

R.S.G.B.



BULLETIN

January 1953

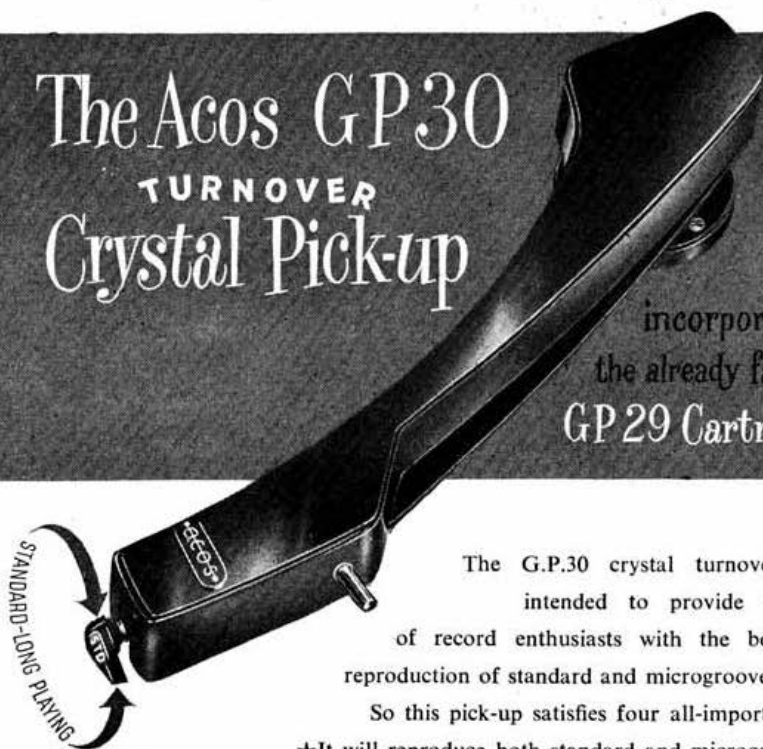
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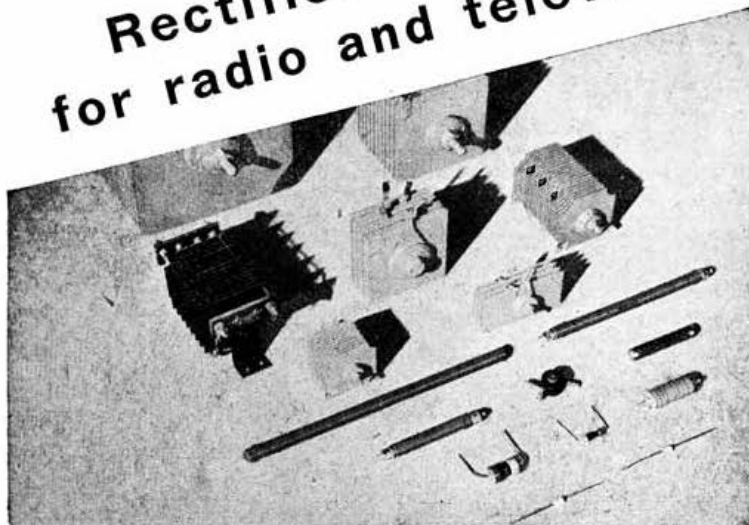
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19	.040	1/4	2/3	—	—	1/5	2/3	1/6	2/5
20	.036	1/5	2/4	1/5	2/4	1/5	2/4	1/7	2/8
21	.032	1/5	2/5	1/5	2/5	1/5	2/5	1/8	2/10
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24	.022	1/7	2/8	1/7	2/8	1/7	2/8	1/10	3/2
25	.020	1/8	2/9	1/8	2/9	1/8	2/9	1/11	3/4
26	.018	1/8	2/10	1/8	2/10	1/9	2/11	2/-	3/6
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21	1/6	1/6
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23	1/6	1/10
24	1/8	2/-
25	1/10	2/2
26	2/-	2/4
27	2/-	2/4
28	2/-	2/6
29	2/2	2/6
30	2/2	2/6
31	2/3	2/8
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R.S.G.B. BULLETIN

Vol. 28

No. 7

JANUARY
1953



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THE R.S.G.B. IS A MEMBER SOCIETY OF THE I.A.R.U. AND ACTS AS THE REGION 1 BUREAU OF THE I.A.R.U.

Forthcoming Events

REGION 1

Bury.—February 12, 7.30 p.m., Y.M.C.A., The Rock. Bury.
Chester (C. & D.A.R.S.).—Tuesdays, 7.30 p.m., Tarran Hut, Y.M.C.A.
Crosby.—Tuesdays, 8 p.m., over Gordon's Sweetshop, St. John's Road, Waterloo, Liverpool.
Liverpool.—January 17, 31, February 14, 2.30 p.m., Larkhill Mansion House, West Derby.
Manchester (M. & D.R.S.).—February 2, 7.30 p.m., Brunswick Hotel, Piccadilly.
Rochdale (R.R.T.S.).—Fridays, 7.45 p.m., 1 Law Street, Sudden.
South Manchester (S.M.R.C.).—Alternate Fridays, 7.30 p.m., Ladybarn House, Mauldeth Road, Manchester 14.
Southport.—January 26, February 9, 23, 8 p.m., Y.M.C.A., off Eastbank Street.
Stockport (S.R.S.).—Alternate Tuesdays, 8 p.m., Blossoms Hotel, Buxton Road.
Warrington (W. & D.R.S.).—January 20, February 3, 7.30 p.m., King's Head Hotel.
Wirral.—January 14, 28, February 11, 25, 7.45 p.m., Y.M.C.A., Whetstone Lane, Birkenhead.

REGION 2

Barnsley.—January 26, February 9, 7.30 p.m., King George Hotel, Peel Street.
Bradford.—January 20, February 3, 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.—February 11, 7.30 p.m., Black Bull, Market Place.
Gateshead.—Mondays, 7.30 p.m., Mechanics' Institute, 7 Whitehall Road.
Middlesbrough.—Thursdays, 7.30 p.m., Joe Walton's Boys' Club, Feversham Street.
Newcastle-upon-Tyne.—January 19, 7.30 p.m., British Legion Rooms, 1 Jesmond Road.
Rotherham.—Wednesdays, 7 p.m., Cutlers Arms, Westgate.
Scarborough.—Thursdays, 7.30 p.m., L.N.E.R. Rifle Club, West Parade Road.
Sheffield.—January 28, 8 p.m., Dog and Partridge, Trippet Lane; February 11, 8 p.m., Albreda Works, Lydgate Lane.
Slaithwaite.—Fridays, 7.30 p.m., 3 Dartmouth Street.
Spennorth.—January 28, February 11, 7.30 p.m., Temperance Hall, Cleekeheaton.
York.—Thursdays, 7.30 p.m., Club Rooms, Y.A.R.S., Fetter Lane.

REGION 3

Birmingham (South).—February 6, 7.15 p.m., Stirchley Institute.
Coventry.—January 23, 7.30 p.m., Priory High School, Wheatley Street.
Kenilworth, Warwick & Leamington.—February 19, 7.30 p.m., Dalehouse Lane.
Malvern.—February 2, 8 p.m., Foley Arms.
Stourbridge (S. & D.R.S.).—February 3, 8 p.m., King Edward's School.
Worcester (W. & D.A.R.C.).—Thursdays, 7 p.m., City Library (basement), Foregate Street.
Wrekin (W.A.R.S.).—Mondays, 8 p.m., Wrekin Service Club, Roseway, Wellington.

REGION 4

Alvaston (D.S.W.E.S.).—Tuesdays and Thursdays, 7.30 p.m., Sundays, 10.30 a.m., Nunsfield House, Boulton Lane, Alvaston, Nr. Derby.
Chesterfield.—January 13, 27, February 10, 7.30 p.m., Bradbury Hall, Chatsworth Road.
Derby (D. & D.A.R.S.).—Wednesdays, 7.30 p.m., Derby College of Arts and Crafts (sub-basement), Green Lane.
Leicester (L.R.S.).—January 19, February 2, 16, 7.30 p.m., Holly Bush Hotel, Belgrave Gate.
Loughborough.—January 21, 7.30 p.m., Great Central Hotel.
Mansfield (M. & D.A.R.S.).—February 1, 3 p.m., Swan Hotel.
Newark.—January 18, February 1, 15, 7 p.m., Northgate House.
Northampton (N.S.W.C.).—Fridays, 6 p.m., February 6, 7 p.m., Club Room, 8 Duke Street.
Nottingham.—January 16, 7.30 p.m., Trent Bridge Hotel.
Peterborough.—February 4, 7.30 p.m., New Inn, New England, Peterborough.
Retford.—February 2, 7 p.m., Community Centre, Chapel Gate.

REGION 5

Chelmsford.—February 3, 7.30 p.m., Marconi College, Arbour Lane.
Ipswich.—January 28, February 11, 7.30 p.m., T.A. Drill Hall, Woodbridge Road.
Lowestoft (L. & B.A.R.C.).—January 28, February 11, 7.30 p.m., Y.M.C.A.

REGION 6

Gloucester.—Alternate Thursdays, 7.30 p.m., Spreadeagle Hotel.
High Wycombe.—January 27, 7.30 p.m., G2FDF, "Audley," London Road, Great Missenden.
Portsmouth.—Tuesdays, 7.30 p.m., Signals Club Room, R.M. Barracks, Eastney.
Southampton.—February 7, 7.30 p.m., New meeting place: Prospect House, 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, Chiswick High Street, W.4.
Balham.—January 21, 7.30 p.m., Alexandra Hotel, Clapham Common South Side, S.W.4.
Barnes, Putney & Richmond.—February 3, 7.30 p.m., 337 Upper Richmond Road, East Sheen, S.W.14.
Barnet (B. & D.R.C.).—Wednesdays, 8 p.m., "Hopedene," The Avenue.
Bromley, Kent (N.W.K.A.R.S.).—February 6, 8 p.m., Shortlands Tavern, Station Road, Shortlands.
Chingford.—January 27, February 10, 8 p.m., A.T.C. Hall, Pretoria Road.
Croydon (S.R.C.C.).—February 10, 7.30 p.m., "Blacksmiths Arms," South End.
Ealing.—Sundays, 11 a.m., A.B.C. Restaurant, Ealing Broadway.
East Ham.—January 27, February 10, 24, 8 p.m., 57 Leigh Road.
East London.—January 25, 3 p.m., Town Hall, Ilford. W. Gunning (G.P.O.) "Up to date Transmitting Licences."
Enfield.—January 18, February 15, 3 p.m., George Spicer School, Southbury Road.
Finsbury Park.—January 27, 7.30 p.m., 164 Albion Road, Stoke Newington, N.16.
Guildford & Woking.—January 25, 3 p.m., Royal Arms Hotel, Guildford. "Bring and Buy."
Harlow (H. & D.R.S.).—January 27, February 10, 8 p.m., 6 High Street; February 3, 17, 8 p.m., War Memorial Institute.
Hendon & Edgware (E. & D.R.S.).—Wednesdays, 8 p.m., 22 Goodwin Avenue, Mill Hill.
Holloway (G.R.S.).—Mondays and Fridays, 7.30 p.m., Grafton School, Eburne Road, N.7.
Ilford.—Thursdays, 8 p.m., G2BRH, 579 High Road.
Kensington & Shepherds Bush.—February 13, 8 p.m., 38 Royal Crescent, W.11.
Lewisham (R.A.R.C.).—Wednesdays, 8 p.m., Durham Hill School, Downham.
Norwood.—January 17, 7.30 p.m., Windermere House, Westow Street, Crystal Palace.
Reigate (E.S.R.C.).—January 27, 7.45 p.m., 19 London Road.
Slough.—January 15, February 19, 7.45 p.m., Labour Hall, Chandos Street.
Southgate.—February 12, 7.30 p.m., Arnos Secondary Modern School, Wilmer Way, N.11.
Sutton & Cheam.—January 20, "The Harrow," Cheam Village.
Uxbridge.—February 6, 7.30 p.m., The Vine, Uxbridge Road.
Welwyn.—February 3, 8 p.m., Council Offices. "The Naval B40."

REGION 8

Brighton (B.D.R.C.).—Tuesdays, 7.30 p.m., Eagle Inn, Gloucester Road. (E.B.S.W.C.).—Thursdays, 7.30 p.m., 27 Warren Avenue, Woodingdean.
Chatham (M.A.R.T.S.).—Mondays, 7.30 p.m., Co-operative Hall, Luton Road.
Hastings (H. & D.A.R.C.).—January 27, February 10, 7.30 p.m., Saxon Cafe, Denmark Place.
Gillingham (G.T.S.).—Alternate Tuesdays, 7.30 p.m., Medway Technical Institute.
Isle of Thanet (I.O.T.R.S.).—Fridays, 7.30 p.m., George Hotel, Hawley Street, Margate.
Maidstone (M.K.A.R.S.).—Fridays, 8 p.m., Elms School, London Road.

REGION 9

Bath.—January 19, 7 p.m., Y.M.C.A., Broad Street.
Bristol.—January 23, February 13, 7.15 p.m., Carwardine's Restaurant, Baldwin Street, Bristol 1.
Exeter.—February 6, 7.30 p.m., Y.M.C.A., 41 St. David's Hill.
North Devon.—February 5, 7.30 p.m., Rose of Torridge Cafe, The Quay, Bideford.
Penzance.—February 5, Railway Hotel.
Plymouth.—January 17, 7 p.m., Tothill Community Centre, Tothill Park, Knighton Road, St. Judes.

(Continued on Page 319)

R · S · G · B · BULLETIN

Volume 28 No. 7

January, 1953

Current Comment . . .

Only Five Years Left

ON December 19, after the Society's Annual General Meeting had taken place, a Special General Meeting followed at which Council Member R. Walker's motion to increase the subscription forthwith was to be considered. There was a full discussion, and at the end of it a show of hands revealed the overwhelming agreement of those present to the proposed increase. That could have settled the matter. However, the President in all fairness asked if a poll was required as well. If ten members wanted one, there should be one. They did—and there was. Here again the result would have shown approval for the increase, except for one factor. It happened that a small number of R.S.G.B. local representatives held sufficient proxy votes to kill the motion. And so the motion was lost. No immediate increase in the subscription can therefore occur.

This development had a dramatic sequel. Council Member Hugh McConnell declared that if the membership would not assent to the increased subscription then he did not feel justified in costing the Society money. He pointed out that to travel to and from Scotland for Council meetings was an expensive business both to himself and to the Society and that to put an end to this expenditure he would resign on the spot. And he did.

* * *

That then, is the barest summary of what took place on December 19. It is not our concern now to dwell on the events, nor to castigate those who presumably had nothing but the sincerest motives in opposing an increased subscription. Recriminations are of no avail. What needs to be done now is to tell the membership very firmly how the position stands—and it is a pity that space must again be devoted to this since the President himself dealt so ably with it in the November BULLETIN.

The first thing to make very plain is that because the R.S.G.B. is operating with post-war outgoings and pre-war incomings it is making a loss each year. To pay its way it is using its reserves. It cannot do this indefinitely, and in five years' time the bottom of the barrel will have been scraped.

Now the significance of our leading title will be appreciated. *There are only five years left before this Society—the second most powerful Amateur Radio organisation in the world—will be compelled to close down.*

It is unthinkable that such a disaster should

befall. Members whose instinct is naturally to resist any increase in price in any quarter—and it is the instinct of most of us—will assuredly see the cold reasoning—the cold facts—that point clearly to the inevitability of an increase in the Society's income if the disaster is to be averted. Were a further ballot on the question to be taken at an early date—as seems unavoidable—then if members register a majority decision against the proposal they will themselves have deliberately voted this Society out of existence, along with all the facilities which it provides.

Gone will be the R.S.G.B. BULLETIN.

Gone will be the QSL Bureau.

Gone will be the power to negotiate collectively with Government authority.

Gone will be the close-knit scheme of representation which gives many thousands of amateurs the feeling of "belonging," and in its place will be many small, isolated, helpless groups resembling wandering, unattached electrons with no nucleus.

But one need expatiate no further on this aspect of the matter, since it was covered in the President's November editorial. All members are urged to re-read that editorial with great care.

* * *

Just two things remain to be said. The first is that the 30s. subscription is the minimum needed to enable the Society to remain on an even keel in the years ahead. If any member disagrees, then he is arguing emotionally, and without full knowledge of the figures that make this amount imperative—indeed, implying that he has more knowledge of the Society's finances than has the Council! Resistance to the inevitable increase is *blind* resistance, unreasoned and uninformed.

The second factor concerns economy. Unless every possible and reasonable economy has been effected in the day-to-day operation of the Society it is quite wrong for an increased subscription to be asked. Members should be in no doubt whatsoever that such economies are—and have been—much the concern of the impartial and vigilant Hon. Treasurer—and will continue to be even after the subscription has been raised.

* * *

So there it is—more income or no R.S.G.B. The stark choice will leave members in no doubt of what to do when they are again asked to give their mandate, which they will be asked to give before very long.—J.H.

MIXER MASTER OSCILLATORS

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

Part I

To claim better stability for this system than any other variable frequency exciter available for amateur use will arouse considerable interest. Nevertheless, this article—written by W. H. Allen (G2UJ)—describes how A. E. Livesey, D.F.H. (G6LD) accomplished it with no more difficulty or complexity than the conventional v.f.o.

THE mixing of two frequencies to produce a third is employed in every superheterodyne receiver but as a means of providing drive for an amateur transmitter the method appears to have been neglected in this country. Mention of it has been made occasionally in the technical press and as long ago as May, 1938, an article by W6CEM appeared in *Radio* under the title of the "Flexlet Exciter." Further designs have appeared recently in American magazines,⁽¹⁾ but one, at least, failed to exploit fully the advantages of the system. The circuit is well known in Service and commercial circles but so far as is known no practical design for the amateur has been published on this side of the Atlantic.

The Principle Employed

When several amateur bands are to be covered it is usual to design the oscillator so that its fundamental frequency is half that required for the lowest band. If the transmitter is to cover all bands from 3.5 to 28 Mc/s this may well mean a frequency multiplication of 16 times.

For illustration, it will be assumed that a variation of ± 50 c/s. is permissible at 30 Mc/s, or a stability of one part in 300,000, which, referred to an oscillator operating on 1.9 Mc/s, allows a deviation of ± 3 c/s from the mean frequency.

In a mixer master oscillator (m.m.o.) the output of a crystal oscillator is combined with that of a

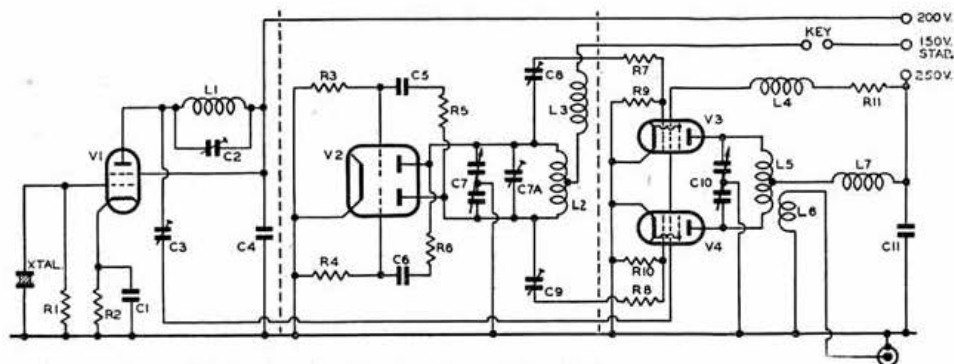


Fig. 1.—Circuit of the high-level push-pull mixer from which sufficient output is available to drive a frequency multiplying stage.

- | | | | |
|----------|-------------------------------|-------|---|
| C1 | .02 μ F | R11 | 100,000 ohms |
| C2 | 100 μ F variable | L1 | 22 t. 20 s.w.g. $\frac{3}{8}$ " diam. 1" long self-supporting for 7.5 Mc/s |
| C3 | 75 μ F air-spaced trimmer | L2 | 180 t. centre-tapped, 36 s.s.c. $1\frac{1}{4}$ " diam. $1\frac{3}{8}$ " long approx., tunes 400–1,000 kc/s |
| C4 | 0.01 μ F | L3 | Broadcast-type r.f. choke |
| C5, 6 | 200 μ F | L4, 7 | R.F. chokes, 1.5 mH. approx. |
| C7 | 200 + 200 μ F twin gang | L5 | 48 t. centre-tapped, 28 s.w.g. enam. $\frac{1}{16}$ " diam. close wound with $\frac{1}{8}$ " spacing between the two sections, 7–8.5 Mc/s |
| C7a | 50 μ F air-spaced trimmer | L6 | 1 or 2 turn link winding between halves of L5 |
| C8, 9 | 10 μ F air-spaced trimmer | V1 | 6V6 (and see text) |
| C10 | 75 + 75 μ F twin gang | V2 | 6N7G (and see text) |
| C11 | 0.25 μ F | V3, 4 | EL32 |
| R1, 3, 4 | 50,000 ohms | | |
| R2 | 500 ohms | | |
| R5, 6 | 10,000 ohms | | |
| R7, 8 | 100 ohms | | |
| R9, 10 | 40,000 ohms | | |

What follows is an account of the work done by G6LI on the subject and two methods of tackling the problem from different angles will be discussed. Although full information will be given concerning the circuits and components employed the article is not constructional in the usual sense, as the original units were made up with parts which were to hand at the time: in fact, under the conditions in which a large proportion of amateur work is done.

However, sufficient details will be given to enable those interested to produce an exciter the performance of which will be better, from the point of view of frequency stability, than any v.f.o. available to the amateur. This is a big claim and before going further an attempt will be made to justify the statement.

variable oscillator (v.o.) of much lower frequency and either the sum or the difference of the two employed to control the transmitter. For example, a crystal frequency of 4050 kc/s may be applied to a mixer circuit together with the output of a v.o. on 300 kc/s and, extracting the difference, a frequency of 3750 kc/s would be available at the output of the mixer.

Assuming that the stability is to be one part in 300,000 as before, and also assuming that the crystal oscillator has negligible drift, the v.o. must maintain its frequency within the limits of ± 6 c/s which, at 300 kc/s, is only one part in 25,000 or 12 times *less* than was demanded from the conventional v.f.o. A well designed oscillator operating at 300 kc/s and moreover very lightly loaded, may be made with far better stability than this, so that even allowing for some shortcomings

* 32 Earls Road, Tunbridge Wells, Kent.

in the c.o. the potential stability of the combination should be much better than with a normal v.f.o.

It is obvious from the foregoing that the lower the frequency of the v.o. the less it will affect the stability of the combined output. The lower the frequency, however, the nearer the frequency of the crystal approaches that of the mixer output with consequent difficulties of separating one from the other. Nevertheless, it has been found quite satisfactory to use a v.o. tuning from 250 to 550 kc/s for output in the 3.5 Mc/s band and 500 to 800 kc/s for operation on 7 Mc/s.

Frequency Mixing

When two frequencies are mixed, at least four frequencies will be present in the output of the mixer—the two original frequencies and the sum and difference of the two. In a receiver, the i.f. amplifier is made sufficiently selective to discriminate in favour of the required difference frequency and to reject the others. In an m.m.o. it would be inconvenient to use a number of tuned circuits for the purpose of selecting the required frequency and rejecting that of the crystal. Fig. 1 shows one method of overcoming the difficulty by employing a push-pull mixer.

The output of the v.o. is fed to the two mixer grids in push-pull while the c.o. output reaches the mixer screens in parallel and is thus cancelled out in the centre-tapped anode circuit. With suitable valves the output from this type of circuit will be large enough for direct connection to a buffer or frequency doubling stage in a transmitter.

The circuit in Fig. 2 employs low-level mixing with a normal frequency changer type of valve such as the 6SA7 which has proved eminently suitable. The output is then amplified before being passed to the transmitter by a low impedance

link. Provided the crystal frequency is suitably chosen, say 3250 or 4050 kc/s for output in the 3.5 Mc/s band or 6500 or 7500 kc/s for 7 Mc/s, it will be found quite simple to reduce the c.o. component to negligible proportions by loose coupling alone, and the performance of the two arrangements may be considered identical in all respects. A frequency changer valve provides a very small amount of r.f. power without overloading, and failure to obtain good results from this type of circuit in the past may have been due to overlooking this fact and increasing the inputs from both v.o. and c.o. in an endeavour to overcome it. It is recommended, therefore, that a class A buffer stage followed by a class C amplifier be employed to obtain adequate output and isolation.

In a practical test, a unit with the circuit of Fig. 2 operating on 7 Mc/s was coupled to a transmitter consisting of two buffer amplifiers driving a pair of 808 valves in push-pull with an input of 150 watts. With the m.m.o. only four feet from the tank coil of the final amplifier no trace of instability or abnormal behaviour could be induced. Undoubtedly the very complete screening necessary for satisfactory operation of any m.m.o. was responsible for this performance.

At G6LI the high-level push-pull mixer (Fig. 1) has been in use for more than two years and during that time has been employed for all bands including two metres. Even on the latter band reports have been consistently T9.

The Crystal Oscillator

Any of the normal crystal oscillator circuits may be employed but some have certain advantages over others. The circuit in Fig. 1 is probably the most common of all the available arrangements and will be found to be quite satisfactory provided it is realised that, in the neighbourhood

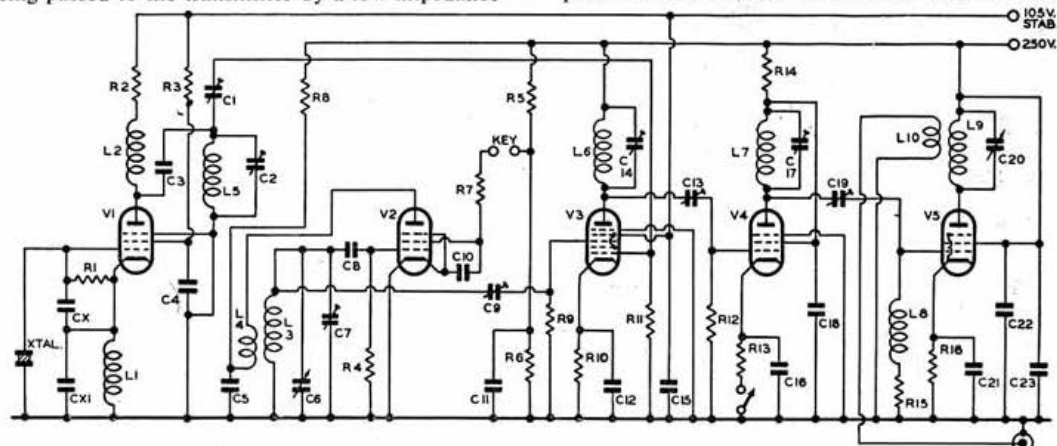


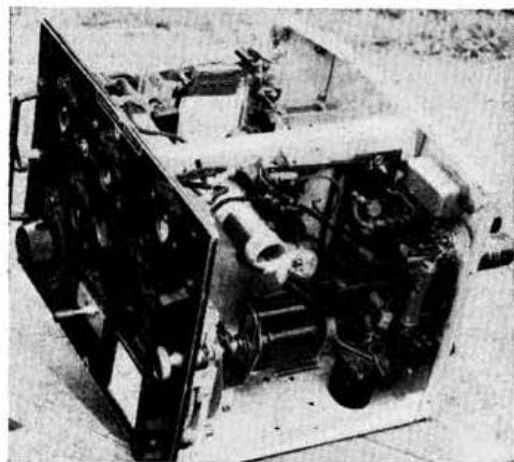
Fig. 2.—Circuit of the low-level mixer with buffer and output stages. The switch in the cathode circuit of the SP61 is for netting purposes. It should be noted that this valve fits *only* the Mazda octal base. The live heater lead of V2 is by-passed to chassis with a 670 μ F mica condenser.

Cx, Cx1	See text
C1	15 μ F air-spaced trimmer
C2, 7	50 μ F air-spaced trimmer
C3, 5, 11, 16, 18	670 μ F
C4, 15	0.1 μ F
C6	500 μ F variable
C8	50 μ F
C9	10 μ F air-spaced trimmer
C10, 12	0.001 μ F
C13, 17, 19	25 μ F air-spaced trimmer
C14	65 μ F air-spaced trimmer
C20	100 μ F variable
C21, 22, 23	0.01 μ F
R1, 9	100,000 ohms
R2	10,000 ohms
R3, 14	5,000 ohms

R4, 8, 11, 12	50,000 ohms
R5	4,000 ohms
R6	22,000 ohms 3 W.
R7	8,000 ohms
R10	250 ohms
R13, 16	470 ohms
R15	57,000 ohms
L1, 2, 8	R.F. chokes, 1.5 mH. approx.
L3, 4	See text
L5, 6, 7	Normal values for 3.5 or 7 Mc/s bands as required
L10	Link coil, 1 or 2 turns, wound at earthy end of L9
V1	6AC7
V2	6SH7
V3	6SA7
V4	SP61
V5	EL32

of resonance, the tuning of L1, C2 can "pull" the frequency of the crystal to a considerable extent. It is essential, therefore, for this circuit to be tuned to the high side of resonance and not to the point where the r.f. output is at maximum.

The circuit shown in Fig. 2 is to be preferred as the crystal will continue to oscillate at all settings of the condenser C2 and the effect on the frequency as resonance is passed through amounts to no more than a few cycles per second. It has been found that only certain valves are entirely satisfactory in this circuit; the 6AG7 is the only one so far tried which will develop more than enough output for the high-level mixer circuit where the amplitude of the required frequency depends almost entirely upon the r.f. available from the c.o. The Mullard EF50 and the American 6AC7 (1852) make excellent oscillators where only a moderate amount of r.f. is required, as is the case with the low-level mixer. The only critical values in the circuit shown are the two condensers Cx and Cx1 which, for the 6AG7, should be 10 μ F and 220 μ F respectively.⁽²⁾ In the case of the EF50 and 6AC7 Cx should be 25 to 30 μ F and Cx1 100 μ F.



The low-level unit with case removed. The v.o. tuned circuit is in the lower foreground with the pre-set mixer tuning condenser above it.

It is important that the coupling between the oscillators and the mixer circuit in both the high and low-level mixers should be as light as possible consistent with satisfactory output, and adequate screening is necessary to prevent random mixing of the frequencies.

The Variable Oscillator

With the push-pull mixer of Fig. 1 it is logical to employ a push-pull oscillator and that shown will be found to be most satisfactory. A 6N7G valve has a centre-tapped tuned circuit between the two anodes and feed-back occurs from the opposite grids by way of the fixed condensers C5 and C6 in series with 10,000 ohm resistors R3 and R4. Other double triodes could, no doubt, be made to function, but there is a definite advantage to be gained in stability by running a fairly large valve well below its maximum ratings. The RK34 (2C34), which is readily available, makes a very good substitute for the 6N7G and passes a similar anode current of around 8 mA. When using an RK34 the value of the condensers C5 and C6 may be reduced to 100 μ F or slightly less.

An important point to note is that the r.f. choke in the anode circuit of the push-pull oscillator (L3), must be of sufficient inductance for the low frequency in use. For this reason a component suitable for the medium or long-wave broadcast bands should be chosen.

For the v.o. used in conjunction with the low-level mixer a type 6SH7 valve was found by trial to be satisfactory. An EF50 should be a suitable alternative in the British range. On the other hand, a triode (6J5) proved to be completely unsatisfactory, the output being poor and the efficiency much lower than the pentode.

The employment of a feed-back type of oscillator circuit is recommended for the frequency concerned, the reaction winding, L4, being made no larger than is necessary for adequate regeneration. In the unit shown in the photograph the coil assembly (L3, L4) was a type T-33 from a Bendix compass receiver, but an alternative would be one of the proprietary makes of t.r.f. or detector coils, preferably with an iron core.

A simple method of adjusting the degree of regeneration in any oscillator of this type, without altering the coil, is to insert a carbon resistor between the anode of the valve and the feed-back coil, choosing a value which enables the circuit to oscillate freely but not fiercely.

Cathode keying should be avoided, as filters adequate for preventing r.f. from straying down the keying leads cause a pronounced chirp.

* * *

In Part II, the design of the mixer and the choice of valves for the buffer and amplifier stages will be described together with general notes on construction and keying.

* * *

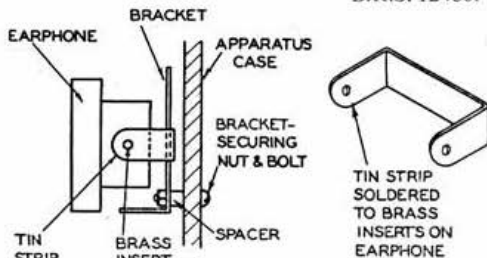
References

- (1) Bartlett: "A Beat Frequency Exciter for Better c.w. Signals." *QST*, June 1952.
Wherry: "The 'Modern'—A Heterodyne Exciter." *CQ*, July, 1952.
- (2) Chambers: "Crystal Controlled Oscillators." *QST*, March, 1950.

Bright Idea

WHEN using a single earphone with a piece of apparatus it is useful to have a stowage for it. Most "surplus" earphones have a brass insert on each side to which a strip of tin can be soldered, thus enabling it to be slid on to a bracket attached to the apparatus. The idea is illustrated.

B.R.S. 12480.



Thanks

THE General Secretary and Miss May Gadsden wish to thank their many friends in the Society who sent them Christmas and New Year Greetings. These kindly expressions of remembrance were much appreciated.

SKELETON SLOT AERIALS

Practical details of skeleton slot radiating systems for use on 144 Mc/s.

THE slot aerial, which possesses characteristics particularly suited to v.h.f. operation, normally consists of a narrow oblong cut in a large conducting surface of sheet metal or wire mesh. Its properties are inverse to those of the half-wave dipole; the voltage distribution shows a maximum at the centre, a minimum at the ends, the current, conversely, being maximum at the ends and minimum at the centre.

Whereas a horizontal dipole radiates horizontally polarised waves, the slot must be vertical in order to obtain horizontal polarisation. It has a gain of some 4 db over the dipole, due to the fact that, while the dipole figure-of-eight polar diagram is in one plane only, the slot produces the same radiation pattern in both the horizontal and vertical planes. In effect, the performance of a single slot aerial is equivalent to that of a "one-over-one," or two stacked dipoles, and is therefore ideal for two-metre operation.

Practical Design

The main difficulty in evolving a practical design was the question of wind resistance. With this in mind it was decided to ascertain how much the metal surround of a slot could be cut away before the performance began to deteriorate. The results were discouraging, the performance falling off seriously if the distance from the slot to the edges of the conducting sheet were reduced below a half wavelength. It was found, however, that if the width of the slot was increased as the surround was decreased, performance was not materially affected.

A skeleton slot was then constructed from $\frac{1}{2}$ -inch diameter tubing bent to a rectangular shape, the length being about 10 per cent. short of a half wavelength, and the width one-third of the length (Fig. 1). The performance of this aerial exceeded all expectations, many checks being made to eliminate any possible source of experimental error. Attempts to reduce the diameter of the tubing below $\frac{1}{2}$ -inch failed; it would seem that this size is the absolute minimum for 145 Mc/s operation, $\frac{3}{8}$ -inch tubing being preferable.

The design of a beam using slots was now practicable, and initial tests with a normal parasitic reflector spaced a quarter-wave behind the slot produced a forward gain of 4 db, making the aerial unidirectional with a very broad frontal lobe. The feed-point impedance was found to be about 600 ohms.

Slot Arrays

Since a slot Yagi is impracticable, experiments were confined to stacked arrays, various spacings being tried to determine the optimum design. In practice it was found that the normal half-wave spacing proved the best.

Two arrays were constructed, one consisting of two stacked slots with reflectors and the other of four stacked slots with reflectors. Various methods of feeding the stacks were investigated, the system finally adopted providing equal power distribution and convenient matching. The short lengths of 300-ohm tubular phasing lines have a velocity factor of 85 per cent., and the

lengths indicated in Fig. 2a are electrical half-waves. Thus, no impedance transfer occurs, the feed-point impedance being effectively that of the two slots in parallel, namely, 300 ohms, enabling a direct connection to be made to 300-ohm feeder.

The lengths specified in Fig. 2b are for use with 70-80 ohm feeder; each phasing section is an electrical $\frac{1}{2}$ -wavelength constituting an impedance transformer which changes the 600-ohm impedance of the slots to 150 ohms. The feed-point impedance is therefore two 150 ohms in parallel, namely, 75 ohms, and standard 70-80 ohm twin feeder, or coaxial cable via a balun, may be used.

The operation of the four-stack aerial feed system (illustrated in Fig. 3a and 3b) is similar; the 300-ohm phasing sections are so proportioned that the electrical length of the two inner and outer lines is a half-wave and full-wave respectively, so that no impedance transformation occurs, and the feed-point impedance is that of the four slots in parallel, namely, 150 ohms. Should 150-ohm feeder be available, no further matching is necessary, but even if 75-ohm or 300-ohm feeder is used direct, the standing-wave ratio is only 2:1. To overcome this,

however, Q-bar sections should be inserted between the feeder and the feed-point: for 300-ohm feeder the impedance of the Q-bars should be 230 ohms, and this may be achieved by using two 20-inch lengths of $\frac{1}{2}$ -inch tubing spaced 1.8 inches from centre to centre, supported by low-loss spacers at each end. Other diameters of tubing or rod may be used provided the following formula is adhered to:

$$Z = 276 \log \frac{\text{centre-to-centre spacing}}{\text{radius}}$$

For 300-ohm feeder it is sufficient to ensure that the centre-to-centre spacing is 3.65 times the diameter of the elements. The construction of a matching section for 75-ohm feeder is much more difficult, the impedance required being 106 ohms, necessitating a centre-to-centre spacing of only 1.2 times the diameter of the elements.

It is essential that all the component stacks of a stacked array are fed in phase and, in the case of a two-stack array, that none of the phasing feeders are crossed over. Particular care should be taken with the four-stack aerial, as correct phasing is only obtained when the two outer feeders are crossed over in relation to the inner ones (Fig. 3b). Since it is necessary to open-out the wires of the phasing sections in order to make connection to the slots, dimensions given are for the unopened lengths and do not include the opened ends. The figures quoted are only accurate for 300-ohm tubular feeder; open lines should not be used.

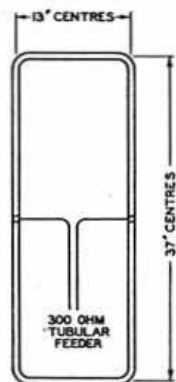


Fig. 1.
Dimensions of skeleton slot aerial for 2-metre operation, constructed from $\frac{1}{2}$ -in. diam. tubing.

* Roslynn, Debdale Road, Western Fawell, Northampton.

Mechanical Construction

The mechanical construction of skeleton slot aerials is considerably simplified by the fact that no insulators are necessary. The slots, having

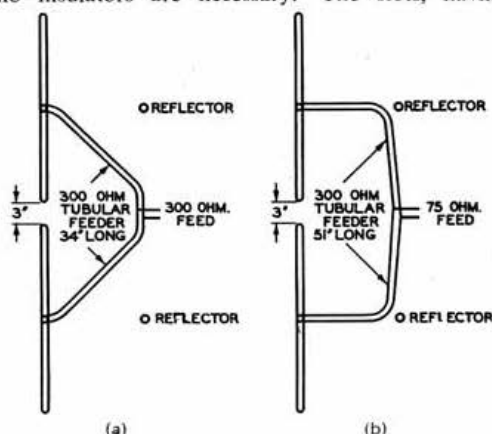


Fig. 2.—Side elevation of a 2-stack aerial for 2 metres, indicating phasing line dimensions, for (a) 300-ohm feeder, and (b) 75-ohm feeder.

maximum voltages at their centres, are electrically "dead" at the ends and may be screwed to their supports at the centre of the shorter side of the oblong. A suggested method of assembly is to screw the slots to the mast and support the reflectors and feed-point arrangement on short booms. Alternatively, "plumber's delight" con-

struction may be used, the presence of vertical metalwork in close proximity to the slots having negligible effect.

The bending of the slot tubing may provide some difficulty, a bending machine being necessary to avoid kinking of the tube at the corners. The average electrician will, however, usually assist, if requested, by constructing the slots from $\frac{1}{2}$ -inch aluminium conduit; alternatively, a plumber might be persuaded to do the job using copper water-pipe.

Miscellaneous Points

The aerials described have been used by the writer for a considerable time with great success; in addition, a two-stack array has been tried on 420 Mc/s with good results. For 420 Mc/s operation, the dimensions given for 144 Mc/s may be divided by three, but the lengths of the phasing lines are not necessarily an exact third—the velocity factor of the 300-ohm feeder must be taken into account.

Apart from the useful gain provided, the great advantage of a stacked skeleton slot aerial on 144 Mc/s is its directional characteristic, the vertical polar diagram being comparable with that of the far more cumbersome array of eight stacked dipoles. The horizontal polar diagram has an exceptionally broad forward lobe, a good back-to-front ratio, and an almost infinite side-to-front ratio. The null points at the side are exceptionally sharp, and, in conjunction with the broad frontal beam, prove advantageous in reducing local interference.

Although certain details in the experiments have not at this stage been fully ascertained, nevertheless, the salient factor emerges that the performance of a skeleton slot with a reflector is at least equal to that of a conventional slot. When a reflector is not used, a certain amount of reactance appears at the feed point; it appears probable, therefore, that some degree of reactance cancellation occurs when a parasitic reflector is added.

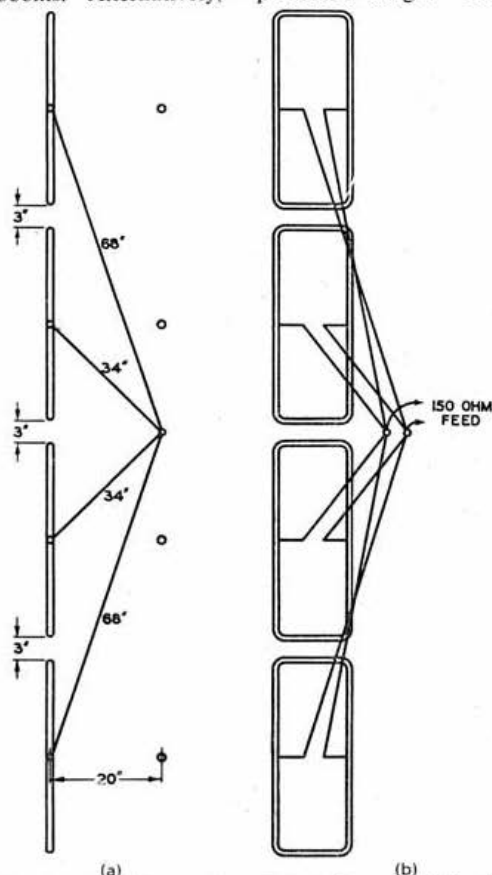


Fig. 3.—(a) Side elevation of 4-stack array, indicating feeder lengths; (b) front elevation of 4-stack array, reflectors excluded, indicating feeder connections.



Busy

In spite of his many professional duties Richard Thurlow (G3WW)—he is Clerk to the Isle of Ely County Council and Under-Sheriff of Cambridgeshire and Huntingdonshire—finds time to keep his call sign prominent in the 2-Metre Regional ladder. His achievements in v.h.f. contests are legion. Richard is also Region 5 Representative.

Utilising High-Cycle Transformers

By G. F. WILSON (G3BZH)*

THE majority of amateurs have, at some time or other, stripped or converted war-surplus radar units, resulting in the accumulation of a number of apparently useless high-cycle power transformers. The writer found it a nuisance to have these lying around the shack, and, as none seemed suitable for any contemplated audio equipment, it was decided to find a 50-cycle mains application for them (or burn them out in the attempt).

Five transformers were selected, of which four were British types for 80 V input. One, from a radar monitor unit, bore the reference number 10KB/575, the terminal labels indicating a 450-0-450 secondary and three l.t. windings. Another, from the R.A.F. Power Unit, type 280, was numbered 10KB/934; in this case only the 80 V. input terminals were marked, but tests with a 6 V. vibrator confirmed that one secondary winding was intended to deliver about 500-0-500 V. Reference numbers on the other two were illegible, but again vibrator tests indicated that each had a secondary winding for 500-0-500 volts. The remaining transformer was American (part No. 7248695), with an input of 115 V. tapped at 80 V.

put voltages were obtained: American transformer (115 V. primary)—23 V., (80 V. tap)—15 V.; British transformers: 10KB/934—22 V., 10KB/575—18 V. The two unnumbered British transformers gave outputs of 19 and 17 V.

Two of these transformers have since been used for periods of up to six hours without ill effect. It seems reasonable to suppose that most ex-Service high-cycle transformers with a 450-0-450 V. (or higher) winding, given adequate core size, can be thus employed to provide useful l.t. voltages. Incidentally, as this kind of experimenting with mains supply voltage can be dangerous, it is advisable to rig up a fused terminal board fitted with a switch, so that the power can be broken at any time.

Auto-transformers

Since the h.t. secondary winding (across which the mains is connected) is centre-tapped, the transformers may be used as auto-transformers on 200-250 V. 50-cycle mains to provide a 100-125 V. output. No experiments have yet been made to determine what power the transformers will comfortably handle in this application, but from the

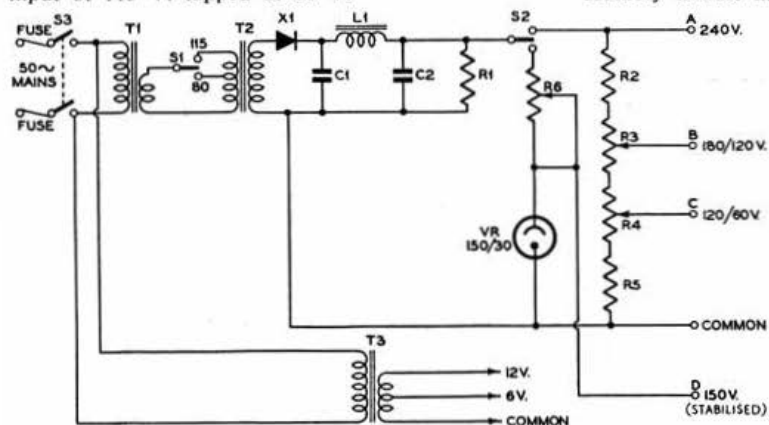


Fig. 1

Circuit diagram of an experimental power pack utilising high-cycle transformers.

- R1.—50,000 ohms, 5-W.
- R2, 5.—10,000 ohms, 1-W.
- R3, 4.—10,000 ohms, wirewound.
- R6.—5,000 ohms wirewound.
- T1, 2.—High-cycle power transformer (see text).
- T3.—Heater transformer.
- S1, 2.—S.P.D.T. switch.
- S3.—D.P.D.T. switch.
- C1, 2.—32 μ F., 350 V. wkg.
- L1.—L.F. choke (receiver type).
- X1.—Selenium rectifier (300 V. 60 mA.)

Obtaining L.T. Supplies

In view of the large core sizes and the usually generous Service ratings, it was decided to apply 230 V. at 50 c/s. to the full h.t. secondary winding in each case, and measure the output off-load voltage of the 80 V. primary winding. Connection to the mains was made with considerable misgiving, as it was realised that the turns-per-volt ratio was low, but there were no untoward consequences. The output voltage varied between 19 and 26 V., and there were no signs of over-heating.

It seemed clear that, provided they were only lightly loaded, the transformers might be pressed into service to provide useful l.t. voltages. The next step was to determine what would be reasonable loading. If one and a half amperes could be drawn for two hours without overheating, then it would be reasonable to conclude that 0.75 to 1 A. could be taken for fairly long periods with safety. Suitable resistors were obtained, and each transformer was given this two-hour test. In no case was there any undue heating.

With a load current of 1 A., the following out-

l.t. tests it seems clear that at least 25-30 watts should be safely available.

Experimental Power Pack

A small experimental power pack using high-cycle transformers connected back-to-back (thus saving the expense of a standard mains transformer) is shown in Fig. 1. T1 is the R.A.F. type 10KB/575, while the American 7248695 is used for T2, so that the 80 V. tap can be switched to provide an alternative output voltage. There is no reason, however, why any high-cycle transformer giving suitable output (16-19 V. at 1 A.) should not be used in either position.

The unit will supply a total current of about 45 mA., which is adequate for many experimental purposes. The output voltage available from "A" (on load) is about 240 V. (S1 being connected to the 80 V. winding is used, the voltage at "A" is about 170 V.

Again, using the 80 V. tap on T2, the voltage available at "B" is variable from 120 to 180 V., and at "C" from 60 to 120 V. With the full 115 V. winding in circuit, output voltages are about

* 45 Wendover Court, Western Avenue, London, W.3.

two-thirds of these figures. By connecting "A" to the transmitter negative h.t. return, the unit can be used as a source of variable bias for two stages. Switch S2 and the VR150/30 circuit provide a stabilised output at "D."

Heater current for equipment used with this unit is supplied by T3—a back-connected vibrator unit from a discarded R19 receiver. Output is either 6 or 12 V, as required, at about 1 A.

Altogether the unit is very flexible and, with the exception of the 300 V. 60 mA. half-wave selenium rectifier, was built entirely from "junk box" items, using a 9in. x 5in. x 3in. chassis.

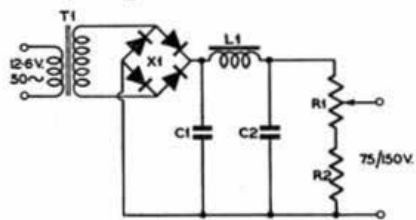


Fig. 2.

Circuit of an inexpensive transmitter bias supply utilising one high-cycle transformer.

- R1.—25,000 ohms potentiometer.
R2.—25,000 ohms, 2-W.
L1.—L.F. choke 10-20 H. (receiver type).
T1.—High-cycle transformer (see text).
X1.—Selenium bridge rectifier (180 V., 40 mA.).
C1, 2.—8 μ F., 250 V. wkg.

A Simple Electric Bug Key

SINCE publication of the article bearing the above title by Lt.-Cdr. (L.) Chambers (G15NO) in the October, 1952, issue of the BULLETIN, two members have put forward ideas for producing automatic dashes as well as dots.

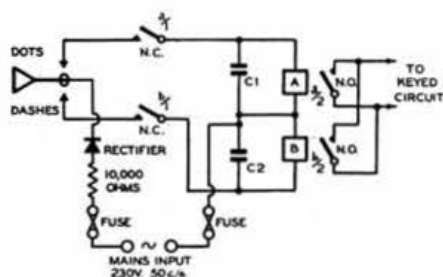


Fig. 1.

G3EUG offers the revised circuit shown in Fig. 1 from which it will be seen that condenser C2 is wired in parallel with a second relay B, the keying contacts of which are in parallel with a/2. The capacity of C2 is made three times that of C1 in order to obtain the correct dot to dash

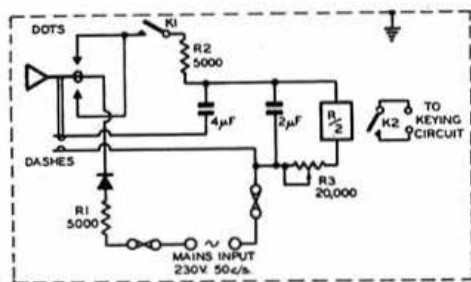


Fig. 2.

Transmitter Bias Supply

One high-cycle transformer may be used to supply transmitter bias—in fact, the circuit shown in Fig. 2 has been used to provide bias for a pair of 1625 valves. The transmitter heater-supply voltage (12.6 V.) is applied to the 80-V. primary of a 10KB/934 transformer, the output voltage available being about 150 V. (On test, with a current drain of 30 mA., 135 V. were measured.) It may be of interest to note that the rectifier used was obtained from a surplus carbon-pile voltage regulator purchased for 1s. 6d., the total cost of the bias supply being less than 10s.

In the case of a 6.3 V. heater supply, the same arrangement will provide about 80 V. of bias. Alternatively, if the main power transformer is of 75 V.A. (or greater) rating, it is permissible to use its mains adjusting taps to provide a 10-V. input supply for the high-cycle transformer.

These notes by no means exhaust the 50-cycle possibilities of high-cycle transformers; for instance, there is room for experiment with the e.h.t. transformer as used in radar units. With heater voltage input, output voltages in the order of 1 kV. (suitable for oscilloscope supplies) should be available.

It is hoped that this account of one amateur's efforts will encourage others to find further applications for high-cycle transformers, and to publish their results.

ratio. If, as in the original circuit, C_1 is $2\ \mu\text{F}$ C_2 should be $6\ \mu\text{F}$.

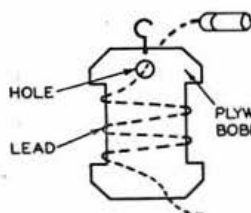
Fig. 2 illustrates the method suggested by G2JZ. A switch actuated by the swiper arm completes the "dash" circuit and operation is then as follows:

In the dot position the $2\text{ }\mu\text{F}$ condenser shunts the relay coil, as in the original circuit, and in the dash position $4\text{ }\mu\text{F}$ is added, making a total of $6\text{ }\mu\text{F}$. The dash to dot ratio is therefore maintained. The function of R2 (5,000 ohms) is to prevent sparking of the relay contacts and R3 (20,000 ohms potentiometer) acts as a speed control. Spacing may be adjusted by bending the relay contacts to a position where the space is the same duration as a dot.

It is suggested that the key should be wholly enclosed in a wooden or other insulated box for safety.

Bright Idea

TO prevent straggling leads and cables from kinking and twisting on soldering irons, test probes, etc., they should be wound on a flat bobbin of the type illustrated. This consists of a piece of plywood with a slot cut in each side and a hole drilled in the top. The lead should be threaded through and wound round as shown; it can then be kept tidy and intact, only the required length being unwound.



Around the Stands

at the Sixth Annual R.S.G.B. Amateur Radio Exhibition

THE accent was again on amateur built equipment at the Sixth Amateur Radio Exhibition, the standard of construction reaching a new high level of excellence. The trend towards table-top design, as opposed to rack-and-panel construction, was more in evidence than ever and a large number of exhibits, if not actually in cabinets, were obviously intended to be. All types of equipment, from elaborate bandswitching 'phone/c.w. transmitters to small items of test gear, showed that the radio amateur of today values craftsmanship as never before.

The commercial exhibits also emphasised the high standard of British production but were regrettably confined to a small section of the industry. With the end of the surplus market in sight, it is hoped that many more manufacturers will exhibit at the Coronation Year exhibition, particularly those who produce components and valves.



A corner of the stand devoted to single-side band transmission equipment.

of a complete range of amateur equipment which it is hoped will ultimately give British amateurs a service comparable to that available in the U.S.A.

Quartz crystals of many types, in the frequency range 400 c/s to 16 Mc/s, were shown by Salford Electrical Instruments Ltd. A comprehensive selection of *Gecalloy* dust cores, including the new type for T.V. scanning circuits, were also shown. These components are available to the individual amateur. The Quartz Crystal Activity Test Set, synthetic sapphire gramophone needles and a selection of *Salford* selenium and copper oxide rectifiers also attracted interest.

The Automatic Coil Winder and Electrical Equipment Co. Ltd. showed many new items of test gear, including the 95 range Electronic Multi-meter. A transparent version of this meter enabled the construction to be seen in detail. Instruments of perhaps more practical concern to the average amateur were the Model 2 *Avomizer*, a new version of an old favourite with a sensitivity of 4000 o.p.v., and the very robust heavy-duty 18 range *Avometer* which has a die-cast alloy case. This meter was originally developed for use by the railways.

Cosmocord Ltd. exhibited a wide range of high-fidelity pick-ups and microphones. The cartridges used in the pick-ups are available to those who wish to construct their own instruments while the Mic. 6 insert—eminently suitable for amateur transmitting and recording purposes—can be pur-



During the period of the Exhibition a specially designed Avo meter was presented to sightless amateur Dennis Hann (G3UY). In this picture the President is shown with Mr. Hann and a representative of the Avo Co.

The Trade Stands

Electric and Musical Industries Ltd. displayed their full range of specialised equipment for the amateur, including wave-meters, grid-dip oscillators and field strength meters, together with kits used in connection with the EMI Institute's practical postal courses in radio. Items of a more specialised nature were the new *Emicorda* high fidelity Home Recorder, the Impedance Bridge type Q/D215 (capable in many circumstances of measuring components *in situ*) and the All-Wave Signal Generator covering 30 kc/s to 50 Mc/s.

Panda Radio's improved version of the PR-120-V attracted much attention. The cabinet has been re-styled and the use of the latest high-grade components has enabled greater efficiency to be obtained from a circuit which remains substantially the same as that in earlier models. For all practical purposes, the transmitter is T.V.I.-proof. Also exhibited were the *Panda* band-switched aerial tuning unit (available as an accessory) for matching unbalanced output to balanced line, and low-pass filters for 52 and 75 ohm lines. These products are the forerunners



CB3RS in operation, with Eric Yeomanson (G3IIR), at the microphone.

chased separately for use in home-constructed microphones.

English Electric showed their new 16-in. television tube, which is now available to amateurs as a result of over 11,000 inquiries—evidence of the potentialities of the amateur market. Television receivers, built by amateurs to the "Magnaview," "Teleking," and "Viewmaster" designs, demonstrated the excellent pictures which may be obtained.

A full range of Windsor test equipment was shown by Taylor Electrical Instruments Ltd., including the Model 72A Multimeter which is accurate to within 1 per cent. Signal generators and panel mounting meters (available calibrated to customers' requirements) were also displayed.

Examples of chassis, cabinets and rack-and-panel assemblies for the amateur were shown by E. J. Philpotts' Metalworks Ltd., whose prices compare very favourably with the ordinary pressed products.

A display of Osram valves was the main feature on the General Electric Company's stand. The uses of these valves were shown in a 50 W 'phone/

was devoted primarily to new equipment, much of which employs sub-miniature techniques and operates on v.h.f. f.m. Amongst the exhibits were the new portable s.h.f. radio relay set, a new v.h.f. (f.m.) tank set, a receiver made in a Jap P.O.W. camp and a "tonic train" receiver of 1917



The President (Frederick Charman, G6CJ), the Exhibition Manager (Horace Freeman), old-timer Geoffrey Thomas (ex-G5YK), C. H. L. Edwards (G8TL), Jim Davie (G2XC), Miss May Gadsden, Assistant Editor (John Rouse, G2AHL), and the General Secretary on the Headquarters Stand.

vintage. A demonstration of polar diagram plotting (by courtesy of the Military College of Science) proved very popular. Practically all the equipment shown was exhibited as the result of the co-operation of the Signals Research and Development Establishment. Information regarding the new A.E.R. Wireless Squadron, commanded by Major D. W. J. Haylock (G3ADZ), was available. Incidentally, this was the first time the Army had exhibited at the R.S.G.B. Amateur Radio Exhibition.

A very fine display of the specialised equipment used by the Royal Air Force was a feature of the Air Ministry stand. Amongst the items shown were a 2000-channel frequency generator unit, an airborne ILS installation and valves from the early 1900's to the present day. Of historic interest was a Fleming diode (loaned by Marconi's Telegraph Co. Ltd.) used at Poldhu. The A.M. Meteorological Office demonstrated radiosonde equipment with a Model 2 (Airborne) Transmitter and a complete ground station.



The Norwood Group—with an intruder—got together on the Miscellaneous Equipment Stand. The T.R. (W. D. Gilmour, G2VB) is fifth from the left.



Three sightless amateurs (G3ILT, G3ILU, G3IWC) visit GB3RS. During the Exhibition period some three hundred contacts were made with stations in the United Kingdom and abroad.

c.w. transmitter for 14, 21 and 28 Mc/s, a 16-in. "Teleking" T.V. set and a 144 Mc/s converter. Also on show were the B.R.T. 400 communication receiver, G.E.C. microphones and the "Selectest" multi-meter.

Tunggram valves and Siemax and Full O'Power batteries were exhibited on the stand occupied by Siemens Electric Lamps and Supplies Ltd. Tunggram American types, including miniatures, and the Tunggram-807, which is claimed to be an exact equivalent of the RCA-807, aroused considerable interest.

Publications for the Amateur

Firms specialising in publications for the amateur were represented by Iliffe and Sons Ltd. who, in addition to *Wireless World* and *Wireless Engineer*, showed a selection of their books. Short Wave Magazine Ltd. exhibited a range of American publications as well as the current issues of the *Short Wave Magazine* and *Short Wave Listener*. George Newnes Ltd. featured *Practical Wireless* and *Practical Television* and showed a selection of books for the radio enthusiast. Easibind Ltd., manufacturers of binding cases, provided an answer to the perennial problem of what to do with loose magazines.

The Services' Stands

The Regular Army stand, manned by Royal Signals personnel from 5 Corps Signals Regiment,

The G.P.O. maintained a Bureau throughout the exhibition to answer queries on licensing and radio interference problems.

Amateur Television

Without any doubt, the Amateur Television demonstrations arranged by the British Amateur Television Club, were a highlight of the Exhibition. Despite the loss of Mr. George Short's control console (due to a motoring accident in which nearly 50 valves were destroyed), the Club demonstrated the high standard Amateur Television has already reached in this country, undeterred by the difficulties involved in obtaining suitable components. The equipment exhibited included a live camera chain with image iconoscope and complete control rack and monitor unit (Ian Waters, B.R.S. 17906), a 5FP7 scanner unit (M. Barlow, G3CVO), and a 70 cm radio link (R. L. Royle, G2WJ).

Headquarters' Stand

A selection of amateur-built equipment was displayed on the stand, amongst which were an advanced amateur bands frequency meter (W. H. Allen, G2UJ), a T.V.I.-proof transmitter (C. H. L. Edwards, G8TL), 420 Mc/s pre-amplifiers and a



Jeremy and Ralph Royle (G2WJ), with Mike Barlow (G2CVO), and other members of the British Amateur Television Club.

1200 Mc/s helical beam aerial (D. N. Corfield, G5CD), low pass filters (R. H. Hammans, G2IG), a 25 W 14 and 21 Mc/s harmonic-free transmitter, a valve voltmeter for the low frequencies and a plug-in noise generator (J. W. Mathews, G6LL).

Exhibition Station

Throughout the period of the Exhibition, an amateur radio station, using a 75 W T.V.I.-proof transmitter loaned by G5RV, was operated under the special call-sign GB3RS. The receiver used was an AR88 and the aerials were 30 ft. above the roof of the hotel. Special QSL cards (donated by G6MN) were sent to all stations contacted.

Amateur Equipment Stands

On the S.S.B. and Test Gear stand, much interest was shown in the "S.S.B. Jr." exciter and the 150 W power peaker (H. F. Knott, G3CU), the simplicity of which must have appealed to those who aspire to experiment with S.S.B. transmission. Other exhibits included a W2UNJ phase shift exciter (D. W. Morris, G3FDG), an r.f. impedance bridge (R. C. Harris, G2BAB), a lower side-band crystal filter unit (E. L. Devereux, G3CCZ) and a triode voltage stabiliser (J. Perring, B.R.S. 19427).

The Miscellaneous Equipment stand had a number of interesting items including a miniature T.V. set with a 3 in. screen (M. D. Mason,

G6VX), a valve test set (A. Shiel), an experimental pulse generator for 405 line T.V. transmission (R. N. Grubb, G3FNL) and a miniature v.f.o. (F. R. Ellory, G3CUI).

The U.H.F./V.H.F. Equipment stand was surmounted by an imposing 70 cm helical beam (K. W. Cranfield), while other items shown included a 70 cm converter (S. F. Weber, B.R.S. 19317), a u.h.f. T.V. receiver gear (C. E. Newton, G2FKZ) and a 144 Mc/s converter (E. Yeomanson, G3IIR).

The items shown on the High Frequency Equipment stand included a very fine table-top all band T.V.I.-proof transmitter (John Salvage, G3HRO), a cathode ray oscilloscope (F. Hicks-Arnold, G6MB), a miniature 1.7-28 Mc/s transmitter (R. S. Robinson, G2ANX), a crystal controlled 1.8-30 Mc/s receiver (M. D. Mason, G6VX), a rack mounting v.f.o. for all bands (A. S. Clacy, G6CY) and a miniature Top Band transmitter (R. S. Babbs, G3GVO).

Amateur Constructors' Section

The Committee charged with the responsibility for organising this highly successful section of the exhibition consisted of the following members:—

P. W. Winsford (G4DC), Chairman, C. H. L. Edwards (G8TL), E. Ruth (G2BRH), Dr. A. Koster (G3ECA), E. Yeomanson (G3IIR), M. J. Hicks (G3ASI), Secretary.

Grateful thanks are recorded to the following members who loaned equipment and/or undertook stand, and operating duty at GB3RS.

Operating duty, GB3RS: P. W. Winsford (G4DC), C. H. L. Edwards (G8TL), M. Mills (G3ACC), F. Lawrence (G2LW), A. O. Milne (G2MD), J. J. Hollington (G4GA), E. Yeomanson (G3IIR), B. W. LeGrys (G3GOT), R. N. Grubb (G3FNL), A. F. Dennis (G3CNY), R. C. B. Cutts (G3HRC).

Stand duty: A. G. Tearle (G3KGT), E. Ruth (G2BRH), H. Cooper (G3IRR), Dr. A. Koster (G3ECA), J. Allan (G3JA), J. Perring, E. Green, D. Huggitt, M. Wallace, M. Mills (G3ACC), E. Rayner (G6IO), H. F. Knott (G3CU), C. Newton (G2FKZ), E. Yeomanson (G3IIR), F. Lawrence (G2LW), R. C. B. Cutts (G3HRC), S. H. Ledbrooke (G3FDY), G. C. Bagley (G3FHL), R. G. Morris (G3FDG), K. N. Honeyball (G3HIL), G. W. Norris (G3ICI).

Equipment: C. Newton (G2FKZ), S. F. Weber (B.R.S. 19317), C. H. L. Edwards (G8TL), Dr. A. Koster (G3ECA), M. D. Mason (G6VX), E. Bovis (G3EXD), J. Woodfield (G3HZK), K. W. Cranfield, M. Wallis (B.R.S. 18241), T. D. Cheeseman, E. G. Styles, J. Perring (B.R.S. 19427), F. Hicks-Arnold (G6MB), Don Cocks, Ken Young (G3IKY), R. C. Harris (G2BAB), A. Bryan, A. Shiel, K. O. Ireland (G3IKW), R. N. Grubb (G3FNL), E. J. Parker (G3EJK), P. Montgomery, E. A. Knight (G3BNZ), R. S. Robinson (G2ANX), R. S. Babbs (G3GVO), Jack Frost (G3GNL), John Salvage (G3HRO), P. Sollom (G3BGL), B. Kendall (B.R.S. 14261), A. S. Clacy (G6CY), R. Ellory (G3CUI), D. Bradford (G3GBO), L. Hickingbotham (G3HZG), E. Yeomanson (G3IIR), R. T. Jago (G2JG), H. F. Knott (G3CU), R. Morris (G3FDG), G. Mather (G3GKA), E. L. Devereux (G3CCZ), D. W. Morris (G3AYJ), S. H. Iles (G3BWQ), E. J. Parker (G3EJK), R. Halls (G3EIV), G. Fox (G3AEX), G. G. Gibbs (G3AAZ), S. H. Feldman (G3GBN), A. F. Veneear (G3CWS). Grateful thanks are also due to Louis Varney (G5RV), who kindly loaned the transmitting equipment for GB3RS.

Appreciation

Thanks are recorded to Mr. Horace Freeman, Exhibition Manager, who was, for the sixth year running, responsible for the organisation of the Exhibition; to the management and staff of the Royal Hotel for their willing co-operation and to the many members who volunteered to man the Society stands and who loaned equipment.

EXHIBITION PHOTOGRAPHS

Copies of photographs used to illustrate this and the previous article on the Amateur Radio Exhibition may be obtained from Mr. Eric Yeomanson, G3IIR, 9 Trewsbury Road, Sydenham, London, S.E.26, at the following prices:—

10" x 8" — 3/3 plus 3d. postage;
8 1/2" x 6 1/2" — 2/8 plus 3d. postage;
6" x 5" — 2/- plus 3d. postage.

Annual General Meeting

Minutes of the Twenty-Sixth Annual General Meeting of the Incorporated Radio Society of Great Britain held at the Institution of Electrical Engineers, London, W.C.2. on Friday, December 19, 1952.

Present

The President (Mr. F. Charman, B.E.M., in the Chair), Messrs. H. A. Bartlett, L. Cooper, C. H. L. Edwards, D. A. Findlay, T. L. Herdman, J. H. Hum, F. G. Lambeth, A. O. Milne, H. McConnell, R. Walker, P. W. Winsford (Members of the Council), Mr. V. M. Desmond (Past President), Messrs. D. N. Corfield, J. W. Mathews and A. J. H. Watson (Vice Presidents), Mr. John Clarricoats (General Secretary), Miss May Gadsden (Assistant Secretary) and about 150 members.

Notice Convening the Meeting

The Honorary Secretary (Mr. A. O. Milne), read the Notice convening the Annual and Special General Meetings.

Minutes of the Twenty-Fifth Annual General Meeting

It was moved by Mr. Lambeth, seconded by Mr. McConnell and resolved that the Minutes of the Twenty-Fifth Annual General Meeting, as published in the January, 1952, issue of the R.S.G.B. BULLETIN, be received, approved and confirmed.

Annual Report of the Council

It was moved by the President and resolved that the Annual Report of the Council, as circulated to the Members and published in the November 1952 issue of the R.S.G.B. BULLETIN, be received, approved and adopted.

There was no discussion on the Report.

Report of the Honorary Treasurer and the Audited Accounts

The Honorary Treasurer (Mr. D. A. Findlay), made a brief statement on the Society's financial affairs, stressing in particular that a deficit of more than £2,000 had occurred on the year's working. The rise in expenditure was chiefly due to increased BULLETIN production costs and additional administration expenses. Only by increasing subscription rates could the gap between income and expenditure be safely bridged. Except by reducing important services, the Society could not materially reduce the current level of expenditure.

There was no discussion on the Accounts.

It was then moved by Mr. Findlay seconded by Mr. Walker and resolved that the Audited Annual Accounts for the year ended June 30th, 1952, be received, approved and adopted.

Election of the Council for 1953

The President reported that he had received a letter (of which the following is a copy) from the Scrutineers setting out the result of the Ballot for the election of Officers and other Council Members for the year 1953.

"We the undersigned have scrutinised the Council Ballot and report as follows:—

Officers

President :	L. Cooper, G5LC
	Returned unopposed
Acting Vice-President :	A. O. Milne, G2MI
	1,272 votes. Elected
	J. W. Mathews, G6LL
	704 votes.

Hon. Secretary :	C. H. L. Edwards, G8TL
	Returned unopposed
Hon. Treasurer :	D. A. Findlay, G3BZG
	Returned unopposed
Hon. Editor :	J. H. Hum, G5UM
	Returned unopposed

Ordinary Members

I. D. Auchterlonie	G6OM	1,452 votes.	Elected
P. W. Winsford	G4DC	1,411 votes.	Elected
R. H. Hammans,	G2IG	1,399 votes.	Elected
H. A. Bartlett	G5QA	1,389 votes.	Elected
L. E. Newnham	G6NZ	1,323 votes.	Elected
H. McConnell,	GM2ACQ	1,254 votes.	Elected
F. Hicks-Arnold	G6MB	1,246 votes.	Elected
G. Webster	G5GK	900 votes.	
C. R. Thompson	G8WI	885 votes.	
R. Walker	G6QI	871 votes.	
F. G. Lambeth	G2AIW	806 votes.	
S. M. Sugden	G3GSS	776 votes.	

Total Number of Ballot Papers Wholly Accepted	1,945
Total Number of Ballot Papers Partially Accepted	47
Total Number of Ballot Papers Rejected	19
(Signed) Leslie Allen, F. Barnard, E. U. E. Green, F. Ruth, A. C. Yates."			

The President thanked the Scrutineers for their help and congratulated Messrs. Auchterlonie and Hammans on their re-election and Messrs. Hicks-Arnold and Newnham on their election to the Council. Mr. Charman also thanked the Members of the retiring Council for their loyal support during the year.

Auditors

It was moved by Mr. Findlay seconded by Mr. Walker and resolved to confirm the appointment of Edward Moore & Sons as Auditors for the year ended June 30th, 1953, at a fee not exceeding that paid last year, namely, one hundred guineas.

Institution of Electrical Engineers

The President moved and it was resolved that a cordial vote of thanks be recorded to the President and Council of the Institution of Electrical Engineers for permitting the Society to continue to use the Institution's building for the holding of meetings.

Other Business

In reply to enquiries the President stated that (a) the Council selects the person to open the Annual R.S.G.B. Amateur Radio Exhibition (b), an Assistant Editor was appointed in October (c), log difficulties had been responsible for a delay occurring in publishing the results of the 2 metre Contest held in July.

That concluded the business of the Annual General Meeting.

LONDON MEMBERS' LUNCHEON CLUB

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

At 12.30 p.m. on January 23, 1953.

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

TROPHY WINNERS

It is a tradition for the President, at each Annual General Meeting of the Society, to present trophies and prizes won by members during the year. At the Annual General Meeting held last month at the Institution of Electrical Engineers, London, a photographic record was made of the presentations, highlights of which are depicted below.



(1) Mr. D. N. Corfield (G5CD), winner of the Norman Keith Adams Prize. (2) Mr. J. C. Foster (G2JF), winner of the Second "Top Band" Contest, 1952, was awarded the Victor Desmond Trophy. (3) Mr. Paul Sollom (G3BCL), winner of the Courteney Price Trophy. (4) Mr. W. E. Russell (G5WP), leading British Isles operator in the Senior B.E.R.U. Telegraphy Contest, received the Col. Thomas Rose Bowl. (5) Mr. Roy Poeton (G3CTN), Bristol County Representative, received the National Field Day Shield on behalf of the Bristol Group. (6) Mr. V. M. Desmond (G5VM), Past President and Honorary Member, was awarded the Founders' Trophy. (7) National Field Day Shield Replicas were received on behalf of the Bletchley Group by L. W. Limb (G2DTD), and on behalf of the Slough Group by R. Young (G3BTP). (8) Mr. C. E. Newton (G2FKZ), winner of the Wortley-Talbot Trophy.

Special General Meeting

Minutes of a Special General Meeting of the Incorporated Radio Society of Great Britain, held at the Institution of Electrical Engineers, London, W.C.2, on Friday, December 19, 1952, at 7 p.m. The Meeting followed the Twenty-Sixth Annual General Meeting of the Society.

Present

The President (Mr. F. Charman, B.E.M., in the Chair), Messrs. H. A. Bartlett, L. Cooper, C. H. L. Edwards, D. A. Findlay, T. L. Herdman, J. H. Hum, F. G. Lambeth, A. O. Milne, H. McConnell, R. Walker, P. W. Winsford (Members of the Council), Mr. V. M. Desmond (Past President), Messrs. D. N. Corfield, J. W. Mathews and A. J. H. Watson (Vice Presidents), Mr. John Clarricoats (General Secretary), Miss May Gadsden (Assistant Secretary) and about 150 members.

Notice Convening the Meeting

The President explained that the notice convening the Special General Meeting had been read by the Honorary Secretary at the opening of the Annual General Meeting.

Special Resolution

Pursuant to notice, Mr. R. Walker moved and Mr. D. A. Findlay seconded the following Special Resolution:—

That to enable the Council to increase members' subscriptions to meet the Society's expenditure the Articles of Association shall be amended so that:—

Article 19 shall read—

"The annual subscription shall be £1 10s. for Corporate Members and 15s. for Associates or such lesser sums as the Council may decide from time to time. Corporate Members shall pay an Entrance Fee of 10s. upon admission and Non-Corporate Members shall pay a Transfer Fee of 5s. upon transfer to Corporate Membership"

and

Article 27 shall read—

"At any time after having been a Corporate Member of the Society for five consecutive years, such Member may, subject to the approval of the Council, commute all future annual subscriptions by a payment of Twenty Pounds, which shall entitle such Member to all privileges and rights of ordinary membership for the remainder of his life."

After the motion had been freely debated Mr. Dollery proposed that the Special Resolution be amended to make the Annual Subscription payable by Corporate Members 25s.

The President informed the meeting that no substantial amendment to the Special Resolution could be accepted. Mr. Dollery thereupon withdrew his proposal.

Following further discussion Mr. Wardman moved and a Member seconded that the meeting be adjourned to permit time to be given to suggestions for amending the subscription rates referred to in the Special Resolution. Upon being put to the meeting the motion was declared lost on a show of hands.

Mr. Thorogood thereupon moved, a Member seconded and it was resolved that the question be now put.

The President informed the meeting that he would first call for a show of hands on the motion and later, if so demanded, he would arrange for a poll to be taken. A show of hands showed a large majority in favour of the resolution. In order to ascertain the number of members who

had voted for and against the resolution, voting papers were distributed and then scrutinised.

The President announced that 118 Members had voted **IN FAVOUR** of the Special Resolution and 26 **AGAINST**.

Mr. B. O'Brien, G2AMV (the Society's Representative in Region 1) Mr. S. M. Sugden (the Society's County Representative for West Lancashire) and Mr. F. H. P. Cawson (the Society's Representative for the towns of Southport and Formby) and seven others thereupon demanded a poll.

The Secretary reported that he had received a grand total of 301 Proxies. Of this number 35 were General Proxies held by Members of the Council, 214 were General Proxies held by ordinary Members, 51 were Special Proxies instructing the donee to vote against (and one in support of) the Special Resolution. A further 38 Proxies (33 General, 4 against and 1 in support of the Special Resolution) were received at the Registered Offices of the Society less than 48 hours prior to the time of the meeting and had been rejected by the Council.

The Secretary further reported that 177 General Proxies and the 51 Special Proxies (instructing the donee to vote against the Special Resolution) were held by Messrs. Sugden, Cawson and O'Brien.

The Proxy Votes (totalling 291) were then called in. It was reported that donees holding seven proxies were not present and that three donors of proxies were present in person.

The President announced that 39 Proxy votes had been cast **IN FAVOUR** of the Special Resolution and 252 **AGAINST**.

The President thereupon declared that the Special Resolution had been **LOST**.

by 278 votes (252 by Proxy, 26 in person)
to 157 votes (39 by Proxy, 118 in person)

The Meeting terminated at 8.55 p.m.

Side Slip

THE caption beneath the photograph published on Page 252 of the December issue should have read "Old-Timers Gay (G6NF) and Longuehay (G8KC, ex-2KC) are intrigued—at what?" Our apologies to Messrs. Avery (G2KC) and Longuehay for the slip.

An Appeal

WILL the person who borrowed Mike Barlow's gold pencil during the Exhibition in order to sign the Visitor's Book on the B.A.T.C. stand, please return it immediately? G3CVO has his name but not his address.

LONDON MEETINGS, 1953

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.

Friday, January 30, 1953: **R. H. Hammans, G2IC.**
"SINGLE SIDEBAND TRANSMISSIONS."

Friday, February 27, 1953: **Special General Meeting.**

Friday, March 20, 1953: **F. Charman, B.E.M., G6CJ.**
"V.H.F. AERIAL DEVELOPMENTS."

Report of Special General Meeting

THIS Report of the Special General Meeting, held on December 19, 1952, should be read in conjunction with the Minutes of the Meeting as published on Page 296 of this issue of the BULLETIN.

Special Resolution

In moving the Special Resolution standing in his name **Mr. Walker** said he appreciated that any measure to increase subscription rates would not be popular. When the matter was first discussed by the 1952 Council, a figure of 25/- for Corporate Members had been suggested but careful consideration of all the facts had shown that 30/- would be required if the gap between income and expenditure was to be bridged effectively. The Council had hoped to submit to the membership during the current year a complete redraft of the Articles of Association but this had not proved to be possible. The Council had decided to give full consideration to the many varied viewpoints put forward by members after the draft had been circulated, a process which had taken up a great deal of time. **Mr. Walker** explained that whereas 25/- for Corporate Members might just close the gap on the basis of present commitments, the Council hoped to approve projects which had been shelved through lack of funds. It was hoped to provide a larger BULLETIN, more technical publications, a new Handbook and greater Provincial Representation. Provincial Representation on the Council and the operation of the Scheme of Representation were items which Provincial Members would no doubt realise cost a great deal of money.

The wording of the Special Resolution was identical with that used in the redrafted Articles of Association except that the words "or such less a sum as the Council may from time to time decide" had been added. This would fix a subscription ceiling of 30/- for Corporates and 15/- for Associates, at the same time not preventing the Council from reducing the amounts if it was found possible to do so.

On a personal note, **Mr. Walker** explained that it was his own desire to resist any possible rise in rates of subscription which had brought him into contact with those members who had asked him to accept nomination for the Council and it was ironical that he now found himself in the position of asking the membership to take the step which he had himself sought to prevent. He agreed that the present was not the best time to ask for increased subscriptions but there was really no choice. An increase in the subscription rates would represent much better value for money to members than would a reduction of the services to members.

Mr. Walker's speech was loudly acclaimed.

The President thanked **Mr. Walker** for his clear explanation of the position and spoke warmly of his valued services to the Society during the year. He expressed regret that both **Mr. Walker** and **Mr. Lambeth** had not been re-elected to the Council.

Mr. Findlay formally seconded the motion and reserved the right to speak a second time in the debate.

Mr. Wardman considered that the Council had shown some nervousness in putting forward the Special Resolution. He felt that action ought to have been taken earlier to arrest the fall in revenue. Two years ago he had expressed the view that subscription rates should be increased. He was not sure that 30/- would be adequate if the Society is to provide the services which members require. He emphasised that Members are prepared, in

spite of protests, to pay purchase tax on valves and other components. They are also prepared, indeed they have no choice but to pay £2 a year for a licence. In his view the Council should have the power to fix the annual subscription. He hoped the Hon. Treasurer would indicate more specifically what the Council proposes to do with the extra revenue.

Mr. Thurlow stated that at an R.R.s Conference held during 1950 the then Hon. Treasurer warned that within two years the Council would be compelled to ask for a substantial increase in subscription rates. He supported the proposal that the Corporate rate should be fixed at 30/-.

Mr. Walker interposed to say that he did not want to give the impression that the Council wanted 30/- but would settle for 25/-. He agreed that the Society might be able to "scrape by" for the time being on 25/- but 30/- was the amount really needed to ensure stability.

Mr. O'Brien expressed the view that 40 per cent. of the membership in Region 1 (approximately 600 members.—Ed.) would resign if a figure of 30/- is adopted. In his opinion an increase of about 8/- would be sufficient to offset the loss on the last two years' working. The loss on the year to June 30, 1952, represented 3/8 per head. **Mr. O'Brien** considered the present time was inopportune to introduce an Entrance Fee. **Mr. O'Brien** expressed himself as being in favour of a Corporate rate of 25/- but he could not support the proposal to introduce an Entrance Fee.

Mr. Dollery suggested that the proposed figure of 30/- was "impossible." Those members (about 10 per cent. of the whole) who support local activities might be prepared to pay the higher rate but the remainder are unlikely to do so. In his view it would be a major psychological blunder to introduce an Entrance Fee at this stage. He believed that the membership generally would support a figure of 25/- but not 30/-. To test the feeling of the meeting he would be prepared to move, as an amendment, that the subscription to be paid by Corporate Members should be 25/- per annum.

The President explained that, whilst minor amendments could be accepted, any motion to amend the actual rates quoted in the Special Resolution would be illegal.

Mr. Dollery thereupon withdrew his proposal.

Mr. Newton warned the meeting not to be led astray by what he called "red herrings." He did not attach much importance to suggestions that 40 per cent. of the membership in a given Region would resign if the rate of 30s. is approved. Two years ago there had been talk of "splits" in the Society and suggestions that "it was finished." The Society was today stronger in prestige than ever. **Mr. Newton** suggested that if certain Provincial Members are not satisfied they should seek to get their own nominees elected to the Council.

Mr. Norman pointed out that as the meeting had been called in accordance with the requirements of the Companies Act no major amendment to a Special Resolution was possible. He emphasised that the additional subscription, as far as Provincial Members were concerned, amounted to no more than the cost of seven cigarettes a month.

Mr. Thorogood reminded the meeting that he had, during his term of office on the Council, endeavoured to obtain support for the setting up of a General Purposes Committee to prepare three-

and five-year plans, but the proposal was not supported. He hoped that the mover or seconder of the motion would "give us the facts."

Mr. Matthews sensed that some emotionalism was creeping into the meeting. Members had been deriving benefits from the Society for years at a cheap rate as the result of the reserves built up in the past and were now being asked to contribute no more than was justly due. If 40 per cent. of the members in a Region were so lacking in appreciation of the services given to them, the Society could well afford to let them go.

Mr. Young considered that the privileges of Corporate Membership were well worth £2 per annum. Even this higher rate was equivalent to only 8½d. a week.

Mr. Hunter commented that he had yet to learn what were the real objections from the Provinces to the 30/- rate.

Mr. Robinson, speaking on behalf of a group of Northamptonshire members, stated that he was empowered to hand in their resignations *en bloc* if the Special Resolution was adopted. He suggested that if *The Short Wave Magazine* can be made to run at a profit the Society should be able to follow suit. He considered that salaries should be cut before members are deprived of services. Members in Northamptonshire cannot afford to pay a 30/- subscription.

The President interposed to point out to Mr. Robinson that *The Short Wave Magazine* does not have to spend about £1,000 a year on representation or another £1,000 per annum to defend the rights of amateurs.

Mr. Cawson spoke of the recession of trade which is currently affecting Lancashire and of the difficulties which many members would experience if the subscription were increased to 30/-. In his view the increase should have been introduced in easy stages beginning at the time when money was easier. A ceiling of 25/- should enable the Society to pay its way. He hoped that more money would be set aside for representation.

Mr. Lawson considered that a subscription rate of 15/- was good measure, 25/- was still satisfactory, but 30/- was "sheer robbery." He enquired what was the present position in regard to licence fees.

Mr. Findlay, answering questions and points raised in the discussion, emphasised that whilst 25/- might enable the Society to struggle along, a figure of 30/- was essential if it were to pay its way. Mr. O'Brien's figures sounded convincing but it was the view of the Council that reserves must be built up, in order to extend services to members. Mr. Wardman's suggestion that the Council should have power to fix subscription rates would be covered if the Special Resolution was adopted. Mr. Thurlow was correct when he stated that it was made clear nearly two years ago that subscriptions would have to go up. It was not possible to predict with any degree of certainty what percentage of the membership would drop out if subscription rates were raised but his estimate had been based on reasonable assumptions. The Hon. Treasurer confirmed that present Life Members would not be required to pay any further subscription if the resolution to increase Life Composition fees was approved.

Mr. Findlay thought it should be made clear to Provincial Members that the original proposal to introduce an Entrance Fee came from a Provincial Regional Representative and was supported by 11 of the 14 Regional Representatives present when the matter was first discussed at the 1952 R.R.s Conference. The Hon. Treasurer pointed out that the Entrance Fee would go some way

towards off-setting the expenditure incurred by the Society whenever a new Member was elected. In his view an Entrance Fee of 10/- would not deter keen people from applying for membership. Mr. Findlay regretted the attempt which was apparently being made by certain members in Region 1 to coerce the Council. It would be presumptuous for such members to infer that they knew better than the Council how to run the Society.

Mr. Dolery had suggested that members would not be able to pay 30/- per annum, yet many of them pay 30/- per annum for *The Short Wave Magazine* and 36/- for *QST*.

Mr. Thorogood had asked first for facts and then for "future facts." The hard fact was that, unless more money were received from subscriptions, the Society would go out of business in a few years' time. If subscription rates had been raised by easy stages, from some time just after the war, members would have been worse off than they are today.

Mr. O'Brien, commenting on a point made by the Hon. Treasurer, indicated that, for the current year, subscriptions were running at a level of 3/8 in excess of 15/- and at 8/1 in excess of 15/- if the last two years were taken into account.

Mr. Watson (who was honorary treasurer from 1943 to 1951) considered that the Council should be given a free hand to get on with the job of balancing the budget and building up new reserves. He had warned the membership in every Honorary Treasurer's Report submitted between 1947 and 1951 that the time was fast approaching when subscription rates would have to be increased. In his view the difference between 25/- and 30/- was not worth arguing about.

At this point of the discussion **Mr. Thorogood** moved, another Member seconded and it was **RESOLVED** (on a show of hands) that the question be now put.

(The subsequent proceedings are fully reported in the Minutes of the Special General Meeting.—Ed.)

Summary of Voting on Special Resolution

By a Show of Hands: A large majority in favour of the motion.

By Ballot: 118 in favour of the Resolution.
26 against the Resolution.

Proxy Votes: 39 in favour of the Resolution.
252 against the Resolution.

Total votes cast against the Resolution 278. Total votes cast in favour of the Resolution 157.

The President thereupon declared the Special Resolution lost.

The meeting then terminated.

Resignation of Hugh McConnell, GM2ACQ, from the Council

Following the defeat of the Special Resolution on December 19, 1952, Mr. Hugh McConnell resigned from the 1952 and 1953 Councils. A personal statement from Mr. McConnell appears on Page 317.

Coronation Year QSL Cards

ERIC MARTIN, G6MN, has submitted samples of special Coronation Year QSL cards which his Company (Richard Martin & Co., Ltd., Bridge Street, Worksop, Notts) are producing. The design includes an outline block of the Coronation coach surmounted by a Royal Crown and the words "Coronation Year 1953."

Prices per 100 are: on white card, 12s. 6d.; on gold card, 19s. 6d.



AROUND THE V.H.F.'s

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

Two Metres in Retrospect

At the commencement of a new year, it is interesting to survey what has taken place on the v.h.f.s during the preceding twelve months. On two metres conditions were often good but never outstanding save, perhaps, for a few brief periods over a limited area. Nevertheless, the band was open for more than the usual ranges quite early in the year and in late December, 1951, some Continental stations were heard and a DL3 worked by G3VM (nr. Norwich) and contacts made by G3WW with Belgium and Holland.

On the other side of the globe, a remarkable record was set up by VK5GL (Perth) and VK6BO (Adelaide) who exchanged signals over a distance of 1,325 miles on December 30, 1951. At about the same time it was reported that ZL3AR had worked VK2AH.

During January the band was often open for contacts up to 200 miles from the more favourably situated stations and the results reported by G3EHY in March were those normally associated with summer propagation. His contacts included G3BW (Whitehaven, Cumb.) on 'phone at 232 miles. In the early part of April EI2W (Dublin) worked a number of stations at distances up to 200 miles and G6NB (Aylesbury) at 255 miles.

In May conditions were generally poor, and that included the R.S.G.B. 2 metre Field Day which took place on the 11th. Thirty-eight logs were submitted and the first three places were occupied by G3ERD/P, 3DIV/P and 3ABA/P. GD3DA/P was again active from Snaefell, I.O.M., between May 15 and 18, and some 60 contacts were made with stations ranging from Poole to Scunthorpe and Belfast to Fife. Those taking part in *The Radio Amateur 2 Metre Contest* on May 24/25 were somewhat luckier as conditions were fairly good as evidenced by G3WW's 78 contacts during the period. This station worked GM3BDA (Airdrie) on June 13 and the same Scottish station was contacted five times by G3EHY between July 5 and 16.

At about this time the first Marine Mobile licence issued in this country was granted to Capt. Clarke, G8AO, whose vessel makes regular voyages between the Tyne and Thames; many amateurs have by now worked him on the 2 m band.

G3EHY and G1GQB (nr. Belfast) first made contact on July 10 and a daily sked. has been kept ever since with a surprisingly high proportion of solid QSOs. July 10 was also a good day for G6LI (nr. Grimsby, Lincs.) who made a number of contacts with Scottish stations. Just prior to this, G6RH (Bexley, Kent) worked OZ2FR on 'phone at 58 both ways. This followed the reception of several calls from the Hamburg area and what is believed to have been the first 2 m signal heard in this country from a Norwegian station.

Around the same period G3BW (Whitehaven, Cumb.), who at the present time occupies first

place on the 2 m "Ladder," worked stations as far distant as G3FAN (Ryde, I.O.W.), whilst (G3FGR (Worthing, Sx.) contacted G3AGA (Falmouth) at 215 miles. Conditions continued favourable during July and on the 24th G6LI exchanged signals with OZ2FR and OZ6B, the latter at Kolding, 455 miles. On the same evening G3WW worked 7 countries—G, GM, GW, DL, ON, OZ and PA, the greatest distance being to DL6SV 440 miles away in Ahrensburg. Conditions then changed swiftly to no more than fair for the R.S.G.B. Two Metre Contest on July 26/7. Several competitors, however, managed quite good scores including G3WW who worked 63 stations.

On August 29 EI2W and DL3VJ, operating portable at Horn/Lippe, contacted one another, on 'phone, and thus gained the European 2 m record with a distance of 651 miles. On the same evening G2HIF (Wantage, Berks.) raised five countries in five calls—G, GI, DL6, EI and ON.

Conditions were again no more than normal for the European-North African Two Metre Contest on July 5/6 and G5YV is to be congratulated on coming out the winner by the handsome margin of 81 points over ON4BZ. Of the 125 logs submitted 17 were from British stations, four of whom were in the first 10 places.

For the second R.S.G.B. 2 metre Field Day on September 21 conditions were patchy but the event, which was won by G2HCG/P with G3ABA/P and G5BM/P second and third, was well supported. G3EHY worked 12 of the portables including G3MY/P (nr. Sheffield).

Following poor conditions for the first 10 days of September G5YV worked G3BEX/P (Devil's Dyke, Brighton) and on September 13 DL1LB and DL6SV. Several good periods were experienced between October 5 and 17, but activity was low and few were available to take advantage of them. The activity must have been there a short time before, because G3WW managed to work stations in 40 countries during the first three weeks of September.

Thus ends an interesting if not spectacular year. Many new calls were welcomed to the band, several newly licenced stations choosing to make their first appearance on 2 m. But there is plenty of room for many more operators who would like to enjoy QSO's away from the mad scramble and the QRM of the lower frequency bands.

Seventy Centimetres Reviewed

On 420 Mc/s good results were obtained on many occasions during the first two months of 1952. G3EHY and GW2ADZ had a number of QSO's over the considerable distance and difficult terrain between their stations whilst the regular skeds. maintained by the Welsh station with G2FKZ and G3FZL in London often yielded excellent results. During the second week of April G2WJ (Dunmow, Essex) and G5RW (Ilkeston, Derby) contacted one another over a distance of 100 miles.

* 32 Earls Road, Tunbridge Wells, Kent.

Attention was drawn in these columns in March to the necessity of fuller occupation of the 420 to 460 Mc/s band and suggestions were made to popularise this allocation by encouraging the use of simple apparatus for those who are unwilling or unable to provide themselves with the admittedly complex gear necessary for the very best results. That these suggestions have borne some fruit is instanced by the recent outbreak of 70 cm enthusiasm sponsored by G3ECA and others in the Ilford district, some of the results obtained being given in the December BULLETIN.

Seventeen stations notified their intention of operating in the R.S.G.B. 420 Mc/s Tests on June 21/22, and although conditions were only fair and there was in consequence an absence of spectacular contacts, more actual activity was apparent than during the previous event. Two-way working was effected up to a distance of 80 miles by several stations and two-way reception was reported between GW2ADZ and G2FKZ and G3FZL in London at a distance of more than 160 miles. Their work in the Tests, together with their masterly report on v.h.f. propagation, earned them the joint award of the Arthur Watts Trophy. Certificates of Merit were awarded to G3APY and G8QY.

The European 70 cm record was gained by F9BG (Toulon) and FA8IH (Algiers) for a contact of approximately 450 miles.

On November 1 came the welcome news that the negotiations between the Society and the G.P.O. had at last been successful and that henceforth a power input of up to 150 watts could be employed on the 70 cm band subject to non-interference with certain aircraft navigational aids.

First Amateur TV Contact

So far as is known the first amateur TV two-way contact ever to take place anywhere was achieved by G5ZT/T and G2BLV/A/T, both operating in Plymouth, on May 1. The transmissions were made on 430 Mc/s with a definition of 250 lines.

The Ultra Highs

Of the bands available for amateur use above 460 Mc/s only one item of news finds a place in this review; the two-way contact on the 1215 Mc/s band on July 12 between G2JT (Oldham, Lancs.) and GW6DA/P operating from the summit of Carnedd Llewelyn, North Wales. Despite very bad weather conditions on the mountain and the necessity of extremely portable and low powered gear the distance of 81 miles was covered at a signal strength of S7/8 on m.c.w., beating the record previously held by G3QC and G8DD by 6 miles.

Current Two Metre News

The claim by G3FKO and 3IWA to operate the most compact 2 m portable station in the country, regularly transported on two trips on a lightweight motorcycle, is challenged by G3EMJ and 3GUD (Derby) who, on two solo motorcycles, carry not only their station but camping and sleeping equipment and food for two days in addition. The gear includes a 5-element Yagi beam, a 20-foot sectional mast with guys and rotating gear, a 4-watt transmitter with a Mullard QV04-7 in the final and a G21Q-type converter working into a BC454 as i.f./a.f. amplifier. H.T. is supplied from the motorcycle accumulators via the rotary converter on the BC454 and there is sufficient power available to keep the station on the air for 16 hours. As if this were not enough to take along they also carry a paraffin-vapour lamp and spare valves and batteries. Phew! Their first combined operation was to test a site for the May, 1952,

Regional V.H.F. Ladder

TWO-METRE BAND

To qualify for entry in the Two-Metre Regional V.H.F. Ladder, members must have worked stations in at least seven R.S.G.B. Regions since July 1, 1952. The rules, and a list of Regions and Counties or Areas forming them, were published on page 544 of the June, 1952, "Bulletin."

Psn.	Call & Location	Worked		
		Regions	Stations	Countries
1.	G3BW <i>Whitehaven, Cumb.</i>	15	63	5
2.	G5YV <i>Leeds, Yorks.</i>	13	212	9
3.	G3WW <i>Wimbleton, Cambs.</i>	13	209	9
4.	G2HIF <i>Wantage, Berks.</i>	13	109	7
5.	C4RO <i>St. Albans, Herts.</i>	11	136	4
6.	G3FAN <i>Ryde, I.O.W.</i>	11	115	4
7.	G2FNW <i>Melton Mowbray, Leics.</i>	11	78	3
8.	G6LI <i>Ludborough, Lincs.</i>	11	59	6
9.	G2BY <i>Caversham, Berks.</i>	10	152	4
10.	G3FD <i>London, N.14.</i>	10	80	7
11.	G3HBW <i>Wembley, Middx.</i>	10	69	4
12.	G6XX <i>Goole, Yorks.</i>	10	63	3
13.	G6YU <i>Coventry, Warks.</i>	10	46	3
14.	G3GBO <i>Denham, Bucks.</i>	9	130	3
15.	G2FJR <i>Sutton Bridge, Lincs.</i>	9	83	3
16.	GW8UH <i>Cardiff, Glam.</i>	9	60	3
17.	G2DKH/P <i>Stanley, Co. Durham.</i>	9	45	4
18.	G3ACS <i>Manchester 8.</i>	9	36	3
19.	G3BHS <i>Eastleigh, Hants.</i>	9	35	2
20.	G2AHP <i>Perivale, Middx.</i>	8	73	2
21.	C5MR <i>Hythe, Kent.</i>	8	55	5
22.	G3FIJ <i>Colchester, Essex.</i>	8	42	6
23.	G3BVU <i>Witney, Oxon.</i>	8	33	1
24.	G3COP <i>Southampton, Hants.</i>	7	46	2

2 m Field Day for the Derby and District A.R.S.—whose station G3ERD/P subsequently won the event—and from there they worked ON4BZ at S8/9 both ways at a time when the only other signal audible to the Belgian station was G5YV at much weaker strength.

EI3R (Waterford) has heard GW8UH (Cardiff). EI2W has been rebuilding his aerial but should be active again before these notes appear.

G3GBO (Denham, Bucks.) has rebuilt the feed system of his 4-over-4 array after damage in the recent gales and is looking, without much success, for increased activity. The aerial at GW8UH has also been a casualty in the gales.

Gerry Marcuse, G2NM, in sending his best wishes for 1953 to all 2 m enthusiasts, deprecates the present lack of activity on a band which, in contrast to the l.f. allocations, still permits interference-free contacts.

London U.H.F. Group

At the December meeting of the London U.H.F. Group several members reported on the results of the 70 cm skeds. mentioned in our last issue. G5DT (London, W.1) was active every day from November 7 to December 3, during which period he made 54 contacts with 13 stations. On only four occasions were there no signals to be heard.

This would be an excellent result for any station, but for one situated in the heart of the West End with its inevitable absorption and screening and high noise level such an achievement is highly commendable. As a matter of interest the stations worked were G2DD, FKZ, MV, RD, WJ, 3ECA, FP, 4KD, 5AA, CD, RD, TP and 6NF.

European-North African 2 Metre Contest

It is regretted that, due to pressure on space last month, the list of placings in this event could not be given in full, but mention should have been made of E12W who was the sole representative of Eire and finished 18th with a score of 210 points. It should also be noted that G8IS, with 101, and G12FHN/P, with 98 points, were 50th and 54th respectively and not as stated in the table.

V.H.F. Research Society of Ireland

The December issue of *The Upper Spectrum*, the journal of this society contains, besides domestic news, much of interest to v.h.f. workers generally and includes articles by G2IQ on the "all 6J6" 2 m converter associated with his call together with practical suggestions on obtaining the best results from it. The criticism that v.h.f. transmitters are often far too complex can hardly be levelled at the two valve circuit employing a

6J6 c.o./frequency multiplier and Z77 f.d./output described by G3CVO. The design is stated to perform well on its own, or as a driver for a normal p.a. stage, despite the low power. A single valve (12AT7) circuit is also described which, built on a chassis only 1½ in. square, can be made to give a small but useful output on the 2 m band directly from an 8 Mc/s crystal. GW2ADZ contributes to this issue an article on estimating v.h.f. propagation conditions from weather signs.

Mr. F. Charman, B.E.M. (G6CJ), Immediate Past President of the R.S.G.B., will be the guest of honour of V.H.F.R.S.I. at a dinner to be given in Dublin on January 23 at which it is hoped a number of prominent citizens will be present. Mr. Charman will talk on V.H.F. Aerials at a meeting in Athlone on the following day.

Offer of Co-operation

G5YH (Chiswick, London, W.4) has a receiver covering both the 1215 and 2300 Mc/s bands and would be willing to assist anyone wishing to test a transmitter on either band.

* * *

Reports for the February issue by January 22 please.



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.F. (G8TL), 10 Chepstow Crescent, Newbury Park, Ilford, Essex.

* Each station will operate in turn.

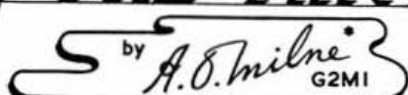
† S.S.B. telephony announcements.

G.M.T.	Call	kc/s.	Town
Sundays			
09.00	G3LP	1850	Cheltenham
10.00	G6MH	1990	Southend-on-Sea
	G3AAZ	1780	Welwyn
10.30 *	G3EPK		
	G3EWG		
	G5UM		
10.30	G3GIO	1915	Guildford
	G3CYS	1990	Pontefract
	G3ESP		
10.30 *	G3HEX		
	G3HNC		
	G3IDT		
	G3US		
11.00	G2FXA	1900	Stockton-on-Tees
12.00	G15UR	1860	Belfast
14.00	G5AM	1900	Wittesham, Ipswich
21.00	G2FIX	1812	Nr. Salisbury
Mondays			
19.00	G3NC	1825	Swindon
	G3BFP	1875	Croydon
20.30 *	G3BLP		
	G6LX		
21.00	G3BHS	1720	Eastleigh, Hants
21.00	G3BLN	1900	Bournemouth
22.00	G3GIO	1915	Guildford
22.15	G2BRH	1900	Ilford
22.30	G8TL	1896	Ilford
Tuesdays			
18.30	G2FXA	1900	Stockton-on-Tees
19.00	G3IBL	1883	Derby
	G3HGY	1815	Coventry
19.30 *	G5PP		
	G5SK		
20.30	GW3BKP	1745	Wrexham
21.00	G3EFA	1855	Southport
22.00	G3ELG	1772	Rotherham
22.00	G2BND	1890	Dalston, E.
22.00	G3GIO	1915	Guildford
23.00	G2XG	1735	Chingford

G.M.T.	Call	kc/s.	Town
Wednesdays			
14.00	G3ADZ	1910	Southsea
19.00	G3ADZ	1900	Southsea
19.30 *	G3HBX	1870	Warwick
	G6XA		
21.30	G3HKC	1770	Birmingham
22.00	G3DLC	1800	Grays, Essex
22.00	G3HXN	1850	Cambridge, Glos.
22.00	G3GIO	1915	Guildford
22.45	GM3GUS	1800	Dunfermline
Thursdays			
19.00	G3NC	1825	Swindon
19.30	G3GRM	1815	Derby
	G2DOF	1830	S. Birmingham
	G3DTG		
19.30 *	G3ENH		
	G6K1		
	G8JI		
20.00	G3FVH	1920	Hull, Yorks
20.30	GW3BKP	1745	Wrexham
21.30	G6DL	1760	Birmingham
21.30	G3ICX	1900	Sutton Coldfield
22.00	G2NK	1730	St. Mary Cray
22.00	G3GIO	1915	Guildford
22.30	G3OB	1803	Manchester
23.00 *	G3LA	1915	Brentwood
	G4AK		
	G8RC		
Fridays			
19.00	G3BLN	1900	Bournemouth
20.00	G3CSG	1870	Wirral
21.00	G3BHS	1720	Eastleigh, Hants
	G3AUF	1785	Rugby
22.00 *	G3AUT		
	G3CBV		
	G3GTX		
22.00	G3GIO	1915	Guildford
Saturdays			
09.30	G3ICX	1800	Sutton Coldfield
13.00	G2FXA	1900	Stockton-on-Tees
14.00	G3ADZ	1910	Southsea
22.00	G3GIO	1915	Guildford

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

THE MONTH ON THE AIR



Please Ask Us

WE wonder if members realise that it is often unwise to ask the Authorities for a ruling. From time to time it happens that a member writes to the G.P.O. direct with a request to do something which is not specifically covered in the licence. It may be that the Society is already in negotiation with the Department on this self-same point or something very like it and there is danger of our negotiations being prejudiced by precipitate action. If you want to raise such matters, why not write first to Headquarters? This will avoid you putting your unwitting foot in it and at the same time ensure that representations are made in the right quarter.

DL2 Stations

As already announced, the QSL Bureau handling cards addressed to amateurs operating with DL2 calls is being run by Mr. G. Verrill, G3IEC, 75 South Street, Gosport, Hants. DL2s should send their envelopes to him and outgoing cards to G2MI. For a number of reasons, the old QSL Bureau at Wahnheide got into a bad state of chaos and we have Jack Drudge-Coates, DL2RO, to thank for unearthing a vast quantity of cards from a cupboard there and sorting them out for despatch. Many of the cards were addressed to calls no longer active and as soon as a list can be prepared, it will be published here and the persons concerned will be invited to collect their cards from G3IEC. In the meanwhile, our thanks to Jack for a job well done!

Top Band

Some quite remarkable DX has been worked on this band in recent weeks. Really outstanding have been the contacts between VS9AW (Oman), working on Top Band, and VS1EV, VS1ES, VS7EA, VS7WA, and MP4HBK working on 14 Mc/s. The first tests were made on November 15, 1952, at 2200 G.M.T., when the 85 watt signals of VS9AW on 1900 kc/s were received by VS1EV at RST 599, with slow QSB to S7; by VS1ES at 569; by VS7EA at 589; by VS7WA at 589 and by MP4HBK at 599. The second test was made on phone, when the reports were at IES, RS59 plus 10, with QSB to S7; by IES at 55/6; by 7EA at 58/9, by 7WA at 56/7, by MP4HBK at 57/8. All stations experienced heavy tropical QRN. Further tests were made on November 22 with Y12AM also, but on that occasion it was 14 Mc/s which let them down! VS9AW's 1.9 Mc/s signals were received by VS1EV and by VS7WA. An unconfirmed report says that a VE1 also heard VS9AW the same night. VS9AW several times relayed signals from the other stations back to them, although the distances involved were all over 2,000 miles. The distance between VS9AW and VS1EV is 3,600 miles. Incidentally, VS9AW contacted VQ4AQ on November 22, at 2030 G.M.T. on 1802 kc/s, receiving 559 and giving 569.

The B.B.C. medium-wave evening transmissions are being well received in Singapore at S9.

Enthusiasm for the Top Band is growing all over this part of the world and suitable rigs are being built to take advantage of the present conditions while they last.

The transmitter at VS9AW runs 85 watts to a 254 ft. long wire. The receiving aerial at VS1EV is a 272 ft. l.w. and at VS1ES, 160 ft. VS7EA uses a Vee beam. VS9AW is anxious to arrange schedules with British Isles stations and would also welcome reports on his transmissions. As he will be returning to the U.K. in February there is not much time.

G3NT has also been busy on the Top Band and has worked HA5BT, 1900; OH7OH, 1851; OH2YV, 1882; and OH3NY, 1840, ZC4RS, Box 451, Nicosia, Cyprus, is active and wants to arrange tests. G3COJ says OH3NY wants contacts with the counties of Berkshire, Rutland, Shropshire and Westmorland. Surely he has not worked all the others on Top Band!

Why 15?

G5VT asks why do people on the 21 Mc/s band say CQ 15? It most certainly is *not* the 15 metre band, as a little simple calculation will show. In fact, the band extends from 14.29 to 13.98 metres. It is therefore centred on 14 metres, but in any case, why not be modern and say CQ21?

Notes and News

G3FXB, who scored 67,425 points in the CQ Contest, made contacts with EA9AP, TA3AA, CT3AB, VP9BF, FA, CN8, 4X4 and F9QV/FC on 3.5 Mc/s. The QTH of AP2L is Box 151, Karachi.

VP8AP reports that the l.f. end of the 7 Mc/s band is a jumble of Argentine 'phone signals. This is due to the new regulations which prevent LUs from operating on 14 Mc/s or the higher bands, unless they pass a Morse test! Despite the QRM, however, VP8AP has worked G5VB, VE1CD and KH6ADA on 3.5 Mc/s and says the best time for contacts with G is between 1930 and 2030 G.M.T. He is leaving VP8 in May and will be operating later as a G. He arrives in London on June 18 on the *Highland Monarch*.

South African amateurs now have the same facilities as ourselves on the 21 Mc/s band and, in addition, they are allowed to use the 26-27 Mc/s range, 50-54 Mc/s and frequencies around 220 Mc/s. South Africa will observe the I.A.R.U. Band Plan.

John Hall, B.R.S. 19107, who is studying for his ticket, has heard OH7OH, W1LYV, UB5KAD and UQ2AW on Top Band and ZS91 on 7 Mc/s. G3DO, using a 268 ft. l.w., worked FF8AR, SV0WP, TA3AA, OD5AD, CN8BQ, CR6AT, CR6BX and VF6SD on the first day phone was permitted to Gs on 21. He has also worked ZS9G and ZS6ZU/Marion Island for two new ones on phone.

Although the licence position in Egypt is still rather touchy, we understand there is some chance of permits being forthcoming fairly soon. The

* 29 Kechill Gardens, Hayes, Bromley, Kent.

YIs seem to be a lot better off. YI2AM is the call of the R.A.F. Amateur Radio Society at Habbaniya and there are a number of other stations active.

GM3CIX has worked VK1JC on Heard Island and nabbed MP4BAU in Qatar on 7 Mc/s. He says several Gs have worked this station on 3.5. VK5KO, also active again on that band, has often been heard by G2MI at the low end.

G6GO has so far raised only VP6, VS7 and YV on 21. He comments, as do many others, on the general low level of signal strength on this band. He works W6 on 14 Mc/s fairly easily, but makes the astonishing statement that for 10 years he has been trying without success to work the East Coast of U.S.A.! He wonders how many people appreciate the so-called "Good-will" programmes radiated by Radio Pakistan on 7020. We suggest that the only people to hear them are radio amateurs who can hardly feel much good-will towards Pakistan in consequence!

B.R.S. 18017, of Warwick, not Coventry, has his card from ZP5CF (ex-ZP4TA). On c.w. his log includes CR6CZ, 14005, 1935; VS1DU, 14010, 1645; FM7WD, 14060, 1715; OY2Z, 14025, 1244; FP8AP, 14035, 1220. B.R.S. 7594, of Yeovil, reports a few signals on 28, notably W2MAK/MM, the tanker *New London* south of Crete at the time of logging, and also ZB1L. He says 21 seems definitely a week-end band, when he has heard the usual run of stuff. On 14 he has heard CN8AV/AM, CR6AT, 14195, 1648; CR6BX, 14175, 1835; HP1MD, 14249, 1832; SV5UN, 14332, 1940 (QSL to the *Courier*, c/o The Voice of America, N.Y., 19, N.Y.); VP7NB, 14155, 1844; VQ3BU, 14198, 1904; ZD4BK, 14171, 1748 and ZS3O, 14108, 1853. Cards are in from ZS6ZU/Marion Island (QSL either to S.A.R.L. or to ZS6AAO).

G3FRB recently worked OD5AJ and discovered that he was an old friend of war-time days. Neither knew that the other had taken up Amateur Radio. At present on release leave from the Army, G3COJ, in spite of an indifferent aerial, has worked VP6SD, 1225; VS7WA, 1125; ZS9G, 1442; YI2AM, 1237; TA3AA, 1020; and VP9BG, 1535 on phone and OA4C on c.w. on 21 Mc/s.

G2DPY sends a comprehensive survey of all the bands from 3.5 Mc/s upwards. On this band he has worked W, VE, and EA9. On 7 Mc/s, MP4BAU, a new one to him, was heard at 2100, but not worked. PX1YR is active in the mornings; others heard include VP8AP, ZD2DCP, and KC6QY. He states that VK1PN and VK1JC are both on Heard Island using the same rig. He has received his card from VQ8AF and also one for a contact with G3AAT/OX when GW3IQQ/OX was operating from a Sunderland Flying Boat. He wonders if he can use the card for GW or OX!

Who's Who

Lt.-Col. Nepean, G5YN, due to sail for Singapore in February, expects to be active soon as VS1YN. Anyone hearing G5YN after then for the next two years should ignore a pirate. Col. Nepean was the original AC4YN (Tibet). Via G3GOA and VK6DX we learn that VK1HM started up on December 17 with n.b.f.m., using two Vee-beams. He will be active on 14160 at 1300 G.M.T. daily.

Alan Betts, VP8AI—recently married—has been building his own house. Unfortunately he succeeded in disabling his right hand for a time and says he wishes he had learned to send with his left! The best of luck, O.M., and we hope you will soon be o.k. again.

Dick, of HZ1MY, recently visited Paris, where

he met F9HE and some of the DX gang. He is being joined by his wife and hopes to be in London in time for the Luncheon Club meeting this month. G3FRB says HZ1RD will shortly be working from Dahrn on 14. His name is Jamil Nahas.

A Personal Note

May I take this opportunity to thank the hundreds of members who so kindly sent Christmas cards to my wife and myself and to the Bureau staff. We deeply appreciate your kindness. The work involved in making individual acknowledgment is beyond us! Thank you.

The Station behind the Call

DL2RO

OPERATOR of DL2RO is old-timer Major J. M. (Jack) Drudge-Coates, vintage 1924, ex Y-DCR, AI2KX, VQ6DCR, G2DC, VU2FO and J4AAC. The station is housed in a cellar—a comfortable, centrally heated room with adequate space for shack and workshop.

The transmitter consists of a Franklin or Clapp v.f.o. link-coupled to the first frequency doubler stage (6V6), followed by three further f.d. stages (6V6s) and a buffer amplifier (807). The doublers can be switched into the buffer stage as desired to suit the frequency band in use. The drive is link-coupled to the power amplifier, which uses 813s in push-pull running at an input of 130 watts for c.w. and 70 watts for 'phone. The 813s have given trouble-free operation since 1947.

The modulator and the main and subsidiary power units are housed on racks below the transmitter, separate supplies being provided for each v.f.o. and for the p.a. screens.



Major Jack Drudge-Coates at the operating position of station DL2RO. On the left is the main transmitter with the power units mounted below the bench. The receiver is on the right. Mounted in the window is the aerial tuning unit.

The p.a. is link-coupled to the aerial coupling unit, the appropriate aerial being selected by a mains-operated relay. A 137 ft. end-fed Zepp is used for all-band working, while a 67 ft. Zepp is available for the 7, 14 and 28 Mc/s work. A 4-element radial ground plane aerial is occasionally used on 14 Mc/s. The main receiver is a Hammarlund S200 Super Pro.

The station is wired for single-switch relay control, separate manual switching being available for checking and tuning the transmitter stage by stage.

DL2RO is active on 3.5, 7, 14 and 28 Mc/s, mainly on c.w., and uses a straight key which is an old friend of 25 years' standing. Since coming on the air in August, 1951, 137 countries and 37 zones have been worked.

The Darwen-Blackburn Plan

By HARRY WHALLEY, M.Sc., A.M.Brit.I.R.E. (G2HW)*

The Society's T.V.I. Sub-Committee, which is concerned chiefly with matters of technical policy rather than with the investigation of individual routine complaints, commend this article to all who are in trouble with T.V.I. A few energetic local committees similar to the one set up by the Darwen-Blackburn Group would do a power of good at the present time.

MEMBERS of the Darwen-Blackburn R.S.G.B. Group faced the coming of television to Lancashire in typical Amateur Radio fashion! At that time (two or three years ago), T.V.I. was merely a subject mentioned in Amateur Radio journals, presumably of interest only to unfortunate individuals living in the London area and the larger cities in the U.S.A., but of no concern to the average Provincial amateur. Then Sutton Coldfield opened. The advent of this station made the area such that fringe reception of TV signals was possible in Lancashire—a fact which gave Northern amateurs a taste of what T.V.I. could mean. However, no real alarm was caused because they knew that Holme Moss would not only provide strong television signals, but the station would operate on frequencies favourably situated with respect to harmonics from amateur transmitters. But when Holme Moss *did* start up it soon became apparent that T.V.I. was something to be seriously reckoned with.

Local Problems

The benefits of high field strength did not materialise. Receivers in the shadow of hills needed high gain aerials to get a picture at all. Aerials were directed at all conceivable angles in attempts to minimise ghosts. Receivers in good locations were used with indoor aerials, producing "noisy" pictures which were no better than good installations had previously received from Sutton Coldfield. The number of 1.7 Mc/s and 3.5 Mc/s amateur transmitters in the district which produced interference was far greater than had been expected and a number of higher frequency transmitters which, because of the favourable harmonic relationship, "couldn't possibly cause T.V.I. to Holme Moss" were very effectively doing so! It became clear, therefore, that something would have to be done about it, and as a first step a T.V.I. committee was set up by the members of the Darwen-Blackburn R.S.G.B. Group. This committee was intended to act as a central body from which technical advice could be obtained on T.V.I. problems. It was also planned that a stock of simple test gear should be accumulated for general use.

The Committee in Action

The first action taken by the committee was to send to all Group members a set of notes on what to do to make a transmitter T.V.I. proof, together with a questionnaire which they were asked to complete whenever a request was made for assistance. Such a request had to be made *via* the T.R. The questionnaire asked for details of tests made to date and was so worded that the person completing the form would realise exactly what had to be done to put his house in order. Although, in fact, no completed forms have yet been returned, it is known that the information put out by the committee has served a useful purpose, because the majority of stations can now use, at least, one amateur band without causing T.V.I. Assistance from the committee is there for the asking but the need for it is becoming progressively less as the

experience of members in handling T.V.I. problems grows.

As transmitters were cleared of interfering harmonics it became apparent that there were still a few stubborn cases where the trouble was at the receiving end. This could usually be cured by fitting an appropriate filter to the receiver, *but in no case was a filter fitted permanently, as it is not the amateurs' responsibility.* It is in such cases that a local T.V.I. committee can be of great value.

Organisation of a Committee

Although the committee membership ought not to be too large, it should, if possible, be composed of persons widely dispersed throughout the district so that individual assistance can be given with least inconvenience. Committee members should be chosen, primarily, because of their sound technical knowledge as they will have to deal with the G.P.O. Radio Branch and possibly with the engineering staff of receiver manufacturers. At the same time a degree of tact is required and an ability to realise that the Amateur Radio Service is not the only one to be considered. As, in special cases, advice or assistance may be required from R.S.G.B. Headquarters, it is suggested that the T.R. should be an ex-officio member of the committee.

Suggested Policy

When a case of T.V.I. is reported directly to the amateur, he should immediately contact the committee who will check to see that the transmitter in question is as free from harmonics as can be ascertained with the available test equipment. As much assistance as necessary should be given to the amateur concerned in order to achieve this condition. If the interference persists, the G.P.O. should be called in to give the transmitter a final test.

If the first intimation of T.V.I. comes from the G.P.O., the amateur concerned should inform the committee. The transmitter should then be treated until it is given a clearance by the G.P.O. and the committee.

When it is apparent that the fault lies at the receiving end, every facility for testing must be extended to the G.P.O. inspectors. It is very desirable to have available a range of filters with different cut-off frequencies for insertion into the television receiver feeders, as a filter will often provide a quick method of identifying the type of trouble. These tests may be carried out by the amateur, but it is always preferable to leave the actual installation of filters to the G.P.O. Having demonstrated a cure it must be explained to all concerned that the fault lies in the receiver and hence responsibility rests with the dealer or manufacturer. At this stage it is essential that the manufacturer should be told of the trouble. Incidentally, there is no doubt that some manufacturers are in ignorance of the true performance of their receivers simply because amateurs have fitted filters to close a particular case. This is bad policy not only because the action implies liability on the part of the amateur, but because it helps to perpetuate an unsound design merely because the manufacturer has received no complaints. The com-

* 2 Park Road, Sale, Manchester.

mittee should therefore ensure that manufacturers are informed of the facts of all such cases by the G.P.O. If the local engineer is unable, or unwilling, to do this a request should be made direct to the Radio Branch, Brent Building, North Circular Road, London, N.W.5. By adopting this procedure both the Radio Branch and the manufacturer become fully aware of the magnitude of the problem. Whereas such action could, of course, be taken by individual amateurs the system is much more effective if it is initiated by a committee representing all local amateurs. Only in the unlikely event of a manufacturer refusing to effect a cure should filters be fitted by the amateur and only in exceptional circumstances should they be fitted free of charge.

Conclusion

It is hoped that the information set out in this article will encourage other Town Groups and perhaps Affiliated Societies to form T.V.I. committees. It is also hoped that the more experienced amateurs in a particular town will agree to serve on local committees, thereby giving the benefit of that experience to their colleagues.

A T.V.I. committee can be very valuable in maintaining close and good relations with the local G.P.O. inspectors. Further, there may be occasions when the existence of such a committee will be of considerable advantage when dealing with the public.

Effective Noise Limiter

FOLLOWING the publication of his article "An Effective Noise Limiter" in the July, 1952, issue of the BULLETIN, the author (R. H. Harris, B.R.S. 4029) received a number of enquiries concerning the fitting of the limiter to the CR100 receiver. Mr. Harris states that the modification can be carried out quite easily.

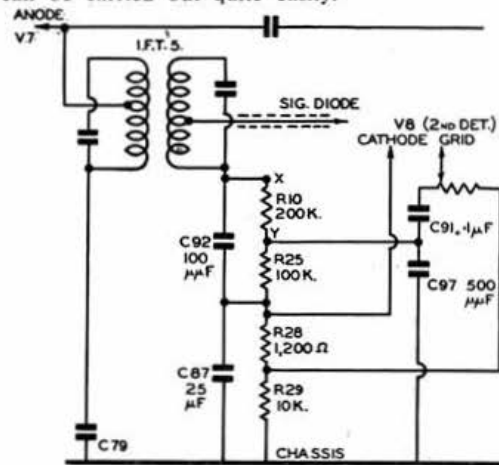


Fig. 1.—Circuit of i.f.t.5 and second detector connections in the CR100 receiver.

Fig. 1 shows the connections to the second detector of the CR100 receiver, with the equivalent points "X" and "Y" marked, as in the original article. The wire from the junction of C91 and C97 to point "Y" should be disconnected at "Y" and joined to the limiter on-off switch (this wire is equivalent to that connected to C10A in the R208 receiver). The remaining limiter connections are as shown in the circuit.

There is ample room beneath the chassis for the limiter sub-chassis carrying the 6H6 valve. No difficulties were experienced by Mr. Harris in carrying out the modification, and the noise limiter has been in effective use for some time.

Radio Research

THE Report of the Radio Research Board, together with the Report of the Director for Radio Research (Dr. R. L. Smith-Rose), for the year 1951, is now available from H.M.S.O., price 1/6.

The Report of the Board (which appears under the signature of Col. Sir Stanley Angwin) reviews the programme of work in hand and summarises progress. Projects under investigation include:

- (i) The Ionosphere. (ii) Radio Noise. (iii) Ground Wave Propagation. (iv) Propagation of Very Short Waves. (v) Direction Finding. (vi) Materials used in Telecommunications. (vii) Measuring Techniques.

The Report of the Director records progress made in the investigation of a wide variety of subjects including the propagation of low frequency waves along the surface of the ground (with particular reference to their use in navigational aids); the propagation of radio waves along wires and through the Ionosphere. The Report also makes reference to a special study of radio-meteorology at centimetric wavelengths.

Information is given concerning the routine recording of Ionospheric height and critical frequencies at Slough, Singapore, the Falkland Islands and Fraserburgh. The equipment used at the latter station has now been transferred to a new site at Inverness.

A section of the Report deals with the forecasting of high frequency radio propagation conditions. Information is also given on the accuracy of forecasts of transmission conditions and on the forecasting of Ionospheric storms.

Radio amateurs interested in research and experiment will find the Report of absorbing interest.

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The Radio Amateurs' Examination

Model Questions and Answers

Part 6.—Valves—Neutralisation.

IN Part 5 of this series reference was made to the simple triode valve, but candidates should also know something of the commonly used screen-grid and pentode valves.

Account for some of the disadvantages of screen-grid and pentode valves compared with triodes.

When additional electrodes are placed between the grid and anode of a valve, the attraction exerted by the anode on electrons leaving the cathode is reduced. The effect is equivalent to an increase in the a.c. resistance of the valve. Thus, while triodes seldom have a.c. resistances above 40,000 ohms, this figure may be many times exceeded in the case of multi-grid valves.

By

B. W. F. MAINPRISE

B.Sc. (Eng.), A.M.I.E.E. (G5MP)*

The high a.c. resistance of screen-grid and pentode valves necessitates a high impedance anode circuit. This entails an increased number of turns on such anode components as coils, chokes and transformers, or cores of specialised alloys. Difficulty arises in keeping down stray capacitance, leakage and resonance effects in the design of these components.

The output of multi-grid valves tends to have an undue proportion of harmonics, which will impair high quality reproduction.

Again, multi-grid valves tend to generate more noise than do triodes. A reason is that each additional electrode contributes slight variations in electron flow from instant to instant—much as obstructions in a river set up variations over brief periods through eddies—and these departures from steady electron flow give rise to noise. Accordingly, in positions such as v.h.f. mixers, or the r.f. stage coupling the aerial to the mixer, a triode may provide a more favourable signal to noise ratio.

High slope valves can usually handle only a small input without overloading which would produce distortion and harmonics. While there are many applications where full advantage may be taken of the high amplification provided by screen-grid and pentode valves, it will be seen that in some cases triodes may be advantageous in spite of their lower gain.

Neutralisation

Explain why neutralisation is necessary when a triode is used as an r.f. amplifier. How is the correct adjustment determined?

The grid and anode of a valve form two conducting surfaces separated by a dielectric—in this case the valve vacuum. They therefore act as a small condenser passing a proportion of the anode circuit variations back to the grid circuit. Re-amplification will occur, resulting in unwanted oscillation (i.e. instability).

In screen-grid and pentode valves the presence of additional electrodes between grid and anode

reduces the anode/grid capacitance to so low a figure that the feedback is normally insufficient to result in oscillation. In a triode the capacitance

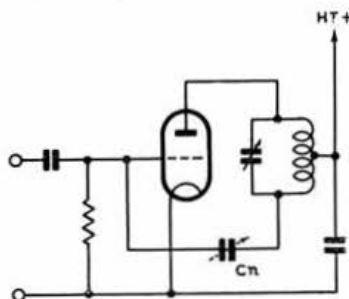


Fig. 1.

Illustrates a common method of neutralising feedback in a triode valve.

is greater than about 0.5 micro-microfarads which is the figure above which oscillation is probable, and external means must be provided to "neutralise" the feedback, occurring in the valve. A typical circuit is shown in Fig. 1. A condenser C_n is connected from the grid to the end of the tank coil remote from the anode. (N.B. Candidates frequently err in the placing of this connection). The mid-point of the coil is then kept at zero r.f. potential either by direct connection to earth, or via a by-pass condenser if the h.t. feed to the valve is being taken through the coil. C_n is made approximately equal to the valve's anode/grid capacitance and the correct setting is readily determined (in the case of a transmitter) in the following manner.

The h.t. voltage is removed from the stage to be neutralised, and drive is applied from the preceding stage, a d.c. milliammeter being used to indicate the grid current. On rotating the tank condenser through resonance with the grid circuit a flicker will be noted in the milliammeter reading. The neutralising condenser is now adjusted in progressive steps till any such flicker is removed, the grid tuning condenser being slightly re-set if necessary to keep the grid current at the maximum rated value. Anode voltage and aerial loading may then be applied to the stage.

Where a triode r.f. stage is used in a receiver the neutralising condenser is normally set to the value which prevents oscillation when grid and anode circuits are resonated to the same frequency, though in some applications, such as the "cascode" circuit, it should be set for the optimum signal-to-noise ratio.

A.R.R.L. DX Competition

THE Telephony Section of this ever-popular competition is scheduled for the week-ends of February 6 to 8 and February 20 to 22 and the Telegraphy Section for the week-ends of March 6 to 8 and March 20 to 22. Complete rules appear in the January, 1953, issue of *QST*.

* 48 Earlsfield Road, Hythe, Kent.

Amateur Television Topics

AFTER the mishap that restricted the Amateur TV demonstration at the R.S.G.B. Exhibition, we are glad to report further progress in other directions. Ian McWhirter (G3ETI), of the Wirral, has succeeded in getting a manufacturer's reject tube to function nicely after only five months' work. Good pictures are being obtained with 100 watts of lighting. He is rebuilding to improve performance and then hopes to operate the unit on 70 cm. Incidentally, G3ETI plans to organise a Television Convention in the Liverpool-Manchester area this year and would like to hear from those interested in the proposal. It is intended to show cameras, teletext and teletext apparatus, 70 cm. transmitters, receivers, etc.

By M. Barlow (G3CVO)*

Another camera just completed belongs to Tony Sale, of High Wycombe. This uses an RCA 5527 Iconoscope obtained just before the latest currency restrictions. It is proposed to use the unit, which is complete on its own, to feed G3CVO's transmitter. Three other cameras nearing completion are those of Messrs. Short (Boston, Lincs.), Bellamy (Bristol), and Dixon (Ross-on-Wye). The latter camera is designed for colour working using rotating colour discs driven by surplus synchronous motors. The drive is applied through bicycle chain and Meccano gears to discs, made of sheet acetate, obtained from theatrical lighting suppliers, and run in airtight chambers.

On the teletext side, J. A. Plowman (G3AST) of Luton, is constructing a flying spot microscope. Other enthusiasts have announced their intention of using Mullard projection tubes for true flying spot studio scanning. This is quite feasible, although the depth of focus is only a few inches when standard surplus R.A.F. camera lenses are employed. Nevertheless, the system makes a good start for those who want live pictures cheaply and economically.

Currently licensed for TV transmissions are G3BLV/T (Sunderland), G5ZT/T (Plymouth), G2DUS/T (Baldock), G3FNL/T (Upminster), G2WJ/T (Dunmow), and G3CTS/T (Norwood). Of these, the first two urgently require reports on their 70 cm transmissions. Are there any v.h.f. listeners in their areas? G2DUS and G3FNL are rebuilding, whilst G2WJ has changed from a CV53-CV53 to a CV127-CV397 arrangement, to provide 25 watts output instead of the previous watt or two. Due to start up on 70 cm as soon as gear is ready and licences obtained are G3ACK (Blyth), G3ETI (Gt. Meols, Wirral) and G3CVO.

By the way, G3CTS is the station of the Television Society, soon to be installed in the Norwood Technical College, South London. Full coverage of the London area, except to the east and south of Norwood is expected, with, initially, 25 watts input to a QV06/40 p.a. London readers may like to start constructing a converter for 427 Mc/s in readiness to receive transmissions from this station. The sound channel will be on 424.5 Mc/s, so that both sound and vision will be capable of reception on a standard TV set following the converter.

It is interesting to record that the British Amateur Television Club now has more than 200 members. Much progress is hoped for during the New Year.

* Cheyne Cottage, Dukeswood Drive, Gerrards Cross, Bucks.

Radio Amateurs' Examination

NEARLY three-quarters of those who sat for the special Radio Amateurs' Examination organised by the G.P.O. and held in London and Leith on October 4, 1952, were successful. The report issued by the G.P.O. shows that most of the candidates attempted all the questions. The average percentage of marks obtained by the successful candidates was 64; that obtained by the unsuccessful candidates was only 34. The results are shown in the following table:

Centre	No. of candidates examined	No. and percentage of passes	No. and percentage of failures
London	57	41 (72%)	16 (28%)
Leith	9	7 (77.8%)	2 (22.2%)
Total	66	48 (72.7%)	18 (27.3%)

The questions were as follows:

1. A 36-volt battery of negligible internal resistance is used to heat the filaments of a receiver employing four valves in series rated at 6.25 volts each. What resistance should be included in the circuit to limit the current to 0.3 A? (15 marks.)
Comment.—The majority of candidates appeared to have no difficulty with this question. (Average marks 13/15.)
2. State the procedure which should be used by the operator of an amateur station when calling another station. What is the maximum continuous time which may be occupied in making a call? (10 marks.)
Comment.—Although the majority obtained pass marks, many of the answers displayed a disappointing lack of knowledge of the procedure. (Average marks 6/10.)
3. Describe the construction of a pentode valve and state the function of each electrode. What do you understand by the amplification factor of a valve? (10 marks.)
Comment.—Fairly well answered by the majority of candidates. (Average marks 6/10.)
4. Describe with the aid of a diagram a transmitter employing a crystal oscillator, buffer stage and power amplifier. How can different frequencies be obtained using the same crystal? (15 marks.)
Comment.—Fairly well answered by most candidates. (Average marks 8/15.)
5. Moving-coil, moving-iron, and hot-wire ammeters are available to you. Which would you use to measure aerial current? Describe the construction and action of the meter selected and show how it is connected in the circuit. (15 marks.)
Comment.—Many of the candidates were unacquainted with the construction and action of the hot-wire ammeter. (Average marks 6/15.)
6. An aerial has an inductance of 62.5 microhenrys and a capacitance of 0.001 microfarads. If this circuit is set oscillating what will be the frequency of the wave radiated? (π^2 may be taken as 10.) (15 marks.)
Comment.—The majority of the candidates who passed showed the correct method, but many failed to bring the arithmetical calculation to a correct conclusion. (Average marks 6.5/15.)
7. Draw a diagram of the second detector stage in a super-heterodyne receiver and explain fully how the intermediate frequency is converted into an audible frequency. (10 marks.)
Comment.—This question was generally not well treated. (Average marks 4/10.)
8. Give a diagram of a circuit suitable for supplying smoothed h.t. from a.c. mains and describe its action.
Comment.—Fairly well treated by the majority of the candidates. (Average marks 6.3/10.)

G.P.O. to hold Examinations in London, Edinburgh and Cardiff

COMMENCING this year and until further notice the G.P.O. is prepared to hold a Radio Amateurs' Examination in October in London, Edinburgh and Cardiff provided that a total of not less than 60 applications is received. The examination fee will be 25/-.

The G.P.O. reserve the right to vary the arrangements in any way considered desirable and to review the position should the City and Guilds of London Institute be able, in the future, to hold two examinations annually, or should the number of applicants in any year fall below 60.

THE SOCIAL SIDE

Thames Valley Dinner

THE high standard set in past years was well maintained at the Annual Dinner-Dance of the Thames Valley Amateur Radio Transmitters' Society held at the Caernarvon Castle, Hampton Court, on Saturday, December 13th, 1952.

The Chair was taken by the President of T.V.A.R.T.S. (Leslie Cooper, G5LC), who had the support of Mrs. Cooper and Committee Members Alan Mears, G8SM, Gerald Billison, G6GB, Frank Hicks-Arnold, G6MB, and Ernie Dedman, G2NH, with their ladies.

Among the many visitors were the General Secretary of the R.S.G.B. and Mrs. Clarricoats, the President of the Sutton and Cheam Radio

Clarricoats spoke of the high honour which had come to the Society, whose President—Leslie Cooper—had been nominated President of the National Society. Mr. Clarricoats also referred to the many successes which had been achieved by T.V.A.R.T.S. and the associated East Molesey R.S.G.B. Town Group. He recalled that T.V.A.R.T.S. won the Affiliated Societies Contest for 1952 and that the East Molesey Group were runners-up in N.F.D.

Mr. Cooper, in reply, spoke of the enthusiastic support he had received from the membership and especially from the members of his Committee.

Mr. Alan Mears proposed the health of the visitors and a much appreciated response came from Mr. Vanstone. Mr. Hicks-Arnold welcomed the ladies and Mrs. Billison responded.

Before the company broke up for dancing a number of cups and trophies were presented. Mr.



Frank Hicks-Arnold (G6MB), receiving the Cooper Cup from Mrs. Iris Cooper, wife of the T.V.A.R.T.S. President, at the recent dinner. Also in the photograph Mrs. G6CL, G5LC, Mrs. 2AYC, G8SM.

Fred Lambeth, G2AIW, presented the G5KH Cup to Mr. Mears, as representing the East Molesey Group, whose members manned the leading Region 7 station during N.F.D. A particularly

Society and Mrs. Vanstone, the South-West London D.R. and Mrs. Lambeth, and R.S.G.B. Council Member C. H. L. Edwards and Mrs. Edwards.

Informal toasts were called by Alan Mears, who acted as Toast Master.

For the first time at an Affiliated Society function the Loyal toast was followed by a toast to H.R.H. The Duke of Edinburgh, K.G., Patron of the parent Society.

In proposing a toast to T.V.A.R.T.S. Mr.

warm ovation was given to Mr. Horace Cullen, G5KH, after he had presented the Cullen Inter-Club trophy to the President of the Sutton and Cheam Radio Society.

During the after-proceedings, Kenneth Price, Gladys Cowper, and Joyce Lock provided excellent entertainment. Prizes to a value of many pounds were subsequently distributed in a raffle.

Dancing was enjoyed to the music of Kenneth Barratt and his band. Mr. Barratt is a brother of G8IP/ZC4IP.



London Members' Luncheon Club

Christmas Meeting—December 19, 1952.

Top table: G2AIW, 2MI, Mrs. 2MI, 6CL, Mrs. 6CL, 2AYC (Chairman), Mrs. 2AYC, 6CJ (President, R.S.G.B.), Miss May Gadsden, 5QA, Mrs. H. M. Harris.

London Members' Luncheon Club

THE largest attendance for some months (36) was recorded at the Christmas gathering of the Luncheon Club which met at the Bedford Corner Hotel, Bailey Street, W.C.2, on Friday, December 19, 1952. By arranging the luncheon on the day of the A.G.M. Club members were able to welcome a number of provincial visitors including Council Members Herbert Bartlett, G5QA, and Hugh McConnell, GM2ACQ. Also present were the President of the R.S.G.B. (Frederick Charman, G6CJ), Region 5 Representative (Richard Thurlow, G3WW), Cambridge C.R. (F. W. Crabtree, G3BK) and Arthur Hemsley (ZS6GV, ZS7B, ZD7A and ZD8C). Warmly welcomed by the Chairman of the Club (Stanley Vanstone, G2AYC) were a number of wives and lady friends of members.

Following the luncheon, Mr. Hemsley spoke most entertainingly of his recent Amateur Radio experiences on the island of St. Helena. His talk, one of the very best ever delivered to the Club, was received with much enthusiasm.

Before the proceedings ended, Basil Wardman, G5GQ, voiced the thanks of all present to the Chairman, Hon. Treasurer (Clem Jardine, G5DJ), and Hon. Secretary (May Gadsden) for their services to the Club during the year, whilst Mrs. Cecilia Clarricoats expressed thanks to Mr. Vanstone for his generous gifts to the ladies.

The Club will meet again at 12.30 p.m. on Friday, January 23, at the Bedford Corner Hotel, Bailey Street, Tottenham Court Road. Luncheon 5/6. Reservations should be made to Miss Gadsden (HOL 7373) prior to the date of the meeting.

Norman Turner's Hamfest

ABOUT 70 enthusiasts, with their ladies, braved the terrors of the great fog of Sunday, December 7, to attend the Sixth Annual Norman Turner Hamfest at the Chiltern Works of Ernest Turner Electrical Instruments Ltd., High Wycombe, Bucks, and were rewarded with entertainment of the regular high standard of this famous party.

The President (F. Charman, G6CJ) and the President-Elect (L. Cooper, G5LC) with their wives were amongst the guests, some of whom had come from as far afield as London and Oxford; there is no doubt that the numbers would have been much greater but for the dreadful weather. Unfortunately, to the regret of all, Norman Turner, G4NT, who had been overseas, was unable to get back in time. In his absence the proceedings were ably managed by amateur D/F expert G. T. Peck, who is a senior member of the Company's staff.

Introductions over, a very interesting practical lecture on "High Fidelity Reproduction" was given by H. J. Leak, the well-known specialist in this field. High tea followed. Then came an illustrated lecture by D. G. Cane (Seismograph Service Ltd.) entitled "Prospecting for Oil," and the showing of three semi-technical films kindly loaned by Shell-Mex and B.P. Ltd. Mrs. Charman later presented a number of prizes to winners in the "Lucky Draw."

The President offered thanks on behalf of the guests to Mr. Turner, Mr. Peck, and all those who had assisted them in providing yet another of these unique Hamfests. At the suggestion of Kenneth Alford, G2DX, a greetings telegram was sent to G4NT in the name of the assembled company.

F.C.

The Quarter Century Wireless Association

THE Quarter Century Wireless Association celebrated its Fifth Anniversary at a Dinner-Meeting in New York City on December 5, 1952. More than 175 members attended, including many well-known amateurs in industry, radio and television engineering and government. At this meeting Paul Godley (ex-2ZE) described the first reception of North American 200 metre amateur spark and c.w. signals in England during 1921, using his superheterodyne receiver, whilst Irving Vermilyea (WIZE) told of his early exploits in installing and operating an amateur wire telegraph line in New Rochelle, N.Y., in the early part of the century.

The Q.C.W.A. organisation dates back to the night of November 14, 1947, when six old-timers were discussing amateur affairs on the 10 metre phone band. It was proposed by one of the number (W2UD) that those who had held an amateur licence for 25 years or more, should get together in person and talk about the "good old days." A meeting duly took place in New York City on December 5, 1947, and the Quarter Century Wireless Association was founded with a membership of 35.

John DiBlasi, W2FX, was elected President, George I. Droste, W2IN, Vice-President, Leon A. Hansen, W2FIT, Secretary, and David Talley, W2PF, Treasurer. The above officers were re-elected at the last annual meeting. By the end of 1947, there were 54 members, mostly around the New York Metropolitan Area. This number had increased to 150 in 1949 and to 250 by the end of 1950. Growth was rapid thereafter. The membership as at the end of December, 1952, stood at 540, drawn from all states of the U.S., Mexico, Canada, Cuba, Puerto Rico, Western Germany, Great Britain, Peru and Brazil.

The objects of the Q.C.W.A. are expressed in the following extracts from its Constitution:

1. To foster and develop friendship and co-operation among amateur wireless and radio operators of more than 25 years standing.

2. To take a general interest in all matters affecting or involving Amateur Radio, and sponsor such action as may be deemed proper in their interests.

In connection with the above aims, the Q.C.W.A. has been supporting the *Braille Technical Press* which prints in Braille, for the benefit of blind Amateur Radio operators, various technical articles taken from the *A.R.R.L. Handbook*, *QST*, *CQ* and other technical magazines. The Q.C.W.A. is always interested in helping the novice amateur and newcomer to Amateur Radio.

Membership dues, which are nominal—only \$1.00 per year—help to pay for the cost of posting the *Quarterly Q.C.W.A. Bulletin* and for producing Q.C.W.A. certificates, a copy of which is issued to all new members. The certificate depicts "The Old Man" as the insignia of the Q.C.W.A. It is a most valuable possession of the "old timer."

Those who were licensed as radio amateurs 25 or more years ago and are currently licensed are eligible for membership. Application forms can be obtained from David Talley (W2PF) 130 Martense Street, Brooklyn 26, N.Y., U.S.A.

Can You Help?

• E. W. Webb (B.R.S. 19803), Connaught House, Connaught Road, Littlehampton, Sussex, urgently requires the circuit diagram of the Canadian 52 receiver.

SOCIETY NEWS

Presentation of Prizes and Trophies

AT the conclusion of the Annual General Meeting, the President made the following presentations:

Wortley Talbot :	Mr. C. E. Newton, G2FKZ.
Courtenay Price :	Mr. Paul Sollom, G3BGL.
Founders' :	Mr. V. M. Desmond, G5VM.
Colonel Thomas :	Mr. W. E. Russell, G5WP.
N.F.D. Shield :	Bristol Group.
N.F.D. Shield Replicas :	Bletchley and Slough Groups.
1930 Committee :	Mr. W. S. Hall, G2AOL.
Watts :	Mr. C. E. Newton, G2FKZ.
Edgware :	Thames Valley Amateur Radio Transmitters Society.
Desmond :	Mr. J. C. Foster, G2JF.

The **Norman Keith Adams Prize** was presented to Mr. D. N. Corfield, G5CD.

Mr. W. E. D. Parker, G6BY (Winner of the **ROTAB Trophy**) was prevented by illness from attending.

Other Trophy winners who were unable to attend included Mr. R. S. Stott, B.R.S. 18013 (**B.E.R.U. Receiving**), Mr. D. E. Davies, GW3FSP (**Somerset**), Mr. J. Walley, B.R.S. 18656 (**1950 Council**), Mr. F. J. U. Ritson, G5RI (**Braaten**), Mr. J. Banner, M.B.E., GW3ZV (**Milne**), Mr. F. W. Miles, G5ML (**Fergus**), and Mr. H. Beaumont, G5YV (**Thorogood**).

Mr. B. Sykes, G2HCG and the Derby and District Amateur Radio Society qualified for miniatures.

The first award of the **Bevan Swift Memorial Premium** was made to Mr. H. Whalley, G2HW.

Good News for F.M. Enthusiasts

AS from January 31st next, British amateurs will be allowed to use Frequency Modulation in the following frequency bands:—

1715-2000 kc/s, 3500-3635 kc/s, 3685-3800 kc/s, 7000-7300 kc/s, 14000-14350 kc/s, 21000-21450 kc/s.

This new facility has been obtained as the result of prolonged negotiations between the Society and the G.P.O.

First year licensees will be allowed to use F1 and other licensees F1, F2, and F3 subject to the following proviso:—

That the carrier frequency is at least 10 kc/s within the limits of the frequency band in use and that the maximum deviation of carrier frequency shall not exceed 2.5 kc/s. The maximum effective modulating frequency shall be limited to 4 kc/s, and the audio frequency input to the frequency modulator at any frequency higher than 4 kc/s shall not be less than 26 db below the maximum input at lower frequencies.

(Although F.M. may be used legally on frequencies throughout the bands listed—subject to the requirements of the proviso—members are urged to adhere to the R.S.G.B.-European Band Plan.—Ed.).

Affiliated Societies

THE Council has decided that, as from January 1st, 1953, the annual subscription payable by affiliated societies shall be £1 1s. and that every affiliated society shall be entitled to receive one free copy of the R.S.G.B. BULLETIN each month.

The previous subscription rate of 5/- (10/- if a copy of the BULLETIN was required)—fixed many years ago—was considered to be totally unrealistic on present day standards.

* * *

The following societies are now in affiliation with the R.S.G.B.: **Ribblesdale Amateur Radio Society**, c/o E. Pearson (Hon. Secretary), 1 Cowper Avenue, Clitheroe, Lancs.

University Radio Society, c/o J. P. G. Jones (Hon. Secretary), The Union, University Road, Edgbaston, Birmingham.

Gavel Presentation

MR. Arthur Milne, G2MI, recently presented to the Society a beautiful hand-made lignum vitae gavel and plate for the use of the Chairman at meetings of the Council.

The presentation took place at the December meeting of the Council when a vote of thanks to Mr. Milne was recorded in the Minutes of that meeting.

Silent Keys

The announcement that Ronald William Rogers, G6YR, of Southport, Lancashire, has passed on will be read with much sorrow by all who knew him personally or over the air. Ron—he was only 40 when he died on December 20—had been ill for the past three years but during all that time he retained his love for Amateur Radio. His transmitter was remotely controlled from the bedside.

Ron joined the Society in 1934 and had been licensed for about the same period. His call was frequently heard on the DX frequencies as well as on the more domestic bands. A staunch supporter of the Society, he was for some time T.R. for Southport.

He leaves a widow and two young children (Patricia age 5, and John age 3) to whom we offer our heartfelt sympathies at this sad time. J.C.

* * *

With much regret we report the sudden death of John Thomas Sawyer, G2AFU, of Gillingham, Kent. Consistently active on 1.8, 7 and 14 Mc/s, Tom was renowned for his excellent constructional work. He will be sadly missed by members of the local club and by those who knew him well on the "Top Band."

He leaves a widowed mother to whom we extend our heartfelt sympathy. W.B.N.A.

* * *

It is with sorrow that we record the passing of Mr. J. W. Richardson, G8GQ, of Hemel Hempstead, Herts. Jack's call sign was frequently heard in pre-war days on the DX bands but he had not been well enough in recent years to continue the hobby he so much enjoyed. He was a director of Piezo Crystals, Ltd.

Our sympathies are extended to his wife, who did so much to ease his latter years. E.L.G.

* * *

The death has also occurred of Mr. H. A. Parcell, B.R.S. 4810, of New Malden, Surrey. A Member since 1942, Mr. Parcell derived much pleasure from his association with the Amateur Radio movement. Our deep sympathies are extended to his widow.

16th B.E.R.U. Contest, 1953

A FEW important changes have been introduced into the rules for 1953, in an attempt to overcome some outstanding difficulties. Acknowledgement is made to several 1952 entrants who have helped in this respect.

There is one weekend each for the c.w. and 'phone events, but the starting time is your own local Saturday noon, and the finishing time your own local Sunday midnight. Out of that 36 hours you can work as you like to a total of 24 hours, but every session must be at least one hour of the total. The problem is to provide 24 hours' operating time, and spread it through the weekend without having to start Canada on Friday, or finish New Zealand on Monday. Analysis shows a good overlap between all parts of the Commonwealth, but it will be possible to pick the best DX periods and get some sleep as well.

A number of zones have been grouped, in order to reduce the number of "one man" zones and VK and ZS have been rearranged at the suggestion of entrants there. In order to prevent "G-paralysis," Great Britain has been divided into three zones for stations outside the U.K.; the division is by figures and not prefixes. Tests on logs over several years show that the average scoring rate for British stations is about 12 points per contact, whilst in some places it is as low as 6 points. The new plan should help to equalise the rates, and will help Canadian stations particularly.

The 21 Mc/s band has, of course, been included this time, and its introduction should offer much improved opportunities for the 'phone and low-power man.

Entrants are again asked to note carefully the posting dates (Rule 8) and to try and send in tidy and uniform logs (Rule 7). It will be found helpful to prepare a scoring chart in advance showing zones and zone totals against entries. If this is filled in during the contest, duplicate contacts can be avoided, the score can quickly be found at any time, and log and analysis totals can easily be made to agree.

As usual, a trophy or miniature cup will be awarded to the fully paid-up member of the R.S.G.B. gaining the highest number of points in each section. Certificates will also be awarded to the first three entrants in each section and also to the leading entrant in each zone, provided three entries have been received from that zone. A second certificate will be awarded for each zone yielding ten or more logs.

Competitors should conform, as far as their licences permit, with the R.S.G.B. Band Plan, which is as follows:

Telegraphy only: 3,500-3,600 kc/s; 7,000-7,050 kc/s; 14,000-14,100 kc/s; 21,000-21,150 kc/s; 28,000-28,200 kc/s.

Telephony only: 3,600-3,800 kc/s.*

Telegraphy or 7,050-7,300 kc/s; 14,100-14,350 kc/s; 21,150-21,450 kc/s; 28,200-29,700 kc/s.

Remember a hundred well-chosen contacts will bring a leading score. Good hunting!

* In the U.K. the gap between 3635 and 3685 kc/s is not available to amateurs.—Ed.

Rules : Transmitting Contests

- The event will be divided into three sections, namely:—
(a) Senior telegraphy (max. licensed power).
(b) Junior telegraphy (25 Watts maximum input).
(c) Telephony (max. licensed power).
- The Telegraphy event (Senior and Junior) takes place from 1200 Local Time, Saturday, March 28, till 2400 Local Time, Sunday, March 29, and the Telephony event from 1200 Local Time, Saturday, April 11, till 2400 Local Time, Sunday, April 12.
Out of the 36-hour period, a total of 24 hours' operation is permitted, in periods of not less than one hour's duration each. A line is to be drawn across the log at the end of each period.
Operation may extend outside the local time limits given above, but no points may be claimed for any contacts made in this way, though they may be logged.
- The contests are open to all British subjects living within the British Empire and British Mandated Territories and to members of British Forces of Occupation operating properly authorised stations, who are fully paid-up members of either the R.S.G.B. or one of the British Empire Societies listed overleaf. All entrants agree to be bound by the Rules of the Contests.
- An entrant who is not a member of the R.S.G.B. must certify in the declaration overleaf that he was a fully paid-up member of one of the listed British Empire Societies and that he was resident in that country at the time of the contest.
- An entrant not located in one of the prescribed Prefix Zones shall be considered as being in the Prefix Zone nearest to his station.
- Only the entrant will be permitted to operate his station for the duration of the contest.
- Entries must be legibly written or typed on one side of quarto or foolscap paper (8 x 10 in. or 8 x 13 in.) as set out overleaf. Sheet 1 will bear the name, address, etc., and declaration; Sheet 2 the analysis. Continuation sheets will continue the log in time order (G.M.T.).
- All entries must be posted within 14 days of the close of the relevant section—postmarked not later than April 13,

1953, in the case of the Telegraphy Contest, and April 27, 1953, in the case of the Telephony Contest. Entries must be addressed to the R.S.G.B. Contests Committee, New Ruskin House, Little Russell Street, London, W.C.1. The closing date for the acceptance of entries is July 1, 1953.

9. The judging of entries will be carried out by the R.S.G.B. Contests Committee. The decision of the R.S.G.B. Council will be final in all cases of dispute. No correspondence will be entered into regarding any decision made by the Council or the Contests Committee.

10. Operation is restricted to the following bands: Telegraphy: 3.5, 7, 14, 21 and 28 Mc/s. Telephony: 14, 21 and 28 Mc/s. Telegraphy must be type A.1 (pure c.w.) only, and frequent tone reports of T8 or less may result in disqualification. Telephony may be A.3 (amplitude modulation) or narrow band frequency modulation where permitted, but reports of excessive frequency spread may result in disqualification.

11. The conditions laid down in the entrant's licence must be observed. The input to the valve or valves delivering power to the aerial must not exceed 25 Watts in the Junior Telegraphy section.

12. Contacts may be made with any station using a British Empire call sign in any of the Territories indicated in Rule 3, except that contacts with stations in the entrant's own zone, or with mobile or unlicensed stations in places where licences are obtainable, will not count for points. Only one contact per band with each station will count for points, but duplicate contacts should be logged. The decision as to whether or not a station is valid will rest with the R.S.G.B. Contests Committee.

13. For each zone (outside the entrant's own zone) the first contact on a specific band will count 15 points, the second contact 14 points, and so on till after the 14th contact they count 1 point each. This system will be repeated on each band. For stations outside the British Isles, Zone 2 is sub-divided into three zones under the call sign figures 2, 3 and 4-8, regardless of prefix. Thus G2, GC2, GD2, GI2, GM2, GW2 are all Zone 2a, etc. British Isles stations cannot work each other for points.

14. Serial numbers must be exchanged and acknowledged before a contact can count for points. The serial number of

R.S.G.B. BULLETIN. January, 1953.

Tests and Contests

The B.E.R.U. Contest, 1952

The fifteenth British Commonwealth event was as well supported and as popular as ever. Though conditions were reported on the whole slightly better than in 1951 for both c.w. and phone weekends, everybody experienced bad patches. Seven Megs. was in prominence as a DX band; 28 Mc/s had only limited value. African stations, in particular VQ4s, found 14 Mc/s very poor, but they seem to have scored well nevertheless.

The number of logs received was somewhat less than in 1951, though it is known that over 400 stations took part in some way or other. This paucity of logs is believed to be due partly to the difficulty of advance publicity, resulting in many stations coming in by chance rather than by plan. We shall continue to try and overcome the problem. The complete list of placings was published last month.

Senior Telegraphy

The leading score comes from F. Charman, G6CJ, who is satisfied after more than a dozen attempts, but who, being considerably involved in the organising and judging of Contests, cannot accept any award. The old pair of large Vee aerials served for transmission, but he says that a set of special receiving aerials (secret)—which give much better DX/local signal ratio—put up the scoring rate during the heavy QRM periods.

The Senior winner is "Slim" Herbert, ZL1MB, who scored 1,846 points from 199 QSOs—not too bad for 24 hours work. It is a long time since a ZL topped the B.E.R.U. list, and it was done with 100 watts into a 550 ft. Vee, a 3-element 14 Mc/s rotary, or a 132 ft. Zepp.

Runner-up is last year's winner, Fred North, VP6AA (also VP6CDI), who didn't quite reach the mark in spite of his threats—maybe conditions were bad down in B.W.I. Fred used 300 watts into a 28 Mc/s rotary, and various long wire aerials. Next in the list comes the sturdy warrior

and past winner W. E. Russell—"Rusty" of G5WP—who with gruff fist can be heard yearly plodding his way through the thickest QRM and pulling out all the plums.

Junior Telegraphy

The first two in this section are the same as last year; Jac Van Wyk, ZS6QF (now ZS6R), who puts out a fine signal on all bands from a set of folded dipoles, and J. S. Nicholson—"Nick," VU2JP—the reliable station in Zone 1. A relative newcomer, C. T. Fung, VS6CG (Hong Kong), brings back past glory to H.A.R.T.S.

Telephony

The telephony section is well represented by VQ4; perhaps conditions were better than they thought. First is George Dent, VQ4AQ, ex-ZS6AM, who believes in Vee beams, and second R. F. B. Featherstone, VQ4RF, with more Vee beams. Third place is taken by John Ellory, G2DPZ, who prefers multi-element aerials.

Looking back at the list one realises that it is the "aerial farmers" who win all the prizes, and one wonders how to help and encourage the "small man" on whom the success of the event depends. It is not enough just to offer an award for, say, 25 watts and two dipoles, because locations play such an important part.

Receiving

In the receiving sections the scoring was high, maybe because of the new bonus for copying both ends of a contact. In the telegraphy section, R. S. Stott, B.R.S. 18013, one of the regular entrants, has moved up to first place, and C. A. Bradbury, B.R.S. 1066, to second. As there has been a monotonous regularity of winners from Great Britain, it is refreshing to see the name of Tan Bin Hussain, B.E.R.S. 740 of Ipoh, in the telephony section, followed by the Melbourne "regular," Eric Trebilcock, B.E.R.S. 195. There was some difficulty in interpreting the scoring for full QSO entries, and it is hoped that the 1953 rules will be clearer.

Comment

There was a good response to the request for tidier and more uniform logs, though we still receive some in grease pen on blotting paper, and others in queer shapes. Imagine trying to cross check 100 logs when the sheet length varies from six inches to three feet!

Over half the entrants offered some comment, usually favourable and often very helpful. In the rules for 1953, published in this issue, some of these suggestions have been put into practice.

Thanks are offered to all who sent in entries, particularly those with low totals. Thanks also to all who sent in useful check logs. It is regretted that we cannot, much as we would wish, answer all the letters received.

Check Logs

G2AJB, '2AOW, '2MI, '2UX, '3AAM, '3BDS, '5VO, '6AH, '8PG, GW3QN, '5SL, MD5XZ (2), VE1AE, '3XY, VP7NM, VQ4RF, VS1EV, ZL1HM, '2FA, '4GA, ZS5DS, '6HM and B.R.S. 250 (2 logs—c.w. 2,310 pts.!).

Second Top Band Contest, 1952

The ever-popular Top Band Contest yielded 121 logs and check-logs from participants. Among the entrants will be seen many familiar calls, but a glance at the results will show the preponderance of newly-licensed entrants. It is greatly to their credit that so many put up such fine performances.



The station of VK2DI—leading Australian entrant in the Senior Telegraphy event.

The Leading Stations

The stations placed first and second in the last two Top Band events again head the list, although their positions are reversed this time.

J. C. Foster, G2JF (Ashford, Kent), running a Clapp oscillator with buffer and p.a., gained 326 points, a lead of 24 points over D. E. Davies, GW3FSP (Skewen, Glamorgan) who was second. The transmitter at GW3FSP was a 6V6 (e.c.o.), 6V6 (buffer), 807 (p.a.). Third place was taken by W. C. Holley, G5TN (Weston-super-Mare) using a 6J5 (v.f.o.), 6F6 (buffer doubler), 807 (p.a.). The first three stations used half-wave aerials. H. J. M. Box, G6BQ (Gravesend) was placed fourth with 281 points.

Conditions

Conditions were poorer than usual as is evident from the generally lower number of contacts made by the leading stations. For much of the time, especially between 0400 G.M.T. and 0530 G.M.T. long skip conditions were present, but during these periods the only European amateurs apparently operating—OH3NY and HB9HT—were good

Second Top Band Contest, 1952, Results

Position	Call sign	Region	Points	Scoring Contacts	Position	Call sign	Region	Points	Scoring Contacts
1	G2JF	08	326	179	57	G3FRV	07	160	100
2	GW3FSP	10	302	165	58	G3HIR	07	160	100
3	G5TN	09	290	155	59	G3DDM	06	159	79
4	G6BQ	07	281	154	60	G3HQH	08	158	83
5	G5JU	03	278	143	61	G4XC	04	157	78
6	G3BMY	03	275	143	62	G2CV	07	156	98
7	G3EBH	04	271	147	63	GM3IGW	14	156	78
8	G8KP	02	266	144	64	G3AID	06	154	84
9	G3BKF	05	259	140	65	G3HTI	04	153	76
10	G6VC	07	255	145	66	G5SX	07	153	91
11	G3IAS	07	250	145	67	GW3HJR	10	149	79
12	G3HKC	03	247	129	68	G2HPF	05	146	84
13	GM6RI	12	244	128	69	G2BOF	07	145	93
14	GM3OM	14	243	127	70	G8BN	07	143	85
15	G5YV	02	242	125	71	G2VV	07	136	81
16	GM3AVA	14	242	124	72	G2CMK	05	134	67
17	G5MP	08	241	128	73	G3GHC	03	134	67
18	G3GGN	08	236	121	74	G3BGP	07	132	80
19	G3US	02	226	119	75	G3ESY	03	131	66
20	G2MJ	01	222	114	76	G3GFD	02	128	67
21	G3FNK	04	222	118	77	GM8MJ	14	128	63
22	G3CCZ	07	221	123	78	G3BHR	07	124	76
23	G3CWV	07	221	132	79	G3HWU	02	122	61
24	G3HXL	03	218	115	80	G8BM	01	121	60
25	G2DVD	08	215	117	81	G8WC	06	119	60
26	G3HCX	02	215	112	82	G4CM	07	119	78
27	GW3QN	11	214	107	83	G3HN	02	118	59
28	G6UR	09	214	113	84	G3BRL	07	117	67
29	G3BTP	07	208	117	85	G2AYG	01	112	56
30	G3BDQ	08	206	105	86	G3GDW	09	105	52
31	GM3EFS	14	205	108	87	G3HIV	07	105	64
32	G8ON	04	204	102	88	G2AKK	01	102	51
33	G3GFG	06	201	108	89	G2JB	07	102	63
34	G2HBG	04	197	101	90	G3FJQ	01	100	50
35	G3ILT	07	196	112	91	G8FR	07	100	54
36	G3GZJ	07	193	112	92	G3ICJ	04	98	49
37	G5JL	07	193	109	93	G5AO	08	98	49
38	G2NJ	04	191	100	94	G3BWR	01	97	48
39	G5LH	02	186	93	95	G3HKX	07	95	56
40	G8MD	01	186	93	96	G3IWC	07	87	56
41	G2YU	05	184	92	97	G3IDM	07	86	46
42	G3IAF	07	184	106	98	G3IJS	07	85	53
43	G3AKY	02	183	93	99	G6NK	07	85	46
44	G3HYG	08	182	89	100	G3HZG	07	81	46
45	G2HP	07	181	107	101	G3CDZ	05	81	41
46	G2FYT	09	178	90	102	G2ZR	09	76	38
47	GM3EHI	14	177	88	103	G3FHG	06	74	37
48	G5MR	08	177	91	104	G3HLX	07	73	46
49	G3ISA	07	176	103	105	G8LN	07	64	37
50	G3GWT	02	175	87	106	G8QZ	04	64	31
51	G4DC	07	175	109	107	G2HOX	07	62	32
52	GW3ENY	11	173	86	108	G3HTE	02	52	26
53	G2AOL	07	171	98	109	G3FTQ	07	46	24
54	G3GZB	07	166	96	110	G3JWB	07	30	15
55	G6UT	05	164	86	111	G3IDG	07	12	6
56	G3HKF	02	163	81		G6JJ	07	10	5
57	G3ELZ	04	162	81					

* Disqualified under Rule 4 (no declaration).

Contests Diary

1953

January 24-25	"Top Band" (No. 1)
February 7-8	Affiliated Societies
March 28-29	B.E.R.U. (Telegraphy)
April 11-12	B.E.R.U. (Telephony)
May 3	D.F. Qualifying (Edgware)
May 9-10	144 Mc/s Open
May 31	D.F. Qualifying (Peterborough)
June 13-14	National Field Day
June 21	144 Mc/s Field Day (No. 1)
June 28	D.F. Qualifying (High Wycombe/Oxford)
August 16	D.F. Qualifying (Rugby/Slade)
August 30	144 Mc/s Field Day (No. 2)
September 6	Low Power Field Day
September 6	D.F. Qualifying (Romford/Southend)
September 13	420 Mc/s Tests
September 27	D.F. National Final
October 3-4	Low Power
November 7-8	"Top Band" (No. 2)

signals and were worked by several entrants. Between 0430 and 0630 G.M.T. WILYV could be heard and three or four entrants succeeded in raising him. G5JL heard eight W1 and W2 stations at this time.

Scoring System

The new scoring system was generally well received. It appears to have resulted in a general levelling out of Regional scores, eight different regions being represented in the first nine positions. Some criticism was made regarding the scoring for extra-European contacts, but it is felt that any increase in the points-ratio would encourage "queueing" and pre-arranged schedules.

Comments

Ex-G3EIO, who was with HB9HT (Zurich) throughout the contest, praised the excellent quality of transmissions, but remarked upon the number of stations, especially newcomers, to whom the break-in system is rather vague.

There were the usual comments regarding the lack of signals at the ends of the band. G6JJ operated for over four hours on the high frequency edge and during this time five stations were heard and worked.

Thirty-fourth place was gained by G3ILT—to many just another new call. John R. Williams, the licensee, of Banstead, is, however, totally blind. His 112 contacts were logged on a Braille shorthand machine and afterwards transcribed on his typewriter. A Braille clock was used for timing. The only assistance he received was in the checking and totalling of his score of 196 points. A truly remarkable effort, and we hope that we shall see his entry regularly in future events.

In response to requests, the number of points-scoring contacts made by each competitor is shown against his score.

Check Logs

Check logs were received from G2HW, G2ZZ, G3CXM, G3FFY, G5PP/P, G6OM, G8NF, G8WF, HB9HT, OH3NY and WILYV, who are thanked for their co-operation. HB9HT worked no less than 63 British stations during the event.

Council Proceedings

Résumé of the Minutes of the Proceedings at the 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 Tuesday, November 11, 1952, at 6 p.m.

Present.—The President (Mr. F. Charman in the Chair), Messrs. H. A. Bartlett, L. Cooper, C. H. L. Edwards, D. A. Findlay, J. H. Hum, F. G. Lambeth, H. McConnell, A. O. Milne, R. Walker, P. W. Winsford, and John Clarricoats (General Secretary).

Apologies for absence were submitted on behalf of Messrs. T. L. Herdman and W. A. Scarr.

Annual and Special General Meetings.

The Secretary and Mr. Walker reported upon correspondence which had been exchanged with the Society's legal advisers in regard to (a) the forthcoming Annual and Special General Meetings and (b) the use of proxy forms.

Decisions taken on behalf of the Council by the Secretary and Mr. Walker were approved.

Membership.

Resolved:—

- (a) to elect 62 Corporate Members and 17 Associates;
- (b) to grant Corporate Membership to one Associate who had applied for transfer.

Application for Affiliation.

Resolved to grant affiliation to the Ribblesdale Amateur Radio Society.

Royal Patronage.

It was formally reported that H.R.H. The Duke of Edinburgh, K.G., had extended his Patronage to the Society and that His Royal Highness had expressed a wish to receive a copy of the Society's Journal each month and such other publications as the Society may from time to time issue.

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

Final arrangements for the forthcoming Exhibition were approved.

Invitation from Eire.

Resolved to authorise the President (Mr. F. Charman, B.E.M.) to attend the forthcoming Convention organised by the V.H.F. Research Society of Ireland.

Membership Certificates.

Resolved to place an order with Bradbury Wilkinson & Co., Ltd., for the supply of 2,000 certificates of membership at a net cost of £28 10s. 1d.

The 21 Mc/s Band.

It was formally reported that the G.P.O. had agreed to permit the use of telephony on frequencies in the 21 Mc/s band as from November 15, 1952.

Booklet for Representatives.

It was reported that a booklet dealing with certain educational aspects of Amateur Radio (prepared by Mr. C. H. L. Edwards) was now available for distribution to representatives.

Frequency Shift Keying.

It was reported that a letter had been sent to I.A.R.U. Headquarters protesting at the decision of the F.C.C. to allow U.S.A. amateurs to use frequency shift keying on the long-distance communication bands.

Cash Accounts.

Resolved to approve the Cash Accounts for September and October as submitted by the Hon. Treasurer.

Articles of Association.

As the result of a general discussion on matters arising from the publication of the draft Articles of Association it was agreed to make every effort to forward the final draft to the Board of Trade prior to the date of the Annual General Meeting on December 19, 1952.

Proxy Votes.

Arrangements for dealing with proxy forms at the forthcoming Annual and Special General Meetings were approved.

Notice of Motion.

Mr. Walker gave notice that he would move at the next meeting that the subscription payable by Affiliated Societies shall be increased.

The meeting terminated at 9.20 p.m.

Regional and Club News

BRISTOL.—A general discussion of Society affairs took place at the December meeting which was attended by the R.R. (Herbert Bartlett, G5QA). A draw took place for equipment which had been donated to the Group. The following appointments for 1953 were made: *Hon. Secretary and Treasurer:* D. F. Davies (G3RQ); *Hon. Auditor:* B.R.S. 14627; *Committee:* B.R.S. 18798, G2FYT, G3CHW, G3IFV and G6GN.

At the meeting on January 23, R. G. Lane (G2BYA) will lecture on the design and use of wide-band couplers. Members will have an opportunity at this meeting of seeing the N.F.D. Shield.

CAMBRIDGE UNIVERSITY WIRELESS SOCIETY.—Meetings during the Lent term will be held on Mondays at 8.15 p.m., commencing January 19. The Society's station, G6UW, in the Cavendish Laboratory, is again operating on the i.f. bands. Full workshop facilities are available. *Hon. Secretary:* Bryan Phillips (GW3GVB), Caius College, Cambridge.

CHINGFORD.—The Group once more holds its meetings at the A.T.C. H.Q., Pretoria Road. The session opened on December 16 when J. Hunter (G6HU) lectured on tape recording equipment. Local members will be welcomed at meetings.

COVENTRY.—At the November meeting a discussion took place on the revised rules for N.F.D. and on the subject of suitable transmitter designs. Final arrangements were made for the Group Dinner on January 16 at the Saracen's Head, Balsall, near Coventry. The T.R. wishes all members in his area a Happy New Year.

EAST LONDON.—The "East London Coronation Trophy" Contest will take place on January 24-25 on Top Band, the rules being the same as for the Top Band Contest. The area with the most points scored by its three leading members will be the winner. Entrants should register now with their T.R.s. All applications must reach the organiser (G2ZZ) prior to the event.

MANCHESTER & DISTRICT RADIO SOCIETY.—Meetings are held on the first Monday of each month at the Brunswick Hotel, Piccadilly, at 7.30 p.m. *Hon. Secretary:* K. Brockbank, 17 Burleigh Road, Stretford, Lancs.

SLADE RADIO SOCIETY.—The Christmas Social Evening was well attended. On February 6 at 7.45 p.m. a lecture on "Radio Mathematics" will be given at Church House, Erdington. *Hon. Secretary:* C. N. Smart, 110 Woolmore Road, Erdington, Birmingham 23.



Each year, around the Festive Season, the Exeter Town Group hold their Annual Dinner at the famous Globe Hotel, Topsham. In this picture, taken on December 20, 1952, can be seen seated, left to right, G3FLK, 3HTA, 5QA (Council Member and Region 9 Representative), 3EFY (Exeter T.R.; now Devon C.R.), 3HMY (Devon C.R.), B.R.S.4948, G3JW (QSL Sub-Manager).

Standing left to right, B.R.S.19313, I. S. W. L. Smith, B.R.S.19366, G3IPS, B.R.S.7200.

Letters to the Editor

The Society assumes no responsibility for the views expressed herein by correspondents.

A Statement from Hugh McConnell

DEAR SIR,—As is now widely known, I tendered my resignation from the 1952 and 1953 Councils after the Special General Meeting held in the Institution of Electrical Engineers on Friday, December 19, 1952.

Since many Members throughout the country may be intensely surprised at my course of action, I respectfully ask the courtesy of your columns to make the following statement:—

I would remind Members that I did not seek election to Council of my own volition in December, 1951, but that I gladly accepted nomination from the 1951 Council. At that election, I was successful and, in the election for the 1953 Council, I was re-elected.

During my term of office, I have conscientiously carried out what I conceived to be my duty to the Members. I have travelled so often to London that my total mileage cannot be far short of 20,000 miles, and I have been absent 80 days from business.

Each journey has cost, in round figures, £12 10s. of Society money. In view of the Society's financial position, I have never made any charge against the Society for hotel accommodation, telephone calls, postages, meals or petrol, etc. Indeed, I have not charged one halfpenny to the Society other than my bare train fares, and I make no apology for stating that my out-of-pocket expenses are very considerable. This, admittedly, is my own affair entirely.

On Friday evening, the special resolution to raise the subscription to a ceiling of 30s. was heavily defeated.

As a Council Member, I have often been in possession of facts not available outside Council. Our Honorary Treasurer, Mr. Douglas Findlay, submitted to Council for consideration five different schemes each showing the effect of a different subscription rate or combination of rates. Only the 30s. rate met our estimated future expenditure, and appeared to offer a substantial hope of placing the Society's finances on a really sound basis.

During an extensive business career, I have often had to listen to, and act upon, the advice of various accountants. I see no reason to make an exception in the case of Mr. Findlay, whom I know to be a man of the highest honour and integrity.

In my own personal view, if the present trend in the financial affairs of the Society continues, only one ending can result—bankruptcy.

If and when that happens, as appears to me inevitable under the present subscription rates, the Council of that year will have to answer to the Membership and, presumably, to the Board of Trade or some other official body. I do not propose to be a Member of that unhappy Council.

For centuries, the perspicacity of the Scots in financial matters has been renowned, and indeed the Bank of England was founded by a Scot, one William Paterson. One does not, however, require to be a financial genius to foresee the inevitable end, unless matters are put to rights, and that quickly.

I am no longer prepared to permit my name to be included as a Member of Council of a Society which is running at a substantial loss, and whose Council have been denied the power to raise the subscription to an economic level.

Furthermore, the Members of the Society have in large part clamoured for increased provincial representation on Council, but many are apparently not prepared to pay for it.

I do not feel justified in continuing to be, as a provincial Member of Council, a major drain on Society resources, nor yet to use any further resources of my own.

I do not fault any Members for using their proxy votes against the Special Resolution. That is their entitlement, but I am amazed at the thousands of Members who failed to record a vote at all on such an important issue. Where were the provincial proxies? I personally received eleven.

The greatest mystery of all to me is how any thinking Member of the Society can consider the R.S.G.B. alone to be immune to the laws of economics, which so obviously govern alike individuals, families, business houses, and nations.

It seems to me futile to continue to spend time and money, both the Society's and my own, representing a Membership which largely appears to be indifferent with regard to both their own and the Society's interests.

In conclusion, in view of Friday evening's vote, I had no alternative but to adhere to my own strongly-held beliefs and resign from both the 1952 and 1953 Councils.

Yours faithfully,

HUGH MCCONNELL (GM2ACQ).

Shanter Way, Alloway, Ayrshire.

December 22, 1952.

R.S.G.B. BULLETIN, January, 1953.

V.H.F. Advance—and Retreat

DEAR SIR,—I have read Jack Hum's October, 1952, "Current Comment: V.H.F. Advance—and Retreat" with amusement and astonishment, written as it is by one who occasionally operates on the 144 Mc/s band and whose articles have appeared in the *Short Wave Magazine* as well as the *BULLETIN*.

His statement "there is a tendency among a few dozen 2-metre operators to segregate themselves into limited frequency zones, the idea being that other operators will know where to look for them" in my view deliberately ignores the frequency zoning plan suggested by a 2-metre operator (G3CYY) in May, 1949, to avoid local QRM throughout the band to help searching over the band when using directional aerials and adopted by the very great majority of the 350 active operators on the band I have worked, whether they be also members of the Fiveband Club or not—the R.S.G.B. sponsor band planning on the other bands, but have no exclusive right to band plan or suggest it. The wholesale adoption of the band plan was spontaneous despite the fact that for a large number who were already on the band it meant the acquisition of another crystal—a no mean indication of enthusiastic acceptance of a workable plan. From my own observations on this shared band within a 250-mile radius of my East Anglia QTH, I maintain that less than two dozen operators do not segregate themselves into limited frequency zones.

In this two dozen are some prominent pre-G3 call-sign members who will go their own way heedless of the majority view.

Crystal control is almost universal and QSY'ing is therefore difficult on this band, where I had thought the fallacy of optical-range had long ago been exploded except for those who by force of circumstances or otherwise are content with a dipole in the roof and some few watts input to it. DX is a relative expression on v.h.f. and there is no mileage limit for rag chewing.

Maybe certain parts of the band seem unoccupied at normal operating times to those whose normal reception range is limited for one reason or the other, but I can assure Jack Hum that even during this late November cold spell stations are active in the evening between March-Oswestry, the Isle of Wight and Surrey between 144 Mc/s and 145.35 Mc/s and that the band is generally occupied up to 145.8, ignoring at all times U.S.A.A.F. stations! Surely he does not suggest that the two megacycles must be occupied even in part for the greater portion of every 24 hours to preserve it for shared amateur use!

Yours faithfully,

R. F. G. THURLOW (G3WW).

Wimbleton, Near March, Cambs.

More About the Behaviour of 300 ohm Feeders in Wet Weather

DEAR SIR,—In the November issue of the R.S.G.B. BULLETIN Mr. Tiltson (G6XT) discussed the behaviour of 300 ohm feeders in wet weather.

It has been appreciated for a long time that the characteristics of ribbon feeders such as our K.25 do alter when the cable is exposed to bad weather conditions, and it was to provide a feeder that did not suffer from this disadvantage that the K.35 tubular feeder was put on the market. The cause of the trouble is the formation on the surface of the polythene of a film of moisture and dirt which provides a leakage path for the high frequency currents; this results in an increase in capacitance between the conductors, with a decrease in characteristic impedance and velocity ratio. The attenuation also rises due to the decreased characteristic impedance and to extra losses in the moisture film.

The superiority of K.35 lies in the fact that the region of high field strength between the conductors is enclosed in a polythene tube, and moisture films in the weaker field region on the outside of the feeder have relatively little effect.

Mr. Tiltson states that the change in effective dielectric constant has more effect on the velocity ratio than on the characteristic impedance. In actual fact both quantities are altered by the same percentage as an examination of the quoted formulae and calculations will show. However, which of the characteristics it is important to keep stable depends on the way in which the feeder is being used. If the 300 ohm feeder is connected to a 300 ohm aerial the velocity ratio of the feeder is immaterial, but any change of characteristic impedance will result in mismatch. On the other hand, if the cable is used as a resonant length, or as any other form of impedance transformer, the velocity ratio is important and must be stable.

The statement made by Mr. Tiltson that the K.35 will not be effective unless the standing wave ratio is low is misleading. Naturally, both the K.25 and K.35 must be correctly matched to the aerial and transmitter in the initial installation, but the comparison between them is simply that the K.35 will stay approximately matched in wet weather whereas the K.25 may become seriously mismatched.

Yours faithfully,

R. J. SLAUGHTER.

Electrical Research Laboratory,
Telegraph Construction & Maintenance Co., Ltd.

New Books

TELEVISION ENGINEERS' SERVICING MANUAL. By E. Molloy and W. F. Poole, Assoc. Brit. I.R.E. Page size $8\frac{1}{2}'' \times 5\frac{1}{2}''$. 654 pages. Profusely illustrated with half tones and line drawings. Published by George Newnes, Ltd. Price 42/-.

Intended to satisfy the need for a manual giving the television service engineer the information which he requires in order to install most efficiently and to service most expeditiously any of the various types of television receivers which he is likely to encounter in the course of his everyday work. The book opens with a survey of present-day television receivers. Succeeding chapters deal with the installation of aerials and feeders, servicing equipment, and trouble tracing.

The second section of the book is devoted entirely to practical instructions, data and circuit diagrams likely to be required by the television service engineer when dealing with the many types and models of receivers now available. The receivers described are those appropriate to the London and Sutton Coldfield transmitters.

An immense amount of research, as well as close attention to detail, have combined to produce an outstanding treatise in this rapidly developing field of electrical engineering.

RADIO ENGINEERS' SERVICING MANUAL. By E. Molloy and W. F. Poole, Assoc. Brit. I.R.E. Page size $8\frac{1}{2}'' \times 5\frac{1}{2}''$. 760 pages. Profusely illustrated with half tones and line drawings. Published by George Newnes, Ltd. Price 42/-.

Compiled to meet the specific need of radio service engineers for an authoritative source of technical information on post-war broadcast, automobile and communication type receivers. There are three sections: the first provides practical information on general subjects of importance to all service engineers, the second—which forms the major part of the book—contains precise servicing instructions, data and component values for more than 500 popular post-war models. Section three contains a mass of useful reference material.

No progressive service engineer can afford to be without this most valuable book. The information brought together within its covers is tremendous in its comprehensiveness.

THERMIONIC VALVE CIRCUITS (Third Edition). By Emrys Williams. Page size $8\frac{1}{2}'' \times 5\frac{1}{2}''$. 314 pages, 213 illustrations. Published by Pitman. Price 21/-.

As a result of notable war-time developments in radar and telecommunications and the subsequent peace-time expansion of television, many new and ingenious valve circuits have come into use and many new circuits have appeared in new rôles. This considerably enlarged edition of a book that met with instant success when it first appeared 10 years ago, contains an entirely new chapter on "Pulses and Pulse Circuits," together with much new material on push-pull input circuits (phase-inverters), the "See-Saw" circuit, cathode coupling, the dynamic characteristics of the cathode follower, the cathode follower as a voltage stabiliser, resistance capacitance oscillators and phase-sensitive detectors.

The book is based on a lecture course given by the author for the degree of B.Sc. in Electrical Engineering in the University of Durham.

Of great merit and strongly recommended to students in universities and technical colleges as well as to practical electrical engineers.

WIRELESS FUNDAMENTALS. By E. Armitage, M.A. (Cantab.), B.Sc. (London). Page size $8\frac{1}{2}'' \times 5\frac{1}{2}''$. 368 pages, 320 illustrations. Published by Sir Isaac Pitman & Sons, Ltd. Price 18/-.

Written in a simple manner, with some degree of mathematical treatment, this work develops the theory of radio from fundamental principles to an explanation of the superhet. The more complicated aspects of the subject are referred to in the appendices.

A useful book for those studying for the Radio Amateurs' examination as well as for electrical engineering students generally.

AMPLIFIERS—THE WHY AND HOW OF GOOD AMPLIFICATION. By G. A. Briggs and H. H. Garner. Page size $8\frac{1}{2}'' \times 5\frac{1}{2}''$. 18 chapters, 216 pages, 174 illustrations. Published by Wharfedale Wireless Works, Ltd., Bradford. Price 16/- (post free).

The problem of obtaining the highest quality from amplifiers—carried through to the loudspeaker and the listening room—is examined from every angle and described in non-technical language. Special attention is paid to phase splitters, push-pull, negative feed-back, tone compensation, input circuits, and cathode followers. Versatile circuits for tuners, pre-amplifiers and amplifiers, with details of components required, are included in the section devoted to the Garner Amplifier.

There is a useful supplement covering a wide range of subjects allied to amplifiers.

ELEMENTS OF RADIO ENGINEERING. By H. I. G. Peel, M.Sc., A.M.I.E.E. Page size $7\frac{1}{2}'' \times 4\frac{1}{2}''$. 232 pages, 153 illustrations. Published by Cleaver-Hume Press, Ltd. Price 10/6.

This book is intended, primarily, to cover certain City and Guilds radio and telecommunications syllabuses, including that established for the Radio Amateurs' examination. The scope ranges from thermionic valves to the cathode ray oscillograph, taking in on the way a.c. theory, triode amplifiers, a.c. and d.c. circuits, tuning, oscillator and detectors circuits, receivers and receiver measurements. Recent examination questions and answers are set out in an appendix.

The finely-drawn and lettered diagrams help to make this a most attractive book.

ESSENTIAL SERVICING DATA. Edited by James Huxley. Page size $7\frac{1}{2}'' \times 6\frac{1}{2}''$. 118 pages. Published by British Radio and Television, 92 Fleet Street, London, E.C.4. Price 5/-.

Designed as a concise reference manual for the practising radio and television servicing engineer, this book contains basic data on more than 700 different models of radio and television receivers of various makes. Specifications given include: valve line-up, main control and potentiometer values, electrolytic condenser values, intermediate frequencies, aerial and mains supplies, pilot lamps, etc.

A useful pocket book for the service engineer, and a valuable addition to the technical library of any radio and television service department.

Around the Trade

Mullard Ltd are now manufacturing television tubes with grey tinted glass faces. With these tubes a picture of extremely good contrast and low glare can be obtained even under conditions of normal room lighting. The Company has also recently introduced a high performance B7G based stabiliser, the 150B2, which is intended for stabilising over the current range 5-15 mA at approximately 150 V.

Brimar have extended their American range by the addition of the 6AK6, a B7G base economy output pentode, and the 12BH7, a television double triode intended for use as a combined frame oscillator and output stage in wide-angle television receivers. It has a B9A base.

Watts Radio (Weybridge), Ltd., 8 Baker Street, Weybridge, Surrey, have just published a comprehensive catalogue of radio components and an extensive list of surplus valves. Return of post service is offered.

Representation

The following are amendments to the list of Town Representatives published in the February, 1952, issue:—

Region 4 (Leicestershire)

Loughborough
D. Barlow (G2HBG), 56 Beacon Road.

Region 6 (Buckinghamshire)

Bletchley
D. A. Capp (G3CPT), 23 Larch Grove.

Region 7 (London East)

East Ham
W. H. Peek (G2ZZ), 180 Latham Road, E.6.

Town and Area Vacancies

Messrs. J. Colebrook (G3BJD), B. E. Rogers (G8LC), M. S. Thayer (G3HFK) and W. R. Eadie (GM4JO), have resigned as Representatives for West Cumberland, Harlow, Balham and Glasgow respectively.

Nominations for their successors should be made in the prescribed form and sent to reach the General Secretary by February 28, 1953.

FORTHCOMING EVENTS (Continued from page 282)

Torquay.—January 17, 7.30 p.m., Y.M.C.A., Castle Road.
West Cornwall (W.C.R.C.).—February 5, Fifteen Balls, Penryn.

Weston-super-Mare.—February 3, 7.30 p.m., Y.M.C.A.

Yeovil.—Wednesdays, 7.30 p.m., Grove House, Preston Road.

REGION 10

Cardiff.—February 9, 7.30 p.m., "The British Volunteer," The Hayes.

REGION 13

Edinburgh (L.R.S.).—January 20, February 3, 17, 7.30 p.m., Edinburgh Chamber of Commerce, 25 Charlotte Square.

REGION 14

Falkirk.—January 30, February 13, 7.30 p.m., The Temperance Cafe, High Street.
Prestwick.—January 18, 7 p.m., Royal Hotel.

R.S.G.B. BULLETIN, January, 1953.

NEW MEMBERS

The following have been elected to membership:—

Corporate Members (Licensed)

- G2DL †R. H. LAUDERDALE, 11 Dukesthorpe Road, Sydenham, London, S.E.26.
 G2OF †W. G. D'ARCY, 29 Adelphi Crescent, Hayes, Middlesex.
 G3AZU P. MORRIS, 206A Great West Road, Hounslow, Middlesex.
 G3DNC C. C. BRADWIN, 11 Meath Close, St. Mary Cray, Orpington, Kent.
 G3EQE J. HOWARD, 42 Alexandra Road, Southport, Lancs.
 G3GTF †B. W. N. HARRIS, "St. Martin's," New Brighton Road, Emsworth, Hants.
 G3HGJ D. M. FOSTER, The Vicarage, Clapham, Yorks, nr. Lancaster.
 G3HOA W. REYNOLDS, 85 Ashmore Road, London, W.9.
 G3HUL D. M. MALLETT, 12 Gristock Road, Norwich, Norfolk.
 G3IDX C. A. NIGHTINGALE, 39 Westwood Avenue, Brentwood, Essex.
 G3IEY D. W. AYARD, 38 Butlers Marston, Warwick.
 G3IGV J. W. BIRKBECK, 26 Eddystone Road, Slades, St. Austell, Cornwall.
 G3IHD J. KENNEDY, 11 Lanthwaite Road, Low Fell, Gateshead 9, Durham.
 G3IIN M. J. GRIFFIN, "Lugano," St. Peter's Way, Chorley Wood, Herts.
 G3JDX E. B. IRVING, Kidside Cottage, Milnthorpe, Westmorland.
 G3ILB D. S. KENDALL, 40 Aberdale Gardens, Potters Bar, Middlesex.
 G3ILE E. MARSH, 24 Darkwood Crescent, Chatburn, Clitheroe, Lancs.
 G3INB P. A. NIBLOCK, Silverhead Cottage, Byfleet Road, Cobham, Surrey.
 G3IOC F. T. MOORE, 3 Oak Avenue, Subway Street, Hestle Road, Hull, E. Yorks.
 G3IOK H. E. GATES, 72 Rowlands Road, Worthing, Sussex.
 G3IPV P. W. HAYLETT, Church Road, Bacton-on-Sea, Norwich, Norfolk.
 G3IQE J. E. FULLER, W.O.W.S., Beaumanor Park, nr. Loughborough, Leics.
 G3IQF R. A. FOWLER, 1 Dedmere Road, Marlow, Bucks.
 G3IQY A. REES, 22 Harcourt Road, Brockley, London, S.E.4.
 G3ITF B. S. FREEMAN, 18 Bounty Road, Basingstoke, Hants.
 G3ITL J. ERNEST HUMPOLETZ, 110 Moulsham Street, Chelmsford, Essex.
 G3IXL *S. M. K. HORNE, 7 Newland House, Avignon Road, Brockley, London, S.E.4.
 G3JOW O. D. WYLES, 5 Kingsbridge Road, Newbury, Berks.
 G3JRK J. R. KNIGHT, 10 Lynton Drive, Burnage, Manchester 19.
 G3JWH J. W. HARRER, 258 High Street, Poplar, London, E.14.
 G4BD R. R. PALMER, 39 Fraser Road, Rotherham, Yorks.
 G5OO †E. H. WELLING, 121 Kingshill Drive, Kenton, Harrow, Middlesex.
 G5QC †A. G. D. COLLEY, Thermionic Products Ltd., Hythe, Southampton.
 G13ACV R. GABREY, 24 Claude Boye Road, Bangor, Co. Down, N.I.
 GM3HQC C. J. MACPHERSON, 6 House O'Hill Crescent, Blackhall, Edinburgh 4.
 GM3IQS A. G. WALKER, 1 Saxon Road, Knightswood, Glasgow, W.3.
 GM3ITE R. W. G. COSTFORD, 82 Millarbank Street, Springburn, Glasgow, N.
 GW3IEQ P. H. HUDSON, c/o Sgts. Mess, R.A.F. Halfpenny Green, Stourbridge, Worcs.
 GW3IOP J. P. KITCHIN, Imperial Hotel, Llandudno, Caerns.
 GW3ISJ J. J. CAULFIELD, 20 Castle Road, Tongwynlais, Cardiff.

Corporate Members (British Receiving Stations)

- 19831 *C. DEAVIN, 101 Oxford Street, Derby.
 19832 *J. DUNLOP, 29 Douglas Street, Milngavie, Glasgow.
 19833 *D. J. MITCHELL, 6 Edith Road, Selhurst, London, S.E.25.
 19834 †L. P. ALSTON, 118 Stratford Road, Shirley, Birmingham.
 19835 S. J. DAWSON, "Ballantrae," 13 Warren Road, Hoylake, Wirral, Cheshire.
 19836 F. D. COOPER, 84 Eltham Hill, London, S.E.9.
 19837 P. H. BISHOP, 3b (back entrance), Westcourt Street, Brompton, Chatham, Kent.
 19839 W. H. CLARK, Mill House, Mill Gardens, Wells Park Road, Sydenham, S.E.26.

R.S.G.B. BULLETIN, January, 1953.

- 19840 R. KUR, 57 First Avenue, Broomfield Road, Chelmsford, Essex.
 19841 E. G. WIFFEN, Castle Stores, Station Road, Sholing, Southampton.
 19842 J. HUGGETT, 131 Sydney Street, Brightlingsea, Essex.
 19843 C. J. HAYCOCK, 360 Portland Road, Edgbaston, Birmingham 17.
 19844 H. T. C. HILL, Byfield, Granville Avenue, Newport, Salop.
 19845 P. R. SAUNDERS, 92 Derbyshire Lane, Stretford, Manchester.
 19846 W. R. PENTECOST, No. 2 The Hutments, Redlands Lane, Fareham, Hants.
 19847 D. W. HILL, 94 Burns Avenue, Southall, Middlesex.
 19848 P. F. CORRY, Industrial Hostel, Barnoldswick, via Colne, Lancs.
 19849 A. H. ALEXANDER, 36 Duncan Street, Banff, Scotland.
 19850 R. ANDERSON, 25 Spylaw Park, Kelso, Roxburghshire.
 19851 R. SIEVEWRIGHT, 22 The Knoll, Hayes, Bromley.
 19852 D. H. REED, "Ty-isha," Llandegeth, Nr. Caerleon, Newport, Mon.
 19853 D. P. TIPPER, 23 Northstead Manor Drive, Scarborough, Yorks.
 19854 C. V. ROBINS, 2 Brinsmore Cottages, Ilchester Road, Yeovil, Som.
 19855 W. S. M. GIBSON, 180 Castlemilk Road, Kings Park, Glasgow.
 19856 A. J. JEFFRIES, 81 Chaplin Road, Easton, Bristol 5.
 19857 C. G. DOWLE, 27A Carolgate, Retford, Notts.
 19858 G. S. HOLMES, 35 Clyde Road, Alexandra Park, London, N.22.
 19859 R. G. TIMMS, 32 Redesdale Avenue, Coventry.
 19860 E. GREAVES, 47 Anchor Grove, Darwen, Lancs.
 19861 F. J. ORMETT, The Chalet, 44 Manor Drive, Hinchley Wood, Esher, Surrey.
 4636 †S. E. SMITH, 2 Lockram Lane, Witham, Essex.
 10040 †T. E. A. FOREMAN, 7 Fountain Street, Whitstable, Kent.
 12271 †J. M. THOMPSON, BM/Elektra, London, W.C.1.
 18223 †C. W. HENDERSON, 86 Elmfield Road, Chingford, London, E.4.

Corporate Members (Overseas)

- 5A2CI P. C. SKELTON, No. 5 Forces Broadcasting Station, Benghazi, M.E.L.F. 6.
 F3EM P. ERDMANN, 2 rue de Soleure, Strasbourg, France.
 SU1MF C. M. FLATLEY, c/o W.O.S. & Sgts' Mess, 3 L. of C. Signal Regt., M.E.L.F. 10.
 TF3AB A. MAGNUSON, Vesturgata 54A, Reykjavik, Iceland.
 VE3KF J. SWAIL, 18 Kilbarry Crescent, Ottawa 2, Ontario, Canada.
 VK3AVB V. B. ALDRICH, 22 Somerville Road, Yarraville W.13, Victoria, Australia.
 VP4TC D. SERRAO, c/o H. Govia Ltd., 24 Frederick Street, Trinidad, B.W.I.
 VQ4DV *T. H. HUTCHINSON, Tunnel Estate, Fort Ternan, Kenya Colony, East Africa.
 VS1FP H. H. OAK-RHIND (W/CDR.), 39 Newton Road, Singapore.
 VS2DN L. K. KEEN, 169-A Burmah Road, Penang, Malaya.
 VS2DS L. H. FERRIS, c/o Anglo-Oriental (Malaya) Ltd., Malim Nawar, Perak, Federated Malay States.
 VS9AD D. HICKS (FL/LT.), Officers' Mess, R.A.F. Tarshyne, Aden.
 W6LHW T. R. JACOBS, 4b Staverton Road, Oxford.
 YA3UU J. JAMIE, c/o Thompson, 1 Ginderp Road, Montrose, Angus, Scotland.
 ZE5JI G. M. BRICKHILL, c/o Rhomonite Mine, P.O. Box 138, Shabanie, S. Rhodesia.
 ZS6GV A. J. S. HEMSLEY, 24 Lapworth Grange, Lambton, Germiston, S. Africa.

Corporate Members (Foreign Receiving Stations)

- 235 B. STENZEL, 75 Croydon Grove, W. Croydon, Surrey.

Corporate Members (British Empire Receiving Stations)

- 825 B. RUSSELL, c/o P.O. Box 49, Blantyre, Nyasaland, British Central Africa.
 826 4038613 CPL. CHEESEMAN, R.F.S., 10A M.U., R.A.F. Abayad, M.E.A.F. 15.
 827 P. HEATON, c/o Cable & Wireless, Ltd., Ascension Island, South Atlantic.
 828 D. G. CARRETT, British Legation, Beirut, Lebanon.

† Denotes re-elected.

* Denotes transfer from Associate Grade.

R.S.G.B. Orchestra ?

Mr. John R. Seager (G4AK), "Greenoaks," Doddinghurst, Essex, would be glad to hear from any member interested in the formation of an orchestra or band.

For your



Bookshelf or Shack

★ R.S.G.B. Technical Publications

Transmitter Interference.	Price 1/3 (by post 1/6)
Simple Transmitting Equipment.	Price 2/- (by post 2/3)
Television Interference.	Price 2/- (by post 2/3)
Microwave Technique.	Price 2/- (by post 2/3)
Receivers.	Price 3/6 (by post 3/9)
V.H.F. Technique.	Price 3/6 (by post 3/9)
Valve Technique.	Price 3/6 (by post 3/9)

★ R.S.G.B. AMATEUR RADIO CALL BOOK (2nd Edition). Price 3/6 (by post 3/9)

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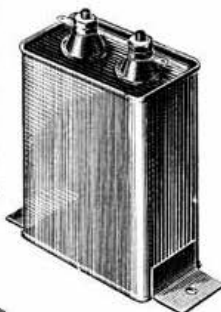
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F OR SALE.—Army 12 sender, very nice condition, table-top transmitter, 1.2 to 18 Mc/s handswitched, c.w., m.c.w., 'phone, break-in, etc., 60 W; best offer. New H.R.O. complete with crystal, "S" meter, handspread coils and p/pack: a beautiful instrument; nearest £50. Wanted: type F aerial tuning unit, FL8, filter.—Box 811, NATIONAL PUBLICITY CO., LTD., 36-37 Upper Thames Street, London, E.C.4. (811)

F OR SALE.—Army 12 set and Eddystone absorption wave-meter.—Offers to A. M. BROWN, 135 King's Gate, Aberdeen. (818)

F OR SALE.—Army 12 sets, £12 H.R.O. coils, all ranges, 30s. each. Wanted: 813s, 808s, also AR.88, S.27, BC.221. Exchanges or cash adjustment. Will collect.—Box 684, NATIONAL PUBLICITY CO., LTD., 36-37 Upper Thames Street, London, E.C.4. (684)

F OR SALE.—AR.88D with "S" meter, new valves, hand-book; S.A.E., offers; Yeovil area, Sylvania modulation meter, mint condition, £6 10s. Woden modulation transformer, U.M.I., perfect, £2.—Box 816, NATIONAL PUBLICITY CO., LTD., 36-37 Upper Thames Street, London, E.C.4. (816)

F OR SALE.—Late G4RH gear: Eddystone S.640, stabiliser tube built-in, with Q5'er for 1.6 Mc/s i.f., pair £22 o.n.o. Class "D" wavemeter with instruction book, £4 10s. G.E.C. 100 kc/s vacuum mounted crystal, wire ends, £1 10s. Good bug key, £2. Command transmitters, run 100 W, BC.696 (3-4 Mc/s), BC.459 (5.3-7 Mc/s), with valves, £1 10s. each. AVO model "D" (similar model 40), 32 ranges, a.c./d.c., volts, amps plus 2 resistance, £10 10s. o.n.o. "Wireless World," January, 1941/December, 1950, complete; instruction books ET.4332B, BC.221M. Best offers.—G3AUT, 257 Bilton Road, Rugby, Warwickshire. (801)

F OR SALE.—QVVO/70 (829B), 45s.; 12AT7, 12AX7, 6AK5, 6AG5, 6s.; 1625, 6N7, 4s.—G3BBL, 14 Benhurst Avenue, Elm Park, Hornchurch, Essex. (813)

H R.O. coils.—Wanted: 7-14 Mc/s (handspread preferred). Sale: 1.7-4.0 Mc/s G.C.—ROUSE, G2AHL, 4 Albany Road, Guildford. (822)

M ETALWORK.—All types cabinets, chassis, racks, etc., to your own specifications.—PHILPOT'S METAL WORKS LTD. (G4BD), Chapman Street, Loughborough. (99)

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

R A.F. 1224 communication receiver, 1-9 Mc/s, 160-80-40, brand new, £5 10s. Canadian Marconi communication receiver No. 52, 1.75-4 Mc/s, 3.5-8, 7-16 double superhet, v.f.o., c.w. filter, noise limiter, selectivity adjuster, frequency adjuster, anode supply switched and metered on panel, internal speaker, 10 valves and 5 spares; £12, or exchange for B.2 transceiver.—13 Riverside, Hendon, London, N.W.4. (814)

R M.E. 70 receiver for sale, £28. Buyer collects.—G6CS, 244 Broad Walk, Blackheath, London, S.E.3. (798)

S ALE.—Complete station, transmitter Army 12, R.107, both manuals, control cables, spares. Offers?—G3JIO, 76 Riversley Road, Gloucester. (808)

S ALE.—H.R.O. 50 kc/s-30 Mc/s power supply, coil compartment, speaker; complete, rack mounted, in perfect condition, with instruction manual; £35. Buyer collect.—SHAW, 3 Butterworth Street, Heyside, Royton, Oldham. (797)

S ELLING out.—B.21 receiver, 1 to 20 Mc/s. Crystal-controlled transmitter, 6V6 oscillator, 6V6 p.a. Also meters and variable condensers, S.A.E. for full list.—J. HINDE, The Bungalow, Martin Moor, Martin, Lincoln. (802)

T WO bargains.—CR.100/2 receiver, good condition, new appearance, £18. CNY.2 160-80-40 transmitter, complete with receiver, £12. Both all new valves, new makers' instruction manuals.—G3HHZ, 12 Kemble, Cirencester, Glos. (805)

W ANTED.—BC.610 Hallicrafters, ET.4336 transmitters, SX.28s, AR.88s receivers, and spare parts for above. Best prices.—P.C.A. RADIO, The Arches, Cambridge Grove, W.6. (799)

W ANTED.—buy or borrow: BULLETINS, May, 1948, March, 1949, and May, 1949. Urgent.—B.R.S. 19536, 112 Hazel Road, Huyton, Lanes. (789)

W ANTED.—buy or borrow: Handbook for Hallicrafters SX.43. For sale: R.1224A, unmodified, in good working condition; £4. Carriage extra.—B.R.S. 19526, 48 Chalmers Road, Ayr. (804)

W ANTED.—B.2 official power-pack, transmitting coils; good condition.—Write 3 Tennyson Road, London, S.W.19. (791)

W ANTED.—Circuit, crystal frequency, R.1225; 5/- offered for loan.—A. ASHCROFT, 1b Gaw Hill Lane, Aughton, Ormskirk. (788)

W ANTED.—R.C.A. speech amplifiers type MI-11220 J or K and aerial tuning units BC.939A, coils and tuning units for BC.610 transmitters.—Offers, stating quantity and price, to P.C.A. RADIO, The Arches, Cambridge Grove, W.6. (800)

W ANTED.—R.C.A. 4331 transmitters.—P.C.A. RADIO Cambridge Grove, Hammersmith, W.6. (Telephone Riverside 3279.) (562)

(Continued on Cover III)