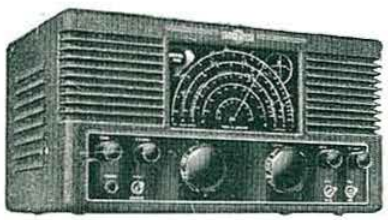
R·S·G·B AMATEUR RADIO

BULLETIN



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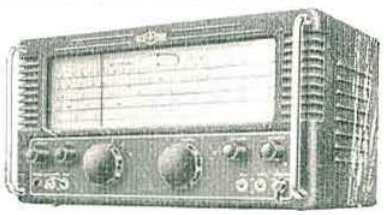

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VOLUME 29 No. 8 PRICE 2/6

FEBRUARY 1954

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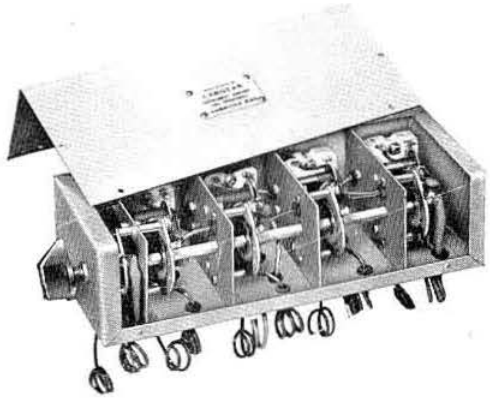
Exciters....



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5-stage Wide-Band Multiplier
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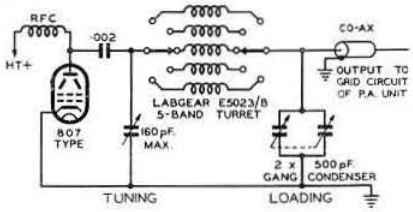

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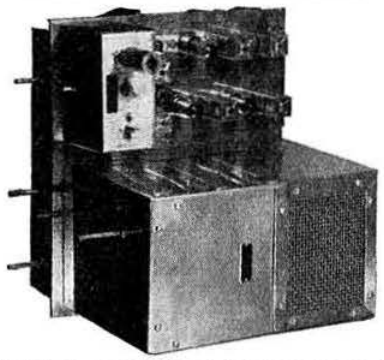

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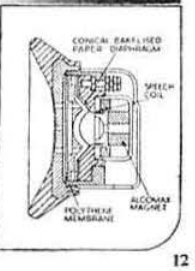

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12

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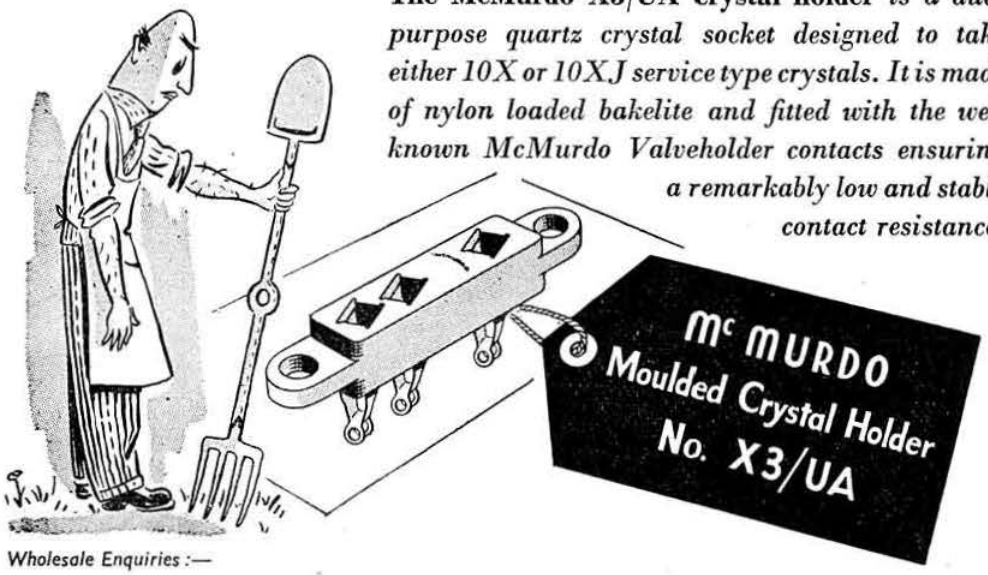

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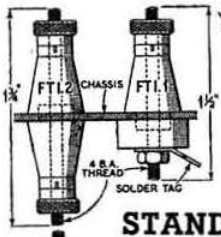

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Filament Voltage	1.25	1.25 V.
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30 mA	M.C. 2½"	Flush	-	**10/–**
50 mA	M.C. 2"	Square	-	**7/6**
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1S5	8/–	9003	6/–
1T4	8/–	9004	6/–
1A7GT	10/–	9006	6/–
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6U5G	7/6	8D2	4/–
6J7M	8/6	9D2	4/–
6K6	9/–	15D2	10/–
6K7G	6/6	R3	8/6
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6Q7GT	8/6	U52	8/6
6SJ7GT	8/6	Y63	8/6
6R7	8/6	P2	4/–
6X5G	8/6	MU14	8/6
6SA7GT	8/6	PX25	12/6
6SQ7GT	8/6	KT33C	10/–
6SG7	7/6	KT66	12/6
6SH7M	7/6	GU50	12/6
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6SL7GT	9/–	XH (1.5)	4/–
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12C8	7/6	AC5/PENDD	12/6
12H6	8/6	PEN25	6/6
12K7GT	8/6	PEN46	7/6
12K8GT	8/6	QP25	6/6
12Q7GT	8/6	QP230	8/–
12SA7GT	8/6	SP61	4/–
12SQ7GT	8/6	SP41	4/–
12SG7	7/6	HL23/DD	6/6
12SH7	7/6	TP25	8/–
12SJ7	8/6	VP23	6/6
12SK7	8/6	VP41	7/6
12SR7	7/6	U22	8/6
14A7	8/6	ATP4	4/–
25Z6GT	8/6	TP22	8/6
25Z5	8/6	TH233	10/–
35Z4GT	8/6	41MP	7/6
25A6	8/6	42SPT	6/–
35L6	8/6	215SG	4/–
50L6GT	8/6	MS/PENB	7/6
42	8/6		
43	8/6		
75	8/6		
78	8/6		
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10 EF50 (Ex-Brand New Units) 5/– each	**45/–** Set
10 6AM6 Valves	**£4** ,,
6K8C, 6K7G, 6Q7G, 5Z4G, 6V6G (or KT61)	**37/6** ,,
1R5, 1S5, 1T4, 1S4 or (3S4 or 3V4)	**30/–** ,,
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R·S·G·B· BULLETIN

Devoted to the Science and Advancement of Amateur Radio

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Contents

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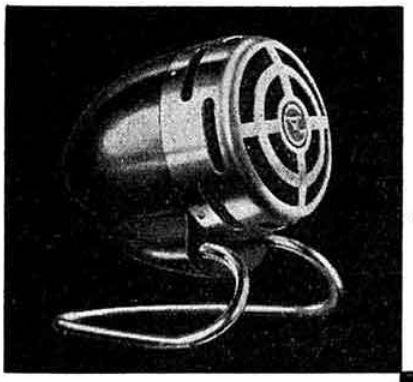

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Current Comment...

The "Hamfest" Season

AS the first of the 1954 series of Hamfests and similar meetings will soon be upon us a little "thinking aloud" on the subject of meetings generally might not come amiss. It is our contention, borne of past experience, that a great many members have, during the last few years, had more than enough of what we might call for the want of a better phrase "Society Politics." Such members, we believe, want to talk and hear more about Amateur Radio and they will come to meetings if they know that an interesting programme has been arranged.

Discussions on such subjects as the Scheme of Representation, the revised Articles of Association, and subscription rates, although important in themselves, have perhaps, claimed a disproportionate amount of our attention in recent years.

It is a well-known fact that only about one member in every five votes on matters of policy even when both sides of an argument have been fully stated. It seems reasonable, therefore, that we should now endeavour to discover something about the interests of the remaining 80% and do our best to encourage them to take a more active part in the life of the Society.

Our advice to those who contemplate the organisation of meetings during 1954, is to concentrate more closely on the practical aspects of day-to-day Amateur Radio. This they can do by arranging plenty of short lectures and field events. A business meeting, if arranged, should be kept short. The ladies and the young people should be catered for and members generally encouraged to make at least part of the meeting a family affair. In other words the emphasis should be on the social side.

Prior to the war the Society arranged frequent visits to such places of technical interest as the B.B.C. stations at Daventry and Brookmans Park, the Post Office station near St. Albans, and the D.S.I.R. station at Slough. There were visits also to radio factories and to airfields. We believe that very many members who are a little tired of radio politics would greatly appreciate the opportunity of taking part in similar visits if these were arranged today. Why not organise one in connection with your next Hamfest?

In prewar days the highlight of every Society year was the National Convention. What happy times they were to be sure! Shortly, full details will be announced of another Convention—this time in Bristol. The organising Committee—as keen and enthusiastic a group of members as we have ever had the pleasure of meeting—are going all-out to make that event an unqualified success. Their one ambition will be to provide varied and interesting entertainment. They intend to concentrate on those aspects of Amateur Radio which they know will lead to the strengthening of the bonds of friendship. We wish them well and in so doing we express the hope that members in their hundreds will, when the time comes, attend Convention to talk, to listen, to relax and to enjoy themselves.

A.O.M.

Your Bulletin

IT will be noted that a number of changes have been effected in the "make-up" of the BULLETIN this month. These have not been made merely for the sake of change but for two severely practical reasons.

First, they will assist our printers by spreading the preparation and printing of the magazine over a longer period, thus limiting production costs: and secondly, by a redistribution of the contents, greater prominence can be given to certain features, chief among which are Council Proceedings. The new arrangement will enable us to prepare the middle 16 pages of the BULLETIN well in advance of publication date and the remainder in two separate sections, leaving the first eight and the final eight pages for advertisements and last-minute items of news.

Another improvement which we should like to make, but which will have to wait a while, is the raising of the size of the type used for such features as Club News, Regional Notes, Correspondence and one or two other regular features; but this would necessitate an increase in the number of pages which, of course, would be more costly. At present, the policy of the Council is to provide as much reading material as possible within the limits of 40-48 page issues, and this is done by the judicious use of the small type face.

We should be self-satisfied indeed if we were content with the BULLETIN. No Editor is ever completely satisfied, nor for that matter is any reader. No periodical can, from cover to cover, be of 100 per cent. interest to any single reader, and, in a magazine like the BULLETIN, we must cater for a very wide range of interests.

Every effort is constantly being made to give the greatest satisfaction to the largest possible section of our membership, and we hope that these changes will be regarded as an improvement.

—J. H.

*Presidential Address**

International Amateur Radio

By ARTHUR O. MILNE (G2MI)

IT is the custom for the newly-elected President of this Society to address the first meeting held in this building during his term of office.

I am as anxious as you all are to hear this evening's lecture and I therefore propose to crave your attention for only a few minutes. Before proceeding to my subject, however, on your behalf, I would like to pay a tribute to my predecessor in this office, Mr. Leslie Cooper. I am sure that no President of the R.S.G.B. has ever faced so many difficulties as he did in January, 1953, or who could, a year later, look back with so much satisfaction on a job well done. I feel that it is in quite large measure due to his personal integrity, that, not only has the Society successfully weathered the stormy passage of 1953, but that it has come through intact and unimpaired as the champion of organised radio amateurs in this country. In taking over from him, I earnestly hope that at some time in the future he will be invited, once again, to occupy the Presidential Chair in a somewhat more propitious atmosphere than that of 1953.

Mr. Arthur Milne, G2MI
President, 1954.

The International Field

Now, may I for the next few minutes direct your attention away from the purely domestic interests of the Society to the wider but no less important field of International affairs? As you know, I have the honour of being the Secretary-General of the Region I Division of the International Amateur Radio Union, charged with the task of bringing together the various National Amateur Radio Societies in Europe and Africa which are members of I.A.R.U. and I would like to stress the importance of these activities to our very existence.

Those of us who have been associated with Amateur Radio for many years, tend to use the abbreviations I.T.U., I.A.R.U. and so on, forgetting that to the newcomer they may be strange or even meaningless. I.T.U. stands for International Telecommunications Union which is the world-wide body, set up many years ago, through which Governments negotiate agreements on all kinds of problems to do with communications and, what is most vital to us, plan the utilisation of the radio frequency spectrum. Every five years or so, a Radio Administrative Conference is held, at which these allocations are re-examined and revised.

In addition to Governments, a number of other organisations have been given the right of entry to these meetings and one of these is the I.A.R.U. (formed in Paris in 1925), consisting of practically all the National Amateur Radio Societies of the World and having its Headquarters in West Hartford, Connecticut, U.S.A.

The Birth of I.A.R.U. Region I Division

As a result of the experience gained at the Atlantic City I.T.U. Conference in 1947, when the I.A.R.U. was represented almost solely by the two delegates sent by the R.S.G.B., the need to broaden the basis of such I.A.R.U. representation for the future was felt to be imperative and to do this adequately some form of Regional co-ordination was clearly indicated. At the I.A.R.U. Conference held in Paris during May, 1950, the Region I Bureau was set up and the R.S.G.B. agreed to run it and to bear the cost for an experimental period. At the I.A.R.U. Region I Conference held in Lausanne during May last year, the organisation was overhauled and re-established on a solid and sound financial foundation, each Member Society in Region I being asked to contribute to three funds on a per capita basis, one to finance the running of the Region I Bureau, another to finance the meetings of the Region I Committee and a third to finance the proper representation of the I.A.R.U. Societies in Region I at any future I.T.U. Conference.

I am glad to tell you that this has proved to be no mere "paper scheme" for the subscriptions have come rolling in from the other European Societies and the Region I Division has now a substantial sum of money at its disposal.

The Position of the R.S.G.B.

It is most striking, almost to the point of embarrassment, to note at these I.A.R.U. and other international meetings of radio amateurs, the high esteem in which our Society is held in Continental Europe and how both those Societies

* *Delivered at a meeting of the Society held at the Institution of Electrical Engineers, London, W.C.1, on Friday, January 29, 1954.*

and individuals look to us for a lead. This is borne out by the fact that the Secretary-General and two of the members of the International Committee of six—freely elected at an International Conference at Lausanne—are British.

Prestige

If ever anyone doubted the necessity for maintaining the prestige of the R.S.G.B. let him cross the Channel and be convinced without further argument, for believe me, Ladies and Gentlemen, the prestige of this Society makes one feel proud to be a member when in the company of the amateurs of other countries. I need hardly stress the need for all of us to take the utmost care that we do nothing to damage or lower this prestige, particularly in our behaviour over the air.

All the activities of the Region I Bureau and therefore of the Region I Division of the I.A.R.U. are directed to only one end, *the preservation of the amateur frequency bands.* The money and effort which are thus expended serve your vital interests as individual radio amateurs and must therefore be worthy of your closest support and attention.

What are the methods by which these ends may be attained? First by the exchange of information between National Societies. Second by giving advice, to those who ask it, on the best ways of ensuring a close liaison with their own licencing authority, thus making certain that the delegates from each Government who attend an I.T.U. Conference are fully conversant with the amateur position. Third, by the mutual agreement between Member Societies on the adoption of technical and operating practices which make for easier enjoyment of our hobby and at the same time ensure that we observe the most modern engineering standards. Finally, our most important function is the sending to I.T.U. Conferences of a competent and experienced team of representatives who can gain the respect of the Government delegations and can be relied upon to defend the cause of Amateur Radio unswervingly.

The international aspect of the Society's work is very close to my heart and I hope that in the coming year it will make great strides.

The Home Front

Perhaps now we may turn for a while to the Society at home. With the big issues of subscription rates and Articles of Association behind us, we may look forward to a year of real progress. There has been a change of personnel at the Post Office. The official with whom we now have to deal has shown himself to be both friendly and eminently reasonable. He has wielded his new broom to good effect in sweeping away a number of very old cobwebs, as I think all of you will agree when, shortly, you read the terms of the new amateur licence.

The Council has lost either by retirement or as a result of the recent ballot, several able and loyal members, but even so the new governing body includes some new members of proved calibre and has been strengthened from several points of view, particularly on the technical side. It is my earnest wish that this year we shall be able to discuss Amateur Radio rather more often at our meetings and spend much less time on internal politics and legalistic argumentation!

It is my personal intention, so far as lies in my power, to attend as many meetings as possible, both of the Official Regional and "hamfest" variety and, in this connection, I sincerely hope that all those who can will give their full support to the National Convention to be held in Bristol next September. This will be an opportunity not only for a large number of our members thoroughly to enjoy themselves in delightful surroundings but if it is a success it will enormously enhance the prestige of the Society. Your Society!

The latter end of 1953 saw the launching of the Radio Amateur Emergency Network. The response has been excellent. This year will, I hope, see this entirely new venture welded into an efficient and nationally recognised Public Service. This will entail much hard work for many people but is, I believe, something eminently worthwhile.

In these few remarks I have attempted to sketch for you in the barest outline, some of our hopes and aspirations. I can assure members, both on behalf of the Council and myself, that our aim is to serve the best interests of the Society and therefore of Amateur Radio itself. In the confidence that I have a first rate team, I have no hesitation in asking you, the membership, to assist and support us. I ask you to accept that we are a body of honest, public-spirited radio amateurs, with no personal axe to grind but concerned only with doing our level best for you all.

May I wish you a bumper year; good DX, fine weather on National Field Day and plenty of temperature inversions for the v.h.f. enthusiasts. Finally, may I thank you all for listening to me with so much patience and attention.

Interlopers in "Exclusive" Amateur Bands

FROM time to time, the Society has made vigorous protests to the General Post Office regarding the presence of non-amateur stations in the exclusive amateur bands—notably 7 Mc/s. In reply, the G.P.O. has pointed out that the provisions of the Atlantic City I.T.U. Convention agreement have not yet been fully implemented over the entire frequency spectrum and that the, as yet, unsettled part includes the amateur 7 Mc/s band.

The R.S.G.B. rejoinder to this has been that if the Atlantic City agreement is not yet in operation, then our 7 Mc/s band must still be subject to the conditions laid down at the Cairo Conference in 1938, which specified the band 7-7.2 Mc/s as "exclusively" amateur. The G.P.O. have now conceded the truth of this argument but have indicated that, in their opinion, Foreign administrations may tend to disregard the Cairo agreement and will wait until the Atlantic City Frequency Table is fully implemented early in 1955. Be this as it may, the G.P.O. have agreed to forward our complaints to the proper quarter, at the same time holding out no great hopes of any immediate improvement. Members will, we trust, realise that, despite our protests, this matter is very much out of our hands and for that matter out of the hands of the U.K. Government; nevertheless, this fact will not deter us from continuing to lodge protests until these interlopers finally remove themselves from "exclusive" amateur bands.

Once again, we would remind members that, so far as 3.5 Mc/s is concerned, the band is shared in Region I (Europe and Africa) between the Amateur, Fixed and Mobile (other than Air Mobile) services.

These other Services, by reason of the Atlantic City agreement have just as much right to operate in that band as has the Amateur Service.

Society News

Radio Society of Great Britain
Change of Name

NOTICE is hereby given that the Incorporated Radio Society of Great Britain (the word "Limited" being omitted by Licence of the Board of Trade) having, with the sanction of a Special Resolution and with the approval of the Board of Trade, changed its name, is now called

Radio Society of Great Britain

The change of name was entered on the Register of Companies on January 21st, 1954.

Thus, after a period of 27 years, the Society reverts to the name by which it was known up to the time of Incorporation.

Committees of the Council, 1954

THE following members have been appointed to serve on the Committees of the Council for the current year:

Contests.—Messrs. D. A. Findlay, G3BZG; E. S. G. Fish, G2HCZ; S. E. Fryer, G3ERO; C. J. Greenaway, G2LC; J. P. Hawker, G3VA; T. L. Herdman, G6HD; F. Hicks-Arnold, G6MB; W. H. Matthews, G2CD; A. W. Timme, G3CWW; R. Walker, G6QI; F. E. Woodhouse, G3DC.

Exhibition (Home Constructor's Section).—Messrs. C. H. L. Edwards, G8TL; D. C. Jardine, G5DJ; H. F. Knott, G3CU; C. E. Newton, G2FKZ; G. W. Norris, G3ICI; F. F. Ruth, G2BRH; M. M. Wallace, B.R.S. 18241; E. W. Yeomanson, G3IIR.

Finance and Staff.—Messrs. H. A. Bartlett, G5QA; L. Cooper, G5LC; C. H. L. Edwards, G8TL; D. A. Findlay, G3BZG; R. H. Hammans, G2IG; J. H. Hum, G5UM.

G.P.O. Liaison.—Messrs. R. H. Hammans, G2IG; A. O. Milne, G2MI.

Membership and Representation.—Messrs. I. D. Auchterlonie, G6OM; H. A. Bartlett, G5QA; C. H. L. Edwards, G8TL; L. E. Newnham, G6NZ; N. F. O'Brien, G3LP.

Radio Amateur Emergency Network.—Messrs. L. Cooper, G5LC; C. H. L. Edwards, G8TL; C. L. Fenton, G3ABB; A. C. Gee, G2UK; L. E. Newnham. G6NZ; W. J. Ridley, G2AJF; C. T. Wakeman, G4FN; D. F. Willies, G3HRK; R. A. Wilson, G4RW; P. W. Winsford, G4DC.

Technical.—Messrs. W. H. Allen, G2UJ; F. Charman, G6CJ; H. A. M. Clark, G6OT; D. N. Corfield, G5CD; C. H. L. Edwards, G8TL; R. H. Hammans, G2IG; F. Hicks-Arnold, G6MB; J. H. Hum, G5UM; A. H. Koster, G3ECA; S. K. Lewer, G6LJ; J. W. Mathews, G6LL; R. L. Varney, G5RV.

The President is an ex-officio member of all Committees of the Council, except G.P.O. Liaison, of which Committee he is a Member.

R.A.E.N. Badges

LAPEL and pin-type badges specially designed for members of R.A.E.N. are now available from R.S.G.B. Headquarters, price 1s. 6d. post free. Similar badges embodying a callsign or B.R.S. number are also available, price 5s. each, as is a printer's stereo block at the same price.

The design for the new R.A.E.N. badge was suggested by Mr. F. R. Peterson, G3ELZ, whose article "Operation Floodtide," published in the March, 1953, issue of the BULLETIN, did much to focus attention on the need for an emergency Amateur Radio network. The badge is chromium plated on a dark red background.

R.S.G.B. Call Book

FOR some years the Editor of the *R.S.G.B. Amateur Radio Call Book* has been endeavouring to obtain the consent of the holders of any of the undermentioned callsigns to the insertion of their names and addresses in the R.S.G.B. Call Book. It would be most helpful, therefore, if any member who has knowledge of the licensees involved, or who is aware that the licences are cancelled, would write to Mr. J. P. P. Tyndall, G2QI, 174 The Drive, Ilford, Essex, giving information.

G2AA	G2DO	G2IZ	G2OA
G2AG	G2DU	G2JA	G2OB
G2AT	G2FI	G2JH	G2OW
G2AU	G2FS	G2JT	G2PA
G2AW	G2GB	G2JV	G2PD
G2AY	G2GG	G2KH	G2PF
G2BC	G2GT	G2KM	G2QA
G2BR	GW2GV	G2LF	G2QM
G2BU	G2HD	G2LM	G2QV
G2BY	G2HI	GM2LQ	G2RG
G2CF	G2HT	G2LZ	G2RJ
G2CG	G2IA	G2MX	G2RM
G2CM	G2IF	G2NA	G2RR
G2CS	GW2II	G2NP	G2RV
G2DD	G2IL	G2NT	
G2DF	G2IV	G2NW	

It is believed that the following callsigns, all of which appear in the current edition of the Call Book, have been cancelled. The Editor of the Call Book intends, therefore, to have these callsigns deleted unless the licensee requests otherwise by the end of March, 1954.

G3ATO	G3AZA	GW3BLC	G3BEM
G3AVJ	G3AZB	GM3BLD	G3BEO
G3AVM	G3AZD	GM3BLQ	G3BEP
G3AVN	G3AZV	G3BCF	G3BEU
G3AVR	G3AZW	G3BCO	G3BEY
G3AVT	G3AZZ	G3BCR	G3BEZ
G3AWI	G3BAB	G3BCU	G3BJQ
G3AWJ	G3BAF	G3BCY	G3BKG
G3AWN	G3BBF	G3BDD	G3BKO
G3AWU	G3BBK	G3BDN	G3BKY
G3AYX	GI3AWX	G3BDO	
G3AYY	GM3BCD	G3BEK	

The Amateur (Sound) Licence

FURTHER to the statement published on page 324 of our January issue, we now learn that the Radio Amateurs' Certificate will be awarded only to those who sit for and pass both the Radio Amateurs' Examination and the Post Office Morse Test.

We understand that the arrangements referred to in our earlier statement will probably become effective within the next six months.

LONDON MEMBERS' LUNCHEON CLUB

will meet at the Bedford Corner Hotel, Bayley Street, Tottenham Court Road,

at 12.30 p.m. on February 19, 1954.

Telephone table reservations to HOL 7373 prior to day of luncheon. Visiting amateurs especially welcome.

V.H.F. Broadcasting

THE Television Advisory Committee has advised the adoption of frequency modulation for the B.B.C.'s chain of 51 v.h.f. sound broadcasting stations.

London Lecture Meeting

AT the Ordinary Meeting of the Society held at the Institution of Electrical Engineers, London, W.C.2, on Friday, January 29, 1954, the Immediate Past President (Mr. Leslie Cooper, G5LC) formally introduced, and afterwards installed, his successor (Mr. Arthur Milne, G2MI) in the office of President.

The President then read his Address to the membership. (The Address appears elsewhere in this issue.—Ed.).

Following the Presidential Address, Mr. F. H. Brittain, D.F.H. (Research Laboratories, The General Electric Co. Ltd.), lectured on "Art and Science in Sound Reproduction." A number of convincing demonstrations of stereophonic sound added interest and pleasure to the lecture.

A vote of thanks to the speaker and his assistants was proposed by Mr. D. N. Corfield, G5CD (Vice-President).

There was an attendance of more than 100—the largest at an Ordinary Meeting for many months.

At the meeting to be held on February 26, Mr. S. A. Lacey (Research Dept., Murphy Radio Ltd.) will lecture on the Practical Aspects of Tape Recording. Buffet tea will be served from 5.30 p.m. and the meeting will commence at 6.30 p.m.

Annual General Meeting

IN the Minutes of the Annual General Meeting, published on Page 318 of the January, 1954, issue, the name of Mr. P. J. H. Matthews, G3BPM, was inadvertently omitted from the list of members who scrutinised the recent Council Ballot.

The closing date for copy for the Bulletin is the 20th of the month preceding publication.

The Television Society

THE second part of The Television Society's Ambrose Fleming Memorial Lecture for 1954 —on Colour Television—will be delivered by G. G. Gouriet, B.Sc., of the B.B.C. Research Dept., at The Royal Institution, Albemarle Street, London, W.1, on Wednesday, February 24, 1954, at 7 p.m. The first part of the lecture was delivered on February 10.

Non-members may obtain tickets of admission (price 5s.) from The Secretary, The Television Society, 164 Shaftesbury Avenue, London, W.C.2.

Malta Amateur Radio Society

MEMBERS of the Malta Amateur Radio Society enjoyed a first class dinner at the Imperial Hotel, Sliema, on January 16, 1954.

During the evening the President (Mr. J. Spafford, ZB1BZ) presented a Weston Exposure Meter to Mr. R. F. Galea, ZB1E, as a token of appreciation of his services to the local community of radio amateurs over a period of many years, during which time he has carried out with great diligence the duties of QSL manager for Malta.

In the course of a short address, Founder President F. Hague, ZB1AH, spoke of the Society's progress since its re-formation after the war.

Mr. H. Faulkner

MR. H. FAULKNER, C.M.G., formerly Deputy Engineer-in-Chief to the General Post Office, has been appointed Director of the Telecommunication Engineering and Manufacturing Association.

R. S. G. B.
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Silent Keys

From G3DIY we learn that Clyde Warren Hackett, W6DBT, whose call was familiar to many U.K. amateurs, passed away on December 26, 1953. Sympathies are extended to his wife Doris whose voice has often been heard over her husband's station.

* * *

It is our sad duty to record the death on January 6, 1954, of Mr. H. L. D. (Les) Gee, M.B.E. (ZC4HG), of Limassol, Cyprus.

Les only very recently joined the Society and was known personally to but a relatively small circle of amateurs but those few owe him a very great debt for it was he who took a leading part in obtaining amateur licences for civilians in Cyprus.

He operated exclusively on 14 Mc/s telephony with modest equipment and took as much pleasure from his local contacts as from DX. His greatest joy was to contact English amateurs. He was 55 years of age and a prominent Freemason.

ZC4IP, 4MH, 4VP and OD5AA were present at the interment, at which the impressive Masonic ritual was used.

Our deep sympathies are extended to Mrs. Gee and to her family. G. F. B.

* * *

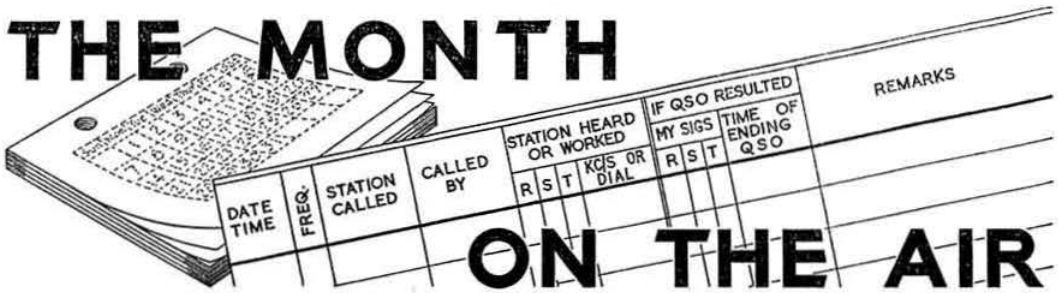
The Midland Amateur Radio Society has suffered a grievous loss by the death, at the age of 51, of their Honorary Treasurer, Leslie Metcalfe, G3AU.

Mr. Metcalfe joined M.A.R.S. in 1933 and had been Hon. Treasurer since 1946. Last year he was awarded the G2AK Shield in recognition of his outstanding work on behalf of M.A.R.S.

Les had been a member of R.S.G.B. for more than 20 years and had held a licence since before the war.

He will be greatly missed by a wide circle of Amateur Radio friends who extend their heartfelt sympathies to his parents and other relatives.

THE MONTH ON THE AIR



By S. A. HERBERT (G3ATU)*

OH! for the day when we can open this feature with the news that ten metres is so full of loud signals that it is difficult to make a QSO at all! Meantime, we must be thankful that things *have* been a little better in January than was the case in December. Ten we pass with a slight shudder; the remaining bands have all had their moments, even neglected fifteen has done as well as could be expected, but this month, we start with news of our lowest frequency allocation, where some surprising things have been happening.

Top Band News

B.R.S. 20106 (Petts Wood) starts the ball rolling. On January 2, he heard VP7NM at the high end working K2ANR (0710) and, shortly afterwards, calling G5JU. Two weeks later, the VP7 was heard at RST549 (0647); and the same morning, KZ5DE appeared, on about 1886 kc/s. The latter worked W3RGQ at 0615 for his first QSO, followed by VP7NM. KV4AA and KV4BB were heard several times. Numerous Ws were logged, including W9CZT and W0NWX on c.w. and W1VDB on phone. W6NDI is on the band, too. ZC6BB was heard at 0634, calling G5JL (more on this below).

B.R.S. 19107 (Beckenham) rectified a fault in his receiver, put up a new aerial and dived into the fray during the recent Top Band Contest, emerging with KV4AA, 4BB, KP4KD, W9CZT and W9PNE on c.w. and W2HCW S9 on phone! The same morning he also heard ZC6BB (Ivan—QTH given as Haifa), but the time—0615—seems peculiar, as ZC4XP invariably faded out by 0430 when active last winter. '19107 hooked VP7NM also and is after the KZ5. **G2HKU** (Sheerness) made a fine QSO with W1BB, while running only five watts input to a 6L6, the aerial being a 7 Mc/s dipole with strapped feeders. Ted heard W1, 2, 9NS, 9PNE, 0NWX, VE1EA, KV4, KZ5DE, YU1AD (see later), and ZC4JA (G2FSR).

G5JL (Hayes) who worked ZC6BB at 0620, on 1808 kc/s, confirms the name and QTH, so we can only hope the ZC is, in fact, genuine. Lots of DX was audible during the Top Band Contest and '5JL heard or worked many Ws, OKs, HB, VE and CN2.

GC2CNC (Jersey) responded to a plea from W2QHH and came on the band, with the result that the first GC/W QSO on Top Band was made on December 25. Previous to this, W1BB had heard GC3EML, but fading prevented a QSO. **GM3JXP** is the new call sign of Sid Parks, ex-ZC4XP, now at the Met. Office, R/S, The Observatory, Shetland Isles. He hopes to be on the band very soon and has the space for a really good aerial. Anyone missing a ZC4 card should send the relevant details direct to the above address. **G3GGN** (Littlehampton) has worked such DX as CN2AO, W1, 2, 3RGQ (S7 on phone) and VE2AIE, with KV4 and VP7 heard. Frank remarks that some pin-witted individual is using calls such as HA3Q, HA4O, YU1AD, EI9J and KV4BB.

Last month, we mentioned SM5AQW being called on Top Band. A QSO with him has solved the mystery. SM5AQW hears lots of U.K. stations at good strength, but as the Swedes are not licensed for Top Band, he calls on 3.5 Mc/s and works cross-band!

Twenty Metres

Conditions on 14 Mc/s have been a little better on the whole, with some of the rarer DX breaking the monotony occasionally. **B.R.S. 7594** (Yeovil) checked the band thoroughly and logged phone from CR4AC, CR6, CR7AF, ET2, FF8, HI6EC (1644), KA3RR, KA0IJ, KG4AA, KG6ADY, KZ5HC, ST2NW, TI2RC (1240), VE4CC, 5DR, 5MI, 7RR, 8YT, ZD2RRW, ZL, ZS3B and ZS9G. Recent QSLs including cards from ZS3AB, FB8BA, TA3AA and ZD1SW, give Don 187 countries verified with 206 heard on phone. **G3CMH** (Yeovil) worked MD5DD, 5DO and TA3MP on phone. **B.R.S. 20104** (S. Harrow) picked up the juicy FK8AB (1030) and VE8OG (Zone 2) on c.w. and says "Roll on 1956!"

GM3DHD heard FB8XX (Kerguelen Is.—14041) and reports that ZD9AA is no more, operator "Red" having left for the U.S.A. However, the station will continue with the call ZD9AB and a new operator. A DL4 may be active from Crete shortly. W4NXE/KS4 is active on phone (above 14200), but ZC3AA has closed down, leaving ZC3AB to carry on. The Rio de Oro trip will now start on March 1. Several PYs are ready to put Trinidad Is. on the DX map when they can arrange transport to the island. The prefix will be PY0 and contacts will count for DXCC credit. TA3AA QSLs on receipt of a card and acknowledges full reports from listeners. George heard VQ4ERR calling ZD8EW on 14100, which sounds interesting!

B.R.S. 18017 (Warwick) unearthed CR7HC, FM7WN, KG6AM (1245), OA2XC, VU2ED and ZS2MI (Marion Is.) on phone. Good ones on c.w. were ZC3AB (1300-14055), HH3FL, HK, ST2 and ZS3BC. **P. M. Crawford** (Darlington), unfortunately confined to his house of late, pulled in phone from AP2N, CO8MP, CE2CS, FB8BP, JA2OT, VE6GI, 8QI, 8ML, 8GY, VP1GM, VP2DL, VP4LC, VP9BA, VKs, VS2UW and the mouth-watering AC3SQ, VR2AS, XW8AA, ZD9AB, ZS7C and JZ0KF. On the key, Martin heard FY7YC, UM8AR, VP8AD (1730), ZL2IQ and ZL4HP. He feels strongly about the behaviour

* *Roker House, St. George's Terrace, Roker, Sunderland.*

of certain phone nets engaged in cosy cross-town chats on 14 Mc/s while the band is open for DX, and suggests that listening before transmitting would be a good thing.

B.R.S. 20106 heard EL2X, KH6WU (1955), FK8AB, FB8ZZ (1650), VS6CL, XZ2OM (1315) and VQ6UU on c.w. His best on phone were FB8BP, ZS3E, ZS7D, ZS8D and ZL2GX. Norman says that G3HLS heard C9AA on the key and that ZD8AW (very "hush-hush") is active and worked ZD2RRW for his first QSO. '20106 has a new pole up, to the consternation of TV-owning neighbours, who fear he has a transmitter!

H. J. Hill (Whitley Bay), who devotes much of his time to Top Band (he acts as second op. to GM3IGW occasionally), tried 14 Mc/s phone and heard OX3HK, KG4OT (1615), LUs, EA9AZ, VE8, VE5GF, ZS8D, HK1JI, VP9JAP, ZS3AB, ZD2RRW and many ZS6s. **G3IES** (Hampstead), with 25 watts phone and an indoor dipole, worked Capt. "Flying Enterprise" Carlsen, operating from KZ5HC, VS2CP (both QSLs are already in) and DL4NB/AM. Associate **R. Civil** (Plymouth), a newcomer to the DX game, used an S20R and a half-wave dipole to collect CM9AA and VP2DZ from the general chaos. **A.1257** (Bexley) mentions phone signals from VK2WT, YV4AM, ZS6 and YJ1AA.

G3JWW (Harlow) has worked 68 countries since coming on the air last September. Recent c.w. catches were FQ8AP, ZD4BJ, with CR7AH and OQ0DZ missed. He finds 7 Mc/s better though. Associate **R. Goodman** (Edgware) rebuilt his 0-V-0 receiver and logged phone stations MP4BBL, MP4K, KA2, KA7IJ, VK, ZD4BK, ZS, ZL2BE and ZL3GU. Although **G3ATU** has worked nothing exciting, he recently heard VQ6UU, FL8UU, FU8AK (RST 229-0930; QSL *via* FU8AA), FY7YC (Box 1001, Cayenne), AC4NC (1630—calling YU1AD and being called by almost everyone else), FK8AB (1430) and VK1AC (Macquarie—RST 589 at 1330). VK1AC uses 100 watts to a "Lazy H" and will be active for the next two years. YS1O has been a good phone signal around midday recently. VR3D was active during B.E.R.U. and will be on Fanning Is. for the next two years.

Overseas News

VS1YN/G5YN (Singapore) is running 80 watts to a long wire. Conditions have so far prevented a G contact, although VKs can be heard working the U.K. In Malaya a number of amateur-type calls have been issued in the series VS2MA to VS2ZZ. These are used by private network licensees for communication between estates, mostly on v.h.f. Cards for VS1YN should be addressed to Lt.-Col. Sir Evan Nepean, Sigs. Branch, G.H.Q., F.A.R.E.L.F., Singapore. **VQ4CW,** who has returned to Kenya after being on leave in the U.K. since June, 1953, is disturbed to find a batch of cards waiting, claiming QSOs during his absence. Most are for 14 Mc/s and the offender calls himself Fred. Mike, the real VQ4CW, operates on 7 and 14 Mc/s only, so QSOs on any other band were made with a pirate.

G. W. J. Bowles (ex-**VP8AU**) will not, due to health reasons, be returning to VP8. He has QSLd all contacts, but anyone still needing a card should write to him at 72 Warminster Road, Bath.

Brian Mills (ex-**ZC5VM**) will supply any missing '5VM cards. Write to "Beauval," Wise Lane, Borden, Sittingbourne. ZC5VR, '5SF and '5VS remain active, the first two using 1154-1155 rigs on c.w. and phone; '5VS is on c.w. only. All may be reached *via* G. Harrison (ZC5SF), Harbour Master, Sandakan, British North Borneo, or ZC5VS, Aeradio, Box 136, Sandakan.

KP4JE reminds us that a QSL is useless unless it shows the time, date and frequency of the QSO. He has several incomplete cards which are therefore no good for awards. **G3IZU,** now in Baghdad, hopes to get a YI call before long. Several other applications are awaiting official sanction and once permission *is* granted, there will be no difficulty in getting going, as new components and the latest British and American receivers are on sale. 'IZU has been listening on 3.5 and Top Band, late at night and in the early morning; several Gs have been heard through the static and other noises "which defy description."

G2RO sends some interesting sidelights on his trip, which by now has embraced operation in six countries. Two hundred QSOs were made from VP7RO; 500 from VP1RO; VP2AO (Antigua) proved a blank, due to d.c. mains; VP2GRO (Grenada) must have produced thousands, as must VP3RO, while VP5RO is still to come (as this is written). His little portable rig runs only 15 watts, but it puts a fine signal into Europe. 'RO remarks that U.K. stations get first preference, but the top layer of Ws has always to be removed before Europe can be worked. He does not object to calls on his own frequency, but he damns those who butt in *during* a QSO. He is keeping a list of persistent offenders and will simply ignore them from Fanning Island, Brunei, or any of his future stopping places.

While on the subject of selfish behaviour, we come to the story of **ST2UU,** now on a trip which will take him through VQ6, FL8, 4W1, HZ1 and possibly VS9. While at VQ6, the antics of the "QSO at any price" brigade came within an ace of proving to be the straw that broke the camel's back. Requests to answer off the frequency were ignored and later calls to "G only" (just before TV time) produced abuse from certain quarters, so much so that Jim very nearly decided to pack it in and finish with radio altogether. Happily, the worst did not happen, but the fact that an operator of his experience should be near to taking such a step should make some individuals thoroughly ashamed of themselves.

Other Bands

Although "other bands" sounds rather disparaging, that is by no means the case. Some good DX is to be heard, especially for those strong enough to cope with the mass of "diversions" on 7 Mc/s! On that band, G5JL worked W9SMT at 1030 and W/VE have been workable as early as 1800 G.M.T. 3.5 Mc/s has been producing all the W call-areas and '5JL has worked all but W6 and 7. On 7 Mc/s c.w., **B.R.S. 20106** unearthed such DX as C3BF (2010), VS9AS, FB8XX (1900), VP8AX, 8AW, VP2GRO, CR5AD, VQ and ZS. Short openings on 21 produced ZS, ZE, VK and WN8NPY. On the same band **B.R.S. 7594** picked up CE3, CR6, CX, FF8, HK4, KP4, KZ, LU, MP4KAC, OQ5, VK9GW (0855), VS1AY (0855), ZD4AE and ZS9G. **G3CMH** worked CN8, EA8, KP4, VQ2, VQ4AQ, YI3WH, ZS and other phone on the same band.

B.R.S. 18017 heard DU7SV on 7 Mc/s c.w. at 1450. **G3JWW** finds a 39 ft. vertical excellent for 7 Mc/s DX, which has included KV4AA, LU, PY, TI2TG, VP4LZ, CO2IP, SU1SS, VP2GRO, HR1AA, KG4AJ, VP5AR, VP8AW, 8AX, 8AK (South Shetlands) and many Ws and VEs. Among those heard were CE5CW, ZS, ZL, CX4OW, HH2LD, CR5AC, ZD4AB, VP2MD, CR6AZ and OQ0DZ. **G5FA** (New Southgate) worked HE2AP and TF5TP, who gave him a list of DX heard on Top Band during the recent Contest. This comprised 28 Gs, 1 GI, 2 GWs, 3 GMs, OK and CN2AO.

Monaco

G6LX, who holds the call 3A2AY jointly with G4QK, recently visited Monaco, where he talked to M. Passeron, the Minister of Communications. The latter is disturbed by large numbers of QSLs arriving for non-existent 3A2 stations. To clarify the situation, the following is a list of stations who were authorised to operate and who were active during 1953: 3A2AH, AJ, AM, AU, AX and BA (all locals), 3A2AW (SM5ARP—phone/c.w. in May); 3A2AY (phone/c.w. in July and November) and 3A2BM (G5MP—c.w. in October and November). Any 3A2 on c.w. should be regarded with suspicion unless it is an expedition trip. All locals use phone only as a knowledge of Morse is not required except in the case of foreign nationals, who must produce a full phone/c.w. licence before a permit is granted. G6LX has agreed to act as QSL Manager and cards may be sent either to him, to G4QK or to 3A2AH.

G3JRC (London) has been receiving cards for phone contacts on Top Band, which band he has never used.

* * *

Thank you for your reports and comments. We hope the month of February goes well, with VRs on all bands! Reports should be sent to arrive not later than the 20th of the month. Good hunting and 73.

Have You Any Surplus Components?

THE Church Lads' Brigade, Liverpool Diocesan Regiment (Radio Section)—recently granted affiliation to the Society—would be grateful for gifts of surplus components. Valves and parts suitable for transmitting and receiving in the 2m band (to which they are restricted by the terms of their licence) will be particularly appreciated. Offers should be addressed to Lt.-Col. E. Carden, LL.B., T.D., 521 Aigburth Road, Liverpool, 19.

Contests Diary

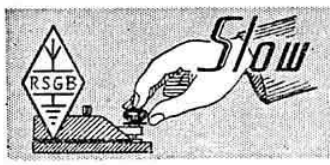
1954

May 2 - - -	D/F Qualifying* (Slade/Rugby)
May 9 - - -	144 Mc/s Field Day (No. 1)‡
May 23 - -	D/F Qualifying (South Manchester)*
June 12-13 -	National Field Day†
June 20 - -	D/F Qualifying (High Wycombe/Oxford)*
July 3-4 - -	144 Mc/s Open
July 11 - - -	D/F Qualifying (Peterborough)*
August 8 - -	D/F Qualifying (Salisbury)*
August 15 - -	144 Mc/s Field Day (No. 2)
August 29 - -	D/F Qualifying (Romford/Southend)*
September 5 -	Low Power Field Day
September 12 -	D/F National Final*
September 12 -	420 Mc/s
October 2-3 -	Low Power
November 13-14	"Top Band" (No. 2)

* *For rules, see page 328, January, 1954.*

‡ *For rules, see page 327, January, 1954.*

† *For rules, see page 179, October, 1953.*



Slow Morse Practice Transmissions

The following slow Morse transmissions, sponsored by the Society, are intended to assist those who aspire to obtain an amateur transmitting licence. More volunteers are still required for parts of the British Isles not already covered, particularly in the London Area. Stations listed who find themselves unable to continue transmissions should immediately notify the organiser, Mr. C. H. L. Edwards, A.M.I.E.E. (C8TL), 10 Chepstow Crescent, Newbury Park, Ilford, Essex.

†*Alternately.*

G.M.T.	*Call*	*kc/s*	*Town*
Sundays			
09.00	G3LP	1850	Cheltenham
09.30	G3BKE	1900	Newcastle-on-Tyne
10.00	G6MH	1990	Southend-on-Sea
11.00	G2FXA	1900	Stockton-on-Tees
11.00	G3GZA	1837.5	Bristol
12.00	GI5UR	1860	Belfast
14.00	G5AM	1900	Witnesham, Ipswich
21.00	G2FIX	1812	Nr. Salisbury
Mondays			
19.00	G3NC	1825	Swindon
21.00	G3BLN	1900	Bournemouth
22.15	G2BRH	1900	Ilford
22.30	G8TL	1900	Ilford
Tuesdays			
18.30	G2FXA	1900	Stockton-on-Tees
18.30	G3JMP	1875	Bristol
20.30	G3GDZ	1905	Kingsbury, N.W.9
21.00	G3EFA	1855	Southport
Wednesdays			
19.00	G3GZA	1837.5	Bristol
22.30	G3FBA	1910	Bath
Wednesdays (contd.)			
19.30†	G3HGY, G3HVU, G5PP	1900	Coventry
22.00	G2BND	1918	Dalston
Thursdays			
19.00	G3NC	1825	Swindon
20.00†	G2CPS, G2CNX, G3GWT	1910	Hull, Yorks.
21.30	G3ICX	1915	Sutton Coldfield
22.00	G3IFX	1910	Derby
22.30	G3OB	1803	Manchester
22.30	G3ADZ	1940	Southsea
23.00	G3LA	1915	Brentwood
Fridays			
19.00	G3BLN	1900	Bournemouth
19.00	GW3HJR	1900	Caerphilly, South Wales
20.00	G3CSG	1870	Wirral
Saturdays			
13.00	G2FXA	1900	Stockton-on-Tees

MEMBERS USING THIS SERVICE ARE REQUESTED TO SEND LISTENER REPORTS TO THE STATIONS CONCERNED.

Council Proceedings

Résumé of the Proceedings at a Meeting of the Council of the Incorporated Radio Society of Great Britain, held at New Ruskin House, Little Russell Street, London, W.C.1, on Thursday, December 17th, 1953, at 6 p.m.

Present.—The President (Mr. Leslie Cooper in the Chair), Messrs. I. D. Auchterlonie, H. A. Bartlett, F. Charman, C. H. L. Edwards, D. A. Findlay, F. Hicks-Arnold, J. H. Hum, A. O. Milne, L. E. Newnham, R. Walker, P. W. Winsford, and John Clarricoats (General Secretary).

Apology.—An apology for absence was submitted on behalf of Mr. R. H. Hammans.

Membership.

Resolved :—

(a) to elect 56 Corporate Members and 23 Associates ;

(b) to grant Corporate Membership to 10 Associates who had applied for transfer ;

(c) to grant Life Membership to Mr. T. L. Franklin, G5HO.

Applications for Affiliation.

Resolved to grant affiliation to the Loughborough College Radio Society and re-affiliation to the Manchester and District Radio Society.

Amateur Radio Exhibition.

It was reported that (a) 2,746 persons paid for admission compared with 2,707 last year ; (b) a small profit was expected to result from the event; (c) revenue from the hire of stands would be about £72 less than in 1952 ; (d) more than 800 copies of the 3rd Edition of the Call Book were sold at the Exhibition ; sales of other literature handled by the Society had also been satisfactory.

It was agreed to pay the subscription, when due, of five members who had rendered special service to the Society during the Exhibition.

The Council received, with regret, notification from Mr. Horace Freeman, that he would no longer (because of advancing years) be able to continue to act as Exhibition Manager. The Secretary was instructed to convey to Mr. Freeman the thanks of the Council for his past valuable services to the Society in his capacity of Exhibition Manager.

New Amateur (Sound) Licence.

The Secretary reported upon discussions which he and Mr. Milne had had with representatives of the G.P.O. in regard to the new Amateur (Sound) Licence. The outcome had been most satisfactory.

Extraordinary General Meeting.

Matters associated with the Extraordinary General Meeting to be held on December 18th, 1953, were dealt with and procedure agreed.

National Convention, 1954.

Mr. Bartlett reported at length upon the proposals which had been discussed at a recent meeting of the Bristol Convention Committee.

The following tentative programme has been drawn up:

Friday, September 17. Afternoon.—River or coach trips. Buffet and film show.

Saturday, September 18. Morning.—Technical talks. River or coach trips. Afternoon.—Free period. Evening.—Dinner and speeches. Draw for raffle.

Sunday, September 19. Morning.—River or coach trips. Informal luncheon. Afternoon.—Informal tea.

An exhibition of Amateur Radio equipment would be arranged for the Friday and Saturday.

Arising from a discussion of the financial arrangements it was agreed to loan to the Committee the sum of £100 for use as a float in financing certain aspects of the Convention.

Mr. N. S. Potter.

Correspondence was submitted from Mr. N. S. Potter of Manchester.

Resolved to inform Mr. Potter that the Council are of the opinion that the actions which he contemplates taking are likely to prejudice the efforts which the Society will continue to make in order to ensure fair treatment for those amateurs who are suffering from the ill-effects of TVI due to no fault of their own.

The Secretary was instructed to point out to Mr. Potter that the Council cannot subscribe to his viewpoint that the P.M.G. uses "illegal methods to discriminate against the amateur's use of his licensed equipment."

R.A.E.N.

It was agreed to have printed a small membership card for distribution to those who have joined the network.

A design of coat badge submitted by Mr. F. R. Peterson, G3ELZ, was approved. The Secretary was authorised to obtain quotations for a pin or brooch type of badge to the design submitted.

R.S.G.B. BULLETIN.

Correspondence was submitted from *South London Press, Ltd.*, to the effect that it would be necessary, if the present publishing date is to be maintained, to have at least 50% of each issue (apart from advertising) in page form corrected by the end of the month previous to publication.

It was agreed to invite a representative of *South London Press, Ltd.*, to meet the Editor and representatives of the Council to discuss ways and means for overcoming the production difficulties which had arisen.

Cash Account.

Resolved to receive and adopt the Cash Account for November, 1953.

Reports of Committees.

(a) *R.A.E.N.*

Resolved (i) to receive, and adopt as a Report, the Minutes of a Meeting of the Committee held on November 14th, 1953.

(ii) to accept recommendations contained in the Minutes relating to the establishment of the Network ; frequencies and systems to be used ; the name of the organisation.

(b) *Finance and Staff.*

Resolved (i) to receive, and adopt as a Report, the Minutes of a Meeting of the Committee held on December 3rd, 1953.

(ii) to accept recommendations contained in the Minutes relating to the renewal of the General Secretary's Service Agreement for a further period of three years as from January 1st, 1954, and the financial arrangements in connection

therewith; staff increases; repayment of £1,000 2½% Defence Bonds Conversion issue; cashing of £75 Tax Reserve Certificates; payment of honoraria totalling £65.2.0 to 13 QSL Sub-Managers and free subscriptions to two others.

It was pointed out that the salary increases which had been approved by the Council would amount, in all, to £89 for the six months to June 30, 1954. The Hon. Treasurer had budgeted for an additional expenditure of £200 for salaries and a possible staff pension contribution for the Assistant Editor.

It was agreed to offer any three titles in the Amateur Radio series of technical booklets for sale to members at 2/6. A recommendation to extend the offer to the general public was not approved.

Secretary's Service Agreement.

Resolved to authorise the President to sign the General Secretary's new Service Agreement on behalf of the Society and to affix the Seal of the Society.

Two copies of the Agreement were sealed and signed by the President and Mr. Clarricoats.

(c) Amateur Radio Exhibition (Home Constructors' Section).

Resolved to receive the Report of the Committee and to commend to the 1954 Council a suggestion that the Committee be made a Standing Committee of the Council.

(d) Membership and Representation.

It was agreed not to accept a recommendation of the Committee (which had met earlier that day) that the Contests Committee be asked to draft a rule to the effect that no group shall be permitted to enter a station for N.F.D. unless a T.R. is in office as at the 1st April in any particular year.

The Secretary was, however, instructed to publish a notice in appropriate issues of the BULLETIN to the effect that if no T.R. has been appointed at the closing date for entries, the group will not be permitted to enter for N.F.D.

Badges for Past Members of Council.

It was agreed that, as from the current year (1953), members who have served on, or retired from, the Council, shall be presented with a suitable badge indicating their past association with the Governing Body of the Society.

Retiring Members of Council.

The retiring members of the Council (Messrs. Charman, Walker and Winsford) spoke of the pleasure they had experienced in serving on the Governing Body.

The President, on behalf of his colleagues, thanked the retiring members of the Council for their past valuable services to the Society, and expressed the hope that all would offer themselves for re-election on some future occasion.

Call Book Editor.

Resolved to make a gift to the value of £5.5.0 to Mr. and Mrs. John Tyndall in appreciation of their services to the Society in connection with the Third Edition of the Amateur Radio Call Book.

The meeting terminated at 10.15 p.m.

Sir Noel Ashbridge Honoured

AT the Annual General Meeting of the British Institution of Radio Engineers, held in London on October 21, 1953, a Certificate of Honorary Membership was presented to Sir Noel Ashbridge. The citation referred to Sir Noel's outstanding work as Director of Technical Services of the British Broadcasting Corporation, and paid tribute to his notable contributions to the whole field of radio engineering.

The City and Guilds of London Institute's Insignia Award in Technology

THE Insignia Award in Technology was established by the Council of the City and Guilds of London Institute some 12 months ago to provide a high qualification for persons in industry whose initial training was based primarily upon practical experience combined with theoretical study and who, having gained appropriate City and Guilds' certificates as craftsmen or technicians, have now advanced in their industry by a combination of progressive experience and further study.

A copy of the regulations governing the Award, together with notes for the guidance of candidates, will be sent on application to The Director, Department of Technology (I.A.), City of London Institute, 31 Brechin Place, London, S.W.7.

Essay on TVI Wins First Prize

IN the Essay Competition held by the Institute of Post Office Electrical Engineers the first prize was awarded for an essay on the subject of TVI.

The following comment on the essay appeared in a recent issue of *The P.O. Electrical Engineers' Journal*: The essay judged to merit first place, "The Problem of Interference to Television Reception from Amateur Transmitting Stations," by G. H. Bedford, is a succinct, well-written, well-produced account of some of the difficulties overcome by amateurs in suppressing harmonic radiation, so enabling them to avoid interference to television receivers. After a brief account of the growth of Amateur Radio, and the extent of the frequency bands allocated to amateurs in the United Kingdom, the author shows that the harmonic relationship between the amateur bands and the television channels is such that each band has harmonic relationship with at least two television channels. He then investigates the cause and nature of harmonic interference and proceeds to a consideration of methods of locating and reducing it. He also suggests that the intermediate or image frequency band of television receivers should not be centred upon an amateur band and that, where this is done, it is illogical to hold an amateur transmitter responsible for either intermediate frequency or image break-through. Finally, he suggests the need for an additional amateur licensing clause and changes in the licensing regulations with the purpose of enabling television and amateur transmission to enjoy a peaceful and active co-existence.

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Two Metre Converter

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

A converter for the Two-Metre Amateur Band could hardly be much simpler than the one described in this article. Notwithstanding, its performance is unlikely to be bettered by any other design using valves and components available to the amateur at the present time.

IN attempting to achieve increasingly better performance, two metre converters have become, in many cases, pieces of apparatus which are not only complicated, expensive to build and difficult to adjust, but are calculated to discourage those to whom v.h.f. technique and miniaturisation are closed books.

The design presented here started as a simple converter for the newcomer, without complications and frills, but it was quickly found that it was possible to achieve a performance comparable with the best converters available at the present time without going outside the original specification. An examination of the circuit diagram (Fig. 1) and photographs will show that the small number of parts makes construction a relatively simple matter.

Low Noise Factor Achieved

The accepted figure of merit for a receiver is its noise factor, and if every possible precaution is taken, together with the use of specialised—and expensive—valves and first-class construction, it is possible, at the present state of the art, to obtain a noise factor of approximately 3 db. This converter, with one easily obtainable double-triode for the r.f. and mixer stages, measures approximately 4.5 db.

* *32 Earls Road, Tunbridge Wells, Kent.*

The Circuit

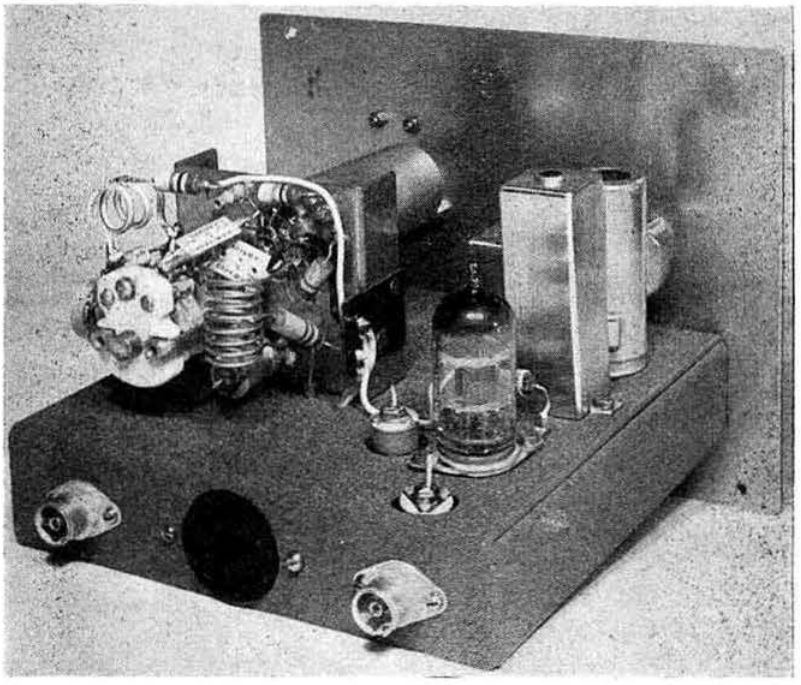
One section of a 12AT7 double-triode valve (V1) is connected as an earthed-grid triode r.f. stage with the input circuit arranged to couple 80 to 100 ohm co-axial feeder to the cathode impedance. The coupled circuits L2 and L3 form an impedance matching network between the output of the e.g.t. and the triode mixer—the second section of the same valve—and it is here that, with only one r.f. stage, sufficient gain is realised to provide adequate sensitivity and a good noise factor.

L2 is resonated at the centre of the band by C3 and L3 by its inductance and the input capacity of the mixer. The degree of coupling between these coils determines the band width.

Mixer bias is provided by rectification of the oscillator injection voltage across R3. This voltage is not critical and coupling between the oscillator and mixer stages is effected by wrapping a thin insulated wire from the anode of V3B round the grid lead to the mixer. To ensure the best signal-to-noise ratio it is necessary to run this valve at a low anode voltage, hence the high value of R4. By so doing the output of the stage is reduced to a certain extent, but as the noise falls more rapidly than the signal for reductions down to 45 volts or so a net gain in the readability of weak signals is obtained.

C5 forms a bypass for signal and oscillator frequencies present at the mixer anode and as it is part of the tuning capacity for the primary of the i.f. transformer in conjunction with C6 it is possible to use a relatively large value without fear of bypassing the i.f. To be fully effective in its dual role, C5 should be of good quality and connected by short leads between the anode tag of the valve holder and the common earthing point of the stage. In some layouts it might be an advantage to connect C5 to a point somewhere along the lead between the mixer and i.f. transformer.

The i.f. amplifier (V2) is a 6AM6, but any r.f. pentode of similar characteristics could be employed in this position. The exact intermediate frequency is not important provided it is above 5 Mc/s; with the transformers described it is 10.2 Mc/s. The frequency chosen should be free of strong signals, particularly if the main receiver is not well screened. With this in mind V2 is run at full gain.



Rear view of the chassis showing the r.f./mixer valve in right foreground with trimmers C1 and C3. The oscillator/doubler assembly is to the left; C17 may be seen between the doubler coil L5 and the chassis.

The Local Oscillator

A second 12AT7 is used as an oscillator/doubler, the injection voltage for the mixer being taken from the anode of the doubler. The injection frequency is on the *low* side of the signal. The Hartley circuit was chosen for the oscillator because of its simplicity, and, provided care is taken in the mechanical construction, its stability. A rigid brass bracket supports all the components of the oscillator/doubler so that relative movement is reduced to a minimum. A series-gap tuning condenser is specified because, if the rotor is left free, no r.f. current flows through the bearings, a major cause of noise and frequency jumping.

Most of the parallel capacity across L4 is provided by C12 and the trimmer C13. H.T. voltage is fed through R8 to the centre tap of the coil. It should be noted that this point is *not* bypassed to chassis as doing so is likely to result in instability and a poor note.

The grid of the doubler section of the valve is driven *via* C16, bias being produced across the grid leak R10. The anode circuit comprises L5

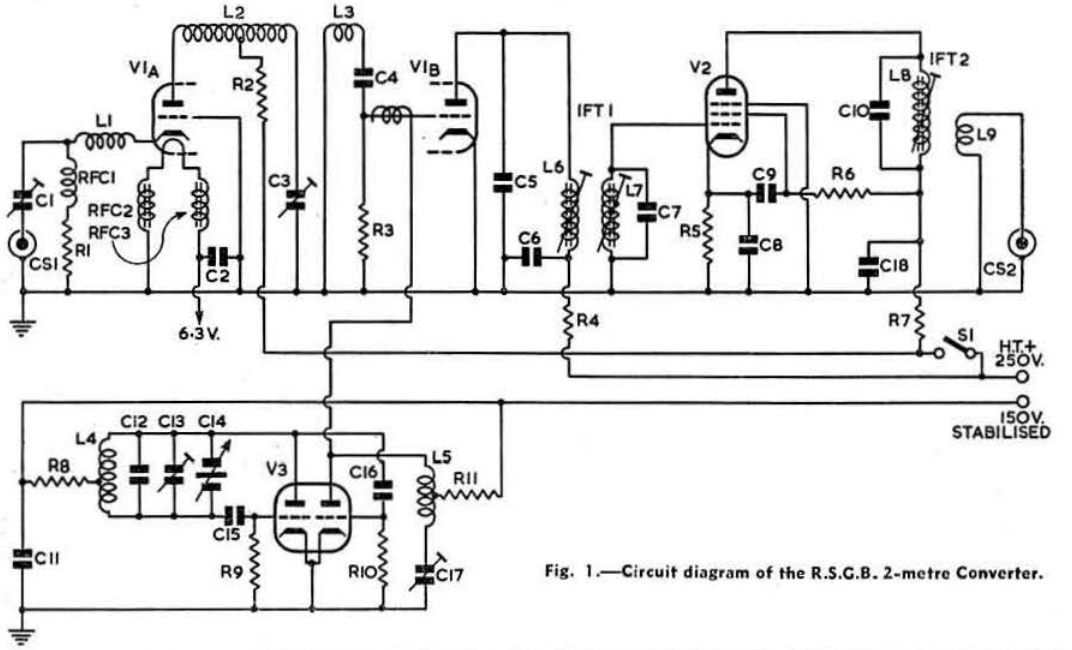


Fig. 1.—Circuit diagram of the R.S.G.B. 2-metre Converter.

Components List

Condensers

C1, 3	3–30 $\mu\mu$F trimmer, Mullard type 7864/01
C2, 11	1,000 $\mu\mu$F, T.C.C. type CTH 310/S
C4, 15, 16	50 $\mu\mu$F, T.C.C. type SMP 101
C5, 7, 10	36 $\mu\mu$F, T.C.C. type SMP 101
C6, 8, 9, 18	2,000 $\mu\mu$F, T.C.C. type SM2N
C12	30 $\mu\mu$F, T.C.C. type SMP 101
C13	3–30 $\mu\mu$F trimmer, T.C.C. type TCK 0330
C14	10+10 $\mu\mu$F variable, Jackson Bros. type C 808
C17	2–8 $\mu\mu$F trimmer, Mullard type E.7850

Coils

L1	7 turns 22 s.w.g. tinned copper ¼in. diam. spaced one wire diam.
L2	8 turns 18 s.w.g. tinned copper ⅜in. diam. ⅜in. long, tapped 6th turn from anode.
L3	4 turns 18 s.w.g. tinned copper ⅜in. diam. 5/16in. long
L4	3 turns 14 s.w.g. silver plated ⅜in. diam. ½in. long.
L5	8 turns 18 s.w.g. tinned copper ½in. diam. ⅛in. long centre tapped
L6, 7, 8	24 turns 34 s.w.g. enam. close wound Aladdin former
L9	8 turns 34 s.w.g. enam. close wound Aladdin former

Resistances

R1	200 ohms, ⅛ W Erie type 9
R2	6,800 ohms, 1 W Erie type 100
R3	2 Megohms, ½ W Erie type 9
R4	220,000 ohms, ½ W Erie type 8
R5	150 ohms, ½ W Erie type 9
R6	20,000 ohms, ½ W Erie type 9
R7, 8, 11	2,200 ohms, ½ W Erie type 8
R9	20,000 ohms, ½ W Erie type 9
R10	220,000 ohms, ½ W Erie type 9

Chokes

RFC1	19 in. 30 s.w.g. enam. ⅛in. diam. self-supporting
RFC2/3	9 turns each 26 s.w.g. d.c.c. on Neosid iron core type 1

Valves

V1, 3	12AT7 Brimar
V2	6AM6 Brimar

Valveholders

1 B7G McMurdo type XM7/UD1. Skirt No. 45, screening can 4/41
1 B9A McMurdo type XM9/U
1 B9A McMurdo type XM9/UD1. Skirt No. 45, screening can 8/71
1 Octal McMurdo type B8/U. (Power socket)

I.F. Transformers

1 former type PPF 5937/6. Aladdin Radio Industries Ltd.
1 former type PPF 5938/6. Aladdin Radio Industries Ltd.
2 top plates PP 5939. Aladdin Radio Industries Ltd.
3 cores, grade 'F' PP 5940. Aladdin Radio Industries Ltd.
1 screening can type D/TV.1. John Dale Ltd.
1 screening can type D/TV.2. John Dale Ltd.

Miscellaneous

Slow Motion Dial. Eddystone type 843 with vernier
Flexible Coupler. Jackson Bros. type 4693
Switch. Bulgin type S.253.
Knob. Bulgin type K.107
Octal Plug. Bulgin type P.112 or P.448
Co-ax. Plugs. Belling and Lee type L.734/P/AL
Co-ax. Sockets. Belling and Lee type L.604/S/CD
Chassis and Cabinet. Philpott's Metalworks Ltd.

series tuned by the 8 $\mu\mu$F concentric air-spaced trimmer C17. H.T. is fed to the centre of the coil through R11.

Construction

The converter illustrated was built on a chassis 5¾ in. square and 1¾ in. deep, and contained in a cabinet 7 in. by 6 in. by 5½ in. deep. This is about the minimum size into which the parts can be fitted. From experience gained during construction it is strongly advised that a somewhat larger chassis be employed unless the constructor is experienced and, moreover, the possessor of a miniature soldering iron. The layout plans (Fig. 2)

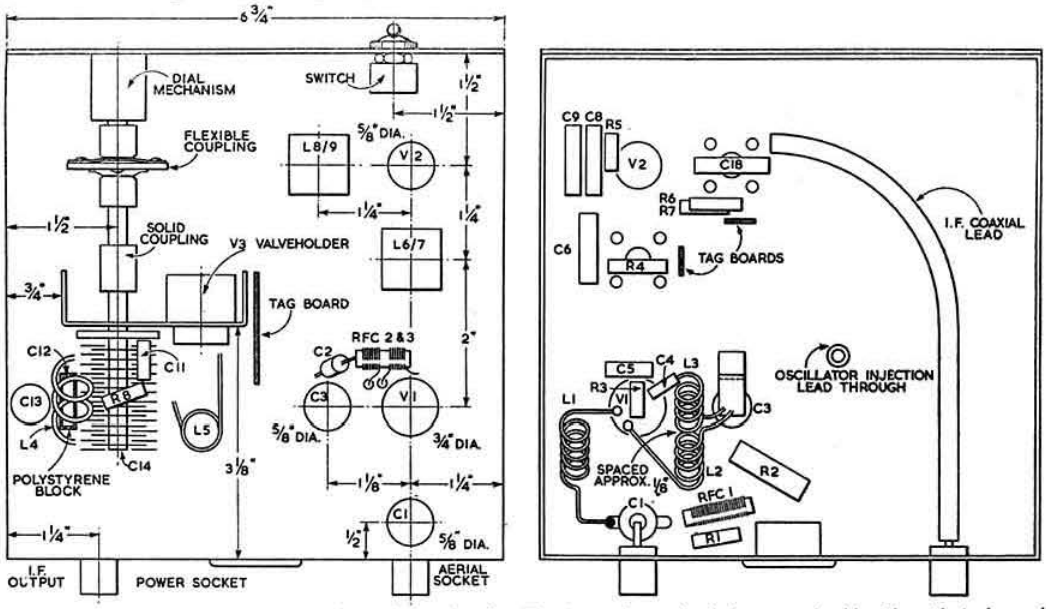


Fig. 2.—(Left) Sketch showing a top view of the chassis. The latter is one inch longer and wider than that shown in the photograph for greater ease of construction. The depth is 1¾in. (Right) Layout of components beneath the chassis. Some latitude is permissible in the relative positions of the r.f./mixer, i.f. amplifier and oscillator/doubler sections if required to fit an existing chassis.

are for a chassis one inch longer and wider and a quarter-inch deeper than the original.

So long as the three units into which the circuit falls—r.f. and mixer, i.f. amplifier, oscillator/doubler assembly—are each made approximately as they are shown in Fig. 2, their relative positions are not so important provided the injection lead from the doubler does not exceed 4 or 5 in. in length and the connection from mixer anode to the i.f. transformer is not more than 2½ in. There would be no objection to the use of a suitable octal or B9G based valve as i.f. amplifier and standard-sized i.f. transformers, provided the chassis is made to accommodate them.

The 30 $\mu\mu$F concentric trimmer (C1) has its spigot bound to the centre conductor of the aerial socket with fine wire and is soldered so that it is adjustable through the hole provided in the deck of the chassis. When making this joint care must be taken to avoid overheating, as both components are adversely affected by heat. If the aerial plug is in position during the operation the pin of the socket will remain central, but the use of "heat shunts" in the form of crocodile clips is to be recommended.

C3 is mounted on a small brass bracket (Fig. 3a) and protrudes through the top of the chassis. L2 is supported at one end by the anode tag of the valveholder (pin No. 1) and at the other is soldered to a lug on the body of C3. The earthy end of L3 is soldered to the bracket close to the point where the spigot of C3 passes through, the two coils being arranged so that their inner faces are about 3/16 in. apart. The other end of L3 is attached to the mixer grid condenser and no further support is necessary. The oscillator injection lead may be wrapped three times round the grid lead at this point or on the other side of the grid condenser (C4) whichever results in the shorter run.

The two r.f. chokes in the heater leads to V1 are mounted above the chassis and wound side by side on a *Neosid* iron core, the outer ends of the coils being soldered to the lead-out wires which

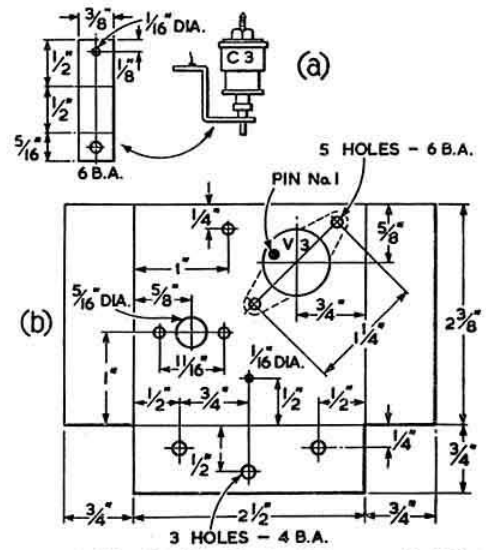


Fig. 3.—Drilling detail for the brackets supporting C3 and the oscillator/doubler components respectively. 20-gauge brass should be employed and, in the case of the former, the joint between sides and base should be soldered for greater rigidity.

then serve as supports: one end is connected to a tag placed under a bolt securing the valveholder and the other to the top of bypass condenser C2. From this point a lead is run to the l.t. connection on the oscillator/doubler assembly.

Details of the bracket for V3 and its associated components are shown in Fig. 3b. A small polystyrene block to support C13 is fixed by two bolts to one of the side members of the tuning condenser, which is drilled and tapped 6 BA for the purpose. C17 is soldered to the bracket by passing its spigot through the 1/16 in. hole indicated. A small piece of paxolin or similar material bolted to one side of the bracket serves to support the ends of the h.t. and l.t. leads from which wires are run, through the chassis, to the appropriate points on the power socket.

Little need be said about the i.f. amplifier except that, in the interests of freedom from pick-up of signals at the intermediate frequency, all leads should be short. Constructional details of the i.f. transformers are given in Fig. 4. The internal connections to the spills should be so arranged that the external connections are as direct as possible. The shielding of the co-axial lead from L9 to the output socket should be connected to chassis at both ends; its length is unimportant.

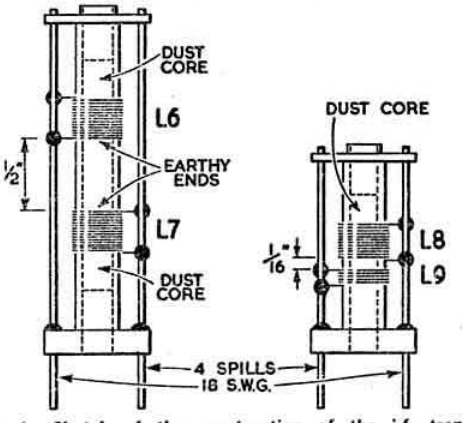


Fig. 4.—Sketch of the construction of the i.f. transformers. C7 and C10 lie between the spills inside the cans.

All power supplies are taken through an octal plug and socket on the rear drop of the chassis. A switch is provided on the panel which, in its "off" position, removes h.t. from the r.f. and i.f. stages during transmission, leaving the mixer operative so that it is possible to monitor the transmitter without overloading either the converter or the associated receiver. In the interests of oscillator stability, h.t. is not removed from V3 during transmission.

Adjustment

Set the main receiver to approximately 10.2 Mc/s and adjust the cores of L6, 7 and 8 for maximum noise. The exact frequency is not important and some latitude is possible to avoid unwanted signals at the intermediate frequency. As a guide, the gain from V2 is such that the r.f./i.f. gain control setting in the receiver will be quite low, resulting in no background noise being audible when the send/receive switch on the converter is at the "send" position.

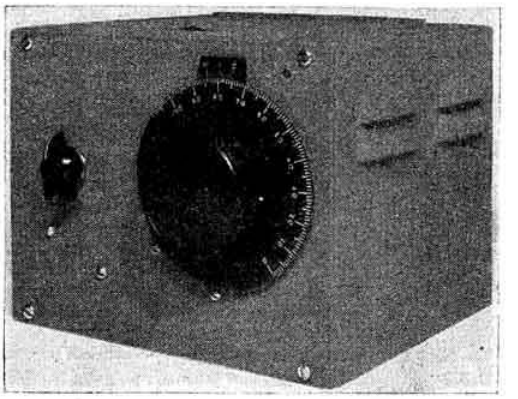
The next step is to resonate L3. With no h.t. on the r.f. stage, the oscillator should be adjusted to give injection at 145 Mc/s. This may require the temporary removal of C12. L5/C17 should tune to 145 Mc/s just short of minimum capacity. A meter with a f.s.d. of about 250 volts is now connected between the mixer anode and chassis and L3 adjusted by opening or closing the turns until the *highest* meter reading is obtained. C3 should be detuned to avoid inter-reaction between L2 and L3 and care taken that C17 maintains resonance in the output circuit of the doubler. The tuning of L3 is quite broad and the adjustment not difficult to make. C13 is then adjusted to set the oscillator to a frequency of (145 – i.f.)/2. or 67.4 Mc/s with the i.f. mentioned above. This may be done with the aid of a grid dip oscillator or a closely calibrated absorption wave-meter. In the latter case it will be necessary to insert a meter in the 150-volt lead to the oscillator and to watch for the kick when L4 passes through resonance.

The doubler anode circuit of V3 should be set to the required injection frequency, *i.e.* twice that of the oscillator. If the circuit values are as shown, the only resonance point within the range of C17 will be the correct one. This will be indicated by a voltmeter connected between mixer anode and chassis as previously described. By adjusting the spacing of L4 and the capacity of C13 the 2-metre band may be spread over the entire dial.

H.T. may now be applied to the r.f. and i.f. stages and C3 tuned to resonance, which will be indicated by a considerable rise in noise. It is essential that the aerial be connected to load V1A. It may be necessary to open or compress L2 so that resonance occurs at about mid-capacity of C3. Instability may be produced at low-capacity settings of C3, but if this happens make sure by rotating C1 that this is not due to incorrect aerial loading.

All preliminary tuning adjustments should be made at mid-scale on C14 and if this condenser is now tuned over its range the background noise should vary only slightly over the band. If there is a sharp falling-off, tighter coupling between L2 and L3 is required, followed by readjustment of C3 at 145 Mc/s.

C1 is not a tuning control and no resonance effects should be found when it is adjusted, but at low settings the stage will almost certainly go into oscillation. The purpose of this condenser is to assist matching when the aerial impedance is not truly resistive, but if the converter is still unstable at all settings of C1 then the trouble should be looked for in the aerial and/or feeder. Slight adjustments to the inductance of L1 may be necessary and, if a noise generator is not available, these should be made for the best readability of a *weak* 'phone signal on approximately 145 Mc/s. To obtain the utmost in noise



Front view of the R.S.G.B. Two-Metre Converter in its cabinet. The stand-by switch is to the left.

factor from the converter a noise generator is essential, but with adjustments made as described there should be no difficulty in obtaining really satisfactory performance.

No attempt should be made to connect balanced feeder to the converter without the addition of a balance-to-unbalance transformer or *balun*.

Acknowledgements

The writer asknowledges his indebtedness to the manufacturers of the components used in this converter for their co-operation and to Commander John Pegler, R.N. (G3ENI), for his assistance in the development of the circuitry for the r.f. and mixer stages.

Appendix

An American 6BQ7 valve has been tested in place of the 12AT7 r.f. and mixer stages; a just measurable improvement in noise factor resulted.

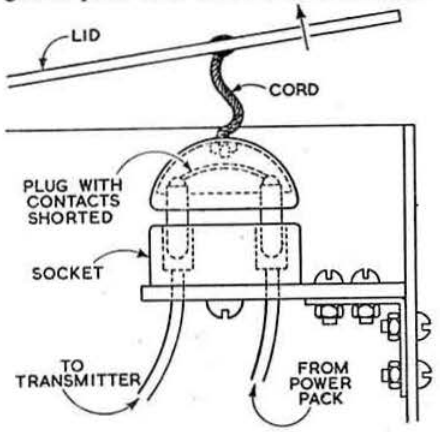
By courtesy of McMurdo Instrument Co. Ltd., a P.T.F.E. valveholder was tested in the r.f. and mixer stages. An easily measurable improvement was achieved and in an experimental model a noise factor of 3.8 db was recorded. The nylon-loaded bakelite component specified gives a performance closest to P.T.F.E. but ceramic or ordinary bakelite types should not be employed, the latter being particularly poor.

A type 6J6 valve will give results equal to a 12AT7 in the oscillator/doubler position but requires a B7G valveholder.

Safety First!

By T. Charles Bryant (G3SB)*

AS it is quite possible to forget to turn off the main h.t. switch before making adjustments (e.g. changing coils, etc.), safety devices to prevent an operator accidentally touching dangerous parts have often been advocated.



The method of mounting the plug and socket in the cabinet.

It is an expensive matter to purchase interlocking devices which prevent lids or doors of a transmitter being opened while the h.t. is on and such arrangements are too difficult for the average amateur to construct. However, the idea described here provides a cheap solution. In the case of a transmitter with an opening lid, a socket (a two pin 5 amp type is suitable) is fitted near the top front of the cabinet with one connection going to the h.t. power pack and the other to the transmitter, as illustrated. A suitable plug, with its connections shorted, is arranged to fit this socket and a piece of cord is attached to the plug and to the lid of the cabinet. The cord is only long enough to allow the lid to be raised the minimum amount necessary to allow the plug to be inserted and removed, so that before adjustments are made, the plug must be removed and the transmitter isolated from the power supply. If desired, a multi-contact socket may be used to break several h.t. voltages.

The arrangement can obviously be adapted for use with a transmitter having a door instead of a lid.

* *15 Filton Avenue, Bristol 7.*

Around the Trade

A NUMBER of Eddystone components of interest to radio amateurs have recently been introduced by Stratton & Co., Ltd., of West Heath, Birmingham. These, together with many existing products, are featured in a new Eddystone Radio Products catalogue.

Among the newcomers are a wide range of transmitting variable condensers. Efficient electrically and mechanically well-constructed, all types utilise ceramic end-plates, some having single and others double bearings. The metal work is brass, the vanes are soldered to the supporting bars and the finish is matt silver-plate. Single section types with one 2 in. square end-plate are available in capacities of 60 $\mu\mu$F, 175 $\mu\mu$F and 250 $\mu\mu$F. Single section types with two 2½ in. square end-plates are offered in capacities of 100 $\mu\mu$F and 230 $\mu\mu$F. Split-stator types include capacities of 25+25 $\mu\mu$F, 50+50 $\mu\mu$F and 100+100 $\mu\mu$F. There is also a new differential type (No. 834) with a capacity of 100+100 $\mu\mu$F.

A typical example from the new range is a 50+50 $\mu\mu$F split-stator condenser (No. 832) which has a flashover per section of 2,500 volts and a vane spacing of .080 in.

A new vernier slow-motion dial (No. 843) built around a 4 in. diameter anodised satin-finished hard aluminium dial is offered, with a scale having 100 divisions, marked over 180°. The driving head is of an improved ball-bearing epicyclic type, totally enclosed and giving a reduction ratio of about 10 to 1. The new dial is very silky in operation and appears to be a considerable improvement on earlier types.

A small ribbed low-loss former (No. 847) with numerous applications in v.h.f. and u.h.f. equipment is also available. It has a diameter of 19/32 in. and the winding length is ¾ in. The former is supplied with a special quality powdered-iron core and rubber string.

Among the many other new items available is a bar knob (No. 846) made in polished black bakelite suitable for use where considerable torque is required.

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The Reflectometer

Part II—Construction

By F. CHARMAN, B.E.M. (G6CJ)* and J. W. MATHEWS, Assoc.Brit.I.R.E. (G6LL)†

IN Part I of this article, which explained the principles of the Reflectometer, it was shown how a special detector head, inserted through the wall of a concentric line, could be adjusted to respond to currents flowing in one direction only and thus used to "sample," separately, the two component waves of a standing-wave system.

The construction of a unit containing two such detectors, one facing each way, will now be described. The forward-looking detector gives a d.c. output proportional to the power flow to the aerial, whilst the output of the backward-looking detector is proportional to the degree of aerial mismatch. The instrument described is most suitable for 420 Mc/s but may also be used at 144 Mc/s. Considerable care has been taken to produce a design which can be made without the use of elaborate tools.

In order to be correctly adjustable, the detectors must rotate easily in their sockets. This is most easily accomplished by the use of thin-walled brass tubes, known in the trade as "telescope tubes," together with a clamp to act as a collar or depth control.

As it is somewhat difficult to mount side-tubes on a circular concentric line, the main line is made with a square cross-section. Thus, the only materials required are some thin brass or copper sheet and a few inches of matched telescope tube about 1 in. in diameter. None of the dimensions given is critical except those which determine the line characteristic impedance. Suitable materials may be obtained from E. J. Philpotts' Metalworks Ltd., Loughborough, or from Stanton's, Shoe Lane, London, E.C.3.

Line Impedance

The relationship between the line impedance on the one hand and the ratio of the inside dimension of the outer case to the diameter of the internal conductor for a square section line on the other, is shown by the graph in Fig. 1. It will be seen that a ratio of 3:1 is required for a 70-ohm line and 5:1 for a 100-ohm line. This means, for example, that a square tube 15/16 in. (inside dimensions) would require a 5/16 in. diameter centre conductor for a 70-ohm line and 3/16 in. diameter for a 100-ohm line.

In the instrument illustrated, a 1¼ in. square section tube is employed with a ¼ in. diameter rod for use with 100-ohm co-axial cable. The length of the line section is not important but a convenient size is 6 in. The distance between the two detector heads is 4 in., but the exact separation is immaterial.

Construction of the Square Line

The square tube is made from 20 s.w.g. brass sheet bent into a U-shape with two ¼ in. flanges turned outwards as shown in Fig. 2. The three sides of the U are 1¼ in. inside measurement. The flanges are used to bolt on a bottom plate to complete the square tube. End plates may be folded and soldered into position or fixed with 8 BA screws if 3/16 in. sheet is used.

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† *90 Tolmers Road, Cuffley, Herts.*

Co-axial Connectors

At 420 Mc/s the subject of suitable plugs and sockets for connection of co-axial cables is very important, since quite noticeable reflections are set up if the connectors have the wrong L/C ratio at this frequency. Most of the available connectors match 50 ohms or lower impedance circuits. Although the detector heads can be adjusted to correct local errors, the instrument thereby loses its versatility.

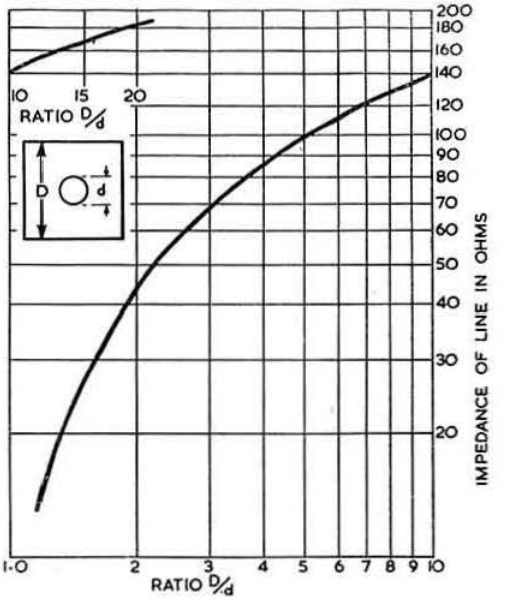


Fig. 1.—Chart showing the ratio of the internal dimensions of a square tube to the external diameter of the centre conductor for use in calculating the dimensions of line sections of required impedance.

Belling-Lee type L604 sockets may be used for 50 to 70-ohm lines at 420 Mc/s, but it has been found necessary to make special connectors for use with 100-ohm lines. The construction is illustrated in Fig. 3.

The pin and socket for use in the 100-ohm connectors can be obtained from a standard Belling-Lee connector, the socket being extracted from the polythene surround by the application of a little heat to one end. The socket is ⅛ in. in diameter so that a small piece of ¼ in. diameter tube is required as the outer conductor. The socket is mounted on a piece of polystyrene sheet cut and filed to fit tightly into the tube. The joint can be sealed with polystyrene cement (polystyrene chips dissolved in benzine).

The 100-ohm plug is made from a piece of tube which just slides over the outer conductor of the socket. If thin-walled tube is used, it can be slit several times with a fine saw so that the segments can be gently pressed inwards to make a good sliding fit.

About 1 in. of 5/16 in. inside diameter thin-walled tube is used to make contact with the outer

braid of the 100-ohm feeder, the external dimension of which is generally about $\frac{5}{16}$ in. The thin-walled tube is soldered to a brass disc which is in turn fitted and soldered to the larger tube. The pin, in its polythene mounting, is then pushed firmly into the inside end of the $\frac{5}{16}$ in. tube. The centre connector of the cable is soldered to the pin in the usual way. In order to make a tight connection to the braid of the feeder, the thin-walled $\frac{5}{16}$ in. tube should be slotted and fitted with a clamp.

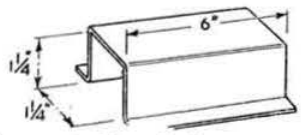


Fig. 2.—The construction of the square section line showing the flange for attaching the bottom plate.

The $\frac{5}{8}$ in. diameter tube which now forms the socket is mounted on the end plate of the square section line by soldering it into a suitable hole before pressing home the polystyrene disc carrying the actual socket. Two such socket combinations are required, one for each end of the line. Connections from the socket pins to the inner line are made by drilling a hole at each end of the rod so that it slips over the pin at the back of each socket; it is then secured by two grub screws.

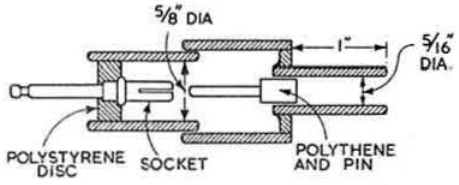


Fig. 3.—Construction of co-axial plugs and sockets for 100 ohm line.

Detector Head Mounting

The detector heads and their sockets are made from telescope tubes of about $\frac{15}{16}$ in. and 1 in. diameters, the sockets being $\frac{3}{4}$ in. long and spaced approximately 4 in. apart on top of the square section tube as shown in the photograph. They are soldered into holes cut to fit them and are slotted so that they may be clamped tightly to the detector heads. The clamps may be made from $\frac{1}{4}$ in. wide strip brass bent round and held together with a 6 BA nut and bolt.

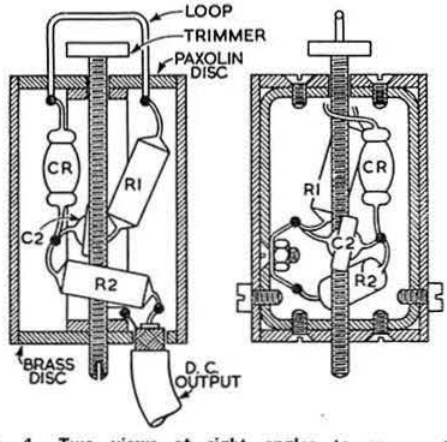
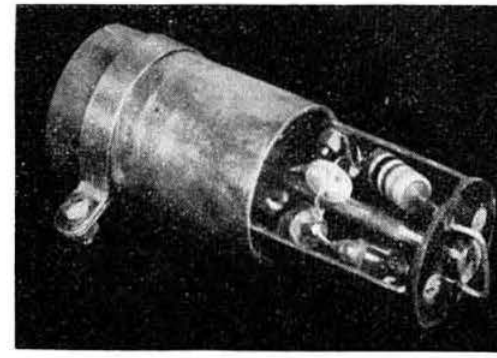


Fig. 4.—Two views at right angles to one another showing the construction of the detector heads.

The Detector Heads

Two views of one of the two detector heads—which are identical—are shown in Fig. 4.

The heads are constructed on small frames made of $\frac{1}{4}$ in. wide thin brass strip bent into rectangles which fit snugly into the tubes. It is upon these "chassis" that all the components are mounted. The upper end of each head is closed by a brass disc; the bottom end is made of resin board or similar material. These end plates are held in position by 8 BA screws, which are also used for fixing the "chassis" inside the tube. It is important that the heads should be a good fit in their respective tubes so that the whole assembly can be easily pushed together.



A view of one of the detector heads partly removed from its casing.

The small trimmer condenser (C1 in Fig. 5) is made by screwing a piece of 6 BA studding right through the rectangle and end plates. A $\frac{3}{8}$ in. diameter disc is soldered to one end, the other being slotted to take a screwdriver. The $\frac{3}{8}$ in. plate is then used to adjust the capacity between the loop and the "earthy" frame. The coupling loop is made from 20 s.w.g. wire and is $\frac{1}{2}$ in. wide and $\frac{3}{8}$ in. above the resin-board plate on which it is mounted. The loop is fixed through pairs of small holes $\frac{1}{2}$ in. apart. Each end of the loop is passed through one hole, folded back through its neighbour and pinched to make a firm anchorage for each leg.

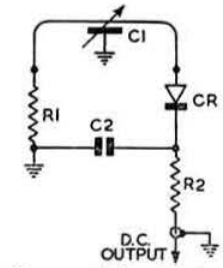


Fig. 5.—Circuit diagram of the detector heads. C1, see text; C2, 47 $\mu\mu$F, ceramic; CR, GEX.66, Germanium diode; R1, R2, 100 ohms, $\frac{1}{2}$ W.

It will be seen from the circuit of the detector head (Fig. 5) that one end of the loop terminates in a resistance R1, whilst the other feeds a germanium rectifier type GEX.66, the output of which is decoupled by C2 and R2. Television type co-axial cable, terminated with co-axial connectors, can be used to feed off this d.c. output. The leads are passed through holes cut in the brass end discs, but care should be taken to anchor the braid securely inside the head by bending a long soldering tag round it and lightly soldering. The tag can then be bolted to the frame.

Mounting the Instrument

The complete Reflectometer is mounted on a metal cabinet together with the necessary input sockets, a 0-100 μA meter, two jacks and a single-pole changeover switch. The circuit of this arrangement is shown in Fig. 6. The 'phones jack is used during the initial setting-up process and the external meter jack when the standing-wave ratio is extremely small. It permits current in milliamps from a forward wave to be compared with current in microamps from a reflected wave. The switch is for changing the meter from one head to another.

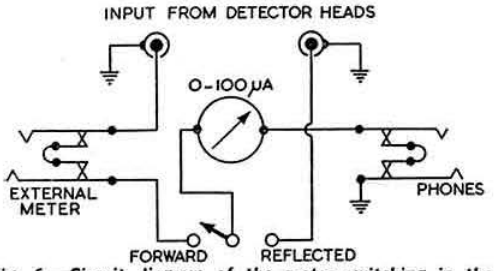


Fig. 6.—Circuit diagram of the meter switching in the mounted Reflectometer.

Terminating Resistance

The initial setting-up process requires that a terminating resistance be used at one end of the unit. It must "look like" a resistance, even at 420 Mc/s. This means that it must be co-axial and of similar impedance to the line. A long piece of co-axial cable, say 100 ft., could be used for the purpose, but as such a length is unlikely to be commonly available, a special accessory will be described.

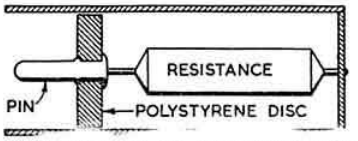


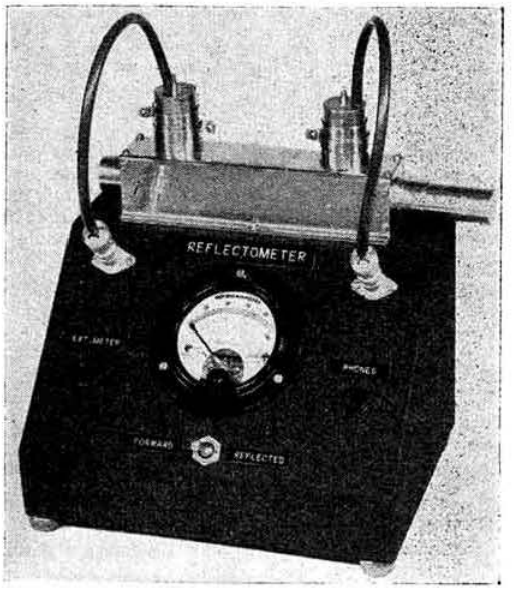
Fig. 7.—Construction of the terminating resistance as described in the text. The diameter of the tube is dependent upon the line impedance and the diameter of the resistor.

An ordinary composition resistor with wire ends, even if it is the correct nominal resistance, may be as much as 50 per cent. in error at 420 Mc/s owing to the nature of the composition and the high inductive reactance of the leads. High stability resistors of the cracked carbon type have, however, been found quite satisfactory: Welwyn type SA3623 or Painton type 74 are suitable. The resistor selected should have the same d.c. value as the required terminating impedance. It is used as the "inner conductor" of a concentric line. The diameter ratio of the line must, however, be made for a 30 to 40 per cent. lower impedance than the required value, because a line in which the inner conductor is all resistance has a somewhat inductive impedance. The smaller outer diameter, by providing greater capacity, compensates for this effect. Thus, for 100-ohm terminations, the outer tube should be about $2\frac{3}{4}$ times the diameter of the ceramic former of the resistor: for 70 ohms the ratio is 2:1. Using the types of resistor specified above, the 100-ohm terminating resistor assembly fits the special 100-ohm socket ($\frac{5}{8}$ in. diameter) while the 70-ohm assembly ($\frac{1}{2}$ in. diameter) fits the Belling-Lee socket. The construction of these terminations is illustrated in Fig. 7. When made as shown, the terminations are within 2 to 3 per cent. of the correct value at 420 Mc/s. However, the wire leads to the resistors should be as short as possible. In the 100-ohm type, the pin should be mounted in a polystyrene disc made to fit tightly in the tube.

Setting-up Procedure

Setting-up the instrument is quite simple and only requires a low-power oscillator or transmitter that can be modulated, preferably with a continuous note. As the terminating resistor is rated at only 1 watt, care should be taken not to overheat it. After setting up, full power may, of course, be passed through the Reflectometer.

The detector heads should be inserted so that the ends of the loops are about half-way between the inner and outer conductors of the line, using the clamps as depth controls. The terminating resistance is then plugged into one end and the modulated 420 Mc/s signal fed into the other.



The complete Reflectometer
The cabinet may be obtained from E. J. Philpott's Metalworks, Ltd., and a suitable 100 μA microammeter from Ernest Turner (Electrical Instruments), Ltd. The nameplates are made by T. A. Butler and Co., Victoria Street, Birmingham.

The signal will be heard in headphones plugged into the 'phone jack and switched to the appropriate head. The head nearest the terminating resistor is next adjusted by simultaneously rotating it in its mounting and adjusting the trimmer until a sharp minimum is observed. This null point is quite well defined. The head should be securely fixed in position by its clamp. The input and output connections are then changed over, the 'phones switched to the other head and the procedure repeated.

This procedure can be carried out on 144 Mc/s but the settings may need slight adjustment for 420 Mc/s.

Use as a Power Meter

As the germanium detector has a reasonably good square-law response, the d.c. output from the heads is proportional to the power in the line. Accurate calibration as a power meter is, however, a difficult task; nevertheless, it is possible to give a rough idea of what meter readings mean.

In the $1\frac{1}{4}$ in. square 100-ohm line, if the loop is $\frac{1}{8}$ in. inside the line cavity the meter will read

(Continued on page 370)

Fifth Annual
R.S.G.B. 420 Mc/s Tests

WITH some 50 stations active on the band, and conditions above average, the 1953 Tests provided participants with one of the highest peaks of activity yet recorded on 420 Mc/s. The level of activity is reflected in the very successful results achieved by many stations—13 of them shared 17 contacts of 100 miles or more, while two others enjoyed contacts with more than 20 different stations—during the two operating periods on September 12-13, 1953.

But while distances and contacts must always remain the form of success most easy to convey in a report, the continuous work of experimentation and improvement carried out by the majority of workers on this band, should not be forgotten. For such, the Tests provide a yardstick each year to gauge the progress made in the preceding months; to read through the Entries is a refreshing reminder that 420 Mc/s offers the same scope for real experimental work that existed on the lower frequencies in the early days of Amateur Radio.

While it is regretted that a higher proportion of those who operate during the Tests do not submit official entries, nevertheless the activities of these stations are much appreciated by all concerned.

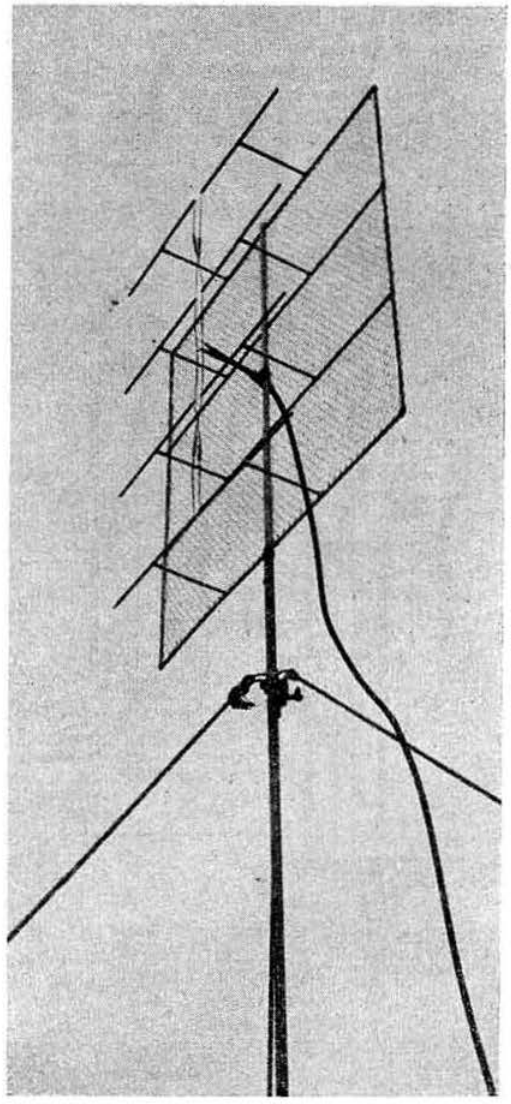
A promising development this year was the reappearance of stations using simple equipment such as that made popular by Dr. A. H. Koster (G3ECA). Although, in terms of distance covered, these stations cannot compete with what has become orthodox equipment, there is no question that such simple gear provides an excellent introduction to the band which is wide enough to accommodate both crystal and s.e.o. equipment.

For those with more elaborate equipment, results on 420 Mc/s now closely resemble, in consistency over medium distances, those achieved on 144 Mc/s. Considering that only a very few stations have available an r.f. power of more than 10 watts, such results are a measure of the overall efficiency of the installations that have been developed during the last few years. For example, the 86-mile path between G3BKQ and GW2ADZ is now fully established for both telegraphy or telephony *under any conditions*. Incidentally, it is interesting to note that if the Tests had been run under the popular 144 Mc/s scoring system of one point per mile, G3BKQ would have compiled a score exceeding 1,650 points!

A Noteworthy First Entry

Newcomers to these Tests are always most welcome, but it is seldom that a first entry with the merit of that of G3BKQ is received. Operating from Blaby, Leics., '3BKQ found that "70 cm. sounded like a lively 2 m band." The technical aspects of the work carried out by this station are of considerable interest, and no apology is made for quoting at length this very fine log.

Like many other stations, '3BKQ stresses the effect of r.f. power, aerials, and aerial feeders. "(1) If a distant station (over 40 miles) increases r.f. power output from 3 to 8 watts, an almost unreadable signal becomes very strong and perfectly readable. (2) A distant station changing from a 5-element Yagi to a 16-element array at the same height gives a good readable signal against no signal with the Yagi. (3) Changing the receiving aerial from a 16-element array with 300-ohm tubular feeder to a 48-element array with 350-ohm open wire feeder resulted in an increase of 12 db in signal of stations up to 100 miles; transmissions improved to a similar extent. (4) The 48-element array 15 feet above ground showed an improvement of 3 db over a 16-element array at 45 feet; raising the 48-element array from 15 to 45 feet resulted in a further improvement of 6 to 9 db. (5) When the 2 m band is fading severely over paths up to 100 miles, 70 cm has little or no fading over the same path. An improvement in 2 m conditions does not always result in improvement on 70 cm. Stations up to 50 miles show signal strengths equal to 2 m, in spite of lower powers."



The 420 Mc/s array used by G3GZM/P.
(Photo by G3FOP)

The relatively high losses with 300 ohm dielectric type feeders have convinced '3BKQ that an open wire feeder is ideal for 70 cm. "Losses on 100 ft. cannot be measured, even in wet conditions." For his 48-element array he uses two 14 s.w.g. copper wires spaced ½ in. apart and terminated with two copper discs 4 in. in diameter spaced quarter-wave apart. The feeder is kept taut by a turnbuckle at the ground end.

The receiver at '3BKQ (Fig. 1) comprises a mixer head with an oscillator cavity and a mixer cavity; a GEX.66 germanium crystal diode, a high-gain, low-noise i.f. head amplifier (23-29 Mc/s wide-band characteristics) feeding into an AR88.

The chief advantages claimed for the post local oscillator injection to a crystal diode mixer are: (1) Very low noise figure, and works even with poor crystals. (2) Selectivity is variable over a wide range with little or no change in conversion gain of the mixer. The mixer head consists of two concentric lines, the oscillator cavity being tuned to the local oscillator frequency, the mixer cavity to the signal frequency.

A Barrier of Leaves

GW2ADZ, who is surrounded by well-wooded country and whose signal must, perforce, pass through some miles of trees, finds that conditions fall off noticeably in the summer when the leaves, in effect, offer a water barrier of considerable depth.

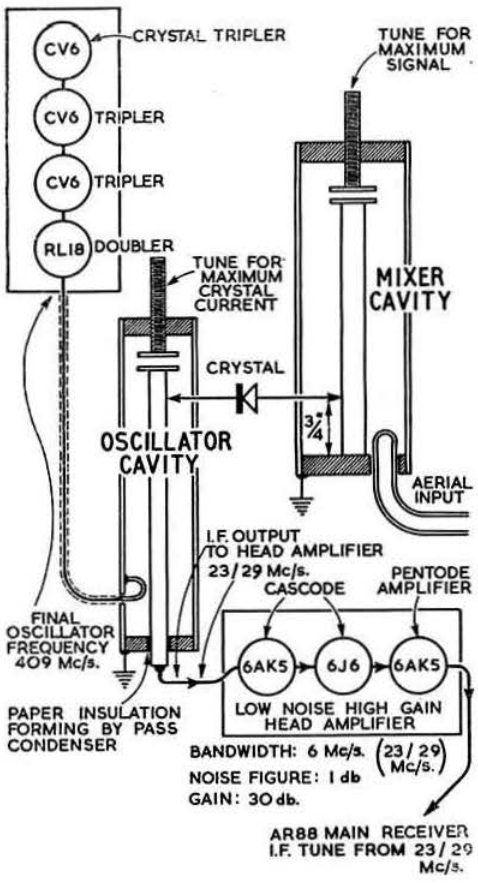


Fig. 1.—Block diagram of G3BKQ's converter for 420 Mc/s.

To 'ADZ, the Tests represent an opportunity of testing the general efficiency of his station, rather than an experimental period; the Tests enable him to answer the following questions on his equipment: (1) Will it operate throughout without failure, and without loss of transmitter output? (2) Will the receiver show in practice—by bringing in unusual "DX"—the sensitivity shown on instrument tests? (3) Will the transmitting aerial lay down a good broadly-radiated signal to facilitate contacts not pre-arranged? An inspection of his entry is enough to convince most people—except perhaps '2ADZ himself—that his equipment comes through with flying colours; though there are hints that the next step will be to increase power above the 12 watts output available last September.

ARTHUR WATTS TROPHY

After examination of the entries submitted for the 1953 Tests, the Contests Committee recommended to Council that the Arthur Watts Trophy be awarded to GW2ADZ, and that Certificates of Merit be awarded to G3BKQ and G2RD.

In general, 'ADZ finds that 420 Mc/s offers a long-term field for experimentation, overall efficiency being the result of many minor improvements: a good receiver, for example, is not likely to be achieved except after painstaking tests with a signal generator fitted with an attenuator. To those without such an instrument, 'ADZ offers the advice, which he follows himself, "borrow one from a friend." Like '3BKQ, he stresses the importance of r.f. power, "2-3 watts will do a good job in good conditions, but when conditions are indifferent—as they usually are—the higher power makes a vast improvement, almost out of relation to the increase."

Where the crystal mixer efficiency is high, lighthouse r.f. amplifiers have been found by both '2ADZ and '3BKQ to result in a fall of efficiency by several decibels. '2ADZ uses a self excited local oscillator (141-144 Mc/s fundamental), but T9 signals are received T9, and can be held on the Eddystone 640 with the crystal switched in.

G3ECA used the period of the Tests to explore the utility of a number of simple receivers, including two superhets and four different types of super-regenerative circuits. '3ECA has recently been experimenting with a separate quench oscillator on 400 kc/s instead of self-quenching valves and has found the additional valve well worth while. Although the lack of selectivity with any type of super-regenerative circuit is a serious disadvantage, the Tests showed that the majority of the Greater London stations could be heard provided they were not all operating at the same time. This is considered sufficient encouragement to pursue the design of simple equipment for this band. Incidentally, he reports no cases of interference being caused to other stations by the quench receivers.

G2RD, who has compiled a comprehensive list of the frequencies used by 420 Mc/s stations, suggests that efforts may soon be required to persuade stations to distribute themselves more evenly throughout their sections of the band. He points out that of the 300 channels (20 kc/s wide) available between 432-438 Mc/s, 49 channels are used by 70 stations.

Portable operation continues to decline in popularity; this year one of the few such stations, G3GZM/P, with an output of 7 watts, commenced

operations—thanks to the assistance of G3BPF and G3FOP—at a height of 1,500 ft. but, owing to the weight of the battery charger, was forced later to descend to 1,350 ft.

Table I: Summary of Results

Call	Location	Stns. Worked	Stns. Heard	Max. QSO Distance (miles)
G2RD	Wallington, Surrey 180 ft. a.s.l.	20	6	100
G2XV	Cambridge 60 ft. a.s.l.	5	1	150
G2FKZ	London, S.E.22	16	8	150
G2FNW	Melton Mowbray, Leics. 575 ft. a.s.l.	6	1	80
G2HDJ	(Operating as G2HDU & G2HDU/P)			
	(i) Oakham,	3	4	90
	(ii) 2 m. W of Oakham	7	2	110
G3FP	Thornton Heath, Surrey 150 ft. a.s.l.	12	13	160
G3AOO	Denton, 6 m. E of Manchester	11	—	85
G3APY	Kirby-in-Ashfield, Notts.	8	—	125
G3BKQ	Blaby, Leics.	23	1	100
G3ECA	Ilford, Essex	12	4	18
G3GZM/P	Clee Hills, 5 m. E. of Ludlow, Shrop. 1500 (later 1350) ft. a.s.l.	16	3	115
G4CG	Wimbledon, London, S.W.19	4	14	6
G4RO	St. Albans, Herts.	17	5	100
G5CD	London, N.W.11	8	7	110
G5DF	Tilehurst, Nr. Reading, 250 ft. a.s.l.	7	13	40
G8QY/P	5 m. S. of Birmingham	9	3	60
GW2ADZ	Llanymynech, 220 ft. a.s.l.	12	—	160

Also active : G2DD, 2JT, 2QY, 2BRH, 2CNT, 2HDY, 2HDZ, 3DA, 3AYT, 3BPJ, 3FFC, 3FZL, 3GDR, 3HBW, 3HWG, 3IOO, 3IRR, 3IUD, 3JCF, 3JMA, 4AP, 5DT, 5HN, 5IG, 5TP, 6NF, 6YP, 6YU, 8KZ, 8SB, 8SK, 8TL, 8VR.

Conclusions

The majority of comments received on the Tests continue to be favourable, and there is little doubt that the event is welcomed by practically all 420 Mc/s enthusiasts, even though these contain a fair proportion of persons who are not interested in contests as such. As G5DF points out, however, newcomers must find it extremely frustrating when regular 70 cm workers announce that they have not bothered to read the rules and retire to bed promptly at their normal bedtime. Television "close-downs" are also still noticeable.

Table II: Notable Contacts

Date and Time	Station A	Station B	Mode	Approx. Distance
Sept. 12				
2110	GW2ADZ	G4RO	A1	140
2210	GW2ADZ	G2FKZ	A1	160
2310	G3APY	G3FZL	A1	125
2325	G3APY	G2FKZ	A1	125
Sept. 13				
1245	GW2ADZ	G2XV	A1	145
1250	G3BKQ	G2DD	A1	100
1415	GW2ADZ	G3FP	A1	160
1500	G3BKQ	G6NF	A1/A3	100
1515	GW2ADZ	G3FZL	A1	160
1530	GW2ADZ	G2HDU/P	A1	100
1530	G3BKQ	G2RD	A3	100
1635	G3BKQ	G3FP	A1/A3	100
1910	G3GZM/P	G3FP	A1	115
1930	G3GZM/P	G6NF	A1	115
2000	G3GZM/P	G4RO	A1	100
2020	G3GZM/P	G5CD	A1	110
2030	G3GZM/P	G2FKZ	A1	110

The later date, clear of most holidays, proved welcome, and is one of the reasons for the considerable increase in activity. Several enthusiasts would like two Tests each year, to enable results of improvements to be readily obtained. It is also occasionally mooted that the time is coming when a point-scoring contest could be instituted on this band, though here again the unique atmosphere of the Tests is generally regarded as a strong argument in favour of retaining the present form of the event.

Some misunderstanding seems to have been caused by the decision that "multiple-station" entries could no longer be submitted: this ruling was not intended to limit co-operation between two or more stations but was necessary to prevent difficulties from arising in the award of the Arthur Watts Trophy.

A. R. Painter (G3BPF) and L. F. Dyke (G3GZM) operated G3GZM/P during the tests.
[Photo by G3FOP

Appendix

The following is a brief summary of equipment used by representative stations :

G2RD.—*Transmitter :* QQV03/20 power amplifier; input 30 watts. *Aerial :* 12-element stack, 40 ft. high. *Receiver :* combined 144/420 Mc/s; 420 Mc/s section includes CV52 first r.f., 446A second r.f., crystal mixer, crystal-controlled local oscillator (5840 kc/s).

G2XV.—*Transmitter :* QQV06/40 power tripler; output approximately 1.5 watts. *Receiver :* Coaxial cavity crystal mixer with crystal-controlled injection at 400 Mc/s into EF54 head amplifier, used with SX28. *Aerial :* 12-element stack, 40 ft. high fed with air-spaced (star) large diameter coaxial cable with bazooka transformers.

G3BKQ.—*Transmitter :* 8012 grounded-grid power tripler in concentric line; input 30 watts; output 12 watts. *Receiver :* See Fig. 1. *Aerial :* 48-element (24 driven elements with reflectors) with open-wire feeder.

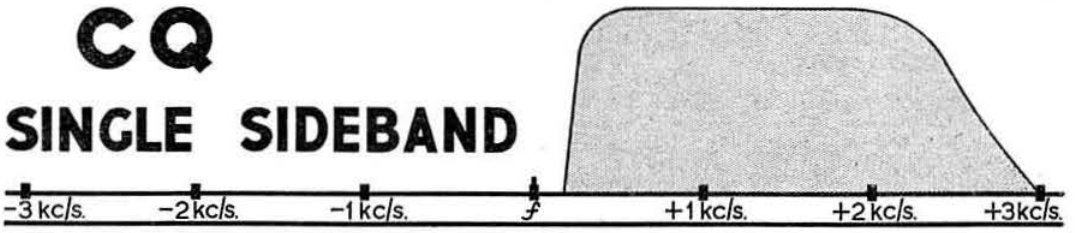
G3GZM/P.—*Transmitter :* 832A power amplifier; input 18-20 watts; output 7 watts. *Aerial :* 8-element plus wire-mesh reflector. *Receiver :* 144/420 Mc/s converter with Command receiver. CV102 crystal mixer with cavity. Injection by hi-Q cavity. Tunable oscillator 34.5-35 Mc/s.

GW2ADZ.—*Transmitter :* 3B/401J power doubler, cathode driven; input 36 watts; output 12 watts. *Aerial :* Two 16-element arrays placed one above the other one-half wave apart, fed simultaneously by a Q-bar matching device. *Receiver :* CV291 crystal mixer with mixer and oscillator cavities. Self-excited oscillator with third harmonic extraction. I.f. head amplifier and Eddystone 640.

British Institution of Radio Engineers

AT the Reynold's Hall, College of Technology, Manchester, on February 4, Council Member Ian D. Auchterlonie, G6OM, lectured to the North-Western Section of the British Institution of Radio Engineers on Past, Present and Future Possibilities of Police Radio.

CQ SINGLE SIDEBAND



Single Sideband Conventionette

THE first conventionette of its type to be held in Europe took place during the last day (November 28, 1953) of the R.S.G.B. Amateur Radio Exhibition, when more than 30 amateurs from the U.K. and European countries assembled at the Bedford Corner Hotel, London. Although the conventionette was confined to the Saturday afternoon, s.s.b. enthusiasts gathered daily on the Single Sideband stand at the Exhibition to make personal QSOs. The official meeting, which was preceded by a luncheon, was opened by the President of the R.S.G.B., Mr. Leslie Cooper (G5LC). Mr. Cooper especially welcomed

By H. F. KNOTT (G3CU)*

provincial members and amateurs from overseas. The latter group included DL6WL, SM7HZ, W4NGK/F7BT and K6BQG. The President stated that the Council of the Society were taking a keen interest in this comparatively new method of transmission, and were well aware of its potentialities in overcoming many of the problems experienced in the amateur bands. He concluded with a word of encouragement to the younger members, saying that the pioneering spirit that had gone so far to establish Amateur Radio in the early days, still existed, and with the introduction of single sideband, a whole new field of experiment was open to them. It was unfortunate that G3ENI, DL4IE and a number of other enthusiasts were unable to attend at the last moment.

Mr. E. A. Dedman (G2NH) who was in the chair, thanked Mr. Cooper for opening the meeting, which then proceeded to debate certain aspects of the recommendations adopted at the Lausanne I.A.R.U. Conference. After a lengthy discussion several conclusions were reached.

It was agreed that the recommendation relating to the use of s.s.b. in the 7 Mc/s band should be reversed, and that the lower sideband be adopted as the calling channel instead of the upper sideband. The lower sideband was preferred for the following reasons:—

(a) To conform with International commercial practice which is to use channel A (lower sideband below 10 Mc/s, upper sideband above 10 Mc/s) for calling purposes.
(b) To come into line with U.S. practice.
(c) To conform with present European amateur practice.

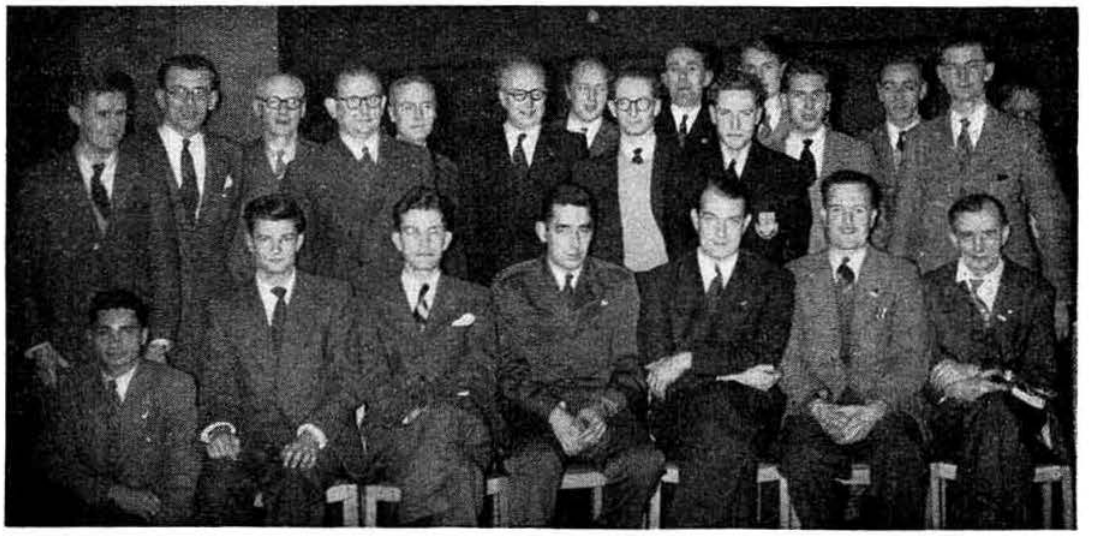
The meeting expressed the view that the reasons given at Lausanne for using the upper sideband on 7 Mc/s were invalid, and that the idea of laying down sub-carrier frequencies for s.s.b. multiband operation was both unnecessary and undesirable.

It was also agreed that the present G.P.O. method of measuring power input was prejudicial to the use of s.s.b. and it was therefore decided that a suitable resolution should be sent to the Technical Committee proposing that the licensing authority be approached with a view to amending the present arrangements to permit the use of peak powers comparable to that of a.m. transmitters.

Notes and News

Although the Christmas period reduced the number of reports received, it certainly did not

* 5 Kevington Drive, St. Paul's Cray, Orpington, Kent.



Single Sideband Conventionette, November 28, 1953. Front row (left to right): G3IXL, DL6WL, W4NGK/F7BT, K6BQG, SM7HZ, G3CU and G2NH.

keep s.s.b. operators off the air. Boxing Day was of particular significance for, after a period of several weeks, transatlantic s.s.b. QSOs were again possible. At 21.0J G.M.T. the first American station was heard and a little later contact was established. The most notable QSO of the evening was between G2NH, G3CWC, G3FHL, W4INL and W1ATE, with exchanges of S7-8 reports. W1ATE who has made several "across the pond" contacts, said he was very impressed by results, for out of the nine different Europeans worked, eight were using single sideband.

G3IXL (Albany Park), whose multiband rig was on show at the Exhibition, is now operational after overcoming several snags. His present p.a. is a class AB1 6AG7 running 7 watts input, but a pair of 807s will be used later. His driver unit is based on the G3CWC-type phasing exciter and operates on 5.8 Mc/s. The 12AU7 balanced modulators feed a 6BE6 mixer. Activity is at present limited to 3.5 Mc/s. Other stations reported active are PA0ZR, OZ5MB and PA0CX. G6HV (Newcastle-on-Tyne) who first operated on Top Band about two years ago, has now reappeared on 3.7 Mc/s with a phasing transmitter.

G2NH has fitted an all electronic system which gives him smooth break-in with loudspeaker operation. G3BQQ has been modifying his filter exciter and now uses a 6SN7 Franklin v.f.o. with very much improved stability over his previous arrangement. The final amplifier is an 803 operating in class B with 1,400 volts on the anode, which, when driven by an 807 in class A, delivers up to 110 watts peak. A pi-coupler feeds a half wave aerial.

Those who wish to hear the advantages of voice controlled operation, should listen to the various s.s.b. "nets" that are frequently to be heard around 3795 kc/s.

Technical Topics

As a result of experience gained while winding an anode r.f. choke for use with an 807 in his all-band exciter, G3COJ suggests the following method (due to G6NA) of testing. Resonate a Q meter with a standard coil on each band in turn, and then connect the choke across the "capacitance" terminals and see how much difference it makes. He says "it is quite difficult to obtain sufficient inductance for 1.8 Mc/s and yet avoid resonances in the 14 and 21 Mc/s bands."

The newcomer who is faced with the problem of a suitable amplifier to boost his low level s.s.b. signal, should find the circuit shown in Fig. 1 interesting. It was sent along by W2QIL who uses an 829B twin tetrode, which will comfortably handle 150 watts. Typical current readings not shown in the diagram are *Ig* and *Ia*, 1mA and 170mA respectively for a single tone input, and a standing current of 25mA in the absence of a signal. These figures represent a fairly distortion-free operating condition. The grid swamping resistor, which should be non-inductive, is used to dissipate some of the excitation, and offers a more nearly constant steady load. The value quoted is 5,000 ohms, but this is open to experiment; it is suggested that a start be made with this value and gradually reduced, while checking linearity of the stage. It has been found to be not too critical. W2QIL points out that the design of the grid circuit leaves a lot to be desired, but those with limited space, or who wish to keep things simple at first, will find it adequate. The driver stage is of conventional design: a 6AG7 working class A is satisfactory. It is important that the screen supply should be regulated as the screen voltage is the controlling factor with a tetrode. In the present case the ordinary VR valves should suffice. The VRs should be operated at nearly their maximum current so that they will not extinguish when a signal is applied. The same care is needed with the control bias, and the anode supply should be "stiff." One final point about the 829B anode circuit is the fact that if a suitable split stator condenser is available C6 and C7 may be dispensed with; in any case a single unit must not be put across the tank circuit from plate to plate. Use two or four in a split stator arrangement, because unwanted harmonic currents will find a better path to earth in this way.

* * *

Reports for inclusion in this feature should be sent to arrive not later than the 17th of the month preceding publication.

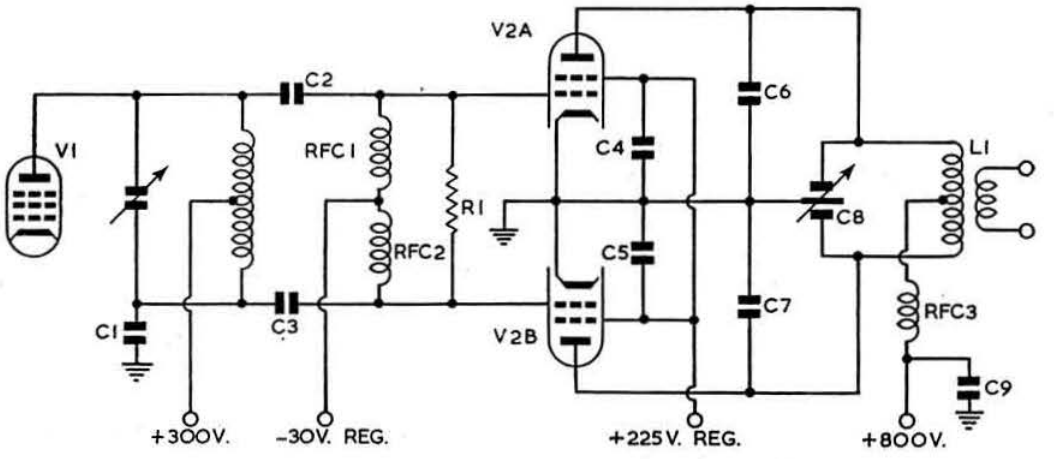


Fig. 1.—The simple linear amplifier used by W2QIL which will handle inputs up to 150 W on 3.5 Mc/s.

C1	10–20 μμF	C9	0.003 μF	R1	5,000 ohms, 1 W
C2, 3	100 μμF	L1	24 turns, 20 s.w.g., 1¾in. ceramic former, overall length 1¾in., with 4-turn link in centre	RFC1, 2, 3	2.5 mH
C4, 5	0.01 μF			V1	6AG7 (Class A)
C6, 7	200 μμF, 1,250 V wkg., mica			V2a, b	829B or 3E29 (Class B)
C8	100+100 μμF, variable				

Radio Amateur Emergency Network

BOTH public and amateur interest in the Radio Amateur Emergency Network continues at a high level. Since last month's report was written many more volunteers have registered as ordinary members whilst several have offered their services as E.C.O.s. Public interest continues to be demonstrated by favourable Press notices. Voluntary organisations are also alive to the possibilities of the scheme.

In some areas where interest amongst radio amateurs seemed very slight a few weeks ago, groups are now in course of formation. In Northern Ireland, for instance, two groups are being organised. One (under the direction of GI2DZG in association with the No. 15 R.R., GI3IWD, and the City of Belfast Y.M.C.A. Radio Club) covers the area of **Belfast** and its immediate surroundings. A 3.5 Mc/s net is already in operation. The other operates in Co. Antrim under the E.C.O. for **Armoy,** GI3BHX. It is anticipated that the whole of the country will be covered before very long. Public interest created by Press notices in Northern Ireland newspapers resulted in GI3BHX being asked to give a talk on R.A.E.N. during one of the B.B.C.'s *Ulster Mirror* programmes.

In Scotland, GM3OM is organising a group in **Stirling** and **Clackmannanshire.** E.C.O. volunteers for other areas are invited.

The **Lichfield** group is making good progress and is working in co-operation with **Birmingham** and **Stoke-on-Trent.** Efforts are being made by members of the **Lancaster and District Radio Society** to get a group going in their area. G3ELZ, E.C.O. for **Grimsby,** has made arrangements for his group to work with **Flamborough.** He urges all members of R.A.E.N. to contact their local E.C.O.s in order to lighten the latter's task. The **Hull** group also maintains contact with Grimsby. In **Middlesbrough,** the group stood by recently to provide emergency communications in the Dales when five villages within a radius of 16 miles were isolated during a blizzard. Fortunately the thaw came before they were needed. An interesting point is that one of the villages has no telephone at all! As the E.C.O., G3GUV, remarks, the incident "acted as a real stimulus to get the necessary equipment built and tested at the earliest possible moment."

From **Berwick-on-Tweed,** G6UC reports that members of the "Border Net" are interested in forming a R.A.E.N. group to cover that area. A group is in the process of formation in **Torquay.** Details from G2GK. Members in and around **Malvern** are interested but so far no one has volunteered to act as E.C.O. Any offers? **Leicester** co-operated recently in a 16-hour exercise organised by the Leicestershire and Rutland Constabulary who were very impressed by the excellent results achieved with simple amateur equipment. The exercise brought out the need for standardisation, within the group at least, and it was made quite clear that very careful checking of car batteries—by plotting discharge curves—is necessary in order to sort out the good from the bad. A recent meeting in **Brighton** led to the formation of a group there and the local net now operates on the first Sunday in the month between 0900 and 1100 G.M.T. The control station is changed each month in order to give experience to as many operators as possible. Other groups in process of formation are **Guernsey** and **Weston-super-Mare.**

Equipment

The problem of equipment for portable use by R.A.E.N. groups has been tackled vigorously by C. H. L. Edwards (G8TL) who is a member of the R.A.E.N. Committee. The results of his experiments were recently demonstrated on 3.5 Mc/s to the Chelmsford group.

The equipment, which comprises a 6V6 crystal oscillator transmitter and a 4-valve superhet receiver for 3.5 and 7 Mc/s, was installed in a Morris Minor from the battery of which power was derived. The last two valves of the receiver act as the modulator when sending. The aerial consisted of a 39in. loaded whip tapped on to a separate loading coil tuned against the frame of the car. From a number of fixed locations, G2AJF, G3ABB, G3HPY, G3GNQ and G4VF were successfully worked at RS59 both ways at ranges from 1 to 3 miles.

During further tests, the transmitter has been heard up to distances of 17 miles. It has not yet been tested on 7 Mc/s. From these experiments it is safe to say that reliable communication can be maintained up to 6 miles. It is hoped to publish details of the equipment, which was built entirely from "junk box" and surplus components, in a forthcoming issue of the BULLETIN.

Membership Cards and Badges

By the time this report is published, membership cards will have been issued to all those who have sent in registration forms. As announced elsewhere in this issue, distinctive R.A.E.N. badges are now available, price 1/6 each. Call sign badges and stereo blocks are also obtainable from Headquarters.

Readers who have not yet joined R.A.E.N. are reminded that registration forms may be obtained from Emergency Communications Officers and Headquarters upon request.

Electrical Engineers' Exhibition

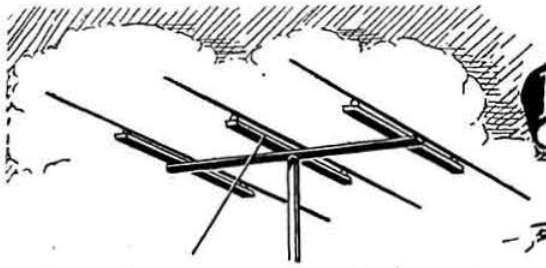
THE Electrical Engineers' Exhibition organised by the Association of Supervising Electrical Engineers, will be held at Earls Court, London, S.W.5, from March 16th to 20th, 1954 (inclusive). The Exhibition will open at 10 a.m. and close at 7 p.m. daily.

Members of the R.S.G.B. will be admitted without charge on showing their badge Season tickets can be obtained on request from Mr. P. A. Thorogood, G4KD, who is General Manager, A.S.E.E. Exhibition, Ltd., 35 Gibbs Green, Edgware, Middlesex.

THE REFLECTOMETER (continued from page 364)

approximately 100 μA for 1 watt r.f. power or 10 mA for 100 watts. D.C. output will be twice these values if the loop end is half-way from the inner to outer conductors, but at tighter couplings it may not be possible to balance the detector correctly. In the 15/16 in. square line made for 70-ohm line, the loop penetration for 100 μA/watt is about 3/16 in.

As the voltage applied to the detector is proportional to the frequency, the d.c. output is, therefore, proportional to the square of the frequency. When the instrument is used at 144 Mc/s the sensitivity and output are about one-tenth of the figures quoted above for 420 Mc/s.



AROUND THE V.H.F.s

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

CONDITIONS recently on 2 m have been difficult to assess accurately owing to a general lack of activity and a dearth of reports but it seems that few, if any, significant openings have occurred.

G5BD (Mablethorpe, Lincs) although regularly on the band, heard only 15 different stations in 30 days. Nevertheless, his daily sked. (at 2315 G.M.T. on 144.18 and 144.43 Mc/s) with GM3EGW (Dunfermline) produced 10 contacts with an average signal of RST339 and on one occasion conditions were sufficiently good for 'phone to be employed.

An operator who considers that conditions are not always as bad as they may seem, is **G8OU** (Ashtead, Sy.) whose regular nightly contacts with GW8UH (Cardiff) prove that it is usually possible to work considerable distances on 2 m if only there is co-operation.

G3WW (Wimblington, Cambs) found conditions generally good from December 16 to January 2 and between those dates worked 25 stations and heard a further seven. Among those contacted were G3IOO (Oswestry) on five occasions and G5TZ/A (I.O.W.) twice. G3WW gave G2DJM (Mundford, nr. Thetford, Norfolk) his first 2 m QSO on December 22. 'DJM's frequency is 144.78 Mc/s.

A recent business trip enabled G3WW to visit G2DUS, 3FUL, 3IOO, and GW2ADZ. He remarks that the latter's 70 cm gear, with which such excellent results have been obtained, appears anything but elaborate. G3WW was favourably impressed by 'ADZ's signal generator for that band which, doubtless, is a big factor in keeping check on receiver performance.

G2CNT, XV, 3GGJ, IIT, 4MW, 5IG and 8SY are all active on 2 m in Cambridge but G2PU, 3BK and 5JO suffered damage to their aerials in the recent gales. G2FQP is still active at Ramsey, Hunts; G3AKU/A is now at Corby, Northants. G3ARX and G5LL are both active in Lincolnshire.

GW2ADZ has experienced no exceptional openings on 70 cm although stations up to 160 miles distant have been heard on occasions and contacts made with G2BVW and G3BKQ (Blaby, Leics.). A fair amount of additional activity on 70 cm should be apparent in the near future, judging from the constructional work being undertaken at the present time. 'ADZ has acquired a 6AJ4 g.g.t. and finds that this gives a worthwhile improvement in signal-to-noise ratio as an r.f. amplifier. The circuit employed is similar to that described recently in *QST* by W1HDQ and does not require any "plumbing." A p.t.f.e. valveholder will shortly be tested in this circuit and it is hoped that a further improvement will then be obtained.

EI2W has, so far, failed to make a 2 m contact with any of the Scandinavian countries and his new array, comprising two 16-element stacks mounted side by side, will be fixed in that direction in the hope of remedying this deficiency.

London U.H.F. Group

The second Annual Dinner of the London U.H.F. Group, held at the Bedford Corner Hotel on January 7 was attended by about thirty members. The guest of the evening, Harry L. Wilson (EI2W), who came over from Dublin specially for the occasion, brought greetings from the members of the International V.H.F. Society and expressed appreciation of the recent decision of the R.S.G.B. Contests Committee which will make it possible for Irish members to take part in future v.h.f. competitions organised by R.S.G.B. Mr. Wilson was assured of the interest and good wishes of v.h.f. enthusiasts in this country for the further attempt to be made this year by I.V.H.F.S. members to establish transatlantic communication on 2 m. The chairman was Phil Thorogood, G4KD.

During the evening D. N. Corfield (G5CD), spoke about the transmissions soon to be radiated from The Television Society station at Norwood, whilst Charlie Newton (G2FKZ) gave information on the experimental work on 70 cm being undertaken by amateurs in this country.

At the December meeting of the Group, H. Gregory (G3GIY) spoke on the subject of frequency measurement at u.h.f. and indicated how this was carried out at frequencies of 1,000 Mc/s and above.

70 cm Activity List

The list of active 70 cm stations compiled by G2RD for the period December 21 to January 24 reads as follows:—

G2DD, HDZ, QY, RD, WJ, 3EOH, FP, HDJ. IRW, MI, 5CD, DT, 6NF.

A 70 cm Linear Tank Circuit

Having broken the anode seals on an 832 tripler when using a U-shaped copper tube tank circuit, **G6NU** has found the following arrangement preferable, as it allows expansion of the glass, due to heat, without imposing any undue strain on the valve.

Two pieces of copper tubing, each 2½ in. in length, form the anode lines and are fitted with clips to make contact with the anode pins, the other ends being soldered to the two tags on an Eddystone type 481 neutralising condenser which are a convenient distance apart for the purpose. H.T. is fed to the lines at the condenser end through two r.f. chokes and a "hairpin" loop serves as aerial coupling.

* * *

This is the shortest article which has appeared in this series for some considerable time. As the production of bricks is said to be impossible without straw, so is the production of *Around the V.H.F.s* without reports. Please see what you can do for the March issue by sending reports not later than February 20.

* *32 Earls Road, Tunbridge Wells, Kent.*

Army Wireless Reserve Squadron

IN response to requests from a number of members, the following is a description of some of the equipment, principally home-constructed or easily obtained for use in the 1215 to 10,000 Mc/s bands, which was exhibited by members of the Army Wireless Reserve Squadron on the Royal Signals stand at the Amateur Radio Exhibition last November.

Co-axial mixer cavity. Employs a 1N21 silicon diode and can be be tuned to the 2300 Mc/s band.

Waveguide aerial primary feed for 10,000 Mc/s. Comprising a 3 cm dipole and reflector for use at the focal point of a paraboloid. Home-constructed and similar in design to that described in the *Amateur Microwave Experiments* series in the BULLETIN last year.

Waveguide "magic" T-junction. A home-constructed junction for use in balanced mixers, reflectometers, impedance bridges, etc. Suitable for 10,000 Mc/s.

Simple 10,000 Mc/s local oscillator and mixer cavity. Illustrated the modification of a commercial model and incorporated a 723A/B reflex klystron, 1N23 mixer diode and a waveguide cavity.

Waveguide diode cavity for 10,000 Mc/s. A home-constructed cavity using a 1N23 diode, suitable for use in a balanced mixer (with "magic" T-junction), for detection measurements, etc.

In addition, a number of valves suitable for microwave work were exhibited, including the CV397 disc seal triode (10 watts output as an oscillator or p.a. at 1215 Mc/s), the 446A disc seal triode (100 mW output as an oscillator on 2300 Mc/s), the CV67 reflex klystron (100 mW output as an oscillator on 2300 Mc/s when used in a simple rectangular cavity), and the 726A reflex klystron (100 mW output at 3300 Mc/s but can be used in the 2300 Mc/s band by a simple modification of the existing cavity).

[*War Office photograph*

A view of the Royal Signals stand at the R.S.G.B. Amateur Radio Exhibition in November, 1953.

[*War Office photograph*

In this picture, the communications receiver built by G3AMO is in the left foreground and an electro-mechanical loudhailer to the right.

An excellent example of a simple home-built communications receiver, covering 620 kc/s to 20 Mc/s, was also shown.

Due to an oversight no reference was made in the *Around the Stands* article in our last issue to the fact that members of the Army Wireless Reserve Squadron helped to man the Army stand.

A.W.R.S. Net

MEMBERS of the Army Wireless Reserve Squadron operate a net on 3550 kc/s on the 10th, 20th and 30th of each month at 1930 G.M.T. unless the date falls on a Sunday when the time is 1100 G.M.T. Among those regularly taking part are G3ADZ, AMO, DLQ, DNQ, EJF, EMO, FDU, IFM and JJA.

All amateurs are invited to join in, whether or not they are members of A.W.R.S.

LONDON U.H.F. GROUP

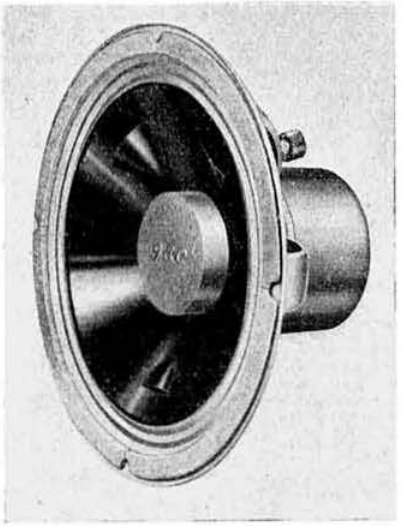
will meet at the Bedford Corner Hotel, Bayley Street, Tottenham Court Road, **at 7.30 p.m. on March 4, 1954.** All u.h.f. enthusiasts welcome.

New Metal Cone Loudspeaker

A NEW metal cone loudspeaker, developed by the G.E.C. Research Laboratories, shown at the Amateur Radio Exhibition in November, is capable of very high quality reproduction without intermodulation.

An entirely new technique, consisting of small deformations in the cone, is used in the construction. When housed in a suitable cabinet, the frequency range extends from about 50 to 20,000 cycles per second.

The speaker was demonstrated at the London Meeting on January 29, 1954, when Mr. F. H. Brittain, D.F.H. (The General Electric Co. Ltd.), lectured on "Art and Science in Sound Reproduction."



The new G.E.C. metal cone loudspeaker.
[Photo by courtesy of The General Electric Co.

The Physical Society Exhibition

THE 38th Annual Exhibition of the Physical Society will be held at the Imperial College of Science and Technology, Imperial Institute Road, London, S.W.7, from April 8 to 13, 1954. Applications for tickets should be addressed to the Secretary-Editor, The Physical Society, 1 Lowther Gardens, Prince Consort Road, London, S.W.7. Tickets will not be issued until the beginning of March and orders cannot be acknowledged unless a stamped addressed envelope is enclosed for the purpose.

A comprehensive Handbook of the Exhibition can be obtained at the Exhibition or from the Secretary-Editor, price 6s. (by post 7s. 3d).

LONDON MEETINGS

February 26, 1954: **Mr. S. A. Lacey** (Research Department, Murphy Radio, Ltd.)
"PRACTICAL ASPECTS OF TAPE RECORDING."

March 26, 1954: **Mr. G. P. Thwaites, B.Sc.(Eng.), A.M.I.E.E., A.M.Brit.I.R.E.**
"'TRUSTWORTHY' VALVES AND THEIR MANUFACTURE."

All meetings are held at the Institution of Electrical Engineers, Savoy Place, Victoria Embankment, London, W.C.2 Buffet Tea from 5.30 p.m. Meetings commence at 6.30 p.m.

Amateur Colour Television

AFTER many months of patient experiment, Grant Dixon (Ross-on-Wye) has succeeded in obtaining amateur colour television pictures over a closed circuit.

The colour experiments have been made with the comparatively simple "field sequential" system, in which successive pictures are viewed in each of the three primary colours—red, blue and green. Early equipment used comprised a colour flying spot system, employing three 931A photocells with gelatine colour filters. Due to the low intensity of the scanner tube, and the insensitivity of the photocells to red light, this system was not very satisfactory. However, the basic colour mixing and pulse generating equipment was designed and tested so that, when in 1952 a professional-type camera tube became available, construction of the colour camera was immediately commenced. Despite limited resources, the camera was put into action with a 12 sector colour disc, running in an airtight chamber, driven from a converted 3 in. magslip through a bicycle chain reduction drive. The standard employed is 150 line sequential, 100 frames per second, giving 33⅓ colour pictures per second. Initial results were disappointing, and several units had to be completely redesigned. On Christmas Day, 1953, however, coloured test charts were at last successfully televised. Although the pictures received were rather dim (information regarding a 5 in. c.r.t. with a white screen, capable of taking 8 kV e.h.t. will be welcomed) all controls worked correctly and the colour reproduction was very pleasing. Readers will join us in congratulating Mr. Dixon on this very fine achievement, which is another step forward by a British amateur.

It is, unfortunately, a condition of the loan of the camera tube that no public demonstrations can be given. For this reason, an improved flying spot colour scanner using a Cintel tube is now under construction and two 5527 iconoscope black-and-white cameras are being converted to colour working by members of the very active colour development group of the British Amateur Television Club. G3CVO.

A.R.R.L. DX Contest

CERTAIN changes have been made in the rules for this year's A.R.R.L. DX Contest, which are printed in full in the January, 1954, issue of *QST*.

Stations outside the U.S. and Canada should call "CQ W/VE" or "CQ TEST" and exchange serial numbers with stations contacted. The first part of the serial number indicates the RST (or RS) report and the last three digits the *power input*. Thus, a station using 500 watts would use 500 and a 25 watt station 025. If the input is different from band to band, the number is changed accordingly.

U.S. telegraphy stations are now allowed to work *six* stations per country per band and Canadians *eight*. All other contestants try to work as many stations as possible in the 19 W(K) and VE/VO licensing areas.

In the contest log, it is necessary to keep a separate record of new countries worked on each of the bands 3.5, 7, 14, 21, 27 and 28 Mc/s.

The second part of the Telephony section will take place during the week-ends of March 12 to 14, and the Telegraphy section from February 26 to 28 and from March 26 to 28.

TVI in Outer Fringe Areas

DEAR SIR,—With reference to the announcement in the November BULLETIN headed "The TVI Problem," the transmitting members of our local radio society read with some alarm and misgiving of the new G.P.O. policy on TVI matters. The G.P.O. lay down very fair and reasonable conditions in respect of radio amateurs situated in areas of reasonable and good TV signal strength, but where a ruling is most urgently required, *i.e.* for the fringe (and outer fringe) areas they fail miserably. In the B.B.C. classified "no service area" a policy of some sort would be very greatly appreciated, because as things are now the amateur must close down at TV times.

We feel that if the G.P.O. are satisfied that an amateur has successfully eliminated his harmonic radiation, then he should not be penalised for either the lack of TV signal strength or the shortcomings of poorly designed TV receivers. These are *real* problems in areas such as Scarborough, which is roughly 90 miles from Holme Moss, surrounded by hills, and according to the B.B.C. service area maps of field-strengths is classified as "out of the service area."

We do not ask for extra-special concessions, but only to be placed on terms equal to those enjoyed by amateurs who reside in stronger TV field-strength areas.

We wish to say that we have every confidence in the Society's G.P.O. Liaison Committee. We would like to thank them for past efforts on behalf of amateurs and wish them every luck in their future meetings with the G.P.O.

Yours faithfully,
P. B. BRISCOMBE (G8KU),
T.R. for Scarborough and
Hon. Sec. Scarborough A.R.S.

NOTE.—There will be a good deal of sympathy for amateurs who reside in outer-fringe television areas and find themselves confronted with difficulties such as those mentioned by Mr. Briscombe. Both the G.P.O. and the Society are fully alive to the fringe area problem, but as the November statement explains, it is a very complex one and is likely to take a little time to sort out. The R.S.G.B. has for years endeavoured to obtain an assurance from the G.P.O. that an amateur will be protected if the field strength of the TV signal is below a certain figure, but to date no agreement has been reached. The Society will continue, on every suitable occasion, to press the G.P.O. for an easing of the present restrictions in fringe areas.—J.H.

Technicians of Tomorrow

DEAR SIR,—As a T.R. I feel bound to comment on your editorial "Technicians of Tomorrow" in the December BULLETIN.

In my own area over the past three years at least half a dozen or more active and enthusiastic amateurs have entered the radio industry as service engineers. From their viewpoint it appears to have been a good move—all are doing work they enjoy and at the same time have relieved the very acute shortage of servicemen in this area.

There is, however, another side to the story. When our local amateurs turned "professional," they were in almost every case lost as hams. The level of their amateur activity declined steeply. Constructional work has become almost a thing of the past and their voices are rarely heard on the bands.

And really it isn't very surprising. After a day's work on radio and TV it would take a super enthusiast to keep it up in one's spare time too. After all, a hobby should be a change from the normal run. There are, I know, professional radio men who are most active amateurs but in my experience they are the exceptions rather than the rule.

I am of the opinion that the changing of amateurs into professionals may be an excellent thing for the Trade, but its a very bad thing for Amateur Radio.

Yours faithfully,
HARRY N. GUBBY (G3ELG),
T.R. for Rotherham.

Rotherham, Yorks.

The Case for Traffic Handling

DEAR SIR,—The letters of Messrs. F. L. Firth (September) and L. J. McDougal (December) in the BULLETIN, prompt me to champion the cause of traffic handling.

I wish we had the freedom to handle traffic in the way the American amateurs can. I understand they may accept messages originating from anyone and addressed to anyone in their own country provided no payment is received and provided the sender knows there is no guarantee of delivery.

I believe there are at least four advantages this would bring.

Firstly, accurate transcription of Morse and smart phone procedure would be developed and rewarded—so Mr. Firth would be even more pleased.

Secondly, this would immediately enable full amateur participation in emergency services and Civil Defence.

Thirdly, we would be doing something useful for the community. I have frequently been asked, "What do you say to each other?" The enquirers really do think I am wasting my time when they are told that we talk about valves and aerials and precious little else. The standing of Amateur Radio would be raised.

Fourthly, if we were giving a useful service to the nation, we might get more sympathy at conferences for allocating frequency spectrum and more backing in the enforcement of regulations.

I think the old argument concerning revenue and Post Office monopoly of communications sounds weak when one considers that more than half the telegrams handled are social telegrams rather than business messages, and that a telegram at 1s. 6d. costs 2s. 8d. to transmit and deliver!

Yours faithfully,
M. C. HATELY B.Sc.(Eng.), A.C.G.I. (G3HAT).

Ealing, London, W.5.

"A Simple Noise Generator"

DEAR SIR,—I should like to raise one or two queries with reference to the article "A Simple Noise Generator" by John A. Rouse (G2AHL). He does not mention in the article whether the crystal is connected so that current flows through the high or the low conductivity direction of the crystal. Assuming that the circuit diagram shows the arrow of the diode pointing in the direction taken by "conventional current," then the crystal is connected in the high conductivity direction hence the reason for the dangerously high crystal current mentioned.

In the McGraw Hill book "Microwave Receivers" by Van Voorhis, on page 323 there is a statement that the crystal should be connected so that the current flows in the direction of *lower* conductivity and hence the crystal current would be very much lower for a given noise output.

I have not read the article in *CQ* but I should like to point out that the connections of British crystal diodes are reversed compared to the American ones. Therefore, if the article is based on the article in *CQ* it is possible that the crystal in Mr. Rouse's noise generator is in the opposite direction to that of the original.

Another point is that Mr. Rouse states that a crystal diode noise generator cannot be used for noise figure measurements. That is not true. It can be used provided that it is calibrated against a thermionic noise diode. At present there is no noise diode readily available for measurements in the 420 Mc/s band. However, the CV172 is fairly common, and this could be used to calibrate a crystal noise generator at a frequency of say 144 Mc/s and then to use the crystal for noise measurements in the 420 Mc/s band. Of course the accuracy would depend upon the constancy of output of the crystal noise source over the frequency band 100-500 Mc/s, but provided that the load resistor is substantially non-reactive over this band the output should remain reasonably constant.

Yours faithfully,
G. M. C. STONE, Plt. Off. (G3FZL).

Scampton, Lincoln.

Top Band Contests

DEAR SIR,—Editorial comments in the January issue on the joys of B.E.R.U. prompt me to ask, once again, if it is really necessary to run the second leg of the Top Band Contest at a time when a series of carefully organised DX Tests are taking place on this frequency—Tests which are now well known internationally, and which, to those of us who, like myself, have taken our Top Band work very seriously for many years, are the highlight of the year?

Generally speaking, conditions preclude the DX Tests taking place at any other time than the ten or so weekends in extreme mid-winter, and for their participants they call for much hard work, cut-and-try and lost sleep.

I can well imagine it being argued that one weekend out of ten makes little or no difference, and were DX QSOs of the same nature as the average Top Band contact, I would readily agree, but when it is realised that the uncertainty of conditions often means that only four, and sometimes fewer, weekends find conditions "spot-on," with the average W contact seldom above RST 339 or 349 both ways, it will be appreciated that, in addition to the ghastly QRM from "fish-phone" and the like, which we must perforce endure, the welter of QRM from a Contest which could quite easily take place in late March or early April is not very welcome—indeed it is something of which I, personally, take a very dim view.

Let those who enjoy these "Bug-Bashing Barbecues" continue to do so, and while I imagine that I shall receive my full quota of pyrotechnics, I hope, in view of the howl of protest that would go up if some humorist conducted gramo-

phone tests on 14050 kc/s during B.E.R.U.—and the comparison is not so futile as it may at first seem—this, Sir, my second appeal of this nature, will not have been made in vain.

Yours faithfully,
L. J. FULLER (G6LB).

Great Baddow, Chelmsford.

Itamkith ?

DEAR SIR,—My enjoyment of the January BULLETIN was somewhat spoilt by that stupid part of *Current Comment* which was headed " ITAMKITH."

The writer remarks that he does not wish to revive the old argument of " 'phone versus c.w.," yet a whole half page is devoted just to that. He drags out the much-worn cliché about operating efficiency with the usual absurd assumption that only the c.w. fraternity possess such, and he digs up that other very doubtful truism about c.w. being able to convey as much as 'phone, etc. Finally he ends with a remark that the 'phone-only man is only " half a ham," which seems to me to be in rather bad taste.

Although an inveterate 'phone operator myself, I do not wish to pursue this controversy in spite of exceedingly strong views on the subject. I do not, however, consider all " key-thumpers " to be clots, and most certainly I would not suggest so in print, nor during one of my lectures.

Ham radio is a grand hobby in all its aspects, but there are some things which are not done.

Yours faithfully,
H. S. WOODHOUSE (G2AHY).

Wokingham, Berks.

Modulation Methods

DEAR SIR,—Mr. B. J. P. Howlett in his letter (January issue) has confused power output and power input. Plate, screen, suppressor, and control grid modulation all work by varying the current passing through the load impedance connected in series with the valve anode. (This is usually the p.a. tank circuit.) For 100% modulation with a sine wave signal, the power developed across the load impedance at the positive peaks of modulation has to be four times the resting value. This is accomplished by doubling the current through the load impedance.

In anode modulation, the variation of current through the load (and the valve in series with it) is obtained by varying the h.t. voltage ; to obtain double the current, the h.t. voltage must be doubled at the positive modulation peaks. This quadruples the output power, but it also quadruples the input power and the power wasted as heat at the valve anode. The efficiency remains substantially constant.

In the other types of modulation, the h.t. voltage remains at the resting value all the time, and the current is varied by altering the voltages on the other electrodes, singly or in combination. At the positive modulation peaks, the input power is doubled and the efficiency is also doubled, the output power being quadrupled. This implies that the efficiency must be kept low in the resting state, so as to permit of it being doubled at the positive modulation peaks. It cannot be more than about half the efficiency of the same stage adjusted for anode modulation, i.e. it will not be more than say 30%. Attempts to obtain more efficiency in the resting (unmodulated) state merely result in distortion of the positive modulation peaks.

The suggestion that a square law characteristic is required to obtain the required output on positive peaks is incorrect, at least for the reasons put forward by Mr. Howlett. It might be possible to use such a characteristic to compensate for non-linearity in the modulated stage, if this took the form of a reversed square law curve ; but in my experience the non-linearity in the modulated stage mostly occurs at the bottom of the Vg2/Ia characteristic when the screen voltage approaches zero, the remainder of the curve being quite straight up to voltages above those required for modulation on positive peaks.

Yours faithfully,
ALAN G. DUNN (G3PL).

Hull, Yorks.

A Case for F.S.K.

DEAR SIR,—Since permission was granted for amateurs to use frequency (or phase) modulation and frequency shift keying, the use of the latter has been prevented where possible by the larger amateur organisations.

One method employed to achieve this end has been their refusal to publish articles in their respective journals. The lead seems to have been taken by the A.R.R.L. and the R.S.G.B. has followed without so much as a by-your-leave to the membership. This savours very much of the type of government that we are supposed to abhor, the one that gives its peoples what they—the government—think is good for them!

It is not my intention to make a political issue of this matter, but rather to question the technical knowledge of the persons concerned in this particular subject. My reason for so doing is that the same people appear quite willing for frequency modulation to be used.

All other things being equal, the only possible exception that can be taken to either system is the band width involved. Take the first—frequency modulated telephony. For a condition equalling a fully modulated a.m. transmission, the sidebands will be, approximately, 1st—minus 6 db, 2nd—minus 18 db, 3rd—minus 33 db, using the carrier as a reference at 0 db. Other sidebands will, in a correctly adjusted system, be generated at such low levels that they may be ignored. Nevertheless, it must be kept in mind that this spectrum is inferior to that obtained with a.m. of any kind if bandwidth is the criterion.

With any keyed carrier system, and more especially amateur ones, where the keying is usually in the earliest possible stage, the limiting action of any power amplifier after the keyed stage will produce an indeterminate output waveform governed both by the input waveform and the transmitter characteristics. The transmitted waveform, therefore, will be substantially rectangular and will produce excessive sidebands which appear as clicks. Considering, therefore, only those sidebands whose power is above about 30 db below carrier level in a near perfect transmitter, the effective transmitted bandwidth will be a little over 1,000 c/s. It will be admitted, I think, that few amateur transmitters exhibit such excellent characteristics as this, mainly, of course, because the origination of clicks is not always fully appreciated and also because it is so difficult to obtain these conditions without proper test equipment.

When using frequency shift keying the square waveform of the intelligence is equal to squarewave modulation at the keying speed and unnecessary sidebands will be generated, the effective transmitted bandwidth, however, will still only be about 1.3 times the peak deviation. This statement is based on the argument as stated in the paragraph on frequency modulation for ignoring sidebands of low order powers. Without further considerations, therefore, we have a bandwidth of less than 700 c/s when using a shift of 500 c/s. All subsequent stages of the transmitter, whatever their purpose, cannot alter the waveform of the input signal, a condition impossible to obtain with on/off systems.

As the frequency shift is usually achieved with a reactance valve the keying intelligence is required only to be a small change in voltage. This can be shaped by a simple CR network and once the desired characteristic is obtained the shape is unaffected by the transmitter. By thus reducing the rate of change of frequency to something like 5 milliseconds with a CR filter, the bandwidth will be reduced below the 700 c/s figure stated above.

It appears, therefore, that f.s.k. telegraphy is superior to the on/off system, whereas f.m. telephony is inferior to a.m. systems. Other advantages, such as:

(a) reduction of TVI and BCI ;
(b) absence of shock excitation of nearby aerials ;
(c) an effective gain of up to 14 db over a circuit when using band-pass filter detection

have not been taken into consideration as the relative bandwidths required are a strong enough case in themselves.

Why, therefore, the negative attitude to f.s.k. ?

Yours faithfully,
N. SHIRES (G3BTM).

Dagenham, Essex.

TVI in Reverse

DEAR SIR,—Much has been written on TVI from the amateur transmitting point of view. What of the listener ?

When my next door neighbour is using his TV receiver, one of well-known commercial make, I can receive an excellent re-broadcast of the sound channel from the i.f. on 19.6 Mc/s. The mixer oscillator is also heard on 67.85 Mc/s. In fact, a number of these can be heard on the 35-90 Mc/s spectrum from other receivers in the neighbourhood.

Although this seems to be a very good way of receiving TV sound without a v.h.f. receiver, I am of the opinion that the above transmission could, under certain circumstances, interfere with other services on these frequencies.

Yours faithfully,
W. F. WILSON (B.R.S. 2317).

Beeston, Leeds 11.

QRM Galore

DEAR SIR,—Shall I consider my neighbours who have television receivers ? One Sunday recently between 11 a.m. and 12 noon I settled down to do some v.h.f. listening on my all-mains superhet, but next door and adjacent:

(1) A motor bike was being tuned up.
(2) A motor-car engine was being tuned up.
(3) An electric drill was functioning.
(4) Several dogs were chorally in attendance of the above.

Finally, a nearby two-year-old smacks his thumb with a hammer and " hell " is let loose to add to the sum of QRM for that one hour I wanted for v.h.f.

All is quiet when TV starts—deadly quiet, so naturally I feel something should be done to waken up my TV friends!

I dug up some old 1925 junk and made up a single-valve detector (SP210) such as I had in the old days, and my! my! was I surprised at what I could pick up! I shall scrap my all-mains loudspeaker super-cum-super superhet.

Yours faithfully,
EDWARD S. ELLIOTT (G6PV, ex-G5LT).

Coventry.

Regional and Club News

BRIGHTON & DISTRICT RADIO CLUB.—At the A.G.M. the following officers were elected: *Chairman:* R. C. Langridge (T.R. for Brighton); *Vice-Chairman:* E. Banister; *Hon. Treasurer:* W. Pitfield (G3EDG), and *Hon. Secretary:* T. J. Huggett (15 Waverley Crescent, Brighton). The club meets at the "Eagle Inn," Gloucester Road, Brighton, on Tuesdays at 7.30 p.m.

BRISTOL.—More than 60 members attended the January meeting at which the General Secretary, John Clarricoats (G6CL), lectured on the "History and Development of Amateur Radio." The Executive Vice-President (Herb. Bartlett, G5QA) was also present. During the evening Mr. Clarricoats, a friend of the late Billy Andrews, presented the "G5FS Memorial Challenge Trophy" to D. V. Newport (G3CHW). *Hon. Secretary:* D. F. Davies (G3RQ), 51 Theresa Avenue, Bristol 7.

CHESTER & DISTRICT AMATEUR RADIO SOCIETY.—"An All-Band Portable Transmitter" was described at a recent meeting by the No. 1 R.R., Basil O'Brien (G2AMV). The club station (G3GIZ) is active on Top Band and 3.5 Mc/s c.w. on Tuesday evenings. *Hon. Secretary:* A. N. Richardson (B.R.S. 19678), 23 St. Mary's Road, Dodleston, near Chester.

CHISLEHURST & SIDCUP.—The inaugural meeting of the Group will be held on February 24, at 7.30 p.m., in the Club Room "Seven Stars," High Street, Footscray. A cordial invitation is extended to members who reside both in and out of the area covered by the new Group, and their support will be appreciated. The T.R. is A. Swindon (G3ANK), 133 Station Road, Sidcup, Kent.

Amateur Radio are personally helped by experienced members, is proving popular. A Top Band QRP net operates on Sundays, from 1430 G.M.T., frequency 1900 kc/s. Details of membership and a copy of the Society's journal can be obtained from the *Hon. Secretary:* J. Whitehead, "The Retreat," 92 Rydens Avenue, Walton-on-Thames, Surrey.

R.A.F. AMATEUR RADIO SOCIETY.—The A.G.M. will be held at the Headquarters of the Society, R.A.F., Locking, on March 27 at 2.30 p.m. R.S.G.B. members are cordially invited to attend. Tea will be served at 5 p.m.

SALISBURY & DISTRICT SHORT WAVE CLUB.—At the A.G.M. the following officers were elected: *President:* The Rt. Hon. the Earl of Pembroke and Montgomery, M.V.O.; *Chairman:* K. Ledsham; *Vice-Chairman:* R. Titt (G3CMJ); *Hon. Treasurer:* V. G. Page (G3IVP); *Hon. Secretary:* H. G. Futcher, 171 Castle Road, Salisbury. The club tied for third place in the *Short Wave Magazine* Club Contest. All R.S.G.B. members are invited to attend meetings on Tuesdays at 8 p.m.

SLADE RADIO SOCIETY.—A film show and lecture on valve making, arranged by Mullard, Ltd., will be given at the Imperial Hotel, Temple Street, Birmingham, on March 5 at 7.30 p.m. Other meetings, at the Church House, High Street, Erdington, are arranged for February 19 ("Isotopes in Industry," E. A. Howell) and February 26 (D/F Discussion). The following officers were elected at the A.G.M.: *President:* W. E. Chilvers; *Chairman:* G. C. Simmonds; *Vice-Chairman:* L. A. Griffiths; *Hon. Treasurer:* A. S. Page. *Hon. Secretary:* C. N. Smart, 110 Woolmore Road, Erdington, Birmingham 23.

Regional and Club News

Contributions to this feature should be topical, concise, and typed—using double spacing—and sent to reach Headquarters by not later than the **20th** *of the month preceding publication.*
Items for inclusion in "Forthcoming Events" should be sent to reach Regional Representatives not later than the **18th** *of the month preceding publication.*

DERBY & DISTRICT AMATEUR RADIO SOCIETY.—The Annual Dinner and Social will be held in the Irongates Grill Room, Derby, on February 26, commencing at 7.30 p.m. Tickets, price 8/6 each, may be obtained from the *Hon. Secretary:* F. C. Ward (G2CVV), 5 Uplands Avenue, Littleover, Derby.

GRAFTON RADIO SOCIETY.—"Principles of Modulation" is the title of the lecture to be given by H. A. M. Clark, B.Sc.(Eng.), M.I.E.E. (G6OT) on February 19. Other meetings will be held on February 26 ("Junk Sale") and March 5 ("Single Sideband," H. F. Knott, G3CU). Classes in preparation for the Radio Amateurs' Examination are held on Monday evenings. *Hon. Secretary:* A. W. H. Wennell (G2CJN), 145 Uxendon Hill, Wembley Park, Middlesex.

KINGSTON & DISTRICT AMATEUR RADIO SOCIETY. Immediate Past President, Leslie Cooper (G5LC), and Mrs. Cooper were guests of honour at the Second Annual Social and Dance held on January 2. The attendance of 120 members and friends also included Stanley Vanstone (G2AYC), President of the Sutton and Cheam Radio Society, Fred Lambeth (G2AIW), the No. 7 R.R., and Frank Hicks-Arnold (G6MB), a Member of the Council. In recognition of his services to Amateur Radio, Mr. Cooper has been elected an Honorary Life Member of the K. & D.A.R.S. At the meeting to be held on February 24, F. Charman (G6CJ) will lecture on "Aerials." The Society meets at Penrhyn House, Penrhyn Road, Kingston, at 7.45 p.m. *Hon. Secretary:* R. S. Babbs (G3GVU), 28 Grove Lane, Kingston-on-Thames.

LANCASTER & DISTRICT AMATEUR RADIO SOCIETY.—At the January meeting D. Baxter spoke on the servicing of receivers. *Hon. Secretary:* A. O. Ellefsen, 10 Seymour Avenue, Heysham, Lancs.

NORWOOD & DISTRICT.—"Aerials—L.F., H.F. and Compressed Types" was the subject of a lecture by G. A. Bird (G4ZU) at the January meeting. The A.G.M. of the Group will be held on February 20, to which all members are invited. The new T.R. is Eric Yeomanson (G3IIR). Local members place on record their thanks to the retiring T.R. (Don Gilmour, G2VB) for his past most valued services.

PONTEFRACT.—All non-transmitting members of the Pontefract Area Transmitting Group have now obtained their licences. New listener-members will be welcomed. The Annual Dinner will be held at the Darrington Hotel in March and applications for tickets should be made now to the *Town Representative:* D. I. Thompson (G3IDT), "Strathmore," A.2 Baghill Lane, Pontefract.

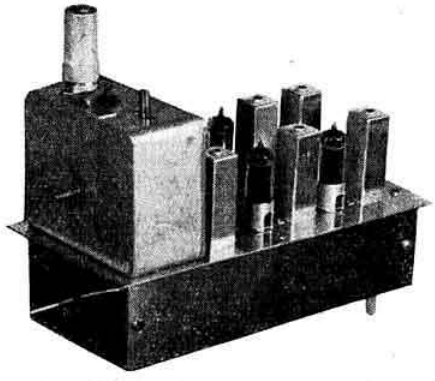
QRP RESEARCH SOCIETY.—E. Banks (GC2CNC) has been elected President of the Society, now in its fifth year. The "student adoption scheme," whereby newcomers to

SOUTHEND & DISTRICT RADIO SOCIETY.—Excellent progress over the last year was reported by officers of the Society at the A.G.M. *Hon. Secretary:* J. H. Barrance, M.B.E. (G3BUJ), 49 Swanage Road, Southend-on-Sea.

SPEN VALLEY & DISTRICT RADIO & TELEVISION SOCIETY.—W2DTJ spoke on "Amateur Radio in the U.S.A." at the Society's Annual Dinner which was attended by more than 50 members and friends. Other items in the programme were a lucky draw and a film show.

STOCKPORT RADIO SOCIETY.—A social evening will be held at the Edgeley Institute on March 6 and the A.G.M. the following day. Ordinary meetings are arranged for February 17 and March 3 at the A.T.C. Headquarters, St. Petersgate. *Hon. Secretary:* G. R. Phillips (G3FYE), 7 Germans Buildings, Buxton Road, Stockport.

TORBAY AMATEUR RADIO SOCIETY.—G4RD will give a talk on the "Decca Navigator" on February 20. At the same meeting, local R.S.G.B. members will discuss N.F.D. plans. *Hon. Secretary:* L. H. Webber (G3GDW), 43 Lime Tree Walk, Newton Abbot.



This is the "Miniciter" five-band exciter unit made by the Minimitter Company, and featured at the Seventh Annual R.S.G.B. Amateur Radio Exhibition.

Forthcoming Events

REGION 1

Blackpool (B. & F.A.R.S.).—February 23, 7.30 p.m., 161 Penrose Avenue.
Bury.—March 11, 7.30 p.m., 52 The Drive, Seedfield, Bury.
Chester (C. & D.A.R.S.).—Tuesdays, 7.30 p.m., Tarran Hut, Y.M.C.A., Chester.
Crosby.—Tuesdays, 8 p.m., over Gordon's Sweetshop, St. John's Road, Waterloo.
Isle of Man (I.O.M.A.R.S.).—March 3, Broadway House, Douglas.
Lancaster (L. & D.A.R.S.).—March 3, 7.30 p.m., George Hotel, Torrisholme.
Liverpool.—February 20, March 6, 3 p.m., Larkhill Mansion House, West Derby.
Manchester (M. & D.R.S.).—March 1, 7.30 p.m., Brunswick Hotel, Piccadilly, Manchester.
Rochdale.—Fridays, 7.45 p.m., 1 Law Street, Sudden.
South Manchester.—Alternate Fridays, 7.30 p.m., Ladybarn House, Mauldeth Road, Manchester 14.
Southport.—Thursdays, 8 p.m., Y.M.C.A., off Eastbank Street, Southport.
Stockport.—February 17, March 3, 17, 8 p.m., A.T.C. Headquarters St. Petersgate Stockport.
Warrington.—February 16, March 2, 16, 7.30 p.m., King's Head Hotel, Winwick Street, Warrington.
West Cumberland.—March 4, 7 p.m., Kell's Community Centre, Whitehaven.
Wirral (W.A.R.S.).—February 17, March 3, 17, 7.45 p.m., Y.M.C.A., Whetstone Lane, Birkenhead.

REGION 2

Barnsley.—February 26, March 12, 7.30 p.m., King George Hotel, Peel Street.
Bradford.—February 16, March 2, 7.30 p.m., Cambridge House, 66 Little Horton Lane.
Catterick.—Wednesdays, 7 p.m., Loos Lines, Catterick Camp.
Darlington.—Thursdays, 7.30 p.m., 129 Woodlands Road.
Doncaster.—March 10, 7.30 p.m., Leopard Hotel, West Street.
Gateshead.—Mondays, 7.30 p.m., Mechanics' Institute, 7 Whitehall Road.
Hull (H. & D.R.S.).—February 23, March 9, 7.30 p.m., "Rampant Horse," Paisley Street.
Middlesbrough.—Thursdays, 7.30 p.m., Joe Walton's Boys' Club, Feversham Street.
Newcastle-upon-Tyne (N.E.A.T.S.).—March 2, 7.30 p.m., Barras Bridge Hotel, Sandyford Road.
Rotherham.—Wednesdays, 7 p.m., "Cutlers Arms," Westgate.
Scarborough.—Thursdays, 7.30 p.m., B.R. Rifle Club, West Parade Road.
Sheffield.—February 24, 8 p.m., "Dog and Partridge," Trippet Lane; March 10, 8 p.m., Albreda Works, Lydgate Lane.
Slaithwaite.—Fridays, 7.30 p.m., 3 Dartmouth Street.
Spenborough.—February 24 (A.G.M.); March 10, 7.30 p.m., Temperance Hall, Cleckheaton.
York (Y.A.R.S.).—Thursdays, 7.30 p.m., Club Rooms, Y.A.R.S., Fetter Lane.

REGION 3

Birmingham (South).—March 1, 7.30 p.m., Friends Hall, Watford Road, Cotteridge.
Coventry.—February 26, March 26, 7.30 p.m., Priory High School, Wheatley Street.
Kenilworth, Warwick & Leamington.—March 19, 7.30 p.m., Dale House Lane.
Malvern.—March 1, 8 p.m., "Foley Arms."
Stourbridge (S. & D.A.R.S.).—March 2, 8 p.m., King Edward VI School.
Wrekin (W.A.R.S.).—Mondays, 8 p.m., Wrekin Service Club, Roseway, Wellington.

REGION 4

Alvaston.—Tuesdays and Thursdays, 7.30 p.m., Sundays, 10.30 a.m., Nunsfield House, Boulton Lane, Alvaston, Nr. Derby.
Chesterfield.—Tuesdays, 7.30 p.m., Bradbury Hall, Chatsworth Road.
Derby (D. & D.A.R.S.).—Wednesdays, 7.15 p.m., Derby College of Arts and Crafts, Sub-basement, Green Lane.
Leicester (L.R.S.).—March 1, 15, 7.30 p.m., Hollybush Hotel, Belgrave Gate.
Lincoln (L.S.W.C.).—February 17, March 3, 7.30 p.m., Technical College, Cathedral Street.
Mansfield (M. & D.A.R.S.).—March 10, 7.30 p.m., Denman's Head Hotel, Market Place, Sutton-in-Ashfield.
Newark.—February 21, March 7, 21, 7 p.m., Northern Hotel, Appleton Gate, Newark.
Northampton (N.S.W.C.).—Fridays, 7 p.m., March 5, 6 p.m., Club Room, 8 Duke Street.
Nottingham.—February 19, March 19, 7.30 p.m., Sherwood Community Centre, opposite Woodthorpe Drive, Sherwood.
Peterborough.—March 3, 7.30 p.m., New Inn, New England, Peterborough.
Worksop.—March 1, 7 p.m., King Edward Hotel.

REGION 5

Chelmsford.—March 2, 7.30 p.m., Marconi College, Arbour Lane.
Lowestoft & Beccles (L. & B.A.R.C.).—February 24, March 10, 7.30 p.m., Y.M.C.A., Lowestoft.

REGION 6

Cheltenham.—March 4, 8 p.m., 128 Prestbury Road.
Gloucester (G.R.C.).—Thursdays, 7.30 p.m., The Cedars, 83 Hucclecote Road.
High Wycombe.—February 23, 7.30 p.m., G3DQC, 6 Peterborough Avenue.
Oxford (O. & D.A.R.S.).—February 24, March 10, 7.30 p.m., The Club Room, "Magdalen Arms," Iffley Road, Oxford.
Portsmouth.—Tuesdays, 7.30 p.m., Signal Club Room, Royal Marine Barracks, Eastney.
Southampton.—March 6, 7.30 p.m., 1 Prospect Place.
Stroud.—Wednesdays, 7.30 p.m., Subscription Rooms.

REGION 7

Acton, Brentford & Chiswick.—Tuesdays, 7.30 p.m., A.E.U. Rooms, 66 Chiswick High Road, W.4.
Barnes, Putney & Richmond.—March 9, 7.30 p.m., 337 Upper Richmond Road, S.W.14.
Bexleyheath (N.K.R.S.).—February 25, March 11, 7.30 p.m., Congregational Hall, Chapel Road, Bexleyheath.
Bromley (N.W.K.A.R.S.).—March 5, 8 p.m., "Shortlands Tavern," Station Road, Shortlands.
Chislehurst & Sidcup.—February 24, 7.30 p.m., "Seven Stars." High Street, Sidcup, Kent.
Chingford.—February 26, March 12. Venue from G4GA (SIL 5635) or B.R.S. 19765 (SIL 6055).
Croydon.—March 9, 7.30 p.m., "Blacksmith Arms," 1 South End, Croydon.
Dorking.—Tuesdays, 7.30 p.m., 5 London Road.
Dulwich & New Cross.—March 2, 7.45 p.m., "Walmer Castle," Peckham High Street.
East Ham.—Alternate Tuesdays, 8 p.m., 57 Leigh Road.
Ealing.—Sundays, 11 a.m., A.B.C. Restaurant, Ealing Broadway, W.5.
East London.—February 28, 3 p.m., Town Hall, Ilford; U.H.F. Debate.
East Molesey (T.V.A.R.T.S.).—March 3, 8 p.m., Carnarvon Castle Hotel.
Finsbury Park.—February 23, 7.30 p.m., 164 Albion Road, Stoke Newington, N.16.
Guildford & Woking.—February 28, 3 p.m., Royal Arms Hotel, North Street, Guildford. "Aerials and N.F.D.," J. B. Gurney.
Harlow (H. & D.R.S.).—February 16, 8 p.m., War Memorial Institute; February 23, 8 p.m., 6 High Street, Harlow.
Hayes & Uxbridge.—February 22, March 8, 7.30 p.m., Hillingdon Primary School, Uxbridge Road.
Hendon & Edgware.—Wednesdays, 8 p.m., 22 Goodwins Avenue, Mill Hill, N.W.7.
Holloway (G.R.S.).—Mondays and Fridays, 7.30 p.m., Grafton School, Eburne Road, Holloway, N.7. February 19, "Principles of Modulation" H. A. M. Clark, B.Sc.(Eng.), M.I.E.E. (G6OT); March 5, "Single Sideband," H. F. Knott (G3CU).
Hounslow (H.R.D.R.S.).—February 21, March 4, 18, 7.30 p.m., Grove Road School, Cromwell Road.
Ilford.—Thursdays, 8 p.m., G2BRH, 579 High Road.
Kingston (K. & D.R.S.).—Alternate Wednesdays, 7.45 p.m., Penrhyn House, Penrhyn Road.
Lewisham (R.A.R.C.).—Wednesdays, 8 p.m., Durham Hill School, Downham.
Norwood.—February 20, 7.30 p.m., Windermere House, Westow Street, Crystal Palace.
Southgate & Finchley.—March 11, 7.30 p.m., Arnos School, Wilmer Way.
Sutton & Cheam (S. & C.R.S.).—February 16, March 16, "The Harrow," Cheam Village, Surrey.

REGION 8

Brighton.—T.R. at home, Wednesdays, 7.30 p.m., 27 Warren Avenue, Woodingdean. **(B.D.R.C.).**—Tuesdays, 7.30 p.m., "Eagle Arms," Gloucester Road.
Chatham (M.A.R.T.S.).—February 15, March 1, 15, 7.30 p.m., Troy Town School for Boys, King Street, Rochester.
Hastings (H. & D.R.C.).—February 23, March 9, 23, 7.30 p.m., Saxons Cafe, Denmark Place.
Isle of Thanet (I.O.T.R.S.).—Fridays, 7.30 p.m., Hilderstone House, Broadstairs.
Maidstone (M.K.A.R.S.).—Tuesdays, 7.30 p.m., Elms School, London Road.
Worthing (W. & D.R.C.).—Monday, March 8, Adult Education Centre, Worthing.

REGION 9

Bristol.—February 26, March 19, 7.15 p.m., Carwardine's Restaurant, Baldwin Street, Bristol 1.
Exeter.—March 5, 7 p.m., Y.M.C.A., St. David's Hill.
North Devon.—March 4, 7.30 p.m., Rose of Torridge Cafe, The Quay, Bideford.
Penzance.—March 4, Railway Hotel.
Plymouth.—February 20, March 20, 7 p.m., Tothill Community Centre, Tothill Park, Knighton Road, St. Jude's.
Torquay.—February 20, March 20, 7.30 p.m., Y.M.C.A., Castle Road.
West Cornwall (W.C.R.C.).—February 18, March 4, 18, "Fifteen Balls," Penryn, near Falmouth.
Weston-super-Mare.—March 2, 7.30 p.m., Y.M.C.A.
Yeovil.—Wednesdays, 7.30 p.m., Grove House, Preston Road.

REGION 10

Cardiff.—March 8, 7.30 p.m., "The British Volunteer," The Hayes, Cardiff.
Neath & Port Talbot.—March 10, 7.30 p.m., Royal Dock Hotel, Briton Ferry.

REGION 13

Dunfermline.—Mondays and Thursdays, 7.30 p.m., behind 34 Viewfield Terrace, Dunfermline.
Edinburgh (L.R.S.).—February 18, March 4, 18, 7.30 p.m., 25 Charlotte Square, Edinburgh.

REGION 14

Falkirk.—February 26, March 12, 7.30 p.m., The Temperance Cafe, High Street, Falkirk.

REPRESENTATION

The following are additions or amendments to the list published in the December, 1953, issue.

District Representative
Region 7—London East
G. W. Norris (G3ICI), 134 Meads Lane, Ilford, Essex.

Town Representatives
Region 1—Lancashire West
Liverpool
B. G. Meaden (G3BHT), 10 Alfriston Road, Liverpool 12.
Warrington
J. Cuthbertson (G5AU), 1 Sandy Lane, Longford, Warrington.

Region 3—Shropshire
Wellington & District
J. C. Tranter (G3BQQ), 78 New Street.
Staffordshire
Rugeley, Tamworth, Walsall, Cannock & Lichfield.
E. A. Matthews (G3FZW), 1 Shortbutts Lane, Lichfield.
Worcestershire
Worcester
J. Morris-Casey (G8JC), 4 Kennels Lane, Fernhill Heath, Nr. Worcester.
Region 5—Suffolk
Lowestoft & Beccles
P. C. Hayward (G3JMX), 250 Denmark Road, Lowestoft.
Region 7—London South-West
Dorking & Leatherhead
W. J. Walsh (G3HZJ), 4 Meadowbrook Road, Dorking.
Reigate & Redhill
L. Knight (G5LK), 6 Madeira Walk, Reigate.
Region 13—Berwickshire
Berwick-on-Tweed
W. Baker (G3AFL), 4 Devon Terrace.

* * *

Vacancies

Messrs. J. Timbrell (G6OI), F. G. Lambeth (G2AIW) and K. N. Senior (GM3AEI), having been elected Regional Representatives, have resigned as representatives for the County of Worcestershire, the District of South-West London, and the Counties of East, West and Mid-Lothian respectively.

G. E. Wegg (G3ANM) has resigned as representative for the County of Lincolnshire.

Nominations for their successors should be made in the prescribed form and sent to reach the General Secretary by not later than March 31, 1954.

* * *

Amendments to Previous Lists

Region 2—Yorkshire West.—Correspondence intended for the Pontefract T.R. (Mr. D. I. Thompson, G3IDT) should be addressed to "Strathmore," A2 Baghill Lane, and not as stated in the December issue.

Region 3—Warwickshire.—The territory covered by the A.R. for Halesowen, Rowley Regis and Oldbury is situated in Worcestershire and not in Warwickshire as stated in the December issue.

* * *

Correspondence intended for the High Wycombe T.R. should now be addressed to A. B. Dixon (G3FAS), 51 Tyzack Road, Totteridge.

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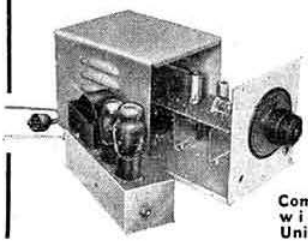

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EXCHANGE AND MART SECTION

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A Collins 75A receiver and 32V transmitter required.—E. PARVIN, 19 Fellbrook Avenue, Acomb, York. (Tel. 78283.) (852

AMATEUR has to sell up: 25 W transmitter; all parts for unbuilt 150 W rig; 6 ft. P.O. rack; sheet 14 g. dural, 6 ft. x 2 ft.; variac; genemotor; telephone handsets; meters; new valves, including 813, 807, 866A, RG1/240A; EF50, VR54, VR56, etc.; back copies "QST," "Wireless World," "Short Wave Magazine"; innumerable small components; many larger items. No list, but callers or specific enquiries welcome. All must be cleared by April.—D. MARTIN, 88 Mysore Road, London, S.W.11. (BAT 6382.) (894

AMERICAN post-war receiver, 6 to 600 metres, matching speaker, "S" meter and manual. Exchange CR100 and cash. — A. STADDON, Longfords Valley, Minchinhampton, nr. Stroud. (912

AMERICAN "Pioneer Corporation" rotary converter, 110 V d.c. input, 110 V a.c. output, 60-cycle, single phase, 300 W; weight approx. 65 lb.; filtered, suitable maritime, mobile or farm; offers about £8. Mallory vibrapak, 12 V d.c. input, 150 V d.c. 60 mA output, unused, 10/-. Hallicrafter vibrapak, 12 V d.c. input, 244 V d.c. 44 mA output, unused, 20/-. Canadian chokes, swinging 5-25 H 550 mA d.c. (2); smoothing, 15 H 550 mA d.c. (2), 10 kV test; weight approx. 30 lb. each; unused; 15/- each. Unused valves, 813 (3), 60/- each; 805 (2), 30/- each. Packing and postage extra. Space wanted.—PETER J. WILLIAMS, G3CZC, "Wymbra," Somerford, Willenhall, Staffs. (857

AMPLIFIER, 50 W output, complete with new valves, £13. Collins TCS12 receiver, £4. TU5B, new, unused, 22/-. Valves, new, 811 (2), £1; GU20 (2), £1; 35T (2), 16/-. Used, as new, 829B, 30/-; 832 (3), 10/-. All prices carriage paid. Many other valves, h.t. transformers, transmitter and receiver parts, meters, i.f. transformers, crystal filters, etc. S.A.E. for list.—G3BPP, 10 West Terrace, North Ormesby, Middlesbrough. (900

(Continued on page 383)

EXCHANGE AND MART SECTION

(Continued from page 382)

A reminder that the finest QSL cards are produced by Minerva, Queen's Road, Brentwood, Essex. (Phone 2938.) (876

ANY reasonable offer.—A.M. test set 73, outside soiled. Power pack, suitable R1155, etc., 30/-. Valves, unused, tested: 6K7G, 6J7G, 6V6G, CV66 at 4/6; VU120 at 2/6. Wanted: 2-metre transmitter and receiver. Type D wavemeter or similar. Handbook for B2; T1154/R1155.—G3CER, BM/HWMO, London, W.C.1. (873

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BARGAINS.—931, 805, 15/-; 866, ACT6, 10/-; EL35, EL50, DET5, 7/6; 6X5, 6L6G, 6V6, 807, 5U4G, 5R4GY, VR150/30, 6/-; many others. S.A.E. list. ZC8931 with 45 Mc/s strip, 19 valves and 3BP1 CRT, 55/-, plus carriage. 5CP1 CRT in screened box, 17/6. Transformers, meters, condensers, etc. General clear out.—G4HL, 22 Denmark Square, Aldershot. (898

BC221N with stabilised p.p., also mains power unit type 45, output 1,200 V 200 mA, £25.—G3EXE, 20 Hurst Grove, Bedford. (860

BC348R, with power pack, £12 10s.; good condition. Buyer collects. — HELLIER, 234 Wilbraham Road, Alexandra Park, Manchester 16. (881

BOUND to satisfy. BULLETINS bound, 6/6 per volume, post free. Attractive low-priced QSL cards supplied. Sample.—H. W. ROBINSON (G2BBT), 35 Forty Acre Road, Canterbury. (891

BRAND-NEW R28/ARC5, 37/6. Coil pack, condenser, i.f.s, crystal, handbook, etc., ex-BC348, 60/-. MCR1 with M/L coil and a.c. power pack, 75/-. S.A.E. for list. Valves, meters, components going cheap. Postage extra.—G3JMU, 121 London Road North, Lowestoft. (909

B2 transmitter, receiver, power supply, in cases, £15 or nearest offer.—COX, 415 Barking Road, London, E.13. Grangewood 5626. (905

CAY unit 47153A, 4 to 6 Mc/s with Cay 47226 case, excellent condition, £2. Universal Avo Minor, O.K., £4. 1131 modulated power pack 1000 volts 500 mA, 350 volts 250 mA, £3. Power pack, voltage doubling, output 1000 volts, 180 mA with rectifiers, £2. Command transmitter 7 Mc/s, less valves, requires usual modifications, £1 5s. Command receiver 6 to 9 Mc/s, less valves, £1 5s. V.H.F. receiver 1147, partly valved, 15s. Transformer 230 volts input, 1800-0-1800 volts, 600 mA unused, £2 10s. Two chokes for h.v. p.p. to take 600 mA, 15s. each. Simmonds double crystal filter 465 kc/s, 300 cycles band width, unused, 17s. 6d. SCR522 transmitter less mod. transformer, etc., £1. R103 Mk. II receiver in working condition. 7 Mc/s, 3.5 Mc/s, 1.8 Mc/s, excellent, £7. Kingston, Surrey district. Add packing and post.—Box 902, NATIONAL PUBLICITY CO., LTD., 36/37 Upper Thames Street, London, E.C.4. (902

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ENTHUSIASTIC private collector would appreciate help in obtaining any "QSTs" before 1924, any "Radio" before 1936, most "CQ" 1945/6, most "R/9." Your prices, if reasonable. Detailed lists on request. Postage refunded. Also seeking RME V.H.F. 152. — G3IDG, 95 Ramsden Road, London, S.W.12. (910

FOR SALE: BC221 with internal power pack and calibration book, as new, £25. Receiver type 1224A, as new, £6. Receiver type 1147, as new, in transit case, £5. Power unit type 1132 with meters, good condition, £4. TU5B, good condition, £2. RF26 unit, as new, £2. Oscillator unit type 217, as new, £2. All carriage extra.—B.R.S. 16514, Clear View, Nancy Downs, Oxhey, Herts. (893

FOR SALE: VCR139A (2), 15/- each. Small scope case for above tubes, 8/6. 813, new, £2. Morse code practice oscillator, 2-valve, 5-tone, with h.t. battery, 15/-. 8012 (4), 8/- each. Eddystone bug key, 45/-. Premier vision strip, London, new, 45/-. Vacuum condensers, Eimac 50 $\mu\mu$F, 32 kV (2), £1 each. Block condensers, 4 μF, 500 V working (3), 2/6 each.—SEPHTON, 16 Bloemfontein Avenue, Shepherds Bush, London, W.12. (880

FOR SALE: Complete station, G3ARA, as owner going abroad. Main items being AR88, H.R.O., SCR211, 150 W transmitter (813 final mods., two 807s in Class B, coils for all bands and p.s.u. capable of 600 W). Whole rack mounted in beautiful condition throughout. In addition, three 10 W transmitters working up to 160 Mc/s with four double superhet receivers similar range.—Offers to MAJOR C. S. KIDD, Houndwood, Farley, nr. Salisbury, Wilts. (884

FOR SALE: Lexington moving-coil pickup, 25/-. Avominor d.c. meter, £2 5s. Avo Universal Minor, £4 5s. E.H.T. transformer, 2,000 V, 4 V, 1 A, new, £1. Ferranti inter-valve transformer, 5/6; ditto push-pull, 7/6. 11 various 2-volt valves, 12/6 the lot. Solid mahogany bass reflex cabinet for 12 in. speaker; super job; £7 5s. plus carriage.—HUGH, 1 Hickmans Close, Lindfield, Sussex. (882

FOR SALE: Hallicrafter Sky Buddy, good condition, £11. Type 145 oscillator, no p.p., £2. Three 832 valves, 25/- each. Avo type 7, as new, £15. Eddystone two-metre converter, as new, £4.—Box 848, NATIONAL PUBLICITY CO., LTD., 36-37 Upper Thames Street, London, E.C.4. (848

FOR SALE: Panda 35 ft. steel tower, 10 m beam, turning motor, mains transformer, Selsyn repeater and indicator. Ready for collection Liverpool. Offers?—HONEY, 54 St. Gabriel's Road, London, N.W.2. (856

FOR SALE: Hambander receiver, good appearance, £9 10s. or exchange tape deck.—J. JACKSON, 27 Thomson Avenue, Johnstone, Renfrewshire. (869

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H.R.O. Senior, almost new condition, power pack and coils for 7-30 Mc/s, £25. Buyer collects.—G5AX, 35 Moss Lane, Leyland, Lancs. (896

INTERNATIONAL tape recording club. Interested recordists write, enclosing IRC, for full details to Box 1414, San Francisco, California. (911

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QSLs and log book (P.M.G. approved). Samples free. State whether G or B.R.S.—ATKINSON BROS., Printers, Elland. (772

R208 superhet, 10-60 Mc/s in 3 bands, b.f.o.; built-in power pack, a.c./6 V d.c., and speaker; £9. Swap H.R.O. coil, 3.5-7.3 Mc/s, for .9-2 Mc/s range.—G3DHZ, 90 Surbiton Road, Kingston-on-Thames, Surrey. (Tel. KIN 0940.) (849

(Continued on page 384)

EXCHANGE AND MART SECTION

(Continued from page 383)

R.C.A. type OP-6 broadcasting station pre-amplifier, mains driven, with R.C.A. aerodynamic microphone, £27. Lowther 12 W amplifier, £17. DST100 receiver, £30. R.C.A. ET4332 cabinet, £15. R.C.A. 9 in. P.M. speaker in portable cabinet, 25/-. Rola 12 in. P.M. speaker unit, 30/-. Type 145 oscillator, £7. Elliott 2½in. voltmeter, 0/5, 15/-; 0/½, 20/-; 0/25/150, 20/-. Post Office rack, 5 ft. 6 m., 35/-. McElroy Morse recorder, less valves, £3 10s.—B.R.S. 12959, 15 Grosvenor Crescent Mews, S.W.1. (871

SALE: Unmodified BC348N, £16 10s. Collins T.C.S. receiver, 1.5-12 Mc/s, £7. Transmitter, 150 W, 20, 40, 80, complete with valves and coils, less p.u., £5. Hallicrafter transmitter/receiver, 1-3.6 Mc/s with p.u. for 12 V input; suit yachts, etc. Offers ? S.A.E. further details. Carriage extra or will deliver up to 20 miles.—WORMALD, G3JCT, Field House, Acaster, Malbis, York. (875

SIGNAL generator and tracer by Labgear, 100 kc/s to 60 Mc/s; cost £35; as new, £20, o.n.o. 242a triode, 7/6. HK54, 65/-. Wanted: BC312.—G6MN, Castlemount, Worksop. (854

TRANSFORMER, 500-0-500 at 150 mA, 18/6. Choke, 140 mA, 15/-. Driver transformer, 15/-. Pair PT15, brand new, 9/6; 829B, 35/-; 42, PT15, 4/-; 5U4G, 5/-.—Box 877, NATIONAL PUBLICITY CO., LTD., 36-37 Upper Thames Street, London, E.C.4. (877

URGENTLY wanted: Manuals or instruction books, data, etc., on American or British Army, Navy or Air Force radio and electrical equipment.—HARRIS, 93 Wardour Street, W.1. (864

WANTED: H.R.O coils,, receivers, power packs, AR88Ds, AR88LFs, SX28s, BC348s, AR77s, etc.—Details please to R.T. & I. SERVICE, 254 Grove Green Road, Leytonstone, E.11. (LEY 4986.)

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WANTED: Eddystone 504, reasonable price.—2HBH, 3 College Road, Airedale, Castleford, Yorks. (853

WANTED: 70 to 100 Mc/s receiver at reasonable price.—HARRIS, The Huon, Bournemouth. (866

WANTED: R.C.A. speech amplifiers type MI-11220 J or K and aerial tuning units BC939a. — Offers stating quantity and price to P.C.A. RADIO, Beavor Lane, Hammersmith, W.6. (867

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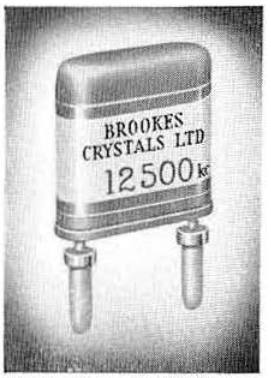

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