all F and CN prefixes). Contacts may be established by means of telegraphy or telephony on any of the international amateur wavebands. Only one contact

Technical Articles are Wanted

with a specific French competitor will be permitted to count for points.

2.—Competitors will be required to exchange a five-letter code word chosen by themselves; this code must be changed for each contact. One point will be scored for each effective contact.

3.—The competitor scoring the greatest number of points from the entrants in his country will be awarded a commemorative diploma and a free subscription to "Radio-Ref" for a period of three months. The competitor scoring the greatest number of points in the world will be awarded a special diploma and a year's subscription to "Radio-Ref."

4.—The contest will commence at 00.00 G.M.T. Sunday, March 24, 1935, and will conclude at 24.00 G.M.T., Sunday, March 31, 1935.

5.—Entries must reach the R.E.F., 17, Rue Meyet, Paris 6°, not later than Sunday, May 19, 1935.

6.—The report should cover the following information: Name, Address, Call Sign of the Competitor, Input and Total Score; and, for each contact: Date, G.M.T., Call, Codes, Frequency Band. A short description of the competitor's own station is also required.

7.—Acceptance of these rules is the only stipulation; the R.E.F. committee's decision must be accepted as final in all cases of dispute.

CALIBRATION SECTION FEES.

CRYSTALS, 1s. 6d. each; FREQUENCY METERS, 2s. 6d. for five points, plus 6d. for each additional point. These prices do not cover cost of return postage, which must in all cases be remitted as a separate amount.

Crystals and frequency meters should be sent for calibration, at owner's risk, to Mr. A. D. Gay, 49, Thornlaw Road, West Norwood, London, S.E.27.

International 28 M.C. Contest.

In addition to the information given by Mr. Clarke under 28 mc. Group Notes, Mr. Swain (G2HG) tells us that harmonics of commercial stations were heard by him on December 1 and 15, FYQ being definitely identified. On December 29 a weak Canadian, believed to be VE1GZ, was heard calling CQ at 15.55 G.M.T. Confirmation is being sought. WIZ and WQU were also heard during that day.

The 3.5 MC. Contest

We have pleasure in announcing that this event was won by Mr. R. A. Bartlett (G6RB), with Mr. W. E. Dunn (G2LR) second, and Mr. F. R. Canning

(G6YJ) third. A full report will appear in our next issue.

New Prefix for Malta.

The first evidence that our proposals regarding new Empire Prefixes have been acceptable is to hand from Malta, from which country our Representative advises us that ZBI is now being used in place of the old and confusing prefix VP3. The personal call letters from A onwards will be retained, thus VP3A, the call used by Mr. Cunningham, becomes ZBIA.

B.E.R.U. Contest.

Mr. Faithful, who operated as VU1AA a year or two ago, is now back in Bahrein Island, Persian Gulf. He will be using a VSS prefix during this B.E.R.U. Contest, but as this prefix has been erroneously allotted to Strait Settlements, some confusion may result. Members working a VSS call should obtain the QRA of the station. Bahrein will rank as a contact with Prefix Zone 17 (Iraq).

W.B.E. Certificates

The following W.B.E. Certificates have been issued:—

Name.	Call Sign.	Date, 1934.
F. C. Fenner ...	ZC6FF ...	October 17
G. Brown ...	G5BJ* ...	" 24
J. S. Owner ...	G6XQ* ...	" 24
C. Sharp ...	G6KU ...	" 25
M. Campbell ...	VK3MR ...	November 5
R. L. Belstead ...	VK4EI ...	" 14
L. Grech ...	G2AZ ...	" 19
N. Blackburne ...	G2AX ...	" 24
A. J. Perkins ...	G6KP ...	" 27
G. McL. Wilford ...	G2WD ...	" 30
S. A. Rance ...	VP3X† ...	" 30
J. Lips ...	HB9J ...	December 12
J. Braun ...	HB9AQ ...	" 21

*Telephony Awards.

†First Malta Award.

Calibration Section.

Manager: A. D. GAY (G6NF).

A few belated reports on the S.F. transmissions have come to hand, and although the number of reports is not large, we have decided to continue these transmissions during the winter months. It is suggested that they are too early in the morning. Unfortunately QRM is so heavy on 3.5 mc. after 10.00 G.M.T. that the transmissions would be seriously interfered with if they were given later.

Form of Transmission.

The transmissions commence at 09.30 G.M.T. or B.S.T., with the call: "RSGB de G6NF" sent several times; then "calibration signals on 3525 kc." a short pause of 30 seconds while the master oscillator is adjusted to the exact frequency, then a series of 10-second dashes until 09.36 G.M.T. At 09.36 G.M.T. an announcement is made to the effect that the frequency is to be changed to 3625 kc. At 09.40 and 09.50 G.M.T. the above performance is repeated on 3625 and 3725 kc. respectively.

QSL Section.

Manager: J. D. CHISHOLM (G2CX).

Several letters have been received as a result of last month's notes, and to those who have taken the trouble to make suggestions, we offer our best thanks, particularly to G2XS and G6ZU.

At the council meeting held last month the question was debated at some length, and the QSL Committee was instructed to prepare a report for approval at the January meeting. Details of this will appear in the February issue.

Once again we are at the beginning of a New Year, with a year of progress behind us. The cards handled have increased still further during 1934, and we have to acknowledge gratefully the help of both H.Q. staff and members alike for their efforts to ensure the smooth running of the section. We hope that the difficulties which are now besetting us will be solved to the satisfaction of all.

QRA Section.

Manager: M. W. PILPEL (G6PP).

NEW QRA's.

- G2HT.—H. TANNON, 16, Victoria Road, Whitehaven, Cumberland.
 G2JH.—J. K. HANKINSON, Old Ferry House, 5, Chelsea Embankment, London, S.W.3.
 G2PK.—H. H. LASSMAN, 3, Overton Drive, Wanstead, London, E.11.
 G2TW.—T. B. WIMBUSH, Signals Section, I.A.C. Squadron, R.A.F., Marston, near Ramsgate, Kent.
 G5FP.—A. M. HARDIE, 45, Derbyshire Lane, Stretford, Manchester.
 G5FZ.—J. CLOUGH, 107, Leeds Road, Bradford, Yorkshire.
 G5GW.—D. GROVE WHITE, 5, Douro Terrace, St. Helier, Jersey, Channel Isles.
 G5RI.—F. RYSON, Sele House, Hexham, Northumberland.
 G6BQ.—H. J. M. BOX, 52, Cobham Street, Gravesend, Kent.
 G6LD.—I. C. I. LAMB, 11, Duntrune Terrace, Broughty Ferry, Dundee, Angus, Scotland.
 G6LH.—Rev. L. C. HODGE, The Bungalow, Skirbeck Road, Boston, Lincolnshire.
 G6RB.—R. A. BARTLETT, 31, Kings Drive, Bishopston, Bristol, Gloucestershire.
 2AGN.—C. R. S. MOON, 774, Holderness Road, Hull, Yorkshire.
 2AGR.—W. A. RICE, 12, George Street, Mansfield, Nottinghamshire.
 2ALZ.—B. E. PIESLEY, 27, Herbert Street, Queens Crescent, London, N.W.5.
 2ARP.—E. P. WESTLAKE, "Ardlui," Wenlock Road, Shrewsbury, Shropshire.
 2AWD.—B. T. REED, 9, Leigh Street, Russell Square, London, W.C.1.
 2BMY.—R. McNEILL KERR, 79, Croftside Avenue, Croftfoot, Glasgow, S.4.
 The following are cancelled:—2BKD, 2BWF, 2BWV.

NEW MEMBERS.

HOME CORPORATES.

- R. A. COATES (G5RB), 47a, Darracott Road, Boscombe, Bournemouth.
 L. G. WATTS (G6WO), 817, Oxford Road, Reading, Berks.
 J. L. C. STONE (2AJA), 35, Elsie Road, E. Dulwich, S.E.22.
 S. B. D. YOUNG (2AQP), Berwick Hill, Berwick-on-Tweed.
 A. L. SHERIFF (BRS1631), Kittyghyll, Lake Road, Kendal, Westmorland.
 D. S. WATSON (BRS1632), 84, Bath Street, Rugby, Warwickshire.
 E. A. BARRIS (BRS1633), Devonberry, Purley Hill, Purley, Surrey.
 P. K. DEV (BRS1634), 6, Boswell's Drive, Springfield Road, Chelmsford.
 F. HAMER (BRS1635), Hilfred, Heatherview Road, Branksome, Bournemouth.
 K. JOWERS (BRS1636), 9, Cowslip Hill, Letchworth, Herts.
 A. ADAMS (BRS1637), County Police Office, Poulton-le-Fylde, Blackpool.
 A. R. WALDER (BRS1638), 6, Western Road, Eastbourne.
 W. E. COOPER (BRS1639), 46, Stanier Street, Fenton, Stoke-on-Trent.
 W. F. STRATTON (BRS1640), 55, Colburn Avenue, Hatch End, Middlesex.

- H. J. PINDER (BRS1641), 20, Barmouth Road, Wallasey, Ches.
 W. E. CROOK (BRS1642), c/o A.S.T., Ltd., Hamble, Hants.
 H. J. BARLOW (BRS1643), 8, Harton Avenue, Gorton, Manchester.
 W. A. SMITH (BRS1644), 19, Delph Avenue, Egerton, Bolton, Lancs.
 F. W. WARREN (BRS1645), The Mall, Sligo, I.F.S.
 G. F. JOHNS (BRS1646), 11, Radway Road, Southampton.
 J. LEGGETT (BRS1647), 5, Whitegate Road, Southend-on-Sea, Essex.
 S. R. DAWSON (BRS1648), 20, Empress Avenue, Ilford, Essex.
 W. G. R. WILBY (BRS1649), 18, Redland Grove, Bristol, 6.
 H. RUSSELL (BRS1650), c/o 59, Cameron Street, Beckett Street, Leeds, 9.
 H. H. GENT (BRS1651), 35, Lushington Road, Harlesden, N.W.10.
 R. WILLIAMS (BRS1652), Dee Cottage, Parkgate, Ches.
 J. A. LAING (BRS1653), 1, Loney Crescent, Denny, Scotland.
 K. D. BRUCE (BRS1654), Sunnycroft, Stroud Road, Gloucester.
 J. M. HAWKINS (BRS1655), 68, Elmhurst Road, Reading, Berks.
 J. H. TAYLOR (BRS1656), 18, Balmoral Grove, Rhyl, N. Wales.
 L. J. STEVENS (BRS1657), 24, Hall Street, Bedminster, Bristol, 3.

DOMINION AND FOREIGN.

- J. BRAUX (HB9AQ), Croix-Rouges 5, Lausanne, Switzerland.
 EMIL ZAVADIL (OK2HX), SL, Ostrava, Czechoslovakia.
 S. R. GREEN (SU1KG), Oasis, Bulkeley, Alexandria, Egypt.
 A. GULDFORD (VK4AP), c/o Sullivan Advertising Service, T & G Buildings, Queen Street, Brisbane, Queensland, Australia.
 H. E. GURNEY (VQ45NA), M'Lea, Post Office, Songhor, Kenya.
 J. A. SEAFER (X1AI), Apartado Postal No. 1, Pachuca, Hgo, Mexico.
 W. H. TITTLER (ZT5V), Radiola, Francois Road, Congell, Durban, S. Africa.
 H. S. BROWN (BERS265), H.M.S. Suffolk, c/o G.P.O., London.
 A. J. KINDNESS (BERS266), Luskere Tea Estate, Chanpur Bagan P.O., South Sylhet, India.
 G. H. HODGSON (BERS267), Parry & Co., Ltd., Box 12, Madras, India.
 R. J. BEE (BERS268), P.W.D., Kuala Kangsar, Perak, F.M.S.

R.S.G.B. Reception Tests.

Below will be found full details relating to Series 32, Reception Tests. Information required by new participants will be found on page 143 of the October, 1934, issue of the T. & R. BULLETIN. On request new members will be sent this information. At the conclusion of the Tests, logs should be sent to Mr. T. A. St. Johnston (G6UT), 28, Douglas Road, Chingford, E.4. The closing date for Series 32 is February 18, when all letters and logs received will be circulated to all participants in the form of a budget. BRS members will find these tests of interest, inasmuch as comparison can be made of reception conditions in the different districts from which logs are received.

SERIES 32.

Test Letter	Date 1935	Period G.M.T.	Band mc.
A	Sunday, Jan. 20	0800-0900	7
B	" " 20	0900-1000	56
C	" " 20	1000-1100	1.7
D	Thursday " 24	2130-2230	3.5
E	Saturday " 26	1800-1900	28
F	Sunday " 27	0830-0930	14
G	" " 27	0930-1030	28
H	" " 27	1130-1230	1.7
I	" " 27	2230-2330	7
J	Tuesday " 29	2000-2100	14
K	Sunday Feb. 3	1000-1100	3.5
L	" " 3	1100-1200	56
M	Wednes. " 6	2100-2200	7
N	Sunday " 10	1000-1100	14
O	" " 10	1100-1200	28
P	" " 10	1830-1930	56
Q	" " 10	2230-2330	1.7
R	Tuesday " 12	2100-2200	3.5

R.S.G.B. Slow Morse Practices

Dates and times for January-February are to be found below. 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. More reports will be appreciated, and are desired, in order to ascertain range of transmissions and numbers utilising the service. If a reply is wanted, please enclose stamped envelope or postcard. Stations willing to assist on 1.7 mc. band—particularly in those districts at present without a service—should get in touch with Mr. T. A. St. Johnston (G6UT), 28, Douglas Road, Chingford, E.4.

SCHEDULE OF SLOW MORSE TRANSMISSIONS.

Date, 1935.	G.M.T.	kcs.	Station
Jan. 20 Sunday	0030	1820	G2OI
" 20 "	0930	1828.3	G2II
" 20 "	1000	1815	G2DQ
" 20 "	1030	1911	G2JL
" 20 "	1100	1.7 mc.	G2UV
" 27 "	0030	1820	G2OI
" 27 "	0930	1828.3	G2II
" 27 "	1000	1815	G2DQ
" 27 "	1030	1911	G2JL
" 27 "	1100	1.7 mc.	G2UV
Feb. 3 "	0030	1820	G2OI
" 3 "	0930	1828.3	G2II
" 3 "	1000	1815	G2DQ
" 3 "	1030	1911	G2JL
" 3 "	1100	1.7 mc.	G2UV
" 10 "	0030	1820	G2OI
" 10 "	0930	1828.3	G2II
" 10 "	1000	1815	G2DQ
" 10 "	1030	1911	G2JL
" 10 "	1100	1.7 mc.	G3UV
" 17 "	0030	1820	G2OI
" 17 "	0930	1828.3	G2II
" 17 "	1000	1815	G2DQ
" 17 "	1030	1911	G2JL
" 17 "	1100	1.7 mc.	G2UV

TRADE NOTICES.

Electrolinx, Ltd., makers of Clix accessories, have produced a non-corrosive spade terminal for heavy duty work. This is a larger and more robust job than usual and is suitable for wire up to 3/16th in. over all diameter.

The terminals are available with the metal spade nickel-plated or lead coated, and with either a red or black insulator. They retail at a price of 3d. each.

Webb's Radio, of Soho Street, London, have submitted for examination a sample of the new air dielectric trimmer condenser recently put on the market by Stratton & Co., Ltd. The trimmer has been especially designed for air-tuned I.F. units and has a capacity of 3/70 mmfd. The brass vane assembly is secured to a frequentite moulding with raised fixing lugs, whilst adjustment is effected from back or front by means of slotted screws which engage the moving plate assembly. The dimensions are 1½ ins. by 1½ ins. by 1½ ins. The condenser is well finished, sturdily constructed and priced at the moderate figure of 3s. 6d.

Messrs. Ferranti have sent us a leaflet describing their new range of broadcast sets, which feature complete visible control. The Lancaster console, which is an all-electric superhet giving an output of 2½ watts, is available at the low price of 12 guineas, whilst the Arcadiagram represents the last word in radio-gramophones. This model is priced at 30 guineas. Intermediate ranges are the Arcadia at 15 guineas, the Gloria at 22 guineas, and the Lancaster radiogram at 24 guineas. The Lancaster and Arcadia are also available with Garrard automatic record changer for an extra 9 guineas.

G5MP IN CANARY ISLES

Mr. B. W. F. Mainprize is spending the winter in the Canary Islands, and is willing to give reports on 1.7 mc. transmissions. He listens every week-day evening from 19.30 to 20.00 and from 21.00 to 22.00 G.M.T., and on Sundays at these times and from 22.00 to 23.30 G.M.T.

His address is Hotel Marquesa Puerto Oratava, Tenerife, Canary Isles. Letters should bear no mention of radio or call sign on the envelope.

Bulletin Cartoons

The Editor is pleased to announce that a copy of Ladner & Stoner's "Short Wave Radio Communication" has been presented to Mr. W. H. Matthews (G2CD) in recognition of the excellent series of cartoons submitted by him during the year 1934.

SILENT KEYS

It is with regret we record the passing, at the early age of 30, of M. Louis Era (ON4BC). One of the earliest Belgian amateurs, he will be missed not only by his intimate colleagues, but also by many others who have in past years enjoyed friendly chats with him from his station in Antwerp. For several years M. Era was a member of the R.S.G.B.

With very deep regret we have also to report the death, on December 12, of a well-known Nottingham member, Mr. R. E. James (G2JR).

Mr. James was Secretary of the old Nottingham Experimental Society, and had been interested in the amateur movement for many years.

Our sympathies are extended to his widow, relations and friends.

Yet another of our members has passed away, Mr. John Kealy (G6IH). For some while Mr. Kealy had been engaged as a maritime wireless operator, and we understand his fatal illness was brought on as the result of fever and pleurisy developed on a recent trip to South America.

Mr. Kealy lived in Bedford for many years, and was closely associated with Lieut. Beaumont, VU2FP and G6HB. He was well known to many of us as a fine amateur and excellent operator. Our deepest sympathies are extended to his widowed mother, who is now resident in Eastbourne.

DX CHART—No. 2.

DX CONDITIONS: NOVEMBER 15—DECEMBER 15, 1934.

G.M.T.	14 Mc.	7 Mc.	3.5 Mc.
0100			W1
0200			W1
0300			W1
0600		PY1; VP5; VK3	W1
0700		LU	
0800		LU4; W2.3; ZL1	
0900		ZL1	
1000	CX1; ZL4; W1; VU2; U9		
1100	W1; VK4; VK23; ZS1; VP1		
1200	W1; VK3; SU	KA1	
1300	W1; 5; VE1		
1400	W1; 5; VE3.4		
1500	W1; 6; VP5; VP4		
1600	W1; 6; VP5; FC4; ZT6; VE2.4; K3; ZL	FQ	
1700	W1; 6; VE2; ZS; FC4; K6	ZL; YI	
1800	W1; VQ8; ZT6; LU7	W7; U9; ZL	YI
1900	W1; ZT2; ZS1; ZE1	CR7; ZS5; ZT1; VK2	
2000		ZT1; VK4; CM8; Y1; K5	
2100		ZS2; PK1	
2200			W1.2
2300		LU8; VP5; CR7; VK2.3	W1.2
2400			W1.2

(A) W1 signifies 1, 2, 3, 4, 8, and 9. (B) Bold type indicates stronger signals.

We are glad to welcome G2RW as a contributor to the above scheme, and regret that G2WQ, of Manchester, was omitted in the first list of helpers.

Empire Calls Heard.

By Eric W. Trebilcock (BERS-195), Postal Staff, St. Peters, South Australia, September 1, 1934, to October 28, 1934:—

7 mc.: ei5f, 8b, g2qo, 2tm, 2vq, 2xw, 2zq, 5fv, 5yg, 6cj, 6hb, 6hp, 6mf, 6nj, 6tr, 6ui, gi5nj, sulec, v8ab, 8af, ve5bi, 5jc, vplzz, 3am, 5mk, vq4crl, vs5ac, 6ah, 6aq, 7gj, vu2ly, zeljo, zt6x.

14 mc.: g2nh, 2oa, 2vq, vs5ac, 6ah, 6aq, 7gj, vu2fy, zslh.

By H. S. Bradley, 66, Main Street, Hamilton, N.Y., U.S.A. During 1934.

C. W.

G2ak, 2ao, 2as, 2av, 2ax, 2bh, 2by, 2dc, 2df, 2dh, 2di, 2dl, 2dq, 2du, 2dv, 2dx, 2dz, 2fn, 2gc, 2gf, 2gj, 2gk, 2gl, 2gn, 2gq, 2gr, 2hf, 2hg, 2hp, 2hu, 2hx, 2ic, 2ih, 2ii, 2im, 2in, 2io, 2jb, 2jx, 2kb, 2kc, 2ki, 2km, 2ky, 2kz, 2la, 2lc, 2lz, 2ma, 2mc, 2mi, 2ml, 2mn, 2mr, 2mv, 2nh, 2nk, 2nm, 2nn, 2np, 2ns, 2oa, 2oc, 2od, 2oi, 2ol, 2os, 2pl, 2pn, 2ps, 2qf, 2qo, 2rf, 2sd, 2tn, 2tn, 2tx, 2ul, 2uv, 2ux, 2vv, 2wa, 2wd, 2wk, 2xa, 2xo, 2xr, 2xs, 2xu, 2xv, 2zj, 2zp, 2zq, 2zx.

G5bd, 5bj, 5bo, 5bq, 5ch, 5cu, 5cv, 5db, 5dl, 5dm, 5ds, 5fb, 5fv, 5gj, 5hb, 5hc, 5hz, 5iz, 5ja, 5jo, 5ju, 5jy, 5ka, 5kd, 5kg, 5kh, 5kt, 5ku, 5kz, 5la, 5mi, 5mk, 5ml, 5mq, 5nd, 5nf, 5ng, 5ni, 5oj, 5ph, 5pl, 5pz, 5qa, 5qf, 5qj, 5qs, 5qu, 5qy, 5rd, 5rx, 5sc, 5sg, 5sh, 5so, 5sr, 5sy, 5tc, 5tz, 5uc, 5uf, 5us, 5uy, 5yv, 5vh, 5vl, 5vm, 5vn, 5vq, 5vu, 5wp, 5wr,

5wy, 5wz, 5xb, 5xt, 5xv, 5yb, 5yh, 5yl, 5yp, 5ys, 5yv, 5yy, 5zg, 5zl, 5zx.

G6ag, 6am, 6ay, 6bc, 6bd, 6bs, 6bt, 6cb, 6cj, 6cl, 6ct, 6cv, 6cw, 6db, 6dh, 6dl, 6fn, 6gc, 6ge, 6gl, 6gm, 6gn, 6gs, 6gv, 6gz, 6hb, 6hp, 6if, 6ir, 6iz, 6jg, 6jq, 6ki, 6kj, 6km, 6kp, 6kq, 6ku, 6lf, 6li, 6lk, 6lm, 6mc, 6mt, 6my, 6nf, 6nj, 6nk, 6nv, 6oc, 6oo, 6os, 6oy, 6pf, 6pi, 6po, 6py, 6pz, 6qb, 6qc, 6qk, 6qp, 6qq, 6qs, 6qx, 6rb, 6rg, 6rk, 6rl, 6rs, 6rt, 6rv, 6sy, 6tm, 6to, 6tt, 6uf, 6uj, 6uo, 6us, 6ut, 6va, 6vk, 6vp, 6vr, 6wm, 6wn, 6wp, 6wt, 6wu, 6wy, 6xb, 6xh, 6xl, 6xm, 6xn, 6xq, 6xr, 6xx, 6ya, 6yc, 6yj, 6yl, 6zg, 6zr, 6zs, 6zu, 6zv.

Gi2kr, 2oy, 2sp, 5aj, 5jn, 5mz, 5nj, 5qx, 5sj, 5ur, 6tk, 6tx, 6wg, 6yw.

E1lt, Ei2b, 2d, Ei3c, Ei5f, Ei6f, Ei8b, 8d, Ei9d.

Telephony.

G2ak, 2ao, 2ax, 2dl, 2dq, 2gf, 2kb, 2mv, 2oi, 2pn, 2sd, 2xo, 2xv, 5bj, 5by, 5cv, 5ju, 5kh, 5mi, 5ml, 5qy, 5rd, 5us, 5vb, 5vm, 5xb, 5yv, 5zg.

6ag, 6cw, 6dl, 6ir, 6li, 6pf, 6po, 6py, 6rb, 6rl, 6to, 6va, 6vp, 6wy, 6xq, 6xr.

Vk4uu, Vp5mk, 5pa, Vp6mr, Ze1jf, Zt2f.

By H. S. Brown (BERS265), H.M.S. Suffolk, at Hong Kong:—

g2av, 2nz, 2qo, 2rf, 2tr, 5fv, 6in, 6ki, 6kp, 6or, 6qx, 6tr, 6uf, 6xj, vs7gj, vu2by, 2fy, 2ls, 2lt, zslc, zu5g, vk2da, 2dq, 2ex, 2ny, 2th, 8qp, 2vq, 3bm, 3bo, 3fx, 3hg, 3mr, 3vr, 3vw, 4ei, 5cr, 5fc, 5hb, 5lb, 6pk, zllcc, 1ft, 3an, 3aq, 4ck.

NOTES and NEWS



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), Durham,
and Northumberland (Middlesbrough is in this district.)
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. H. B. OLD (G2VQ), 3, St. Jude's Avenue, Mapperley,
Nottingham.

DISTRICT 5 (Western).

(Hereford, Oxford, Wiltshire, Gloucester.)
Mr. W. B. WEBER (G6QW), 2, Balmoral Road, St. Andrews,
Bristol.

DISTRICT 6 (South-Western).

(Cornwall, Devon, Dorset, Somerset.)
Mr. W. B. SYDNHAM (G5SY), "Sherrington," Cleveland Road,
Torquay.

DISTRICT 7 (Southern).

(Berkshire, Hampshire, Surrey.)
Mr. E. A. DEDMAN (G2NH), 63a, Kingston Rd., New Malden, Surrey.

DISTRICT 8 (Home Counties).

(Beds., Bucks., Cambs., Herts. and Hunts.)
Mr. G. FEATHERBY (G5FB), 30 Lindsey Road, Bishops Stortford,
Herts.

DISTRICT 9 (East Anglia).

(Norfolk and Suffolk.)
Mr. H. W. SADLER (G2XS), Redways, Wootton Road, Gaywood,
King's Lynn, Norfolk.

DISTRICT 10 (South Wales and Monmouth).

Mr. D. LOW (G5WU), "Nantissa," Westbourne Road, Penarth,
Glamorgan.

DISTRICT 11 (North Wales).

(Anglesey, Carnarvon, Denbighshire, Flintshire, Merioneth,
Montgomery, Radnorshire.)
Mr. T. VAUGHAN WILLIAMS (G6IW), "Malincourt," Grosvenor Ave.,
Rhyl, Flintshire.

DISTRICT 12 (London North).

Mr. S. BUCKINGHAM (G5QF), 9, Brunswick Park Road, New
Southgate, N.11.

DISTRICT 13 (London South).

Mr. H. D. PRICE (G6HP), 12, Hillcrest Road, Sydenham, S.E.26,
and Mr. J. B. KERSHAW (G2WV), 13, Montpelier Row,
Blackheath, S.E.3.

DISTRICT 14 (East-ern).

(East London and Essex.)
Mr. T. A. ST. JOHNSTON (G6UT), 28, Douglas Road, Chingford, E.4.

DISTRICT 15 (London West and Middlesex).

Mr. H. V. WILKINS (G6WN), 81, Studland Road, Hanwell,
W.7.

DISTRICT 16 (South-Eastern).

(Kent and Sussex.)
Mr. A. O. MILNE (G2MI), "Southcot," Larkfield, Kent.

DISTRICT 17 (Mid East).

(Lincolnshire and Rutland.)
Mr. A. E. LIVESY (G6LI), Stourton Hall, Horncastle, Linca.
(acting D.R.) REV. L. C. HODGE (G6LH), The Bungalow,
Skirbeck Road, Boston, Linca.

DISTRICT 18 (East Yorkshire).

(East Riding and part of North Riding.)
Mr. T. WOODCOCK (G6OO), 8, George Street, Bridlington.

SCOTLAND.

Mr. J. WYLLIE (G5VG), 31, Lubnag Road, Newlands,
Glasgow.

NORTHERN IRELAND.

Mr. W. GRAHAM (G1GV), 5 Ratcliffe Street, Donegal Pass, Belfast.

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

DISTRICT 1 (North-Western).

DURING the past year our District has shown a gradual improvement, but if this is to continue every member must give all the help he can to his C.R. Do your best to avoid all cases of friction, not forgetting that such may ultimately throw discredit on your Society. The best I can wish you is a Happy New Year and a united District.—G6TW.

An attendance of 20 was recorded at the last Manchester meeting, when a short talk was given by G2OI on the construction of a single signal super, followed by the usual discussion.

G6JN has obtained another ship and the members wish him bon voyage. 5ZN reports activity on 7 mc.; quite a number of BRS and AA stations are very busy with code with a view to obtaining full tickets, and it is hoped that they will have the best of luck and radiating permits in the New Year. G6ZS is still working DX on 14 mc. when it is about, and reports the end of BCL QRM by the said QRM moving from the district! 6AX has the sympathy of all members in the hard times he has had during the last month or so, and the hope that

he will have better luck in the coming year with a speedy recovery to health of Mrs. AX and junior op.

The following stations report active:—2DH, 2BC, 2BK, 2OI, 2HL, 2WQ, 5CA, 5FA, 5OZ, 5YD, 5ZT, 5US, 5ZN, 6JN, 6QA, 6AX, 6ZS, 6GX, 6GV, 2ACP, 2BHF, 6ZU, BRS1549, 1502, 1504, 1467, 1579, 1114, 2KY.

The C.R., Mr. Lucas, would like to take this opportunity of wishing everyone a very happy New Year, with plenty of DX.

Ten members attended the December meeting in Liverpool, together with two visitors. The new proposals put forward by headquarters regarding District Conventionette were discussed and the meeting voted unanimously in favour of Scheme 1, whereby it is suggested that five provincial meetings shall be held every year in centres appointed by headquarters.

No set programme had been arranged for the meeting, but a most interesting argument developed through a chance remark by one of the members concerning the relative merits of British and American transmitting valves. At times the

atmosphere became quite heated, but the meeting finally terminated in a peaceful atmosphere, and it was agreed by everybody that British valve manufacturers did not cater sufficiently for the needs of amateur transmitters.

Particulars of the activities of local members are as follows:—

G2BNA is building condenser mikes. 2KZ and 2AVK are busy on 7, 14 and 1.7 mc. 2BWG is experimenting with crystal controlled oscillator doublers with a view to operating on 56 mc. 2RF finds conditions bad and blames his receiver, so is rebuilding. He is also active on 56 mc. 6TT and 2OA are both rebuilding, and 6TT has promised to bring down some of the units of his new transmitter, for inspection at the meetings. 6CX is still completing his new transmitter, but hopes to be active again very shortly. BRS1541 is getting ready for 56 mc. BRS1581 is rebuilding his receiver and BRS1395, who is also interested in 56 mc., is willing to stand-by on this band at any time on Sundays by arrangement.

DISTRICT 2 (North-Eastern).

The D.R. wishes all members a Very Happy and Prosperous New Year. During the forthcoming year I want a report from all area representatives, whether activity is prevalent or not. These reports should be sent to Mr. C. Sharp, 316, Poplar Grove, Gt. Horton, Bradford, to arrive not later than the 23rd of each month.

During the past twelve months certain areas have failed badly in this respect, which makes it very difficult to arrive at a true definition of our position in the world of Amateur Radio, and as this is the largest district in the British Isles, smaller districts look to us for something better.

REPORTS CANNOT BE MADE WITHOUT MATERIAL. WHAT ABOUT IT?—(G6PY.)

The notes for this month will have to be curtailed somewhat owing to the fact that no reports or data of any kind have been received, this no doubt is due to the intervention of the Christmas holidays.

The activity of the Bradford group is reflected in the number of new stations which have become licensed lately, and we have pleasure in welcoming G5YW, ex 2BIT, this month. After the usual early troubles, he is now putting out some good 'phone on the 1.75 mc. band, and carrying out tests with G2UY and G2QM.

The monthly meeting of members was held over, as also were the meetings of the Bradford Radio Society, due to the holidays. The latter are held every Wednesday evening at Cambridge House, Horton Lane, Bradford, at 7.45 p.m., and the R.S.G.B. members who are always present in good numbers will be pleased to meet anyone interested in radio.

A short visit was made during the holidays by our old member, Mr. Niven, who recently removed to Middlesex, and we learn with pleasure that he has settled down very well, and has been made welcome by G6VP and other local members.

DISTRICT 5 (Western).

The D.R. and his C.R.'s take this opportunity of wishing all members a Happy and Prosperous 1935.

The Bristol Section monthly meeting, held in December, was the best attended of the year,

members having been circularised that the N.F.D. film would be shown. Unfortunately, they were badly "let down," because another District failed to return the film as instructed.

The introduction of the second item of the meeting, a "Junk Sale," however, turned a very disappointed meeting back to its usual harmony, and a most enjoyable evening was then spent. Members heartily thanked Mr. J. N. Walker (G5JU) for his services as C.R. during the past year, and expressed regret that he found it necessary to resign from that post. Will members please note that Mr. A. E. Brookes (G6VK) is the new C.R. for Bristol and Gloucester, other C.R.'s in the District being as last year.

The C.R. for Oxfordshire thanks all his members for their co-operation in the past, and trusts it will continue during the coming year. He reports activity well maintained, most stations reporting active in one way or another.

Wiltshire members are also active, and by reports in their letter budget many are doing real experimental work. The D.R. thanks all C.R.'s and members for their help and assistance during 1934, and trusts that the latter will support their C.R.'s by attending meetings, etc., during 1935.

DISTRICT 6 (South-Western).

Interest in the district seems to be well maintained, and most members are active. As before, 3.5 mc. and 14 mc. hold most attention, and on the former band 'phone work is still well to the fore. G5VL's 'phone is especially noteworthy, and seems to be getting out well. The two Budgets are still in circulation, though the one belonging to the Exeter and Torquay area seems to be lagging a bit. If this report should catch the eye of any member who happens to be holding up the circulation, will he please get a move on!

The D.R. understands that there have been no nominations from the south-west for county representatives; that being the case it is up to the D.R. to see that these positions are not left empty. We take it that the representatives for Devon and Cornwall are willing to carry on for another year, but in the case of Somerset, 2HF informs the D.R. that he will be too busy during the coming year to do full justice to the office. It is therefore hoped that someone else can be found who will take the job over. We thank 2HF for his services during the past year and are very grateful for all the help he has given. It is hoped that the new C.R. for Somerset will be able to get a Budget started.

G5SY has spent a considerable amount of time recently rebuilding parts of the TX and has now a push pull PA stage working with variable magnetic coupling to the buffer. This proves extremely useful and accurate in adjusting the drive for 'phone work, and is far superior to capacity coupling.

G6II, of 37, Ashcombe Road, Weston-super-Mare, has agreed to act as C.R. for West Somerset.

Owing to the non-arrival of the last Budget there are no individual reports to record. The D.R. therefore closes by wishing all members of the District a very Happy and Prosperous New Year, and extends the wish to all members of the Society.

DISTRICT 9 (East Anglia).

The weather was not very kind for our meeting in Lynn on December 2, but quite an interesting time was spent notwithstanding.

The meeting commenced at lunch time, which, owing to the scattered membership of this District, is considered essential. A visit to the power station followed, and then tea, meeting, and station visits!

The junk sale had not many contributors owing, no doubt, to the weather, and it is hoped for a better show on a future occasion.

We were very glad to welcome our old friend G5JO and party from Cambridge, and others came from Norwich, Swaffham and Downham.

It was decided to hold our next meeting at Bury St. Edmunds on the first or second Sunday in April next (7th or 14th), and details will then be drawn up for N.F.D. plans. Incidentally it was provisionally arranged that one of our N.F.D. Stations would be in the vicinity of Swaffham and the other one between Bury and Norwich. Will users of the roads in these areas therefore keep their eyes open for suitable spots and report same to the D.R.

It was also considered that our meeting would be considerably enhanced if we could get hold of

STANDARD FREQUENCY TRANSMISSIONS.

SUNDAY,
January 27th, 1935

0930 GMT.	3525 KC.
0940 GMT.	3625 KC.
0950 GMT.	3725 KC.

Accuracy within 0.01 per cent.

someone to give us a, not too highly, technical talk. Will members therefore let the D.R. know if they can either help or get someone who can do so.

We are glad to hear that 2BGO has passed his Morse test and now becomes G6QZ.

G2MN's application for a 3.5 permit has gone forward to the G.P.O., and so great hopes are entertained.

2AWI at home on vacation in Lynn, is busy with chimney pots, slates and blowing condensers, so no doubt signals will be stirring ere long.

We are glad to know that Mr. Bell (BRS1291) is considering it time to apply for an AA—quite time O.M. BRS are supposed to mature quickly in No. 9!

Incidentally, its about time we had a few more BRS. What about it G2UT?

G2XS has been busy initiating some Rover Scouts and the Reverend Scout Master into the mysteries of ham radio, so it is hoped that the seeds have fallen on fertile ground.

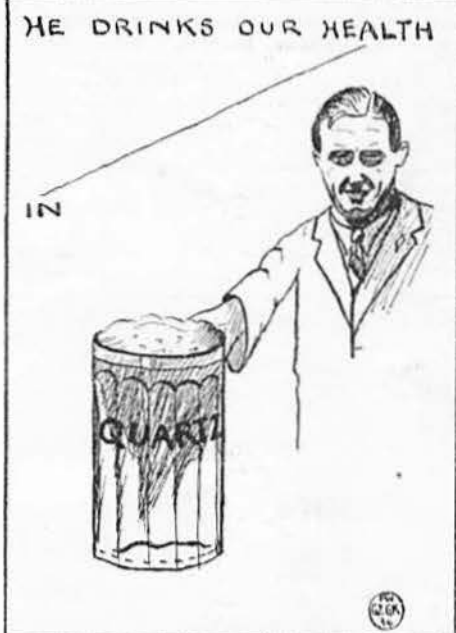
It is with interest that we note a new member in Ipswich, and feel sure Mr. Wood will be extending a hand to him if he has not already done so.

DISTRICT 10 (South Wales and Monmouth).

The Christmas holidays are now over, and if the absence of signals during this period is any guide, it would seem evident that the members in the District thoroughly enjoyed the festive season.

During the month, however, members in the Monmouth area have been keenly active and had marked success.

G6YJ is putting out an excellent signal on 3.5 and 7 mc., having worked VK7BJ and ZD2NE on 7 mc., the former giving R5, although conditions were very poor during contact. On 3.5 mc. successful contacts were made with SU6HL, VE1BV and VOSHK. G5BI has devoted considerable time to the U.S.A. 1.75 mc. stations, and has a formidable list of phone and c.w. stations to his credit, particularly on the 16th.



Mr. Ernie (Quartz) Dedman—G2NH.
(D.R. No. 7 District).

Mr. Mudford, Secretary of the Blackwood Radio Society, is to be congratulated on the excellent progress made in Morse which has enabled him to produce a log on the high frequency bands of considerable value, and indicating marked activity between 04.00-07.00 G.M.T. G2JL is trying out the 2BI aerial and various aerial coupling circuits.

G6PF, 5FI, 2PA, 5KK are also active, while G2XX and G5WU have unfortunately been laid up, but hope to be on the air shortly.

At the time of writing, reports have not been received from the Swansea area, and it is presumed the usual letter has been lost in the post.

DISTRICT 11 (North Wales).

The monthly meeting held at G2II on December 2 was badly supported, the only members present being G2II, 2BKH, BRS1156, 1191 and 1211. This is not good enough, OM's; please let us have your support at these meetings in future.

The majority of members are active, but only one individual report has come to hand, and that from G2II, who has been doing good work at weekends with portable 160-metre gear, using an antenna with a 66-ft. top and a counterpoise of the same length. He is investigating probable "dead spots" in the locality, and hopes to be able to give us an account of his findings at the next meeting.

The 5-metre group are carrying out experiments with directional antennae, and are co-operating with members of District 1 in this field.

We are glad to report that 2ALX has recovered from his recent illness, and is at present engaged in housing his gear in his new QRA.

I hope all who possibly can will attend the meeting at G2II on Sunday, February 3.

The D.R. takes this opportunity of wishing all members a Happy New Year, and hopes that they will all endeavour to do good work during 1935.

DISTRICT 12 (London North).

The festive season curtailed the activities of the District. G5CW has worked W, ZL and VK7. Welcome to a new station, GSDJ, who has started on 7 mc., and would appreciate reports.

The DR is circulating a card to all the active members in the district, asking for details of their stations. He would like to receive a 100 per cent. reply, otherwise the circular will be useless. Seasonal greetings from all in No. 12.



G6CL recently reported that he had W.A.C. and W.B.E. using his beanstick Aerial.

DISTRICT 13 (London South).

A District meeting was held at G6HP on December 19, and was in every way a great success. In spite of the fact that rain was descending in torrents some 20 members turned up. It was decided to run a Letter Budget, on the lines of the previous one in existence in the district, each member adding his new contribution and detaching his old letter as the Budget comes round to him.

Will all members please note that under this arrangement it will be necessary for everyone to send a report to one of the D.R.'s before the 20th of each month, in order that these notes for the BULLETIN may be kept up to date.

We hope, in future, to arrange meetings nearer the extreme limits of the district, as meetings are already being held in the central portion by the S.L.D.R.T.S. As no satisfactory arrangement has yet been arrived at, the next District meeting will be held at G6HP, 12, Hillcrest Road, Sydenham, S.E.26, at 8.30 p.m. on January 16.

Will everyone please make a special effort to be present? Anyone who cares to attend the next meeting of the S.L.D.R.T.S., at the Brotherhood Hall, West Norwood, on the first Wednesday in February, will be heartily welcomed.

Reports are more plentiful this month, and must be cut as short as possible. G2YG is rebuilding, but is still active on 1.7 mc. G6FU is using QRP for local contacts and is not very keen on DX. G6CS works mostly on 7.069 and 1.913 kcs., but will be on 28 and 56 mc. shortly. G2JB is working W's on 7 mc., but is going on to 14 mc. soon. G6QB is working on 14 mc. only, still trying out new aeriels. Will be on QRO 'phone and also QRP 1.7 mc. very shortly.

G2AI is hoping to do some aerial experiments to improve W contacts. G2PT wants skeds on 3.5 mc. G5HF has just started on 7 mc. and should also be on 14 by the time this appears. G5JW is using "59's" for 7 mc. phone. Also has worked W and VE with his 8 watts on 14 mc. G6QN dilates on the merits of a self-excited rig compared with CC. G6AN sends in a "nil" report, but hopes to be active again soon.

G5GF is busy with R.N.W.A.R., but is also equipped for all bands. G2GZ is on 3.5 mc. G6HM is using "higher power"—7.5 watts! G6CB is a newcomer and worked 20 countries in the first two weeks on the air. G2WV is using self-excited circuit on 7 and 14 mc. and is very keen, in his spare time, in really waking up the district. G2FS is rebuilding and hopes to be on the air soon.

2AGW is doing receiver experiments and wants QRA of ZQ1A. 2AFK is working on wavemeter calibrations. 2BUW is working at Morse for full ticket.

G6NF has been active on 3.5, 7, 14 and 28 mc., and on the former band has contacted U.S.A. at R6. On 28 mc., best report has been from G6DH, at Clacton, R4. The station has been completely rebuilt.

A final word to all in South London. We are doing all we can to put this district on the map again, back in its former position of pre-eminence. In order to accomplish this we must have the whole-hearted support of you all. So please don't forget to let one of the D.R.'s have a report, regularly, before the 20th of each month.

DISTRICT 14 (Eastern).

At the Essex meeting, held at G2DQ, 16 members were in attendance. Conventionettes were discussed, and a junk sale arranged for the next meeting, to be held on January 23, at G5UK. Will all members having goods for disposal please notify G5UK? The station of G2DQ gave interest to those present—particularly the various gadgets employed.

The East London section varied from their usual meetings by holding a supper at the Castle Hotel, Woodford, when 14 members were present. Several stations in the district were recently visited by GI6WG and his daughter, other visits have been from PA0FY (G6FY to you!) and PA0HI, who will be remembered as one of the Anglo-Dutch Field Day guests. 2APS has now moved to Ilford.

DISTRICT 15 (London West, and Middlesex)

The sale of apparatus which took place at the last meeting proved quite successful. It was surprising to see so much spare gear for disposal, and as a result many members returned to their shacks

(see calendar) when it is hoped to discuss the problem of running separate meetings for their benefit. Will all those who can possibly get along please do so.

No written reports have come to hand but from personal contacts with members it appears that the active operators are keeping the District on the air.

The DR wishes to thank all who sent him seasonal greetings, and in turn wishes everyone A Happy New Year.

DISTRICT 16 (South-Eastern).

Activity in Kent is at a very high level. We are sorry to know that our popular and energetic C.R. (G2IC) is ill, and trust that he will soon be fully restored to health. Folkestone still shows full activity. 2VI is testing with a T25D. 2GD hopes to be on 3.5, 7 and 14 mc. soon. Beckenham is going strong. A record muster attended the last local meeting.

The "Ham," the local magazine published by 2GB, and devoted to the lighter side of Amateur Radio, has exceeded all expectations in circulation. It may be obtained monthly at a subscription of 2s. per annum.

Our first detailed report is to hand from Ashford via 6SY. Local meetings are well attended. 2JV is testing on 56 mc., and is asking for co-operation. 5QL has at last got the mains.

6SY has been trying directional aerials trained on the moon, to test the possibility of receiving echos. No echos were observed, but this is believed to be the first serious attempt in this line. Full details of the aerial system used will, it is hoped, be published next month. 6SY is going all out to win the 1.7 mc. cup.

In Tunbridge Wells BRS1555 is now 2AXQ 50Q has been keeping schedules with Scotland on 7 mc., using 50 volts H.T.

The Medway District continues active. 2MI and 6RQ are two of the members who have stated that they are after the 1.7 cup! 2OV is putting out some excellent 'phone on 1.7. 2IG has finished his S.S. super, and reports excellent results. Several commercially built S.S. supers are being installed in the locality. Anyone willing to swap one for a pair of pyrex insulators, a brand new Marks and Spencer's 120v. H.T. batt. and an old piano is asked to communicate with 2MI.

As usual, there is no report from Gravesend or the county of Sussex.

DISTRICT 17 (Mid-East).

Pride of place in this month's report must go to G2LR, whom we learn has secured second place in the 3.5 mc. contest. The whole District will assuredly join in offering him hearty congratulations. It is good to see District 17 figuring prominently in contest results again. G2LR reports that G6AC has now obtained a shack and the necessary permission from the Air Ministry, so he will soon be on the air at Cranwell.

G5BD has managed to QSO another W6, but found conditions very unreliable. G5CY has built a tri-tet and is now testing link-coupling.

2AUR is progressing well with his new COPA. 2BKF is now preparing to build a T.P.T.G.

At Boston activity centres largely on 56 mc. Members there have entered the 56 mc. sphere rather late and so have been trying to make up for lost time with some interesting field days during Christmas week. G6LH has constructed a 2 watt

DISTRICT CALENDAR**January/February, 1935**

- Jan. 16.—District 13, 8.30 p.m., at G6HP, 12, Hillcrest Road, Sydenham.
- Jan. 22.—District 14 (East London Section), 7.30 p.m., at 2APS, 9, Royston Gardens, Ilford.
- *Jan. 23.—District 14 (Essex Section), at G5UK, 19, Meadway, Westcliff-on-Sea.
- *Jan. 23.—District 15, 7.30 p.m., at G5LI, 35, Roy Road, Northwood. Discussion: "Station Lay-out and Monitors."
- Jan. 27.—District 7, 2.30 p.m., at "Hand and Spear," Weybridge.
- Jan. 30.—District 15, 7 p.m., at G6WN, 81, Studland Road, Greenford Avenue, Hanwell. This meeting is for A.A. and B.R.S. members only.
- Feb. 3.—District 11, 6 p.m., at G2II, The Flagstaff, Colwyn Bay.
- Feb. 7.—District 5, 7.30 p.m., at Full Moon Hotel, Bristol.
- Feb. 8.—District 1 (Manchester Section), 7.30 p.m., at Brookes' Café, 1, Hilton Street, off Oldham Street, Manchester.

* Sale of apparatus at this meeting.

with something they required. As this is to be a monthly feature, will everyone please endeavour to support the meetings and bring along any spare apparatus they may have.

The January meeting will be held at G5LI (see calendar). His QRA is about five minutes from Northwood L.N.E.R. and Met. Station (not Northwood Hill) and can also be reached by Green Line (Route B) or 'bus No. 183.

A meeting for AA and BRS members is fixed to take place at the D.R.'s QRA on January 30

split Colpitts TX and BRS1044 a 2-valve super-regenerative RX. Signals from this TX were audible at R2 up to three-quarters of a mile away in a moving car. The aerial systems used were much shielded, especially that of the RX, as the car used had a metal body.

G6GH, of Boston, had the distinction of working a W1 in Boston, Mass. G6LH has had a complete rebuild and will soon be active again with a new CO-PA. BRS106 and 406 hope to be active again in the near future. BRS1162, late of Jersey, has been visiting Boston and was heartily welcomed.

The only report from Grimsby comes from BRS1487, who is an enthusiast. He has constructed a portable receiver so that he can listen during spare time at his work. The acting D.R. would much appreciate reports from the other Grimsby members. Unfortunately, the size of the District renders it difficult for members to get together easily, and it becomes increasingly necessary to report regularly that we may all know of activities at the various stations.

G6LH thanks the District for electing him C.R. He will endeavour to live up to their expectations and desires. All success for 1935!

DISTRICT 18 (North-Eastern).

The D.R. takes this opportunity of wishing everyone a very happy and prosperous New Year, with or without DX according to taste!

G6UJ worked VE and VO on 3.5 mc. during the tests; G5FV is testing out new aerial systems and finds 28 mc. very dead; G2TK is rebuilding his medium power TX for 7, 14 and 28 mc. using 1,000 volts H.T. and GUI's as rectifiers; he is listening regularly on 28 mc. but has heard nothing except local station harmonics; 2AUN and 2AMM are busy with television experiments; BRS1316 still favours a triode as his detector, after exhaustive tests with S.G. valves; BRS1321 and BRS1340 are experimenting with untuned S.G. H.F. stages; 2ADY has built an A.C.S.W. receiver and a CO-PA. TX—having passed his Morse test, and become G5AX. (Congrats., OM.). 2AUN has heard PY1AH and OA1B on fone.

G5VO continues indoor television experiments, whilst awaiting hopefully permission to conduct television transmissions using open aerial; 2APU is building super-hets. for both the broadcast and ultra-short wave bands; BRS1340 and BRS1480 report active; G5AX has worked CT1, OE and U3; getting R6 from the latter, since launching out with full licence; hopes to participate in the Junior B.E.R.U. tests. G600 has moved into his winter shack indoors.

SCOTLAND.

December with us has been notable chiefly for the amount of movement among what we might call, for want of a better word, the junior grades of membership. Numbers of both "A.A." and BRS members are pressing the G.P.O. for fuller facilities, and several have been already successful. 2BAO, of Forfar, has been granted the call G6RI; while BRS979, of Broughty Ferry, is now fully licensed as G6LD.

In addition, 2BMY is up for his full permit; while BRS665, 1410 and 1342 are understood to be up for their "A.A." permits.

In the past it has been our somewhat unsatisfactory duty to chronicle from time to time the departure south of our most prominent amateurs. This month we are pleased to perform differently, and have with much pleasure to extend a welcome to G6LS from the south. Mr. Bloxham is now resident in Edinburgh, and we feel sure will be an asset to "D" District.

During the past month or so instances have occurred where members have purchased crystals without first making reference to the Scottish Crystal Register kept at Scottish Headquarters. This practice cannot be too strongly deprecated. We do not keep the Register for our personal entertainment, but as a service to the membership, and the least an individual can do as an obligation to his fellow members is to take advantage of the facilities offered by the record. We are sorry to labour the point, but only a few days ago two members succeeded in purchasing for themselves a pair of perfectly useless "bricks." One was actually the frequency regularly used on 7 mc. by Scottish Headquarters Station, which is definitely QRO, and the other in like manner was totally swamped by another Scottish QRO station. As "Eck" used to say, "don't do it."

The December elections of District Officers for 1935 were duly completed. Only in two districts does the 1934 Officer demit office, as in "A" and

FORTHCOMING CONTESTS

FEB. 2 & 3	}	Senior B.E.R.U. Transmitting.
16 & 17		
FEB. 9 & 10	}	Junior B.E.R.U. Transmitting.
23 & 24		
FEB. 2 & 3	}	B.E.R.U. Receiving.
9 & 10		
MAR. 30 & 31 ...		Low Power Transmitting.

The Rules for these Contests were published in the November issue of this Journal.

"C" Districts, Messrs. Brown and Allen have been elected for another term. "B" District actually held its election in November, when G6LG was elected to take over from G5FP, who left for England. "LG" carries on through 1935. In "D" District, G5IG succeeds G6KZ, who retires. We feel it fitting, therefore, that in this issue we should express our indebtedness to our 1934 Officers, who were actually responsible for producing the most successful year Scottish Amateur Radio has ever known. At the same time we feel sure that the new Officers will ably second the work of their immediate predecessors, and we wish them best of luck.

To our "D" District members falls the credit for the capture of their first "pirate." Acting in conjunction with the G.P.O., the party referred to was caught "red-handed," and now awaits official treatment. Good work, OM's. Pirates are like corns, no use to anyone, so here's to radio chiropirats.

Now we have a good deal more to say, but we guess Mr. Editor is getting a bit restive, so we will close by wishing you all the best of good luck for 1935.

Stations working on 7 mc. who desire reports:—G6LD and G5TA.

Northern Ireland.

GI appears to be recovering from the festive season, as an atmosphere of quiet prevails! The same remarks could not truthfully be made in reference to a certain G, who persists in using about 200 watts to contact another "spitch merchant" about 40 yards along the same street, the result is that about 20 per cent. of the band is rendered useless to amateurs in GI. Goodness knows what local conditions are like. We hope the "evil doer" will revise his ways in 1935.

Sorry for becoming "Uncle Tom-ish," but it must be got off the chest!

It is usual at this time to recall the main events of the passing year, and in this respect we would recall the good work of Headquarters in obtaining increased band-widths, and other privileges which are not fully realised.

During 1934 there was an unwelcome outbreak of pirate transmitters, and we hope that in future vigorous steps will be taken against illegal transmitters, as they are a menace to the amateur movement.

We conclude by wishing our radio friends at home and abroad all the best for 1935.

Belgian Notes.

ON4AU has been heard on 28 mc. by SU1SG and VE3PT. The latter reported him R6 to 7 and the former R9. Both stations were themselves working on 14 mc. It will be remembered that M. Mahieu calls simultaneously on both 14 and 28 mc., listening first on 14 and then on 28 mc. for replies.

He reports hearing VP3AM (Gilbert and Ellice Isles) at R4 on 7,200 kc. on December 17.

ON4AU operates from 13.30 to 14.30 G.M.T. on 28 and 14 mc., using synchronised transmitters. His frequencies are 3610, 7191, 7220, 14008, 14383, 28016, 28766 kc.

Besides the reports mentioned above, ON4AU has been advised by VE1DR and W8DJW that they have received his 28 mc. signals. No two-way contacts have yet taken place.

NEW YEAR GREETINGS

The following messages of seasonal greetings came to hand too late for inclusion in our last issue:—

From Kenya, Uganda and Tanganyika. To G6UN via VQ3BAL, ZS1H, SU1EC and G6WY.

Kindly convey to Council and home members of R.S.G.B. our sincerest thanks for their kind message of seasonal greetings. Members of this zone heartily reciprocate. (Signed) Lane (VQ4CRH). From Gilbert and Ellice Islands. To G6UN via VP3AM, ZL3AN, ZL4AI and G5YH.

On behalf of the amateurs of the Gilbert and Ellice Islands I extend to you and your colleagues best wishes for a Prosperous New Year. (Signed) Green (VP3AM).

From Northern India. To G6UN, via VU2LZ, VS6AQ, ZL3AN, ZL4AI and G5YH.

With the approach of the festive season I wish, on behalf of the members of R.S.G.B. living in

India, to extend to you and your colleagues our sincerest good wishes for Christmas and the New Year. (Signed) McIntosh (VU2LJ).

From South Africa, via ZS1H, SU1EC and G6WY.

On behalf of all members in South Africa, I wish the Council and one and all at Headquarters the compliments of the season and a continual expansion of the B.E.R.U. throughout the Empire. (Signed) Heathcote (ZT6X).

From Burma to G6UN via VU2LZ, VS6AQ, ZL3AN, ZL4AI, G6WY:—

On behalf of the Burma Branch of B.E.R.U. I reciprocate your seasonal greetings, and wish the Society success for 1935.

Signed—Wedderspoon (VU2JB).

From Malta to G6UN via ZB1E, G6WY:—

Your much appreciated message of good wishes, received via G6WY and VP3E is reciprocated by all members in Malta in sincerest greetings and New Year wishes to the Council and Home Members of R.S.G.B.

Signed—Rance,

REPORTS WANTED

VK4EL (Brisbane) on his Friday transmissions. Schedule times 11.30 to 14.00 G.M.T. on 14 mc., and 14.00 to 16.00 G.M.T. on 7 mc.

W9ADN on his 28 mc. transmissions. Schedules can be arranged via G5YH.

VK5EM on his 7 mc. signals, using an input of 44 watts. His QRA is J. Mann, 24, Newman Street, Semaphore, South Australia.

W6CAL on his 28 mc. transmissions. Schedules are also wanted.

G2WO (Swansea) on his 7,161 and 1,765 kc. transmissions.

Amateur Radio Cross Word Puzzle

SOLUTION.

1	A	2	U	3	S	4	T	5	R	6	A	7	L	8	I	9	A
10	V	11	K	12		13	R	14	A	15	G	16		17	O	18	N
19	C	20		21	F	22	I	23	N	24	A	25	L	26		27	T
28		29	Q	30	R	31	G	32		33	L	34	O	35	G	36	
37	Q	38	R	39	A	40		41		42		43	C	44	A	45	T
46		47	L	48	I	49	E	50		51	A	52	A	53	S	54	
55	R	56		57	L	58	A	59	Q	60	S	61	L	62		63	A
64	S	65	M	66		67	S	68	R	69	I	70		71	W	72	X
73	T	74	I	75	M	76	E	77	T	78	A	79	B	80	L	81	E

We are asked by Mr. Jackson (G2KZ) to mention that in the list of clues given last month, "26 across" should have read "27 across."

Empire



News.

B.E.R.U. REPRESENTATIVES.

- Australia.**—H. R. Carter (VK2HC), Yarraman North Station, via Quirindi, N.S.W. Sub. Representatives.—J. B. Corbin (VK2YC), 15, Yanderra Flats, East Crescent Street, McMahon's Point, Sydney, N.S.W.; R. Ohrbom (VK3OC), 22, Gordon Street, Coburg, N.13, Vict.; A. H. Mackenzie (VK4GK), Fire Station, Wynnum, Brisbane; G. Ragless (VK5GR) South Road, P.O., St. Mary's, S.A.; N. F. Ollivier (VK6FO), 26, Merriwa Street, Hollywood, W.A.
- Bahamas, Bermuda and the Eastern Part of the West Indies.**—P. H. B. Trasler, (VP4TA) No. 2 Mess, Pointe à Pierre, Trinidad, B.W.I.
- Burma.**—W. G. F. Wedderspoon (VU2JB), Government High School, Akyab, Burma.
- Canada.**—C. S. Taylor (VE1BV), Stewiacke, Nova Scotia; R. Prissick (VE2CX), 27, Bellevue Avenue, Westmount, Montreal, P.Q.; W. P. Andrew (VE3WA), 1337 Dougall Avenue, Windsor, Ont.; A. E. Howard (VE4CJ), 2401, 25th St. West, Calgary, Alberta; and A. L. Cusden, (VE5HJ), 1465, 17th Avenue, New Westminster, British Columbia.
- Ceylon.**—G. H. Jolliffe (VS7GJ), Frocester, Govinna, Ceylon.
- Channel Islands.**—Capt. A. M. Houston Fergus (G2ZC), La Cotte, La Moye, St. Brelades, Jersey.

- Egypt, Sudan and Transjordan.**—Lt. E. S. Cole (SU1EC), Haking House, Abbassia, Cairo, Egypt.
- Hong Kong.**—C. Emary (VS6AX), R. C. Signals, Hong Kong.
- Irish Free State.**—Col. M. J. C. Dennis (E12B), Fortgranite, Baltinglass, Co. Wicklow.
- Jamaica, British Honduras, Turks Island and Cayman Island.**—C. M. Lyons, (VP5MK), P.O. Box 36, 12, Port Royal Street, Kingston.
- Kenya, Uganda and Tanganyika.**—W. E. Lane, (VQ4CRH), P.O. Box 570, Nairobi.
- Malaya.**—T. G. Laver (VS3AC), Government Electrical Power Station, Johore Bharu, Johore.
- Malta.**—H. G. Cunningham (BERS.161), H.M.S. "Royal Sovereign," c/o G.P.O., London.
- Newfoundland.**—E. S. Holden (VO8H), Box 650, St. John's, Newfoundland.
- New Zealand.**—C. W. Parton (ZL3CP), 69, Hackthorne Road, Cashmere Hills, Christchurch.
- North and South Rhodesia.**—J. W. Mavis (ZE1JE), P.O. Box 160, Umtali, South Rhodesia.
- North India.**—J. G. McIntosh (VU2LJ) Baghjan T. E. Doom Dooma P.O. Assam.
- South Africa.**—W. H. Heathcote (ZT6X), 3, North Avenue, Bezuidenhout Valley, Johannesburg.
- South India.**—J. Shepherd Nicholson (VU2JP), c/o Kanan Devan Hills reduce Co., Ltd., Munnar, Travancore.

Australia.

By VK2HC, via ZL4AI and G6WY.

The past month has yielded surprising results on 28 mc., numerous VK-ZL contacts have been made, and the results have been best for years.

14 mc. has only been fair; for Europe and FM the best time has been 13.00 G.M.T.; 7 mc. has been rather torn by QRN, but European signals were good about 16.00 G.M.T.

The W.I.A. annual Convention is to be held in Hobart during the latter part of January.

The points scored to date in the 28 mc. contest are as follows:—VK4BB 270, 4XN 127, 6SA 112, 3JJ 111, 2LZ 100, 3RJ 62, 2HZ 62, 2NO 60, 2SA 60, 7NC 57, 2HY 55, 3WC 52, 7KV 40, 3ML 39, 3BQ 30, 3JO 22, 6MN 22, 5HG 20, 3NM 17, 3FM 13, 3CW 13, 2YC 11, 2HC 10, 3WX 9, 2PN 7, 2XY 6, 2EP 6. VK4BB was QSO ZL3AJ on December 16, and heard ZL1BA and ICD; conditions on 28 mc. were not quite so good at the beginning of January.

Canada (Third District).

By VE3WA, via VP5PZ, VU2CD, SU6HL, SU1SG and G6QQ.

Conditions have been good for Europe and Africa for the past month. G stations were heard in early

morning; ZS and ZE were good from 18.00 to 21.00 G.M.T. VE3WA contacted XZN2B, a ship off the coast of South Africa, and XZN2C near Labrador. The President's message to B.E.R.U. representatives was received by VE3WA and transmitted to Canadian and Newfoundland representatives.

Ceylon.

By VS7GJ.

VS7RA reports that conditions have been varying considerably from night to night, and that QRN has been particularly heavy. VS7JW has returned from G, and will soon be on the air again. VS7GJ, owing to business, has been somewhat inactive, but during the times he has listened, little has been heard on 14 mc., whilst 7 mc. has been marred by static. During November 12 ins. of rain were recorded during a 24-hour period, but fine cool weather was experienced later.

VS7RP, working on 7 mc., reports an improvement from November 20, with VK's and PK's prominent. KA stations continued to be a nuisance! VS7RP would like to know whether they are amateurs as interpreted in the right sense, for they appear to work by themselves, and at a con-

siderable band spread. Their signals are generally raw, and spoil many local contacts. VS7EB and 7RP hope to carry out some 56 mc. fone tests at an early date.

Hong Kong.

By VS6AX via ZL4AI and G5YH.

The 14 mc. band has been used occasionally by VS6AQ, who reports conditions as having been excellent for VK, ZL and occasional African stations. The 7 mc. band has been very patchy, with DX fair at times. Mr. Thomson is now active as VS6AX, using 100 watts on 7290 kc. VS6AS and 6AX have been experimenting on 56 mc. 'phone with great success. VS6AB has been active on 7 mc.

Irish Free State.

By EI2B.

First, a very Happy and Prosperous New Year to all members. The following stations have reported or are known to be active:—EI2B, 5B, 8B, 4D, 9D, 5F, 6F and BRS1429. EI5B has been experimenting on 56 mc. and has carried out some interesting tests on this band recently in conjunction with the I.F.S. Army Signals Department. He is also arranging for a series of tests with EI6F, who is ideally situated on the other side of the bay. EI8D hopes to be on the air as soon as he can get his generator plant going, and EI6F has been experimenting with a "tritet." We were glad to have "J.B." of EI7C, over from England for a few days at Christmas. He tells us that he is too busy with his hospital work there to be able to give much time to radio. We are glad to welcome a new member in Dr. H. B. Wright (BRS1618), whose QRA appears in the December BULLETIN. Conditions have been generally reported as being poor, as compared with this time last year, and the great increase of very indifferent 'phones on some bands make them anything but pleasant to work on at times.

Kenya, Uganda and Tanganyika.

By VQ4CRH.

Compliments of the season and our very best wishes for 1935 to all home and overseas members.

Activities throughout the year 1934, so far as these territories were concerned, have been very erratic owing to the fact that many members were away on overseas leave.

However, as all absentees have now returned to the fold, things will return to normal as soon as rebuilding, etc., is completed. VQ3BAL reports a further new QRA, having been transferred from Dodoma to the coast. His address is now c/o Wireless Station, Dar-es-Salaam. Hard luck, o.m.; you could not acquire a new call sign.

Many thanks are due to VQ4CRL for carrying on the good work as Representative during the absence of VQ4CRH in England.

Malaya.

By VS2AF.

During November conditions here were variable on both 7 and 14 mc. At the beginning of the month Central and South African stations were heard on 14 mc. for the first time, and on the 24th VQ4CRP was contacted, an R6 report being received using 20 watts. On the 28th, VE5IQ

and VE5HC were heard. The latter gave a chance call to VS2AF who was in turn calling VE5IQ; which resulted in a two-way communication being established between Kuala Lumpur and Vancouver. Incidentally this contact gave VS2AF his W.B.E. which is believed to be the first to be won from the F.M.S., if not from the whole of Malaya.

On December 5, VK5MY attempted to run a "threesome" on 14 mc. with FB8C and VS2AF, but the last two named could not hear each other. FB8C could not stay the course, so 5MY and 2AF went on to have a most interesting chat and test. 2AF's window Hertz, 264 ft. in length, gave two points better than his Zepp. This was considered to be due to directional effects, since the Windom runs in a N.W./S.E. direction, while the Zepp lies N.E./S.W. approximately. On the 6th, VP5PZ (Jamaica) was heard at 20.10 local time on 14 mc. This is most unusual. Signals seemed best in an east to west line on the 12th, KA, VS6, XU being worked on 7 mc. XU gave VS2AF, T9, OSA5 R9! Some interesting tests were undertaken with VS5AC, of Kuching, Sarawak, on the 14th on 7 mc. Two days later, KA1US offered traffic for Singapore to VS2AF, who was obliged to refuse it. Malayan amateurs should note that we are strictly forbidden to handle traffic and should anyone be offered it by a foreign station, he should politely but firmly decline to accept, pointing out that regulations forbid it. KA1US accepted the refusal with good grace.

On the 17th, a most interesting QSO took place between 2AF and VU2FP on 7 mc. (O.M. Beaumont), who is just back from leave. VU2FP is working under the disability of D.C. mains. ZL's are now coming in on 7 mc. and a contact was made with ZL3AN on the 17th. VK's are plentiful and W6 and 7 are heard at times—usually between 22.00 and 24.00 local time—on 7 mc. Conditions on 14 mc. are poor.

2AF is still busy on his new rig, but as he goes to G in February, he doubts whether it will be tested out before then.

Mr. Bee, of Kuala Kangsar, Perak, F.M.S., is now a BERS. He awaits his call sign, which will be a VS2. He will appreciate assistance in his initial tests. Local time is 7 hours 20 minutes ahead of G.M.T.

Malta.

By BERS201, via ZB1E and G6WY.

The prefix of Malta calls was officially changed during December to ZB1. VP3E and VP3C were on the air during earlier part of the month, but changed on 17th to ZB1E and ZB1C respectively. Reception of DX has improved on 7 mc. in the early morning. W calls were present with ZL until approximately 09.00 G.M.T. K5 and K6 were heard more regularly on both 7 and 14 mcs. 14 mc. has been generally poor and 3.5 mc. was unreliable on most nights owing to troublesome static. ZB1E is testing various antennae, and other stations are preparing and looking forward to the B.E.R.U. tests.

Newfoundland.

By VO8H, via VO8HK and G6RB.

I have pleasure in announcing that a Newfoundland Amateur Radio Association was formed on

November 11 last. The officers are VOSAW (President), VOSZ (Vice-President), VOSH (Hon-Treasurer).

Members of the Association are co-operating with the Authorities in connection with the testing of new aeroplanes. It is anticipated that arrangements will be made for amateur stations to assist when these planes are forced to make emergency landings.

Skip effects have prevented local 3.5 mc. work during recent weeks, but successful trans-Atlantic contacts have been possible. This report was transmitted to England by VOSHK working on that band.

Northern and Southern Rhodesia.

By ZE1JE, via ZE1JF, ZSIH, SU1EC and G6WY.

Arrangements have been made for ZE to be included in the new E.L.S. network scheme, and the honour of being the first ZE—E.L.S. has been bestowed on ZE1JF, who will maintain regular schedules with ZSIH and, when possible, SU1EC.

ZE1JJ reports 14 mc. very good of late, and has had 213 DX QSO's during the last nine months. Northern and eastern stations are now fading out, but western and north-western stations are coming in very strongly. ZE1JJ also reports working VE2CH on December 14 on 14 mc., thus qualifying for his W.B.E. Certificate, a fine achievement for this part of the Empire. DX, on 7 mc., has been very erratic; QRN being terrific, due no doubt to the abnormal rainy season now in progress.

South Africa

By ZT6X via ZSIH, SU1EC and G6WY.

Conditions have been fairly good for the past few months, and present indications point to a good DX season. All Continents have been heard on both 7 and 14 mc. bands recently. G stations are fairly prominent, and several of those rare VE's were worked on 14 mc. during October. During November and December VK's came through by the dozen in the early morning on 14 mc., the best time for contacts being 4 G.M.T. to 8 G.M.T., Saturdays and Sundays.

No report of any activity on 28 mc. has been received, but on 56 mc. ZU6W and ZT6G jointly carried off the "Bennett" 5-Metre Trophy in a recent contest.

During September last, the Post Office representations made by the S.A.R.R.L. granted increased facilities to the amateurs of South Africa, chief among which was the permission to transmit music for test purposes on specified bands.

ZSIH has been appointed an Empire Link Station.

Southern India.

By VU2JP, via VU2JR, VU2FP, VP5PZ and G6VP.

Reports and notes are of an almost negligible quantity, although the following stations are active: VU2BY, 2CK, 2CQ, 2LS, 7AB and 7FY. VU2BY and 2LS have been putting out good fone, whilst VU7AB is focusing his new aerial on Great Britain and the United States, with a view to improving contacts with those places. VU2CQ and 2MO are

working up membership in Southern India. There is activity also amongst the BERS members, and we hope to see at least one of them on the air shortly. VU2JP is rebuilding, and hopes to be working in the near future. The letter budget continues, but reports are few this month, due to the holiday season. B.E.R.U. Contest entry forms can be obtained from VU2JP.

Stray.

G6FU requires reports on the reception of his 7 mc. C.C. signals from British or continental stations, together with barometric pressure at time of reception, also, if possible, they should state whether pressure is showing a gradual increase or fall from normal at location of reception. Detailed reports may be sent in any language and will all be acknowledged.

Foreign journals please copy. Report by card via R.S.G.B. or direct to Mr. J. H. Cant, 7, Elthra Road, Lewisham, London, S.E.13.

Remarkable Reception.

We learn from VU2JP, our representative in South India, that Mr. Archibald (VU2JA) has heard LU1EP calling CQ when listening on 56 mc. Mr. Archibald has established the fact that the Argentine station was actually working on 14 mc.

G2KB at W2DC.

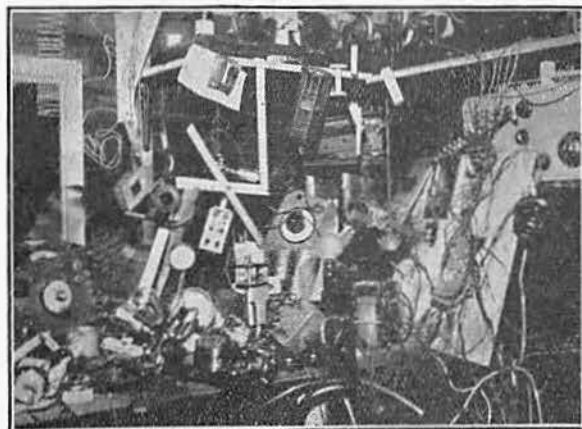
We recently had the pleasure of contacting Mr. Harry K. Bourne (G2KB) from W2DC, and understand he is operating from that station at week-ends. Mr. Bourne is in the States on business at the G.E. Co., and hopes to meet many U.S.A. amateurs during his stay.

Station Descriptionette.

G2CD.

It will be remembered that the Editor promised to award a copy of "Ladner & Stoner" to the member contributing the best cartoon to this Journal during 1934. The award has been made to Mr. W. H. Matthews (G2CD), whose station we illustrate herewith by the courtesy of G2XP.

The award seems to have been made at an opportune moment.



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EDITORIAL.—(Continued from page 241).

of having a few thousand volts trailing around their radio rooms. The mounting of all high-tension gear well out of reach and the adequate insulation of all wiring are simple precautions which are seldom taken. We recommend, too, that all H.T. leads should be painted.

Filter condensers are another potential source of danger, for often when a circuit has been switched off and everything assumed to be safe to touch, these insidious components are ready to emit a dangerous discharge capable of producing fatal results. The precaution here is to provide high resistance bleeder discharge paths.

With the object of averting any coming trouble, and, incidentally, to limit our responsibility in the matter, we have decided to draw up a set of regulations which we shall impress upon our members with the necessity of observing. In this connection we shall be glad to have the co-operation of our members, particularly those who have adopted some form of special precaution. The author of the article which appears elsewhere in this issue gives some valuable advice based upon his own experiences, and this will be carefully considered by the Committee dealing with the proposed rules.

THE 3.5 MC. BAND TO-DAY.—

(Continued from page 245).

Amateur radio seems to have got into the groove whereby we look on 7 and 14 mc. as being the only DX bands, 3.5 mc. being a mere "also ran." One has only to turn up the records of ten years ago to realise that the old-timers had a very different opinion. What about it, all those G's who spend the early morning calling test DX on 7 mc. and not raising it; how about a little variation from the monotony and raise your DX on 3.5 mc.? ZL signals were again heard on 3.5 mc. last spring, and everything points to this possibility.

56 MC. AERIALS.—(Continued from page 247).

of the type that requires 1.5 volts bias will prove suitable for this position. The anode current of this valve rises with an increase in signal volts on the grid. This causes an increase in the voltage drop across the anode resistance R1, which has the effect of reducing the bias on the grid of the second valve V2. The increase of anode current to V2 is then indicated on the meter. A 2,000-ohm. variable resistance connected between the negative side of the meter, and negative filament, allows an opposing voltage to be put across the meter, enabling the latter to be adjusted to read zero for no applied signal. An ordinary 2-volt L.F. valve is large enough for V2. The meter should be screened as shown by the dotted line in the diagram.

R.F. FILTER NETWORKS.—

(Continued from page 250).

output valve to any kind of transmission system, furthermore if the filter section coils are made with small diameter and relatively small gauge wire and the whole unit placed in an aluminium box with porcelain input and output bushings, it is possible to work a shielded receiver in close proximity to the transmitter without having to remove the phones. Using a shielded all mains h.f. s.g. det. a.f. receiver it is possible to come within 25 kcs. of the transmitter frequency without having one's drums split asunder! With a single signal superhet

in the s.s. position one can come within 4 kcs. of the frequency without hearing key clicks, providing, of course, the receiver antenna is not connected.

In the writer's opinion this filter system is one of the most outstanding contributions to radio technique made in recent years, and certainly ranks with the pentode oscillator as an aid to greater efficiency. It is believed that at the moment more Zeppelin-fed antenna systems are in use than any other, and whilst this coupling system works with any form of antenna arrangement, it lends itself particularly well to the twin-fed Zepp.

Constructional details regarding the filter were given in Q.S.T. and will not be repeated again, but the circuit diagram which accompanies this article gives the components used by the writer.

NEW VALVES REVIEWED.—

(Continued from page 253).

frequency oscillation may not be even over the swing of the condenser. The curve shows that a R.M.S. oscillator voltage of 2.5 volts should be used, the makers recommend a peak heterodyne voltage of 3 volts maximum. This would be obtained with a grid condenser of .0001 mfd. and a leak of probably 25-50,000 ohms allowing a grid current of, say, 100 micro amps.

The makers recommend that anode voltages of 150 volts be used and screen voltage of 60 volts; this will give a total anode current of about 2.5 ma. and a conversion conductance of 500 micromhos. The conversion gain is little affected by a drop in H.T. voltage consequent on the batteries running down in use. A.V.C. can be applied to the pentode grid allowing of a large signal handling capacity.

The valve is designed for cathode injection, i.e., a coupling coil in the filament leads as in a battery electron coupled oscillator.

The valve has not so far been tested under radio conditions, but there is no reason to suppose the operation would be anything but satisfactory.

There is a possible use for the valve apart from frequency changing that is as a testing oscillator or part of a QRP transmitter using the triode as a master oscillator and the R.F. Pentode as a buffer giving an output of, say, 50 volts R.F., or as a P.A. with 1 watt max. input. As the suppressor grid is brought out to a separate pin, suppressor grid modulation could be used.

D. N. C.

SOLILOQUIES FROM THE SHACK.—

(Continued from page 254).

when they've a rotten receiver; about lack of co-operation when they're too darn lazy to introduce themselves; and about rude articles in the BULLETIN when the said articles are only inspired by their own misdoings.

Now moan about that, somebody! But I promise to be more cheerful next month.

MORE PIRACY

Messrs. K. T. Harvey (G5KT) and T. Randall (G6TR) report that their call signs are being pirated on 7 or 14 mc.

Mr. W. C. G. Smith (G2GT) advises us that his call is being used by an unauthorised person. His station has not been operated since February last.

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A HAPPY AND PROSPEROUS NEW YEAR to all "hams," and best wishes to all my customers—past, present and future! Best 73s, FB DX and happy hunting. Please excuse delay in replying in certain cases owing to 'Xmas QRM. Will all "hams" urgently expecting replies please drop a postcard to BRS1098, "Villette," 20, The Drive, Roundhay, Leeds 8? Mni tnx!

DET.I.S.W., used six hours, £2. B.T.H. Transformer, input 200-240 v., outputs 1,000-0-1,000 v., 250 ma., 6 v. 5 a. C.T., 7.5 v. 5 a. C.T., £1 5s.—G16JA, 60, Clifton Road, Bangor, Co. Down.

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