February 1951

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Vol. XXVI No. 8 **Contents** FEBRUARY 1951

Forthcoming Events

REGION 1

Ashton-under-Lyne.—March 4, 3 p.m., New Jerusalem Schools.
Blackpool.—March 20, 7.30 p.m., Barclays Bank Chambers, 2 Birley Street (2nd floor).
Bolton.—March 6, 8 p.m., Y.M.C.A.
Bury.—March 8, 7.30 p.m., Y.M.C.A.
Darwen & Blackburn.—February 23, March 9, 7.30 p.m., Y.M.C.A., Limbrick, Blackburn.
Liverpool.—March 3, 2.30 p.m., 29 Derby Lane, Old Swan.
Manchester.—March 5, 7.30 p.m., Reynolds Hall, School of Technology, Sackville Street.
Oldham.—Alternate Wednesdays, Civic Centre, Clegg Street.
Preston.—February 23, March 9, 7.30 p.m., Three Tuns, North Road.
Rochdale.—March 4, 3 p.m., Drill Hall, Baron Street.
Southport.—March 19, 8 p.m., 38a Forest Road.
Wirral.—March 7, 8 p.m., Y.M.C.A., Whetstone Lane, Birkenhead.

REGION 2

Barnsley.—February 23, March 9, 7.30 p.m., King George Hotel, Peel Street.
Bradford.—February 27, March 13, 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., 25 Coniscliffe Road.
Doncaster.—March 14, 7.30 p.m., "Black Bull," Market Place.
Gateshead.—Thursdays, 7 p.m., Y.M.C.A., Sutherland Hall, Durham Road.
Hull.—February 28, 7.30 p.m., Workshops Canteen, R.E.M.E. Barracks, Walton Street.
Leeds.—Fridays, 7.30 p.m., Swarthmore Educational Centre, Woodhouse Square.
Middlesbrough.—Thursdays, 7.30 p.m., All Saints' Hall, Grange Road.
Newcastle-upon-Tyne.—March 19, 8 p.m., British Legion Rooms, 1 Jesmond Road.
Rotherham.—Wednesdays, 7 p.m., Oddfellows Hall, Westgate.
Scarborough.—Thursdays, 7.30 p.m., L.N.E.R. Rifle Club, West Parade Road.
Sheffield.—February 28, 8 p.m., "Dog & Partridge," Trippet Lane; March 14, 8 p.m., Albreda Works, Lydgate Lane.
Slaithwaite.—Fridays, 7.30 p.m., 3 Dartmouth Street.
Spenborough.—March 21, April 4, 7.30 p.m., Temperance Hall, Cleckheaton.
Wakefield.—February 21, March 7, 7.30 p.m., Service House, Providence Street.
York.—Wednesdays, 7.30 p.m., Community House, Falsgrave Crescent.

REGION 3

Birmingham.—February 21, combined meeting of M.A.R.S. & R.S.G.B., 6.30 p.m., Imperial Hotel.
Birmingham (South).—February 18, March 4, 10.30 a.m., Stirchley Institute.
Coventry.—February 16, March 16, 7.30 p.m., Priory High School, Wheatley Street.
Stourbridge (S. & D.A.R.S.).—March 6, Annual General Meeting.

REGION 4

Derby (D. & D.A.R.S.).—February 28, March 14, 7.30 p.m., Clubroom, Sub-basement, Derby School of Art, 119 Green Lane.
Leicester (L.A.R.S.).—February 19, March 5, 7.30 p.m., Holly Bush Hotel, Belgrave Gate.
Loughborough.—March 14, 7.30 p.m.
Mansfield (M. & D.A.R.S.).—March 4, 3 p.m., Swan Hotel.
Newark.—February 18, March 4, 7 p.m., 160 Wolsey Road.
Northampton (N.S.W.C.).—March 2, 7 p.m., otherwise Fridays, 6 p.m., Clubroom, 8 Duke Street.
Nottingham.—February 19, March 5, 7.30 p.m., Lord Nelson Hotel, Carlton Street.
Retford.—March 4, 3 p.m., Community Centre, Chapel Gate.
Spalding.—February 22, 7.30 p.m., 10 South Parade.
Worksop.—March 5, 7.30 p.m., King Edward Hotel.

REGION 5

Chelmsford.—March 6, 7.30 p.m., 184 Moulsham Street.
Southend.—February 19, 7.45 p.m., G2BHA, 27 Park Road.

REGION 6

High Wycombe.—February 20, 7.30 p.m., BRS.17415, 66 Havenfield Road, Booker.

REGION 7

Barnes & Richmond.—March 13, 7.30 p.m., 22 Lowther Road, Barnes.
Brentwood.—March 2, 16, 8 p.m., Drill Hall, Ongar Road.
Chingford.—March 1, 15, 8 p.m., A.T.C. H.Q., Pretoria Road.
Croydon.—(Surrey R.C.C.) March 13, 7.30 p.m., "Blacksmiths Arms," South End, Croydon.
Dulwich & New Cross.—March 5, "Kentish Drovers," Rye Lane, S.E.15.
East Ham.—March 1, 15, address from T.R.
East Surrey (E.S.R.C.).—March 1, Barn Room, 8 Lesbourne Road, Reigate.
East London District.—March 18, 3 p.m., Ilford Town Hall, "The Licence and Log," Mr. W. W. Gunning, G.P.O. Radio Branch.
Edgware (E & D.R.S.).—Wednesdays, 22 Goodwin Avenue, Mill Hill.
Enfield.—March 18, 3 p.m., George Spicer's School, Southbury Road.
Finsbury Park.—February 20, 7.30 p.m., 164 Albion Road, Stoke Newington, N.16.
Gravesend.—Every Wednesday, 7.30 p.m., 30 Darnley Road.
Guildford.—March 25, 3 p.m., "Royal Arms Hotel," North Street.
Hampstead.—March 16, 1 Broadhurst Gardens, N.W.6.
Hayes & Uxbridge.—March 5, 7.30 p.m., "The Vine," Uxbridge Road.
Hoddesdon.—March 1, 8 p.m., "The Salisbury Arms."
Holloway (G.R.S.)—Mondays, Wednesdays, and Fridays, 7.30 p.m., Grafton School, Eburne Road, N.7 (one minute from the "Nag's Head").
Ilford.—March 6, 8 p.m., 42 Grange Road.
Lewisham (R.A.R.C.).—7 p.m., Wednesedays, Thursdays, Childeric Road School, New Cross.

(Continued on page 310)

PREMIER RADIO COMPANY

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600	5CP1	5	E.S.	E.S.	2 kV.	Yes	**25/-**	2/6
601	5BP1	5	E.S.	E.S.	2 kV.	Yes	**27/6**	2/6
817	3EP1	3	E.S.	E.S.	2 kV.	Yes	**15/-**	2/6
1138	VCR138	3.5	E.S.	E.S.	1200 V.	Yes	**10/-**	2/6
1140	VCR140	12	Mag.	Mag.	4 kV.	Yes	**90/-**	12/6
1384	—	11.5	E.S.	E.S.	4 kV.	Expmtl.	**40/-**	10/-
1511	VCR511	11.75	E.S.	E.S.	4 kV.	Expmtl.	**60/-**	10/-
1516	VCR516A	9	Mag.	Mag.	5 kV.	No	**40/-**	10/-
1522	VCR522	1.75	E.S.	E.S.	800 V.	Yes	**15/-**	1/6
2880	EM14/1	3	E.S.	E.S.	800 V.	Yes	**17/6**	1/6
3776	—	5.25	E.S.	E.S. Mag.	4 kV.	Expmtl.	**20/-**	2/6

Acorn Valves:
Type 956, 2/6 each, **20/-** per dozen.
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Output Pentodes. Type CV321. Surplus Equivalent of the KT66. **6/6** each, **60/-** per dozen. No extra charge for matching.

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In addition we offer the following tubes (for one month only) at the ridiculous price of **5/-** each (preferably to callers only as packing, carriage and insurance amounts to 7/6). Types available. **ACR1, ACR2, ACR2X, ACR8, ACR13.**

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The following Types all 6/6 each.
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Type E1148 1/6 each, **12/-** per dozen. **Type CV52, 4/6** each.

Type 210, Transmitting Triodes, 7.5 V., **3/-** each, **24/-** dozen.

V/M Pentodes CV1124 (MSPEN), 4 V. 7-pin base, **5/-** each, **36/-** per dozen.

UHF Triodes, Type 7193, 1/6 each, **12/-** per dozen.

Bayonet Base (Side Contact) Output Valves, Type EL50, 6.3 V., 5/- each, **36/-** per dozen.

Output Triodes, Type DET 5. An excellent replacement for PX25, **10/-** each, **75/-** per dozen. **Type P27/500,** practically identical with the PX25A, **10/-** each, **75/-** per dozen.

EHT Rectifiers, Type 2X2/879, 2/6 each, **20/-** per dozen.

Miniature Valves CV3830 (XH 1.5), 2/6 each, **20/-** per dozen. **9002, 9003, 3/6** each.

Transmitting and Special Purpose Valves. Special Offer. **Types 8012, 830B, 878, 705A, 843, 1625, 1616, 4C27, 703A, EL266.** Any of the above, **5/-** each.

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T.R. Box, Type CV115, 5/- each.

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VU120A, EHT Rectifier, 3/6 each, **30/-** dozen.

CV1111-VU111, EHT rectifier, 3/6 each, **30/-** dozen.

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R·S·G·B

BULLETIN

For the advancement of Amateur Radio

VOLUME XXVI No. 8 FEBRUARY 1951

R.A.F. VOLUNTARY RADIO SERVICE

MANY members will recall that, in 1938, the Royal Air Force formed a Civilian Wireless Reserve, which was later absorbed into the Royal Air Force Volunteer Reserve.

This organisation was mainly drawn from members of the R.S.G.B. and did excellent work both prior to and during the war, forming an efficient force for the expansion of the Wireless and Radar services of the R.A.F.

The Air Ministry have decided to form a similar service, to be known as the Royal Air Force Voluntary Radio Service, and would welcome volunteers with wireless experience. The standard of proficiency is:—

(a) ability to receive Morse code at 20 w.p.m., and

(b) experience in operating and minor servicing of radio communications receivers.

The object of the new organisation is to build up an adequate and efficient reserve behind the Signals Branch of the Royal Air Force. Recruitment and training will be under the control of the Commander-in-Chief, Home Command, and the organisation will be based on the geographical groups within that command. To each group will be appointed a Group Leader who will arrange and control the training of all members within his group.

Training will be undertaken by volunteers in their own homes, receiving radio exercises as directed by the Headquarters. Radio Receivers for this purpose will be provided on loan by the Air Ministry, and an expense allowance given for their upkeep. In addition, occasional attendance at a R.A.F. Reserve Centre will be necessary for discussion.

At this stage, selection will be confined to male candidates and preference will be given to those who are eligible for and enlist in, the R.A.F. Volunteer Reserve; these candidates will be able to qualify for training bounties each year, and would be liable to call-up for full-time service if required in a national emergency. In addition, some candidates who, by reason of age, physical unfitness, etc., are ineligible for enlistment will be accepted for service, as civilian members, on a part-time basis both in peace and in an emergency.

Applications and enquiries should be addressed to the Air Officer Commanding-in-Chief, Home Command, R.A.F. White Waltham, nr. Maidenhead, Berks.

● **Per Ardua Ad Astra** ●

FESTIVAL OF BRITAIN YEAR

LONDON—JUNE 21st TO JUNE 24th

NATIONAL CONVENTION

A SWITCHED WIDEBAND EXCITER

Part II—Construction and Operation

By R. H. HAMMANS (G2IG)*

LAST month the design considerations and the circuit of a switched wideband exciter to meet modern amateur requirements were given. Now it is proposed to discuss in more detail the construction of the original model, the practical modification of the wideband couplers and the operating conditions to be expected.

As standard 19in. rack mountings were in general use at G2IG, a chassis measuring 17in. x 12in. x 3in. was accordingly selected. The power supply was also to be accommodated on the same chassis so that interconnecting leads and their attendant danger of T.V.I. could be minimised. A similar size of chassis could of course be used in cabinet or bench form.

The layout of components comprising the R.F. circuit is arranged in close similarity to the circuit diagram shown in Fig. 5 (see Part I). In this way wiring is kept short and chassis currents are restricted to areas where least trouble can be caused by unwanted couplings. The photographs (Figs. 7 and 10) which illustrate the top and bottom of the chassis, show this clearly.

SPECIFICATION

Approximately 3 watts of R.F. output in the output 3.5, 7, 14, 21 and 28 Mc/s. amateur bands.
Input power required is 3 watts in the 3.5 Mc/s. band.
Input and output connections via 75 to 100-ohm coaxial cables.
Designed particularly with a view to minimising television interference.
Metering of all anode and screen currents, H.T. voltage and R.F. output voltage by means of a single meter.
Output voltage constant to within 10 per cent. without tuning adjustments.

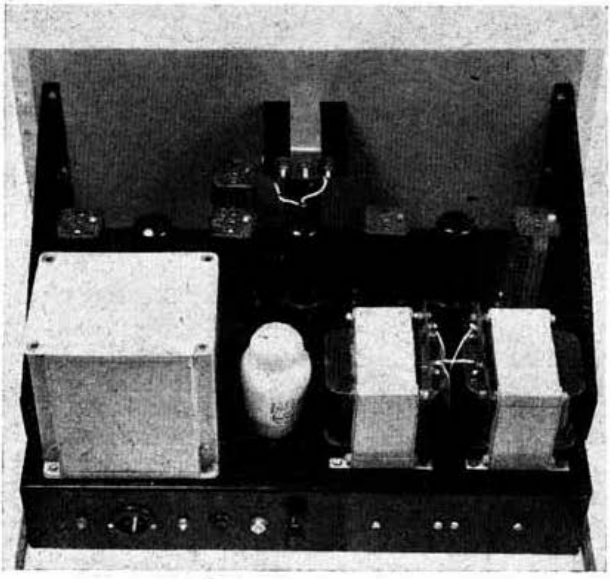


Fig. 7
This top view of the chassis shows the layout of the main components.

In Fig. 5, a relay is shown, the contacts of which when open disconnect the centre tap of the H.T. transformer. The relay supply, which may be 24 volts D.C. or thereabouts, is applied *via* the main station send/receive switch. This arrangement, which of course is optional, is intended to cut-off the H.T. supply to the exciter except during transmission. The power supply is set out along the back edge of the chassis in approximately the position shown in Fig. 5.

The work of wiring-up components is not a lengthy or arduous task, and, if the layout shown in the photographs is closely adhered to, all long leads may be gathered into two "cable forms" running from the main tag board to the two switches on the front of the chassis. This makes for quick and tidy wiring as well as restricting unwanted couplings. In order to maintain the H.T. voltage as nearly constant as possible with the changing load on various bands, a bleeder resistor (R13) is switched across the H.T. supply when the band switch is in the first three postions, namely "Off," "3.5 Mc/s." and "7 Mc/s." On the higher bands the power supply is adequately loaded by the larger number of valves.

The meter switch S6 and S7, is best wired-up separately as a unit. Two single-pole twelve-way wafers are mounted with spacing tubes of length suitable for fixing 1 - watt resistors between corresponding tags on the two wafers. These resistors make convenient formers on which to wind the eight meter shunts for screen and anode feed measurements. Values of most resistors found in stock are high enough to be regarded as "open circuit" compared with the shunts which are wound round them; the latter being about 7 ohms and 0.6 ohm for screen and anode shunts respectively for 10 mA. and 100 mA. full scale deflection on a 1 mA. meter with an internal resistance of 60 ohms. Eureka wire of No. 36 S.W.G. is suitable.

A convenient way of adjusting the shunts is to take a 3 or 4½ volts flash lamp battery, a variable resistance of about 1,000 ohms, and an *Avo* or similar multi-range meter; connect these in series with the shunted 1 mA. meter to be used in the exciter and adjust the shunts in turn until the meter reading is accurate to within about 5 per cent. of the "standard" meter. The variable resistor does double duty as a protective device and as a fine control over full scale readings. Four 10 mA. and four 100 mA. shunts are required for the four screen and four anode circuits. When one of each value has been adjusted it should be sufficiently accurate merely to wind the others identically without going to the trouble of adjusting them individually. Accuracy is not of great importance; the readings are used mainly to ensure that the valves are not run at more than their rated currents and to assist in fault tracing when the exciter is in service.

* 28 Tudor Way, Petts Wood, Orpington, Kent.

Eight of the twelve switch positions are thus employed for current measurements. A ninth is used to check the H.T. voltage with the meter in series with a 1 megohm resistor, while a tenth is connected to a diode (V6) circuit which is provided for the purpose of monitoring the R.F. voltage output. With R14 at 33,000 ohms, the meter reading should be multiplied by three to read R.M.S. volts.

A scale should be drawn on ivorine or white card indicating the meter switch positions and the multiplying factors necessary to convert the 0 to 10 scale into the range in use; *e.g.*, V3 *Ia* x 10 to indicate that the scale reading should be multiplied by 10 to read the anode current of V3. Full scale deflection thus represents the 100 mA. for which the shunt was adjusted.

TABLE I

Schedule of Modifications Made to the Labgear Wideband Couplers.

Component	Function	Band (Mc/s.)	Modifications to:			
			Primary	Secondary	Link	Top Coupling Capacity
T1	100 to 3300 ohms input	3.5	See Fig. 1	Unchanged	Unchanged	Nil-unchanged
T2	low and high impedance output	7	Unchanged	See Fig. 2	Unchanged	Nil-unchanged
T3	low and high impedance output	14	Unchanged	See Fig. 3	Nil-unchanged	5$\mu\mu$F. (2$\mu\mu$F. original)
T4	low impedance output	21	Unchanged	See Fig. 4	2½ turns, ⅛ in. from lower ends of both coils (position critical).	Original twisted wires removed and 5$\mu\mu$F. ceramic inserted.
T5	low impedance	28	Unchanged	See Fig. 5	None originally. 1½ turns put on ⅛ in. from lower ends of both coils (position critical).	Original twisted wires removed. No capacity added.

Modification of Couplers

As supplied by the manufacturers, these couplers are designed for a single output impedance of 3,300 ohms. For the purpose of this exciter, however, certain changes are required, and these are detailed in Table I and Fig 8 (a) to (f). The primary connections of T1 must be altered so that it will accept a 100-ohm input and transform this to 3,300 ohms at the grid of V1. The secondaries of T2, 3, 4 and 5 are modified in order to match into 100-ohm loads. The pin connections shown in Fig. 8 (a) are different from those of the manufacturers owing to the need for accommodating two output pins, one high and one low impedance.

The practical operation of effecting the modification is as follows:

(1.) Remove the 4 B.A. nut at the top of the can and the two 6 B.A. screws at the sides.

(2.) Slide off the screening can.

(3.) Remove the earth connection from the centre pin No. 5 and transfer it to the pin marked 3 in Fig. 9 (a). (Note: It may be found more convenient if the soldering tag under one of the secondary coil fixing bolts is transferred to the opposite bolt. Some couplers are supplied with one, and some with the other, fixing bolt used for the earth connection).

(4.) With a pair of side cutters, clip off the connection which goes from pin No. 3 to the low potential end of the secondary coil, i.e., the coil nearest to the base of the coupler. Transfer this connection to the centre pin No. 5.

(5.) Clip off, at the coil end, the wire from the low potential end of the secondary trimmer, and transfer to the earth tag.

(6.) Replace the connection removed under operation (5) by a mica condenser C between the low potential ends of the secondary coil and trimmer. This condenser, of the postage stamp type, is inserted so that it lies between the can and the primary coil.

The operation as detailed above may appear rather complicated, but with the aid of a pencil-bit soldering iron and some preliminary study of the construction, a coupler may be modified in from five to ten minutes.

Testing and Alignment

When the assembly and wiring of the unit have been completed, the "static" feeds to all valves can be checked on the meter. H.T. voltage, and anode and screen currents should approximate to the figures shown in Table II which gives the "key up" conditions. The couplers should be plugged in for these measurements; or the appropriate socket connections bridged by short pieces of wire,

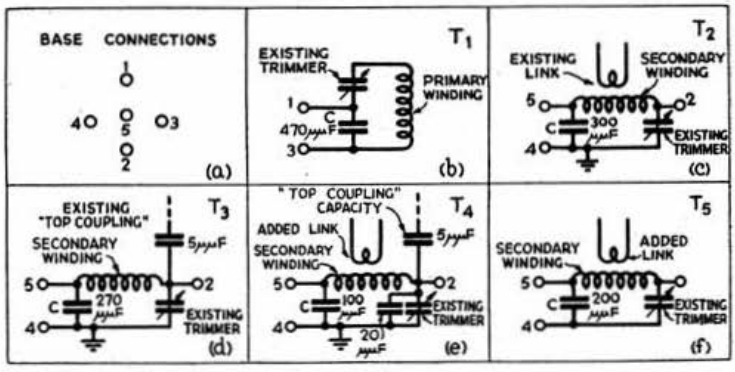


Fig. 8
Modification of the Labgear couplers to provide both high and low impedance outputs (see also Table I).

in order to maintain the D.C. continuity in anode and grid circuits.

If no significantly large discrepancies are found on a D.C. test, the input drive may be connected. With the band switch set to the 3.5 Mc/s. position, the input will be connected right through to the output coaxial socket and the R.F. voltage may be read on the meter. The output should be loaded with a 3-watt carbon resistor. About 20 volts are required for the 3.5 Mc/s. input, representing 4 watts into the 100-ohm resistor. Next voltage at 14,400 kc/s. The primary of T3 is tuned to 14,000 kc/s. It should not be necessary to readjust any trimmers on T1 or T2.

The 21 Mc/s. and 28 Mc/s. tuning can similarly be adjusted, secondary trimmers being set to 21,450 kc/s. and 29,700 kc/s. respectively. Primaries are tuned as before to the L.F. ends of each band *viz* 21,000 and 28,000 kc/s. Output from T4 in the 21 Mc/s. band will probably be a little lower than that obtainable on the other bands. This is to be expected, as V3 has to be

TABLE II

Meter Readings.—"Key Up" Conditions.

BAND (Mc/s.)	H.T. (Volts)	V1		V2		V3		V4		REMARKS
		Ig_2 (mA.)	Ia (mA.)	Ig_2 (mA.)	Ia (mA.)	Ig_2 (mA.)	Ia (mA.)	Ig_2 (mA.)	Ia (mA.)	
3.5	340	—	—	—	—	—	—	—	—	Input R.F. is connected straight through from driver. H.T. loaded by R.13
7.0	325	0.8	21	—	—	—	—	—	—	H.T. loaded by R.13
14.0	390	1.0	24	1.0	26	—	—	—	—	R.13 disconnected
21.0	380	1.0	23	—	—	1.2	28	—	—	R.13 disconnected
28.0	330	0.8	21	0.9	23	—	—	2.0	42	R.13 disconnected

turn the output switch clockwise one position to give 7 Mc/s. output, and set the drive to 3,500 kc/s. Tune the primaries of T1 and T2 to give maximum output at 7 Mc/s. Retune the drive to 3,650 kc/s., and adjust the secondary trimmers to give maximum output at 7,300 kc/s. as indicated by the output diode current. If the process is repeated once or twice, a uniform output over the range 7,000 to 7,300 kc/s. should result. Table III shows the anode and screen feeds to be expected in the case of V1 and the output R.F. voltage which should lie between 18 and 20 volts.

When a flat response and adequate ouput has been secured on 7 Mc/s., the process should be repeated on the 14 Mc/s. coil T3 with the output switch set to 14 Mc/s. The secondary trimmer should be adjusted for maximum dummy load operated as a frequency tripler; but the specified 3 watts output is available by careful tuning.

Table III shows the "key-down" or driven conditions for all stages on all bands. The figures given for valve feeds in this condition may be regarded as only a very rough guide. But in the "key-up" condition they may be taken as fairly accurate if the design is adhered to. Considerable variations occur between one end of the band and the other, in fact the precise figures depend entirely on tuning and loading, and such factors are liable to differ considerably from case to case.

A good method of making a final check on power output and flatness of response—particularly if no valve-voltmeter is available—is to insert an ordinary 2.5 V. 0.3 A. flashlamp bulb in series with the 100-ohm dummy load. Care should, of

TABLE III

Meter Readings.—"Key Down" Conditions.

Band (Mc/s.)	Output Frequency (kc/s.)	H.T. (Volts)	Output Volts across 100 ohms dummy load	V1		V2		V3		V4	
				Ig_2 (mA.)	Ia (mA.)	Ig_2 (mA.)	Ia (mA.)	Ig_2 (mA.)	Ia (mA.)	Ig_2 (mA.)	Ia (mA.)
3.5	3500	340	20.0	—	—	—	—	—	—	—	—
	3600	340	20.4	—	—	—	—	—	—	—	—
	3750	340	18.8	—	—	—	—	—	—	—	—
7	7000	315	20.4	2.4	42	—	—	—	—	—	—
	7150	315	20.4	2.4	42	—	—	—	—	—	—
	7300	315	20.4	2.4	43	—	—	—	—	—	—
14	14000	350	20.0	5.2	20	5.3	43	—	—	—	—
	14200	340	19.5	3.8	38	5.4	43	—	—	—	—
	14400	340	19.5	2.2	45	4.8	44	—	—	—	—
21	21000	330	17.1	5.0	19	—	—	3.5	56	—	—
	21200	330	18.0	4.6	26	—	—	4.6	56	—	—
	21400	320	17.1	2.6	41	—	—	4.4	55	—	—
28	28000	300	19.2	4.8	18	5.2	29	—	—	2.9	55
	28500	290	18.0	2.9	31	3.0	44	—	—	3.7	54
	29000	280	18.0	1.7	42	2.2	44	—	—	3.3	54
	29700	280	17.8	1.6	38	2.2	42	—	—	6.0	53

course, be taken to minimise connecting leads. The bulb will glow with moderate brightness when 3½ to 4 watts output is being generated. A comparatively small reduction in output will show-up as a very distinct drop in brilliance, and at 3 watts the lamp becomes quite dim.

A thermal ammeter may be used in place of the lamp if a sufficiently sensitive instrument is available. A full scale reading of 0.2 to 0.3 A. will provide a reasonably open scale at the working current. The output power may be derived from I^2R; *i.e.* the square of the meter reading multiplied by the value of the dummy load resistance in ohms.

P.A. Input Circuits

After a constant output of about 3 watts on all bands into a dummy load of 100 ohms has been achieved, it next becomes necessary to consider the application of this driving power to an amplifier.

If—as will usually be the case—coaxial line is used to convey the exciter output to the amplifier, the line must be correctly terminated, otherwise standing waves will be set up. These have a considerable nuisance value in that the line length becomes critically dependent on frequency and the impedance of the amplifier input circuit cannot be designed to be a known value.

Although the exciter unit is tested by means of a 100-ohm dummy load, the termination of the line between exciter and amplifier will obviously not be a 100-ohm resistor, but a step-up device transforming the low voltage, low impedance driving source up to values suitable for driving, say the grid of an 807. Nevertheless it must *appear* as 100 ohms to the line if standing waves are to be avoided.

A practical arrangement would be to terminate the line with a one or two turn link coil which could then be coupled into the tuned grid coil of the amplifier. Adjustment of coupling and tuning in the grid circuit would permit the line termination to be made the correct value. However, such an arrangement, although simple, results in some difficulty over band-changing in the amplifier grid circuit. If the output stage is to be limited in power to say an 807, only two circuits —grid and anode—will have to be band-changed, but if a two stage amplifier is to follow the exciter, at least three circuits will have to be tuned and band-changed.

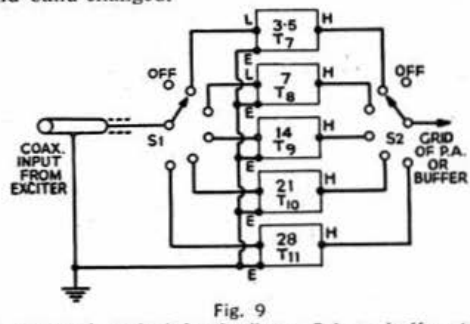


Fig. 9
A suggested method for feeding a P.A. or buffer stage from the low impedance co-axial line. Five modified wideband couplers (T7-T11) are used with switched bandchanging.

Since the whole idea of a band-switched wideband exciter is to avoid having to change coils and make tuning adjustments, it is obviously desirable to minimise the number of such circuits in the amplifier or amplifiers. Wideband couplers may be used for the purpose of matching the 100-ohm line to the grid circuit. In this case the primaries of the couplers have to be modified in the same way as were the secondaries for the reverse process of transforming a high impedance output down to 100 ohms.

A two-pole six-way switch wafer will suffice for the band switching of such a system. See Fig. 9. This switch, the valve holders for the five couplers, and the wiring may be entirely screened and conveniently assembled in an *Eddystone* screening box.

T.V.I.

The circuit diagram shows coils L1, L2 and L3 in the mains and the send/receive relay leads. These are the only connections entering or leaving the unit apart from the fully screened R.F. input

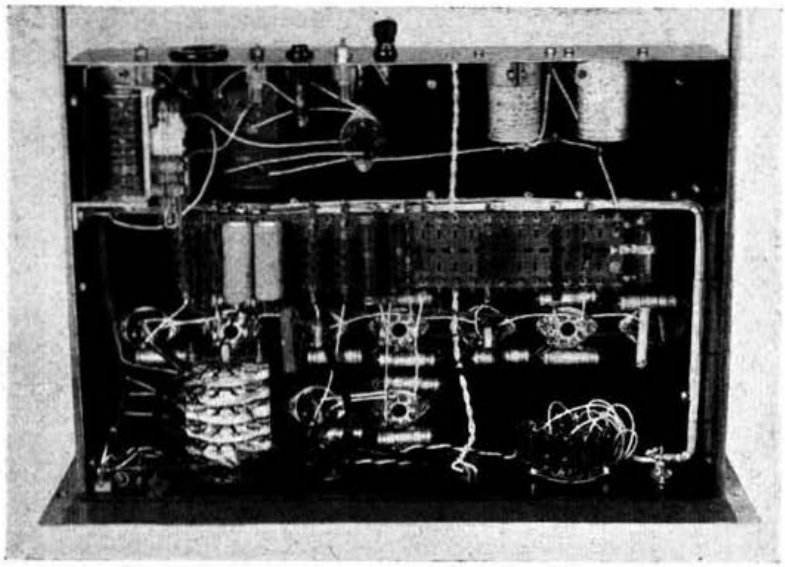


Fig. 10
Underview of chassis.

and output coaxial lines, and should therefore be filtered so that any stray 43 Mc/s. fields may be minimised. L1, L2 and L3 are identical, and consist of three coils from the surplus market, as available from 45 Mc/s. I.F. strips. In the London area they should be made resonant to the 3rd harmonic of 14.2 Mc/s., either by iron core adjustment or by the addition of a small parallel trimmer. A grid dip meter will help here.

In practice, no T.V.I. is experienced at G2IG even without the filters adjusted. However, the field strength from Alexandra Palace is about 1 millivolt per metre, and it is possible that the filters would require some care in adjustment in fringe areas where television signals are very weak. On the other hand the overall design has been carefully evolved so as to eliminate interference, which in any case will be found to be at a much lower level than that likely to be experienced from the power amplifier stage.

The chassis employed should be suitably made to enable its under side to be covered by a screen, so that the last vestige of harmonic radiation from the internal wiring may be eliminated. The chassis used for the original unit was supplied by *Philpott's Metal Works* of Loughborough, Leicestershire (G4BI); and has a metal flange on the under edges conveniently arranged for the addition of a piece of sheet metal to complete the screening.

A power amplifier unit designed to follow the exciter is now under construction. When full tests have been carried out, particularly in relation to possible television interference, it is hoped to describe the design in a future issue of the BULLETIN.

Direction Finding Contests, 1950

FINAL placings in the 1950 R.S.G.B. D/F Contests are given below. These placings are based on the D/F final held on October 29 (assembly point Harpenden Common) after the inconclusive results—due partly to low signal strength—of the Ocober 1 event when the transmitter was hidden on a bombed site in Central London.

1. C. N. Smart (Slade Radio Society)
2. G. T. Peck (High Wycombe)
3. S. Phillips (Birmingham)
4. C. H. Young, G2AK (Birmingham)
5. R. K. Seabrook (Southend)
6. J. K. Finch (High Wycombe)
7. W. F. Holdaway (Romford)
8. J. Salter, G3DQC (High Wycombe)
9. F. A. W. Wisdom, G3DNL (Romford).

Four competitors failed to find the transmitter.

Direction Finding Events, 1951

SINCE the early days of radio many Groups and Societies throughout the country have taken an active interest in D/F events, particularly on "Top Band" (1.8 Mc/s.) and more recently on V.H.F. During the past few years this interest has been extended by collective and inter-Group events and by a number of finals sponsored by the R.S.G.B.

To discuss the co-ordination of ideas and activities during the coming summer and to explore suggestions for the arrangement and conditions under which National Finals could be run, a meeting of representatives of Town Groups and Affiliated Societies has been tentatively arranged to be held in Central London on Sunday, March 11. Several Groups and Societies have already been approached and the organiser—Mr. J. M. S. Watson, G6CT, The Robins, Keymer Road, Burgess Hill, Sussex—would be pleased to contact other Groups or interested members who wish to exchange ideas or to attend the meeting.

The Empire DX Certificate

THE Council has decided that, in future, the Empire DX Certificate shall not be granted except to Corporate Members of the Society *of at least three years' standing*. In reaching this decision the Council took note of the fact that it costs about £2 2s. to produce a single certificate and badge.

A case occurred recently where an overseas amateur forwarded the sum of 12s. 6d. for his initial subscription to the R.S.G.B. and at the same time claimed — successfully — an Empire DX Certificate.

Festival of Britain Year Convention

A NATIONAL Convention will be held in London during the period from June 21st to 24th. Limited accommodation has been reserved at a well-known Central London hotel. Further details next month.

RADIO SOCIETY OF GREAT BRITAIN,
New Ruskin House, Little Russell Street,
London, W.C.1

Assistant Editor

APPLICATIONS are invited for the above appointment on the Headquarters' staff of the Society.

The undermentioned qualifications will be taken into consideration in the selection of an applicant:

(a) Experience of Radio Journalism, preferably in a professional capacity.
(b) Experience as an active radio amateur.
(c) Sound, but not highly specialised, technical knowledge.

The successful applicant will be required to engage in the routine work of the Society, to entertain visitors and to attend meetings of Society members. A knowledge of typing is desirable.

The successful applicant will act as Assistant to the General Editor of the R.S.G.B. BULLETIN and other R.S.G.B. publications and may be required to travel on behalf of the Society.

Salary according to age and qualifications.

Applications, in the candidates own hand writing, giving particulars of education, qualifications and experience should be sent to the General Secretary, R.S.G.B., New Ruskin House, Little Russell Street, London, W.C.1, not later than *February 28, 1951.*

Candidates selected for interview will be required to submit references as to character and ability.

Candidates canvassing Members of the Council, directly or indirectly, will be disqualified.

John Clarricoats,
General Secretary.

COMBINED BIAS AND CONTROL UNIT FOR BREAK-IN OPERATION

By J. W. SWINNERTON (G2YS)*

THE circuit described in this article has been extracted from the American AN/ART 13 control system, and adapted to provide the following facilities at G2YS:

(1) Provision of P.A. bias.

(2) Relay keying of the B.A./F.D. stages of the transmitter.

(3) Operation of the relays which require to be "held" during transmission.

While the facilities (1) and (2) are similar to those found in most stations, it will be shown that (3) can be adjusted to provide automatic change-over, including receiver muting, for break-in operation.

Circuit

As will be seen from Fig. 1, the bias supply is conventional, and since the selection and stabilisation of bias voltages do not come within the scope of this article, the bias supply network is omitted. The transformer ratings will also depend upon the particular bias requirements of the transmitter. It should be noted that there will be an appreciable voltage difference between the heater and cathode of the rectifier valve, and care must be taken to keep this within the rated limits for the valve.

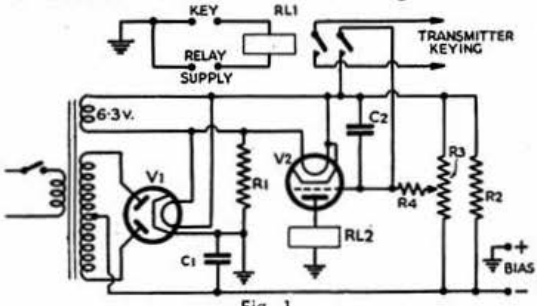


Fig. 1
Circuit of Combined Bias and Control Unit

R1 15,000 ohms 10-watt.
R2 10,000 ohms 10-watt.
R3 0.1 megohm potenticmeter
R4 2.7 megohms ½-watt.
C1 8 μF 350 V.
C2 0.5 μF. 600 V.
V1 6X5.
V2 6C5.

The circuit arrangement of the control valve (V2) is given in Fig. 1, but to clarify the operation this section of the circuit is redrawn in Fig. 2. RL1 is a high speed relay in the transmitter keying circuit, with a second pair of contacts which short C2 when the relay is actuated. If such a relay is not available a second (not necessarily high speed) relay should be used in parallel with the transmitter keying relay. R1 and R2 in series form the main bias bleeder. Across the supply are also connected the control valve, its bias network and three (or four) sensitive relays which are of the type found in the BC357 receiver, and which form the anode load of V2. These relays, which are shown collectively in Figs. 1 and 2 as RL2, are connected in parallel and perform the following functions:

(1) Mute the receiver by bringing in an additional variable resistance in series with the R.F. gain control, as described in previous articles on break-in operation.

(2) Switch on the V.F.O. which is not keyed.

(3) Energise the aerial change-over relay, permitting single aerial break-in operation.

The use of a fourth relay (for example, to switch on a modulator) is also practicable.

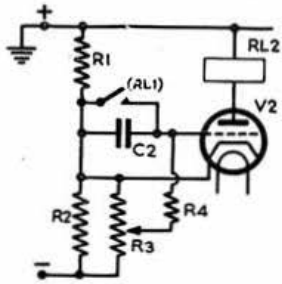


Fig. 2
The control section of Fig. 1 redrawn for clarity

Operation

With the key open, the bias on V2 through the network R3, R4 prevents current flowing through the valve and thus the relays RL2 remain open. When the key is closed, however, the bias is removed from the grid of V2 and the relays operate. When the key is opened again the time-constant of the condenser C2 delays the re-application of bias to V2 to an extent governed by its capacity and by the setting of R3. With the values shown, the delay is variable from a fraction of a second to several seconds. A system is thus available by which, on pressing the key, the operations of changing from reception to transmission are immediately carried out, while on the opening of the key there is a controllable pause before the station reverts to the "receive" conditions. This delay provides a quiet form of break-in to be worked either between letters or between words and groups. Alternatively, the long delay setting of R3 will permit normal send/receive transmission. No appreciable clipping of the first character has been observed in practice, provided that the aerial relay is suitable for fast change-over. Individual relays in the RL2 position are much to be preferred to a single multi-contact relay, as they can be adjusted to operate in any predetermined order. The receiver muting relay, for example, must "break" quickly and "make" last of all, to ensure that clicks do not reach the headphones. If carefully adjusted and maintained, the unit will give faultless operation and reduce greatly the fatigue of contest operating.

* 36 Kingsmead, Upton-by-Chester, Cheshire.

Strays

Mr. John Douglas, GM2CAS, 43 Abbotswell Drive, Bridge of Dee, Aberdeen, wishes to get in touch with any member who has a Siemens Hellschreiber in working order.

Mr. P. A. Manchee, BRS12480, 16 Murray Street, Moonee Ponds W.4, Victoria, Australia, wishes to correspond with a member living in the London area who is interested in receiver development and quality equipment.

Radar Association Reunion

The Fifth Re-union of the Radar Association will take place at the Royal Empire Society Hall, Northumberland Avenue, Trafalgar Square, London, on Saturday, March 10, 1951. Tickets, 8s. 6d. each including buffet, can be obtained from Radar Association, 83 Portland Place, London, W.1.

MODIFYING THE TYPE 78 RECEIVER UNIT

*By L. N. GOLDSBROUGH, M.A., B.Sc. (G3ERB)**

DURING recent weeks the writer has answered a number of inquiries, both by post and over the air, about the details of the modification of this excellent unit for 1.8 and 14 Mc/s. As the unit is once again generally available on the surplus market, these notes may be of interest to others contemplating a similar conversion.

The valve line-up is EF50 (R.F.), ECH35 (mixer), 6J5 (oscillator) with an I.F. of 560 kc/s.; as sold the unit covers 2.4 to 13 Mc/s. in two bands. In addition there is a built-in 100 kc/s. crystal calibrator, whilst a limiter diode is provided across the input. The R.F. and mixer tuning is ganged, but the variometer-type oscillator (mounted in a thermostat-controlled oven) is not band switched, and the second harmonic is used on the higher tuning range. The oscillator tuning scale, which is of the spiral type with an effective length of some five feet, is far superior to that provided on most communication receivers.

The actual oscillator frequency range is 2.91 to 6.95 Mc/s. If instead of 560 kc/s. an I.F. of 1.4 Mc/s. were used, then:

(1) If the oscillator frequency were higher than the signal frequency the unit would cover 1.51 to 5.55 Mc/s.

(2) If the oscillator frequency were the lower the coverage would be 4.31 to 8.35 Mc/s.

(3) If the second harmonic of the oscillator were used—lower than the signal frequency—the coverage would be 7.22 to 15.30 Mc/s.

Hence all the four low frequency amateur bands could be covered.

Practical Details

To realise the idea practically is not difficult, although it requires a little patience owing to the type of coil construction employed. The L.F. ranges have the existing grid windings of 17 turns replaced by 24 turns, preferably of a somewhat finer gauge so that there is no trouble in replacing the former. The H.F. range is more simple to deal with as the top three turns on each coil are merely removed or shorted out. The I.F. coil contained in the unit may be one of two types. If tuned by a *Philips* trimmer, the fixed condensers across the coil should be removed. Additionally a few turns will probably have to be removed from the coil, although this will depend, to some extent, on the actual I.F. desired. If the slug-tuned type coil is fitted then it should be sufficient to remove all the fixed condensers across it, although again it may be necessary to cut-down the winding. It is also preferable to ignore the existing output winding and to take the output to the 2nd I.F./A.F. unit from the mixer anode *via* a small fixed condenser.

A modified BC453 forms the ideal 2nd I.F./A.F. amplifier, for in addition to the advantages of the low second I.F. (85 kc/s.) it can be tuned over a limited range and thus permit the ends of the amateur bands to be set on existing 100 kc/s. points on the tuning scale; moreover the *Desynn* trimmer can be removed with its associated wiring as it is then no longer required. With this combination of units, an I.F. of about 1450 kc/s. is used at G3ERB and the amateur bands are then tuned as follows:

1.8 Mc/s.	2.515	to	2.8	on green scale (Case 1 above)
3.5 Mc/s.	4.3	to	4.6	on green scale (Case 1 above)
7.0 Mc/s.	5.0	to	5.3	on green scale (Case 2 above)
14.0 Mc/s.	12.0	to	12.4	on red scale (Case 3 above)

In other words where the oscillator frequency, or its harmonic, is higher than the signal frequency, the existing scale readings should have the difference between the old and new I.F.s added; where lower, the sum of the I.F.s.

The conversion can be carried out in a very few hours and will amply repay the time spent upon it.

* *54 Kings Lane, Bebington, Cheshire.*

Super Modulation, S.S.B. and Television Systems. Measuring Input Power

IN a simple amplitude modulated transmitter the rated D.C. input to the final stage can be measured under carrier conditions with the aid of a milliammeter in the anode supply lead and a D.C. voltmeter across the H.T. supply. Unless over-modulation is present this power remains unchanged during modulation. This is the method adopted by the Post Office when checking that the input power to a transmitter is within the limits specified in the licence.

At a recent meeting between representatives of the G.P.O. Radio Branch and the R.S.G.B. the method that would be employed in certain other systems was given. In the case of a suppressed carrier single sideband, or a Taylor Super Modulation transmitter, the transmitter is fully modulated with a steady sine wave input from an audio oscillator or other source of tone. In this condition the total D.C. input to all the valves in the final stage is measured in the manner described above. This will be taken as the rated input to the transmitter. The power in the unmodulated condition may be much less in some cases.

In the case of a television transmitter a similar ruling applies. The D.C. input to the final stage will be measured with a modulation corresponding to a white picture in the case of a "positive modulation" system, and with a black picture in the case of a "negative modulation" system.

50-Watt T.V.I.-Proof Transmitter

MR. LOUIS VARNEY, G5RV, whose 50-watt T.V.I.-proof transmitter was described in the July, 1950, issue of the BULLETIN, reports that although brass metalwork is specified in the original article, excellent results have also been obtained using a 16 S.W.G. aluminium chassis, a 20 S.W.G. aluminium base plate and 24 S.W.G. copper for the P.A. screening box. Recent experiments also suggest that copper-plated mild steel can be added to the list of suitable materials for T.V.I. screening given on page 291 of the March, 1950, issue.

C.U. in B.E.R.U.

By 'DONEX"

In the Workshop

FURTHER NOTES ON BEAM CONSTRUCTION

THE article on the constructional aspects of beam aerials, published in the August, 1950, issue, attracted considerable comment—and some healthy criticism. From the wide interest shown it is apparent that further information on this subject is sought by many amateurs.

Straightening Tubular Elements

It frequently happens that the duralumin tubing normally used for beam arrays becomes bent in transit or, later, by heavy windage. Most readers will be acquainted with the difficulty experienced with the usual methods of straightening: *e.g.*, across the knee or on the edge of a bench or building. Such methods are rarely effective and either impart a sinuous and unsightly shape to the length of tubing or bruise or kink it with consequent weakening.

For all but the most severe bends, the correct procedure is to roll them out. Place the element on a flat floor or on the bench and, with a heavy piece of timber (say 6 in. x 2 in.) apply a pressure at the outside centre of the bend to bring it flat to the floor, and then impart a firm rolling motion to the element by means of the timber. With patience, it will be found possible to produce almost perfect straightness again.

If the tubing is actually kinked, the process is a little more involved but still worthwhile in view of the expense of replacing elements. Apply pressure as before to bring the tube reasonably flat to the floor and then obtain (or borrow) a length of mild steel or iron rod of a size which allows it to be pushed into the tube sufficiently far to reach the kink. Slightly taper or round off the end of the rod; then hammer it lightly through the kink. Next roll the element with a block of timber, as before; the kink will then almost completely disappear, and the rod can be withdrawn. Never use a hammer, pipe-grips or pliers on this type of work as the tube will be mutilated and will assuredly fracture later.

Clamps for Adjustable Elements

On the 144 and 420 Mc/s. bands, the multi-element Yagi-type beam is commonly used; generally mounted on a tubular boom rather than a wooden or metal cradle, as is popular in arrays for the lower frequencies. The method of mounting the parasitic elements on a tubular boom calls for some care in the design of the clamps so that, in addition to rigidity, ease of adjustment is also provided. Fixment involving the drilling of holes in the boom is to be deprecated for reasons already given.

A simple and effective solution is shown in Fig. 1. A plate of aluminium (about 14 S.W.G.) is cut and a semi-circular channel formed having a diameter equal to the diameter of the element to be used. Two U-bolts are then made from 2BA or 4BA rod (determined by the size of the elements and the boom) threaded before bending. The clamp is assembled as shown; the lead washer between the tubes where they contact acts as a cushion and should not be omitted. It will be found unnecessary to tighten up the nuts very firmly to obtain rigidity, but locking washers should be used.

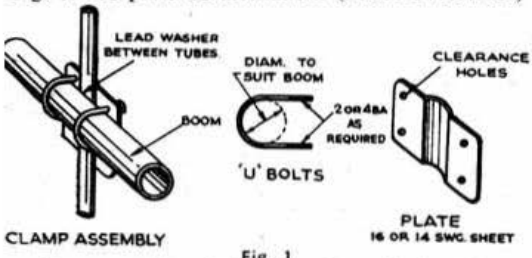


Fig. 1
Recommended method of clamping aerial elements to a boom.

This arrangement facilitates easy adjustment of directors and reflectors and also allows the plane of polarisation to be changed.

For the temporary support of the elements in experimental set-ups, another suggestion which eliminates the elaborate clamps is shown in Fig. 2.

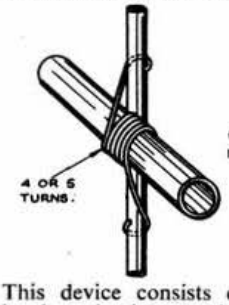


Fig. 2
Quick release clip for experimental beam arrays. Use hard steel wire about 16 S.W.G.

This device consists of a spring made up from hard steel wire not thinner than 16 S.W.G. The coiled portion should be wound originally on a former of sufficient diameter to ensure that it can later (when opened by bringing together the ends) be slipped over the boom. When the ends are released the spring should grip the boom securely, allowing the elements to be clipped under the hooked ends as shown.

A Simple Beam Indicator

The question of indicating—to the operator—the direction in which a beam is "firing" has always been something of a problem to the amateur. While the Selsyn method is almost certainly the best, it is also the most expensive. Alternative systems use variable resistors or multiple contact devices mounted on the beam, in conjunction with an inscribed meter in the shack. The great enemy of all these electrical systems is the weather, and, unless very elaborate sealing and inspection are carried out, they tend to become unreliable.

For the past four years the writer has used a very simple device which has given infallible service in fair weather and foul. It possesses the disadvantages, however, that it is normally only applicable to beams having a rotating vertical shaft, and that it can only be used where the distance from the base of the beam to the shack is not more than about 20 feet.

The general arrangement is shown in Fig. 3. The motion of the beam shaft is transmitted to the shack through a length of "Bowden cable" formed from lengths of extensible curtain wire obtainable at most Woolworth's stores. This cable is well finished and cadmium-plated against corrosion. The inner cable may be the small size standard steel cable as used in cycle 3-speed controls, but an excellent substitute is the fine

stranded copper cable available from "surplus." The problem of threading the cable through the outer casing was solved by straightening a sufficient length of 22 S.W.G. copper wire which, after stretching and lightly greasing, was easily threaded through the casing. Afterwards the stranded cable was carefully and cleanly sweated to this wire and drawn through without difficulty.

The pulleys on the beam shaft and on the indicator pointer must be of precisely the same diameter if an accurate reproduction of the beam rotation is to be obtained. It is also essential to fit an adjuster, of the type common to bicycle brakes, at each end of the line so as to ensure that there is no unwanted motion between the cable and the casing. These adjusters should be mounted on brackets, conveniently placed at the base of the beam shaft and in the shack, to lead the cable accurately to the centre of the pulleys. The joining of the lengths of outer casing calls for some care and external brass sleeves should be soldered in position at each joint. As the

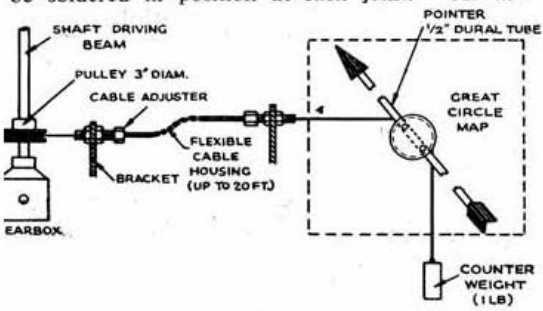


Fig. 3
Simple beam indicator

solder must not be allowed to obstruct the hole in the casing or to catch the cable, the sleeves are best secured after the cable is in position.

The tension in the cable is maintained by a counterweight of between 1 lb. and 1½ lb. according to the length of the line. Two turns of cable round each pulley should be sufficient. Rotation of the beam should be limited to one complete turn, followed by a reverse, rather than to attempt to continue rotation which would reverse the direction of winding on the shaft pulley and probably result in the cable breaking. Sharp bends in the run of the casing should also be avoided for obvious reasons; while an application of thin oil (which will penetrate to the cable) should be made at intervals.

The method of presentation of the beam direction can be varied to suit individual taste. Some may prefer a small box on the operating table containing a pointer and compass card, others a larger pointer on the wall. The writer uses the latter arrangement with the pointer moving over on a great circle map of the world centred on London.

* * *

Members with constructional problems of general interest are invited to write to "Donex," c/o Headquarters.

General-Purpose Oscilloscope

IN the circuit diagram (Fig. 1) of the "General-Purpose Oscilloscope" described in the December, 1950, issue, grid resistors for the valve V4 were inadvertently omitted. A one megohm resistor should be shown between the grid end of C22 and the junction of C23, R10 and R11, and a similar resistor in a corresponding position for the other triode section of the valve.

Slow Morse Transmissions

Regular slow Morse transmissions have proved of considerable benefit to many aspiring amateurs, but more volunteers are still required for districts not already covered and to allow a temporary respite to those who have given their services for several years.

Stations listed who find themselves unable to continue transmissions should immediately notify the organiser, Mr. C. H. Lamborn Edwards, A.M.I.E.E. (G8TL), 10 Chepstow Crescent, Newbury Park, Ilford, Essex.

G.M.T.	*Call*	*kc/s.*	*Town*
Sundays			
09.30	G6NA	1750	Guildford
10.00	G6MH	1990	Southend-on-Sea
10.00	G5XB	1950	Reading
10.00	G3AEZ	1847	Dorking
11.00	G3ADZ	1900	Southsea
11.00	GM3AVA	1860	Falkirk
12.00	G3CWW	1730	Hendon, N.W.4
21.00	G2FIX	1812	Nr. Salisbury
22.00	G2FXA	1900	Stockton-on-Tees
Mondays			
13.00	G3AXN	1870	Southend-on-Sea
19.00	G3NC	1825	Swindon
19.30	G3AIX	1760	Birmingham
19.30	G3GYW	1922	Westcliff-on-Sea
20.00	G2AJU	1900	Stutton, Ipswich
20.00	G3DSR	1750	Derby
21.00	G3ESP	1850	Wakefield, Yorks
21.00	G3BLN	1900	Bournemouth
21.00	G3BHS	1820	Eastleigh, Hants
22.00	G8TL	1896	Ilford
22.00	GM4MF	1860	Falkirk
22.00	G3AEZ	1847	Dorking
23.00	G3EIW	1760	London, S.E.18
Tuesdays			
13.00	G3AXN	1870	Southend-on-Sea
19.00	G5XB	1905	Reading
19.30	G2CPL	1900	Lowestoft
20.00	GI2HLT	1900	Belfast
21.00	G3DMP	1850	Wakefield, Yorks
21.00	G3EFA	1855	Southport
22.00	G3ELG	1772	Rotherham
22.00	G2FXA	1900	Stockton-on-Tees
22.30	G6JB	1820	Salcombe, Devon
23.00	G3EIW	1760	London, S.E.18
Wednesdays			
18.45	G3CQL	1990	Leigh-on-Sea
19.00	G3ADZ	1900	Southsea
20.00	G2NY	1850	Preston
20.00	G3AFD	1783	Southampton
22.00	G3DLC	1800	Grays, Essex
22.00	GM4JQ	1860	Falkirk
23.00	G3EIW	1760	London, S.E.18
Thursdays			
18.00	G3AXN	1870	Southend-on-Sea
19.00	G3NC	1825	Swindon
19.30	G3BUJ	1990	Southend-on-Sea
20.00	G3FVH	1920	Hull, Yorks
20.00	G3NT	1805	Northallerton
21.00	G2AQN	1850	Ossett, Yorks
21.30	G6DL	1760	Birmingham
22.00	G2FXA	1900	Stockton-on-Tees
22.00	G3ARU	1990	Wanstead, E.12
22.00	G3AEZ	1847	Dorking
22.30	G3OB	1803	Manchester
23.00	G3EIW	1760	London, S.E.18
Fridays			
13.00	G3AXN	1870	Southend-on-Sea
14.00	G3ADZ	1900	Southsea
19.00	G3BLN	1900	Bournemouth
19.30	G2CPL	1900	Lowestoft
20.00	G2AJU	1900	Stutton, Ipswich
20.00	G2AMV	1870	Wirral
21.00	G3RB	1850	Ossett, Yorks
21.00	G3BHS	1820	Eastleigh, Hants
22.30	G6JB	1820	Salcombe, Devon
23.00	G3EIW	1760	London, S.E.18
Saturdays			
22.00	GM3OM	1860	Falkirk
23.00	G2FXA	1900	Stockton-on-Tees
23.00	G3EIW	1760	London, S.E.18

OTHER AMATEURS ARE ASKED TO AVOID CAUSING INTERFERENCE TO THESE TRANSMISSIONS

QUA

MEMBERS who have volunteered their services to the **Talking Book Library** (see September, 1950 issue of the BULLETIN) will be interested to learn that a letter of appreciation has been received at Headquarters from **Sir Ian Fraser, C.B.E., M.P.,** who—since 1921—has been Chairman of St. Dunstan's. After expressing his personal thanks, Sir Ian writes: ". . . This typically generous gesture on the part of the Radio Society of Great Britain is very greatly appreciated by the National Institute for the Blind and St. Dunstan's and by all our blind members." Old-timers will recall that Sir Ian, though blinded in the Great War, was a most active pioneer of Amateur Radio in the 'twenties, with the call G5SU, and was President of the R.S.G.B. in 1927-28. At his station in Regent's Park all meters were calibrated in Braille and arranged so that the needles could be held in rubber-lined clamps actuated by plungers; permitting readings to be taken by touch. As long ago as 1924, Sir Ian designed one of the first mobile speech amplifiers in order to address political meetings from a car during his successful campaign at St. Pancras North.

The case for **home-constructed receivers** is well made by **Byron Goodman, W1DX** in the January issue of *QST*. "The manufacturers," he states, "will never bring out a receiver that can't be improved—it just isn't possible. This isn't by way of belittling their know-how, but it is a fact simply because the *customers* can't agree on what *they* want. What is adequate selectivity for A is broad as a barn door for B. Neither A nor B has any interest in the broadcast band, but C and D won't buy a receiver without it and 20 watts of high fidelity audio." As W1DX rightly points out, the only way of getting exactly what *you* want—free of all compromises—is to build the receiver yourself.

The long-awaited **Beveridge report** on the future of broadcasting has provided amateurs with at least one talking point: the development of V.H.F. broadcasting in the United Kingdom. The Committee expresses the belief that such transmissions are important and urgent both for securing better coverage and for increasing the diversity of programmes. The proposal that "public authorities and approved organisations" should be permitted to establish and operate their own stations could easily revolutionise broadcast entertainment in this country. Amateurs who have learnt by bitter experience that any extension of broadcast frequencies usually results in a corresponding reduction in their own bands, can take heart from a study of the Atlantic City allocations. In Region I the following bands are available for the broadcast (including television) service: 41-68, 87.5-100, 174-216, 470-585 and 610-960 Mc/s. Even though all these bands are not exclusively allocated to broadcasting, they should surely be adequate for many years to come without further encroachment on amateur preserves.

A re-assuring note to those preparing to take the G.P.O. **Morse test** of twelve words per minute: we understand that the Radio Branch instructions to local postmasters mention only words and figures with no reference to punctuation symbols which should therefore not be included in the examination. A few cases are believed to have occurred in the past where the local authorities have overlooked this point, but any candidate who failed on this score should apply for a fresh examination. Even experienced operators can be thrown into confusion by the sudden appearance of an unfamiliar symbol.

After B.B.C. engineers had investigated the possibilities of twelve sites in Wales and on the Somerset hills, the Corporation has purchased twenty-five acres of land on St. Lythan's Downs, near **Wenvoe,** about five miles to the west of Cardiff. On this site, some 400 feet above sea-level, will be built the television transmitting station for the Bristol Channel area using Channel 5 (66.75 Mc/s. vision, 63.25 Mc/s. sound). A 750-foot mast is to be erected by *British Insulated Callenders Construction Co., Ltd.*, while the 50 kW. *E.M.I.* vision transmitter and 12 kW. *S.T.C.* sound transmitter were ordered in January, 1950.

Operating procedure—particularly on the DX bands—comes in for considerable criticism these days. But sometimes, we feel, the old-stager who waxes indignantly at the tactics of the present-day amateur is just a little inclined to forget that this is not such a new problem as he would have us imagine. Take, for example, the following sound advice: "Make your receiving apparatus as selective as possible and learn how to use it efficiently; never carry out testing work with the aerial on that can be done equally well with it off; always use the minimum power with which communication can be comfortably carried on; refrain from answering a station that is calling some other station; listen in for a minute after finishing to see whether anyone is waiting to call you." Now the interesting point about these suggestions is that they are not a set of New Year Resolutions for 1951 but extracted from a series of recommendations drawn up by the *Wireless Society of London* in an attempt to reduce QRM in—believe it or not—1914!

Ten Minute Quiz

This month's posers for the radio enthusiast.

1. *What countries use the following amateur prefixes?*
   (a) EA; (b) FA; (c) OA; (d) TA.
2. *What is the difference between a "padder" and a "trimmer"?*
3. *What is the value of an "all orange" resistor?*
4. *Give the formula for finding the correct turns ratio for an audio output transformer.*
5. *Give the anode and control grid voltages on which published valve characteristics are usually calculated.*
6. *What is the most serious natural disadvantage of using F.M. for short-wave operation?*
7. *When confirming telephony call-signs by the substitution of words for letters, what licence regulation should be carefully observed?*
8. *What are the practical electrical units of:*
   (a) current; (b) quantity; (c) potential; and (d) capacity?
9. *Name the type of valve base for a 6C4 and give the pin connections.*
10. *How many licensed amateurs were there in the United Kingdom on June 30, 1950?*

Now turn to page 306 and see whether you have beaten the Question Master.—H.E.B.

THE MONTH ON THE AIR

*By A. O. MILNE (G2MI)**

"Top Band"

TO compensate for the poor conditions now existing on 14 and 28 Mc/s., the "Top Band"—doyen of our present amateur frequency allocations—has again shown its old "1920's" form and provided some excellent DX. Though the technical experts may talk loftily of "sun spot cycles," we prefer to think of this revival in more human terms, as though an old and well trusted friend had suddenly awakened from a long sleep.

It is fitting that several of the plums of this DX revival should have fallen to amateurs who have consistently retained their interest in this band. To G6LB, of Chelmsford, for example, goes the honour of making what is probably the first-ever "Top Band" contact with Turkey. On January 10 at 1845 G.M.T., 'LB answered a CQ from TA3FAS (RST 349) and—though almost buried under Stonehaven Radio—received a report of RST 339 on his 10-watt transmissions with a 267-foot long wire aerial. Later in the month—on January 24 at 0650—G6LB made his first "Top Band" Transatlantic QSO when he worked W1EFN—again receiving RST 339.

Amateur Television

Our Happy Lid is getting set
To join the first Ham TV net;
And so instead of DX plans,
He talks of "flip-flop fly-back scans."
And works away throughout the night
On sync. and "ikes" and lines and light;
While in the day you're sure to meet
Him buying valves in "Surplus Street."

* * *

But here's the snag (don't you agree?)
Just who on earth would want to see
His ugly dial on their TV?

G3VA

It is believed that G6BQ—outstanding performer for many years in "Top Band" Contests—was the first "across the pond" this season when he raised VE1EA on December 31 at 0527 G.M.T. and received an RST 349 report. 'BQ emphasises that it is useless to attempt to call transatlantic stations between 1800 and 1825 kc/s.

January "Top Band" Contest

From a preliminary survey of entries, the Contests Committee reports that although—as usual—activity fell somewhat below that of the November event, high scores were again compiled by leading stations several of whom made more than 140 contacts. Stations which fall into this category include G2JF, 3FAB (150 contacts), 6BQ, 8KP and 8NF. Conditions were not generally considered good for inter-G working and this time there were comparatively few Continental stations active. G6BQ worked three Transatlantic stations during the contest: VE1EA (0554 G.M.T., RST 339 in); W2ESO (0713 G.M.T., RST 469 in); and W1LYV (0755 G.M.T., RST 459 in). G8NF succeeded in getting across twice: to W2ESO (0725 G.M.T., RST 339/459 in) and W3FNF (0735 G.M.T., RST 339 in).

During the contest G3BDQ, 3PU and GW3JI were heard by HK1KE, whose only contacts were with EK1AO and YI3ECU. FA8BG was active and one G station overcame the solid wall of QRM between 1800 and 1900 kc/s. to complete a 50-minute ragchew with the Tangier station who was on 1780 kc/s. EK1AO, who by the way, is ex-EAR96, has worked VE1 and 3, W1, 2 and 3 on this band. He reports that the loudest European signal is GW3ZV, regularly heard at RST 599.

DX Notes

Even though 1.8 Mc/s. may have been the star performer, the H.F. bands still manage to supply their quota of interesting calls.

G6BB reports no thrilling QSO's. The interest lay in the ones that got away. These include FY7YB (at 1030 on 14020 kc/s.), KR6FG (at 0900 on 14080 kc/s.), M1A (at 1456 on 14040 kc/s.), AR8AC (at 1000 on 14091 kc/s.) and FQ8AE (at 0923 on 14080 kc/s.). G2FAY says anyone wanting YV should look for YV5AY on 14080 kc/s. CR5AC and 'AD are fairly regularly on the L.F. end of 14 Mc/s. and cards are in from '5AC. Cards from CR5AA have been received *via* G6RH who mentions that he has heard VT1AC calling CQ-G with a T6 note. CR5AA, whose address is Bissau, Portuguese Guinea is off the air for want of a 140 $\mu\mu$F. two-section variable condenser (*Hammarlund* MCD 140-s) and a 65 $\mu\mu$F. (*Hammarlund* MC-100-s). Can anyone help?

ST2TC on 7010-7015 kc/s. at 1930 G.M.T. is looking for G's every fourth night counting from January 29. This information comes from G2HBG whose DX on 7 Mc/s. includes ST2TC, FF8JC, ZL2IQ, KP4KD and TA1AT.

G5FA has worked MP4BAM on 7 Mc/s. who gave QTH for QSL "PDQ, c/o, PCL, Bahrein."

Bob Pybus offers LU2XA, LU7AA and LU3DJB all on 7 Mc/s. 'phone. CE3AL has been S8 at times, also on 'phone. The 3.5 Mc/s. band has produced VE1DW on January 1 with quite a few W's on January 6.

G5LN mentions that he has heard several KH's coming the long way round and in fact has worked KH6ABQ when both beams were firing south-east.

Here and There

Results of the 1950 VK/ZL Contest have been received from ZL2GX *via* G6XN. Leading U.K. stations include: ('phone) G6XN and GW3FSP; (C.W.) G2AJ, GM3EST and GW3ZV. This shows quick work by the judges!

Ken Smethurst (ex-MP4BAD) is now G3GPE at 6 Alder Lane, Hollins, Oldham, Lancs. He is having another 250 MP4 cards printed and promises to QSL all outstanding claims including listener reports.

BRS18794 reports continued improvement in the health of SU1MR, still in a Midlands hospital. He also passes along the useful tip that CM9AA will be going to Guadeloupe (FG) during this month. TA3FAS was in London recently on a flying visit; says TA3XOX is genuine. TA3GVU will be returning home shortly.

Can anyone please supply the present QTH of MD7WE and MD7DC? W2GT wants both of their cards.

Congratulations to GM3EST, the 10th GM to qualify for DXCC, and probably the first of the "E" series to do so. Total worked 129. He made a brief appearance on telephony but his mod. transformer blew out and now he is back on C.W. once more.

* *29 Kechill Gardens, Hayes, Bromley, Kent.*

GM3FKS explains his recent absence from the air by saying that he has been recalled to the Navy. Warren Snyder, DL4FA, is now in Southern France and hopes soon to be on with a F7 call. His present QTH is 7966 EUCOM Dept. A.P.O.58. BRS766, in Athens, tells us that SV0WU is now running 250 watts to a 3-element beam.

KH6QH is now back in California with his old call, W6ORT. He wants a card from ST2WB. VS1AA, Jim MacIntosh, is on the air using a Franklin (2 6AG7's)—807-807-PPT40's to—appropriately enough—the good old VS1AA aerial. He is on the lookout for G's around 1400-1600 G.M.T. ZD2DCP is active again after a spell of leave in England. He is now at Lagos, running 25 watts on 14 Mc/s. C.W.

S/Ldr. Kenneth Rancombe, ex-VS7KR, has returned to the U.K. and should be active with a "G" call soon. Before leaving Ceylon all outstanding cards were despatched, but replacements for any which may have gone astray can be obtained from '7KR at 201 Chichester Road, Bognor Regis, Sussex. He sends his best wishes to the newly-formed Radio Society of Ceylon. Old-timers will recall YI-ZC-SU and ST6KR as outstanding stations—all of which were operated by Ken Rancombe—when 7 Mc/s. DX was an every day occurrence in the 1920's and 30's.

A Request from Austria

OE1KR has designed a switched directivity multi-element fixed beam, suitable for use on two harmonically related bands. The construction of this aerial is both easy and cheap but as all Austrian amateurs are still officially "under cover" and OE1KR lives in the centre of a town, he cannot put the aerial up without inviting questions. He has therefore offered to supply full details of the theory and construction of the aerial to anyone in the British Isles who is prepared to build it and supply him with a written report on the results achieved. Letters to G2MI please, enclosed in an envelope marked "OE1KR."

Stability of Beam Tetrodes

R.F. stability with beam tetrodes has long been a subject of particular interest to the many amateurs who use 807 valves in their transmitters. Mr. Peter Sawyer, G3BYF, has found that, apart from the orthodox remedies such as careful layout and screening, an effective cure for self-oscillation on the lower frequency bands is the substitution of a larger value screen by-pass condenser of about .1 μF. capacity in the place of the .01 or .002 μF. types usually specified. In several recent cases such a substitution has completely cured instability on 1.8 and 3.5 Mc/s.

The only difficulty likely to be experienced is with telephony operation as a capacity of .1 μF. presents a rather low reactance at audio frequencies. Except for high-fidelity enthusiasts, however, G3BYF believes that the loss of "top" is not likely to prove serious while the increased stability should reduce splatter.

Staff Notes

MR. J. PAT HAWKER, G3VA, who has served on Headquarters Staff since 1947, first as Assistant to the General Secretary, and more recently as Assistant Editor, has now relinquished this position in order to take up an editorial appointment with a well-known London publishing house.

Contests Diary

From	*G.M.T.*	*To*	*G.M.T.*	*Contest*
Feb. 17	0001	Feb. 18	2400	A.R.R.L. DX Contest ('phone)
Feb. 24	1700	Feb. 25	1700	B.E.R.U. Contest (C.W.)
Mar. 3	1700	Mar. 4	1700	B.E.R.U. Contest (C.W.)
Mar. 10	0001	Mar. 11	2400	A.R.R.L. DX Contest (C.W. 2nd. Section)
Mar. 17	0001	Mar. 18	2400	A.R.R.L. DX Contest ('phone)
Mar. 31	1500	Mar. 31	2300	Affiliated Societies Contest (C.W.)
Apr. 1	1500	Apr. 1	2300	Affiliated Societies Contest ('phone)

B.E.R.U. Contest

THE fourteenth B.E.R.U. telegraphy contest (February 24-25, March 3-4) should prove of outstanding interest. The event has been well publicised overseas and there will undoubtedly be a strong contingent from "Down Under" determined to recapture the B.E.R.U. Senior Trophy after the 1950 victory of G5WP. Low frequency DX enthusiasts should note that 3.5 and 7 Mc/s. are included, alongside 14 and 28 Mc/s. For full details of serial numbers, zones and rules, see page 180 of the November, 1950, BULLETIN. Here is your chance to work those rare Commonwealth prefixes! And if you operate—please submit a log!

B.E.R.U. Telephony Contest

FIRST reports of the telephony section of the 1951 B.E.R.U. Contest—held on February 3 and 4—show that both 14 Mc/s. and 28 Mc/s. were open for DX contacts during at least part of the Contest period; though most stations found that 28 Mc/s. proved tough going. Among the British entrants, G2AJ—winner of the 1950 event—G2DPZ, G2VJ and G6RH appeared to be outstanding though, at the time of writing, it is still too early to estimate final results. MP4KW and VQ4RF should also be able to submit good logs. America—represented by VE, VO, VP3, VP4, VP6 and VP9—and Africa with MD2, MI3, VQ2, VQ4, ZD2, ZD4, and ZS gave most points to British entrants. Despite publication of the rules and dates in a number of overseas journals, a fair percentage of Commonwealth stations active on the bands were apparently unaware of the Contest.

National Field Day

MOST important change in the 1951 N.F.D. Rules (see page 308) is the slight relaxation on aerial systems. Rotary beams are again barred, in fairness to the smaller Groups, but greater scope and ingenuity will be possible; separate transmitting aerials on the two bands being permitted. A wider choice of site will also be possible. Power limit remains at 5 watts and times (QTR) must be exchanged with portable stations. QRV? June 2-3.

Affiliated Societies Contest

RULES for the 1951 Affiliated Societies Contest (to be published next month) will be basically similar to those for the inaugural contest last March (see page 232 of the January, 1950, issue of the BULLETIN): 3.5 Mc/s. only, C.W. and 'phone sections, no overnight operation.

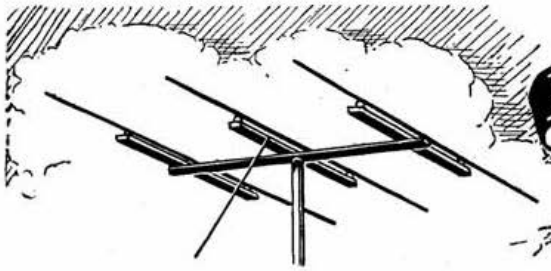
Low Power Field Day

HERE are a few advance details of this brand new contest, scheduled for September 9. Main purpose of L.P.F.D. will be to encourage the construction of ingenious low-weight equipment which is truly "portable." A maximum weight limit of 20lb. must include transmitter, receiver, power supply, aerial, frequency meter, etc. In this contest, also, no over-night operation will be involved, probable times are 10 a.m. to 6 p.m. on 3.5 and 7 Mc/s.

D/F Programme, 1951

An announcement of interest to all D/F enthusiasts appears on page 290. There has been a great revival of interest in this fascinating branch of short-wave radio recently and it is hoped that further progress will be reported in 1951.

KEEP A NOTE OF THESE DATES.



AROUND THE V.H.F.'s

70 cm. Activity Week

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

AT least twenty-one stations took part in the "70 cm. Activity Week" held during the period Saturday, December 30, to Sunday, January 7. While outstanding DX results were not expected at this season of the year, the extra 70 cm. activity encouraged by the tests has been widely appreciated and has provided valuable data towards the establishment of accepted "standards" of performance on the band. For example, before the tests, few amateurs would have forecast that the 55-mile path between G4LU and G8JI would be "open"—despite the indoor aerial at '4LU—on all but one occasion during the week. The success of the venture has prompted further similar tests (March 3 to March 11), full details of which are given later.

Apparatus in Use

Five stations employed the type 832 valve as a tripler from the 145 Mc/s. band, in most cases using the normal 2-metre transmitter as a driving source. Power varied from an estimated one watt out (G2WJ and 8SM) to 15 watts input at G2CIW. All stations were C.C. with the exception of G6HD, who began the chain with a 6 Mc/s. V.F.O.

G5CD was running the *Mullard* QQV06-40 double tetrode P.A. which was demonstrated at the recent London lecture meeting. A CV53 figured as a P.A. in three cases; G8JI, G5PY and G4CG, who was also employing a similar valve in the preceding tripler stage, and applying anode modulation to both stages. G5PY had converted a type 105 unit into a P.A. using a CV53 in place of the original CV82. This was driven by an 829B, to 2½ watts input.

A new *Mullard* V.H.F. valve, the M.E. 1003, was the P.A. at G2FKZ, driven by CV53's. G2XV favoured push-pull 8012's with approximately 6 watts output, and G4LU a CV127 doubler taking the full 25 watts.

On the receiving side, the only wholly "commercial" jobs were the R.1294 and R.1359 in use at G5PY. He found, significantly enough, that although the former appeared to be more sensitive, the R.1359 was more satisfactory due to its narrower band width. G8SM, among others, considers that a C.C. local oscillator is a necessity, and had a 6C4 with a 17 Mc/s. crystal followed by two 6J6 multiplier stages ending up at 408 Mc/s. into a co-axial line. A CV103 crystal mixer preceded by a "lighthouse" type 466A R.F. stage with a gain of 6 db. completed the receiver.

The most elaborate line-up was possibly that at G2FKZ; CV88 co-axial line R.F. stage, crystal mixer, C.C. local oscillator, 30 Mc/s. (tunable) first I.F. and 1.6 Mc/s. second I.F. The receiver covered the band 430-440 Mc/s. At G6HD a 6J6 oscillator/tripler (136.6 Mc/s. output) was injected into a CV102 crystal mixer in co-axial line with an AR88 tuning from 22.1 to 31.9 Mc/s. acting as the I.F. amplifier. The band thus covered was 432.1 to 441.9 Mc/s.

G2XV's receiver comprised a 6J6 mixer, 955 oscillator and 6AK5 I.F. into a *Hallicrafter's* SX28. Three double-triode *Brimar* valves were employed as p.p. E.G.T. R.F. stage, p.p. mixer and oscillator/doubler in the receiver at G5CD. It is understood that a full description of this receiver will appear in the BULLETIN shortly.

Comments

G2CIW obtained no new contacts but welcomed the opportunity of finding activity during the week instead of having to wait until the weekend.

G2FKZ and G3FZL/A found conditions poor, but activity such that signals were audible during every test period. Two weak and unidentified 'phone signals were heard by them, one bearing N.W. at 1945 G.M.T. on January 5 on approximately 432.3 Mc/s., and the other towards the S.W. on 436.5 Mc/s. at 1910 G.M.T. on January 7.

SECOND 70 cm. ACTIVITY WEEK
Operating Periods

March 3	15.00-16.00
	19.00-20.00
March 4 and 11	10.00-12.00
	22.30-23.30
March 5, 6 and 9	19.00-20.00
March 7 and 8	22.00-23.00
March 10	15.00-16.00
	22.30-23.30

All times G.M.T.

G2QY was not particularly satisfied with his results as he failed to add to the 13 stations already worked since May last. Those wishing to make 70 cm. skeds with this station should look for him on about 1850 kc/s. at 1900 G.M.T.

G2XV, who heard nothing and, so far as is known, was not heard during the week, would like to see the tests repeated at intervals of six to eight weeks. G5PY found that G5TP provided a most consistent signal, never falling below S8 despite the distance of 40 miles. G2CIW was S7 at 26 miles over a much more difficult path.

Summing Up

The time of year chosen was, of course, not expected to yield anything spectacular in the way of long distance working. It is unlikely, indeed, that any period could be worse from the point of view of tropospheric propagation, and therefore some sort of standard "low" has been obtained against which subsequent tests may be judged.

Undoubtedly two main factors militate against contacts on 70 cm. between stations with weak signals. The first is aerial beam width, and the second the difficulty of searching adequately a wide band for weak signals in a reasonable time.

* 32 Earls Road, Tunbridge Wells, Kent.

The stacked dipole array undoubtedly has an advantage of greater beam width as compared with the Yagi type, and for that reason is favoured by many. The type of aerial employed by those stations who have forwarded details of their equipment will be found in the table.

So far as is known no one is using an omni-directional beam, such as the "turnstile," and experiences with such an array would be welcomed.

The problem of searching the band on the receiver is not so easy of solution. The signal-to-noise ratio of a receiver depends upon its overall band-width, which, as on the lower frequencies, will tend to decrease in order to take full advantage of modern technique in signal frequency amplification. This puts a premium on oscillator stability both at the transmitting and receiving ends and effectively increases the difficulties of searching. Will eventually panoramic display be considered a *sine qua non* by the 70 cm. enthusiast ?

The Next Tests

In arranging times of operation it is impossible to please everyone. In the first tests television hours were avoided not so much for risk of interference with the programmes, which should not make very drastic demands on technical skill, but because it is very obvious that many amateurs are keen viewers. Some are unable to operate in the early evening and ask for an hour from, say, 2230 to 2330 G.M.T., while others are disinclined towards late hours. To please both sides three late periods have been included in the next tests. With the present level of band occupancy splitting possible weekday activity into two periods in one evening would defeat its own object. It is hoped that the new arrangement will be commented upon by those interested.

It is planned to publish a full report covering the second Activity Week in the April issue of the BULLETIN. As this will entail quite a lot of work it is requested that reports be sent in as soon after March 11 as possible.

News in Brief

With 70 cm. activity taking first place in the V.H.F. reports this month, little news of the other bands has been received. Here, however, is a brief round-up of world V.H.F. news:

A V.H.F. section of the "Coupe du R.E.F." from 1200 G.M.T. on April 7 to 2400 G.M.T. on April 8 should bring European activity (particularly F, HB and ON) to a high level. . . . German 2-metre stations have now worked six other countries: HB, OE, PA, ON, F and G with contacts over 500 km. credited to DL4XS/3KE, DL3FM and DL3NQ. There are now 20 German frequency-modulated V.H.F. broadcasting stations operating between 87.7 and 99.4 Mc/s. . . . Many East Coast American V.H.F. stations lost their beams during violent storms last November, a 50 per cent. "mortality rate" is estimated in some districts. . . . Nine W stations have now "Worked all States" on 50 Mc/s. while W2BAV has raised 21 states in 6 call areas on 144 Mc/s. . . . The development of V.H.F. broadcasting in the U.K. (as recommended in the Beveridge report) should result in the mass production of valves and components equally suitable for amateur V.H.F. requirements. . . . V.H.F. activity in VK, ZL and ZS is mainly centred on the 50 Mc/s. band but a fair number of stations are now equipped for 144 Mc/s.

Ref. No.	*Call and Situation*	*Stations*	
		Heard	*Worked*
1	G2CIW Romford	4, 5, 6, 10	3, 11, 14, 17, 18, 20
2	G2DD Stanmore	—	4, 11, 20
3	G2FKZ London, S.E.22	7, 9, 13	1, 4, 5, 6, 11, 14, 15, 16, 18, 20
4	G2QY Pinner	13, 14	2, 3, 11
5	G2RD Wallington	*	*
6	G2WJ Dunmow	—	3, 10
7	G2WS Beckenham	*	*
8	G2XV Cambridge	—	—
9	G3FP Croydon	*	*
10	G3FZL/A London, S.E.	*	*
11	G4CG Wimbledon	10	1, 3, 4, 14, 15, 20
12	G4LU Oswestry	—	19, 21
13	G5CD London, N.W.11	3, 4	—
14	G5PY London, S.W.12	—	1, 2, 3, 11, 15, 20
15	G5TP Stoke Row, Oxon.	*	*
16	G6HD Beckenham	15	1, 3, 7
17	G6HG London, W.5	*	*
18	G6PG Dartford	*	*
19	G8JI Birmingham	—	12
20	G8SM E. Molesey	—	1, 2, 3, 10, 11, 14, 15
21	GW2ADZ Llanymynech	—	12

* No reports received.

G2WJ used an 8 and G4CG a 10-element Yagi.
G2XV and G5PY used 8-element stacked arrays with reflectors.
G4LU used a 12-element stacked array.
G6HD used a corner reflector.
Frequencies used: G2WJ (435.78), G2XV (432.78), G4CG (435.2), G4LU (431.55), G6HD (434.4).

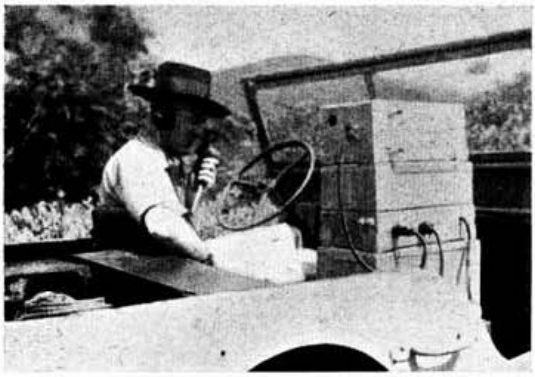
HELP US . . .

- *When writing to Headquarters do not include* BULLETIN *items, queries, changes of address and publication orders, etc., on the same sheet of paper. Only one envelope is necessary, but a separate sheet for each subject please.*
- *Always print, or write clearly, your full name and address. Christian names, call-signs and illegible signatures cause much unnecessary checking.*
- *Notify Headquarters of impending changes of address several weeks before you move. Alterations to subscription reminders, etc., are not sufficient unless definite instructions are given. Include your B.R.S. number and/or call-sign, your present address and, if possible, the date your subscription falls due. Remember that* BULLETIN *wrappers are prepared up to a fortnight before the publication date.*
- *Please pay your subscriptions* promptly *when due. Failure to do so may result in the loss of valuable issues of the* BULLETIN: *high costs of production make it necessary to limit the number of extra copies printed each month.*
- *When forwarding your subscription renewal always return the reminder card sent to you from Headquarters, or, if this has been lost, indicate the date your subscription fell due.*
- *Please send all QSL cards to Mr. A. O. Milne, G2MI, 29 Kechill Gardens, Hayes, Bromley, Kent, and not to Headquarters.*
- *The Society is seldom able to supply information on ex-Government equipment except in the form of* BULLETIN *articles.*

. . . TO HELP YOU

THE STORY

Across th



ZD4AD/P in operation with Dave Sutton at the microphone. All equipment was kept in position beside the driver throughout the 5,000-mile drive.

INTO Headquarters the other day came two sunburnt young men with an unusual story of Amateur Radio achievement. Their names were Dave Sutton, perhaps better known as ZD4AD, and Jim Massie both mining engineers from Obuasi, in the Ashanti province of the West African Gold Coast. A few days earlier they had completed a 5,000-mile drive in two jeeps from Obuasi across the Sahara and on to Chester, England, keeping in touch—during the first adventurous 3,000 miles—with their friends in the Gold Coast by means of a 50-watt N.B.F.M. transmitter mounted in one of the jeeps. We found their story so absorbing that we felt, immediately, that members would like as full an account as possible of this remarkable trip.

* * *

There are several easy ways back from the Gold Coast to England when you are due for a spot of leave; but somehow none of these appealed to auburn-haired ZD4AD and his friends. "Let's try something new and unusual" was the remark that started it all: a two-jeep safari was the outcome. "Communications?" Well with an amateur in the party there could be little doubt as to the answer. '4AD has a high opinion of the reliability of communication on the amateur bands; during a four-month period in the summer of 1950 when no one rated propagation conditions particularly highly he had made 110 contacts with G5AU of Warrington, Lancs, on an almost daily schedule which never failed.

But that was from a fixed station. Could similar results be achieved with mobile equipment? ZD4AD was willing to take the risk, and Jim Massie agreed. Within a fortnight, equipment was assembled and tested. Telephony operation would involve extra complications—and the "let's make it 'phone" was indicative of the spirit in which all problems were tackled.

Equipment

'Phone, without heavy and power-consuming modulation equipment, immediately suggested narrow-band-frequency-modulation. A 6AG7 E.C.O./doubler with output on 7 Mc/s., reactance modulated by a small 6C5-6SJ7 audio amplifier was therefore adopted. This was followed by one section of a 6N7 as a doubler and an 807 as a straight 14 Mc/s. P.A. Above this was placed the aerial tuning unit with relay change-over and aerial current meters, all units being designed to be assembled above a modified BC348Q receiver fitted with voltage regulation and other improvements. To enable the gear to withstand the effects of rocky tracks it was fixed on shock absorbing mountings taken from an R107 receiver.

Power supplies for portable and mobile operation require—as every N.F.D. enthusiast knows—the most careful attention. For ZD4AD/P a vibrator pack supplied the receiver and the early stages of the transmitter, while a rotary converter, running during reception as well as transmission, put about 600 volts on the anode of the 807. Under these conditions, load on the car batteries would be considerable—but there would be plenty of opportunity to keep them fully charged during the long daylight drives. For an aerial a half-wave delta-matched dipole was cut and tried.

Next came the problem of licences. The Posts and Telegraphs Departments of the Gold Coast and Nigeria were co-operative. The most difficult part of the journey, however, would be across French territory and it was not known whether permission could be obtained in time. In the event the necessary permits arrived almost at the last moment, giving authorisation for transmission in French Niger and French Equatorial Africa.

How could communications be maintained with the Gold Coast during the early days when skip distances would make direct 14 Mc/s. contact with ZD4AB and ZD4AE difficult if not impossible? This was where ZD1SW and ZD1SS came into the picture. These two stations, almost 1,000 miles along the cost at Freetown, Sierra Leone, could keep in easy contact with the fixed ZD4 stations and with ZD4AD/P. In practice this scheme worked admirably; while, in the later stages, MD2AC was similarly roped into the network.

The Journey

So on December 3, 1950, the party—two men, two jeeps—set out from Obuasi heading south-east towards Accra. At the Club a large map was stuck on the wall; a map on which their journey was kept carefully recorded as each report was received by Amateur Radio. From Accra, north-east along the coast, across Togoland and Dahomey, where radio silence was observed, the jeeps nosed towards Lagos in Nigeria and then northwards through the extensive Nigerian plantations to Ibadan, Ilorin and Kano; then over the border into the French Niger Colony through Zinder and Agades; regularly every evening raising the base stations on sked at 1700 and 1815 G.M.T.

Most of us probably imagine the Sahara as an enormous flat waste of low lying sand. Actually, towards the centre it rises to considerable heights and the two jeeps were at times over 5,000 feet above sea level as they crossed rocky wind-swept plateaux dotted here and there with small military outposts and primitive villages. The vehicles rattled along tracks devoid of almost all sign of human usage except for an occasional heap of glistening white bones to mark the spot where some unfortunate camel had succumbed to the heat and fatigue of its daily march.

Although the chief requirement from the radio equipment was to maintain communication with

OF ZD4AD/P

e Sahara

base, an occasional spot of DX, including PY and VQ4, was worked. One hundred miles from Tamanrasset, in French Equatorial Africa, came a thrilling moment when ZD4AD/P made contact with G3DKR in Southgate, North London. 'DKR reported signals from the jeep as 12 db. over S9 and added that he had hesitated to call what he assumed to be a local pirate. After a promise had been made to call at G3DKR when the party arrived in London, the long journey was continued.

The start at Obuasi at 8.30 a.m. on December 3, 1950. Loading up the jeeps with everything bar the kitchen stove. On one occasion over 470 miles were covered without refuelling, thanks to the many jerrycans stacked on the backs of the jeeps.

An Unexpected Meeting

A further surprise was in store on arrival at Tamanrasset. A Frenchman, observed to be eyeing with interest the call-sign on the front of the jeep, approached and said, "Are you a Ham?". . . It was FQ8HC, so that soon a ragchew of the highest order was taking place roughly in the centre of the Sahara!

On December 29th, Dave and Jim reached the borders of Algeria. Here ended the radio schedules which had hardly missed an evening for over three weeks. From Algiers the party crossed the Mediterranean to Marseilles. Paris, Calais and Folkstone were soon just entries in the log book, and the 5,000 mile journey ended on January 8th, 1951, at Chester. Although mechanical breakdowns had not been unknown (including three broken springs on those tough jeeps), there had not been a single failure of the radio equipment. Even on arrival in England the apparatus was still in perfect working order!

Technical Articles Are Required

● The Society purchases the Copyright of important technical articles published at the rate of **£3 3s.** per 1,000 words, and of other technical articles at the rate of **£2 2s.** per 1,000 words.

Presentation to Miss May Gadsden

TO mark the completion of 21 years' unbroken service with the Society, the President (Mr. W. A. Scarr, M.A.) recently presented to Miss May Gadsden a cheque for £21, the gift of past and present Members of the Council.

When Miss Gadsden joined the Society as Assistant Secretary in December, 1929, the membership totalled less than 1,000—today it exceeds 12,000. For the first two years of her service with the Society Miss Gadsden carried on her secretarial duties unaided, at 53 Victoria Street, keeping in touch daily with Mr. Clarricoats, who was then the Honorary Secretary. Urgent letters were read to him over the telephone, replies dictated and the typed letters delivered to his home for signature later the same day. When Mr. Clarricoats became Secretary-Editor at the end of 1931 the membership had risen to nearly 2,000—an indication of the hard work which Miss Gadsden had put in during the previous two years.

From September, 1939, until July, 1943, the work of the Society was carried on from G6CL in Palmers Green, North London. During that time, in spite of war-time difficulties, Miss Gadsden kept her side of Headquarters going in a remarkably efficient manner. In addition to typing dozens of letters each week, she handled all subscriptions and cash sale orders—including orders for many hundreds of copies of the *Amateur Radio Handbook*—and prepared the wrappers for the BULLETIN. All that time the membership was increasing at a phenomenal rate.

In more recent years Miss Gadsden has had an opportunity of attending a number of Official Regional Meetings where her presence has been warmly welcomed by the members present.

In making the recent presentation, Mr. Scarr spoke of the loyal and conscientious manner in which Miss Gadsden has always carried out her duties, and on behalf of the present Council he expressed the earnest hope that she would for long be able to serve the Society which she has done so much to build up to its present place of eminence in radio circles.

Miss Gadsden, in thanking the President and his colleagues, asked that her appreciation should also be conveyed to the Members of past Councils who had contributed to the presentation.

N.F.D. in a Nutshell

When: 17.00 B.S.T. **June 2** to 17.00 B.S.T. **June 3.**

Entries: T.R.s. to submit entries by **April 2,** providing an adequate description of the proposed sites which can be anywhere within their Region.

Stations: "A" station on 1.8 and 3.5 Mc/s. "B" station on 7 and 14 Mc/s.

Gear: Power not to exceed 5 watts input. Not more than 3 "fixed" aerials per station (including receiving aerials). Not more than one receiver and one transmitter per station.

Operating: Times (QTR) to be exchanged during contacts with portable stations. Each transmission to be completed with an indication of the band in use.

REPORT OF ANNUAL GENERAL MEETING

Report of the Proceedings at the Twenty-Fourth 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 29th, 1950, at 6.30 p.m.

Present :

The President (Mr. W. A. Scarr, M.A., in the Chair), Messrs. W. H. Allen, M.B.E., L. Cooper, D. N. Corfield, D.L.C.(Hons.), A.M.I.E.E., W. N. Craig, B.Sc., C. H. L. Edwards, A.M.I.E.E., J. W. Mathews, A. O. Milne, P. A. Thorogood, A. J. H. Watson, F.S.A.A. (Members of the Council), Messrs. A. D. Gay and A. E. Watts (Past Presidents), Mr. John Clarricoats (General Secretary) and some 200 members. The Society's legal adviser (Mr. D. Johnson) was also in attendance.

Notice Convening the Meeting

The Honorary Secretary (Mr. J. W. Mathews) read the notice convening the Meeting.

Apologies for Absence

Apologies for absence were reported from Mr. F. Charman (Acting Vice President), Mr. A. P. G. Amos (Member of Council), Mr. V. M. Desmond (Immediate Past President), Mr. Basil Wardman and Mr. C. R. Perks.

Minutes of the Twenty-Third Annual General Meeting

Mr. Cooper moved, Mr. Allen seconded, that the Minutes of the Twenty-Third Annual General Meeting as published in the January, 1950 issue of the R.S.G.B. BULLETIN be approved, confirmed and signed as a correct record.

Mr. R. Walker, G6QI, after submitting that the Minutes were insufficiently detailed in the section headed "Other Business," moved as an amendment that

> "This meeting resolved that the Minutes of the Twenty-Third Annual General Meeting as published in the January, 1950 issue of the R.S.G.B. BULLETIN be taken as read, confirmed and signed as a correct record, but expresses its regret that the said Minutes are not more detailed and it therefore, further resolves that the Council shall, in future, ensure that the Minutes of all General Meetings of the Society are recorded and published in sufficient detail, to afford Members unable to attend such Meetings, the opportunity of acquainting themselves with the individual items discussed thereat."

The Chairman explained that it is not usual for the Minutes of an Annual General Meeting to contain a detailed reference to every matter discussed.

The Chairman assured Mr. Walker that the point he wished to make in his amendment would be borne in mind by the new Council but he could not bind a new Governing Body to any specific course of action. He appealed to Mr. Walker to withdraw his amendment but Mr. Walker declined.

The Chairman then advised the meeting that he could not accept the amendment.

The motion to approve the Minutes as submitted was lost.

The Chairman then ruled that the meeting should proceed to its next business.

Report of the Council

The Chairman moved that the Annual Report of the Council for the year ending June 30th, 1950 be approved and adopted.

Mr. C. Newton, G2FKZ, enquired how the Council had reached the conclusion that a sum of £500 would probably be required to operate the proposed Region 1 I.A.R.U. Bureau for one year. The General Secretary explained that if the R.S.G.B. undertakes to operate the Bureau, additional clerical assistance may be required, whilst it may become necessary to pay for the cost of one or more meetings either in London or on the Continent to discuss matters preparatory to the opening of the Extraordinary Administrative Radio Conference due to be held at Geneva during 1951. It may also be thought necessary for the Bureau to be represented at the Geneva Conference.

The President assured the meeting that if, in fact, the R.S.G.B. undertakes to operate the Bureau for one year, every endeavour will be made to hold meetings in London. He also explained that many of the smaller I.A.R.U. Societies have very limited financial resources and whilst they may be able to pay for the cost of limited representation at I.A.R.U. meetings he did not think they could make any appreciable financial contribution towards the cost of running the Bureau.

Mr. Newton enquired why the Society had, as an Act of Grace, contributed £30 towards the cost of I.A.R.U. Representation to the Geneva Conference. The General Secretary explained that, as the Society was not asked prior to the Conference for a contribution, the Council had the right to decline the request for financial assistance made by R.E.F. after the Conference. As an Act of Grace, however, the Council had agreed to make a contribution towards the expenses incurred by the I.A.R.U. representatives. The General Secretary stated that as far as he was aware not all of the European I.A.R.U. Societies had contributed towards the cost of representation although he believed that most of them had done so.

The motion to approve and adopt the Annual Report was carried.

Report of the Honorary Treasurer and Audited Accounts

Prior to moving the formal resolution for the adoption of the Accounts the Honorary Treasurer (Mr. A. J. H. Watson, F.S.A.A.) made the following statement :

> *The outstanding feature of the accounts for the year ended June 30th, 1950 is the fact that the income is falling and expenditure is increasing.*
>
> *To deal with the last point first the Finance Committee are watching all expenditure very closely and making savings wherever possible. The most noticeable example is in the case of the cost of the* BULLETIN *and during the current year it is expected that the net cost of this publication will be about £1,000 less than it was in the preceding year.*

I notice also that I said in my published report that it was anticipated that a loss of about £100 would be incurred on the Amateur Radio Exhibition. I am glad to say that this was unduly pessimistic and there is a small profit.

On the income side the main item of income is subscriptions and these are continuing to show about a 10 per cent. drop. Although a 10 per cent. drop in subscriptions to Society and Club funds appears to be quite general, I would suggest that the following items must be taken into account:

First there was a very large increase in membership from 1939 to 1945 of about 11,000 and this increase could not be expected to be continued or even to be maintained. During the war there was a very large recruiting ground, because a vast number of men were in direct contact with radio in various forms. Many of the younger men who were then interested in radio have married, probably have families, and thus have much less cash available to spend on radio. There is also the question of the general rise in the cost of living which leaves people with less money to spend on hobbies and amusements.

Next, I think we must take into account the question of accommodation. Some accommodation is required to operate a radio station, and there is such a shortage of accommodation nowadays, and in many cases, it is so expensive, that this must be, in my view at least, a contributing factor.

Again I think another point is the technical examination which people must pass before they can obtain a licence and when people have failed once or twice, I think it may well be that they lose interest in Amateur Radio.

I would next like to refer to statements made from time to time which I think could be summarised in the phrase "What do I get out of the Society?" Apart from the fact that I think such an outlook is entirely wrong and that it should be "What can I put into the Society," the following are the main benefits which every member gets from the Radio Society:

1. The Society is an organisation which is very well recognised and has sufficient prestige to deal with the Post Office and to go with an authorative voice to any International Conference and certainly take the lead in European radio affairs. At least the Society has sufficient prestige to cause the Postmaster-General to visit the recent Amateur Radio Exhibition.

2. There is the R.S.G.B. BULLETIN *which in spite of some criticism, is considered to be an excellent publication.*

3. There is the QSL Bureau.

4. There are a number of Society publications which deal with Amateur Radio and give information which can be obtained from no other source.

It is my view that the present sound financial position of the Society is due to the efforts of those members in the past who have put a lot into the Society and who have not hung back saying "What do I get out of it?"

Take for example, the Amateur Radio Handbook of which about 200,000 copies were sold during the war. The Handbook was a good source of revenue to the Society; it gave information at a very reasonable price which could not be obtained elsewhere and there is no doubt that it was partly responsible for the large increase in membership. Had the Amateur Radio Handbook been published by private enterprise the price would have been higher and certainly authors would have received considerable sums in royalties for the work which they put into it. The work of writing the Handbook was done voluntarily by well known members of the Society and a very great debt is due to them.

The members of the Technical Committee and others, spend long hours planning and writing the various Society publications which are available to you. In addition some members of the Society spend a lot of their time in attending Committee Meetings.

I would also draw your attention to the fact that some members do a very great deal of work in connection with the QSL Bureau and that if the Bureau were ran by an employed office staff the cost of running it would probably increase considerably.

In 1939 the Society's nett assets were only about £1,400, whereas today they are well over £14,000, and I would suggest to you that a good part of the credit for this handsome improvement in our financial position is due to the unselfish and devoted efforts of various members of the Society. It has been suggested that the subscription to the Society should be increased. 'I cannot, of course, at this stage anticipate any decision which the new Council may arrive at, but I can assure you that we have no desire to increase subscriptions just for the sake of increasing them or unless, in return for the increase, some very substantial benefits can be given to members which are not now available. I would point out that only about 10 per cent. of the members attend meetings and therefore a vast body of the members I think would not be interested in paying an increased subscription merely to pay for the cost of further meetings. We must also remember that in giving service to members, owing to residential qualifications, many members may not be able to take advantage of services which would be available to members living in large towns.

I think it is quite clear that were we to increase subscriptions the usual thing that happens when the price of anything goes up would happen in our case, i.e., there would be a further fall in membership, and we do not, at the moment, want to accelerate the rate of decrease.

I now propose formally to put the Resolution that the Audited Annual Accounts circulated among the members be and are hereby approved and adopted, and if there are any questions on the accounts or on my report, I will do my best to answer them.

Mr. Craig seconded the motion.

A member drew attention to the fact that the revenue due from advertising in the Society's journal was considerably less than that which should have been due if the quoted rates had been charged. Mr. Watson explained that the amount shown in the Accounts was a nett figure to the Society after allowing a commission of 25 per cent. to the Society's Advertisement Managers.

Mr. Arthur Watts, G6UN, expressed concern that the income from subscriptions had fallen off considerably. As one who, in the past, had been interested in building-up the membership he felt that every effort should be made to arrest the present falling-off. He stated that similar organisations were making good progress. He urged the new Council to study the position with great care. He commented that the success of any

organisation depends, as the Treasurer had stated, on what members put into it and not what they take out.

Mr. W. H. Matthews, G2CD, stated that he was very disturbed at the position in regard to subscriptions and regretted that the Honorary Treasurer had used the expression "nothing will be done in a hurry to meet what may be a temporary phase." He considered this "laisser faire" attitude harmful to the Society. It was now 25 years since the Society's Articles of Association were drawn up. At that time 90 per cent. of the membership lived in and around London and only 10 per cent. in the Provinces. In recent years that position had materially changed. Mr. Matthews drew attention to the fact that in pre-war days only 20 to 30 members were in the Associate class. Today more than 1,000 Associates were enjoying all the privileges of membership—except that they could not vote—for 10s. a year. Thus a London Corporate Member paid 11s. and a Country Corporate Member 5s. for the privilege of having a vote.

Mr. Matthews stated that on November 18th, 1950, he forwarded to the Society four motions,* three of which related to the question of increasing the annual subscription.

The Chairman informed the meeting that Mr. Matthews had been advised that the motions could not be dealt with at the A.G.M. because they did not relate to the business of the meeting. Mr. Matthews had, however, been advised that he could make a speech at the meeting and could ask the Council to give consideration to the various points mentioned in the motions. Mr. Matthews then asked at what meeting would it be possible for members to consider the motions he had in mind.

The Chairman stated that the motions could be considered at a Special General Meeting called in accordance with Article 34.

Mr. R. Walker commented that under the requirements of the Companies Act, 1948, it would presumably be necessary for 10 per cent. of the total Corporate Membership to sign the requisition calling for a Special General Meeting. This would mean in the case of the Society about 1,000 members.

In reply to a question, Mr. Watson stated that the position in regard to advertising was better than ever before and that the revenue for November, 1950, was the highest ever.

In reply to a question asked by Mr. P. W. Winsford, G4DC, Mr. Watson explained that the reason the Cash at Bank figure had been reduced over the year by over £2,000, was mainly because that sum had been invested.

In reply to a question, Mr. Watson explained that only two representatives of the Society visited Stockholm whilst seven were in attendance at the Paris I.A.R.U. Conference.

Mr. Wedderspoon, G2WZ, inquired what steps are taken to "chase up" overdue members. The General Secretary stated that one month after the issue of the Final Notice (i.e. four months from the time a member becomes liable for the renewal of his subscription) the appropriate Regional Representative is advised. A personal letter is then as a general rule sent to the overdue member by the appropriate Regional, County or Town representative. Mr. Wedderspoon considered that Headquarters should also send personal letters to overdue members.

Mr. R. Clews, G3CDK, thought it was a mistake to suggest that an increase in subscription rates would result in a loss of membership. He asked what proportion of the revenue was spent in providing records. Mr. Watson stated that it was not possible to answer Mr. Clews' question, but within the limits of the staff available every effort was made to supply accurate records to the Regional Representatives.

Mr. A. D. Gay, G6NF, expressed the view that a loss of membership is to be expected at the present time. In the years during, and immediately after the war, there was a great deal of enthusiasm. Today, domestic difficulties were responsible for many changes. He thought it would be interesting to know the type of person who is dropping out of membership.

At this stage Mr. W. H. Matthews stated that if the resolutions he wished to put to the meeting could not be formally dealt with as part of the proper business of the meeting, he would move the rejection of the Accounts.

The Chairman pointed out that the motion before the meeting was to approve the Accounts.

Mr. C. Newton suggested that the amount of £89 shown in the Accounts for Representatives Expenses represents the sum total the Society spent last year on the scheme of representation.

A member enquired how many transmitting members compared with non-transmitting members had dropped out recently and how many live in London and how many in the Provinces. Mr. Watson stated that the details asked for were not immediately available, but he drew attention to certain information given in the Annual Report. This showed that out of 400 members whose subscriptions had recently become overdue 5 per cent. joined the Society prior to the 1939-45 war, 25 per cent. between 1940 and 1945, 50 per cent. between 1946 and 1948, and 20 per cent. in 1949.

A member enquired why the figure for Audit Fees was shown as £105 whereas the amount approved at the last Annual General Meeting was seventy-five guineas. Mr. Watson explained that the additional twenty-five guineas was for accountancy work, which included dealing with the Society's Income Tax.

In answer to another question, Mr. Watson explained that the figure of £37 for Bank Charges included thirty guineas for operating the Society's account.

In answer to a question asked by Mr. J. Hollington, G4GA, the Chairman explained that Mr. Matthews' motion to reject the accounts was a direct negative and was not an amendment.

A member asked if the resolution for the adoption of the accounts included the Treasurer's report, and the Chairman said he was advised that it did.

Mr. Clews' moved as an amendment that the Accounts and Report of the Hon. Treasurer be adopted with the exception of the paragraph in the Report headed "The Future."

The Chairman said he had been advised that the amendment could not be accepted.

The motion to accept the Accounts and Reports of the Hon. Treasurer was then put to the vote and lost by about 40 votes to 120.

Election of Council, 1951

The President read a letter which he had received from the Scrutineers of the Council Ballot. (A copy of the letter is set out in the formal minutes of the meeting on page 307.)

Re-appointment of Auditors

Mr. Watson moved, Mr. Arthur Watts seconded and it was resolved to confirm the

appointment of Edward Moore & Sons as auditors for the year ended June 30th, 1951 at a fee of seventy-five guineas.

Vote of Thanks to the I.E.E.

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 allowing the Society to continue to use the building for its meetings.

The Chairman then announced that the business of the Annual General Meeting was now completed but he would be glad to allow an informal discussion to take place on matters of general Socjety interest.

Discussion

A member enquired why Item 7 "For the purposes of an Annual General Meeting" had been included on the Agenda of the Meeting.

Mr. Watson explained that this item was a normal provision to permit an Annual General Meeting to deal with any urgent statutory item of business which might arise. The statutory purpose of an Annual General Meeting is to receive the Minutes, the Report of the Directors, the Audited Accounts and Report of the Treasurer, to announce the names of the newly elected Directors and to fix the remuneration of the Auditors.

A member asked how it is possible, legally, for a member or group of members to place motions, such as those mentioned earlier by Mr. W. H. Matthews, before the membership. The Chairman suggested it would be much more satisfactory if the members concerned submitted their motions in the first instance to the Council.

A member suggested that Mr. W. H. Matthews should have been advised by Headquarters that he could have requisitioned a Special General Meeting in accordance with Article 34. The Chairman explained that it is not the function of Headquarters to interpret the Companies Act. Mr. C. Newton commented that all members should vote at elections. He also stated that members are entitled to their various viewpoints.

A member pointed out that as the membership elects the Council to act as the Governing Body members should be bound by Council decisions. Another member suggested that if a member writes to Headquarters on matters concerning Annual or Special General Meetings he should be given guidance. The Chairman explained that, whilst routine matters can be dealt with by Headquarters staff, matters of policy—and the motions submitted by Mr. Matthews fell into that category —must be submitted to Council for a decision.

In reply to a member, Mr. W. H. Matthews read a letter dated December 13th, 1950 addressed to him from Headquarters explaining that the motions could not be dealt with at the forthcoming A.G.M. but intimating that the matters referred to in the motions could be brought forward for discussion at the A.G.M.

* * *

At this stage (8 p.m.) the Chairman adjourned the discussion in order to present the Norman Keith Adams Prize Premium, as well as various cups, trophies and certificates.

* * *

At the conclusion of the presentations (8.15 p.m.) the Chairman advised the meeting that arrangements had been made with the Institution authorities to continue the informal discussions until 8.45 p.m.

* * *

A member, after drawing attention to Article 33 which authorises the President of the Council to call Special General Meetings at such time as he or the Council shall see fit, asked whether the Chairman, in his capacity as President of the Council, would be prepared to call a Special General Meeting. The Chairman promised to discuss with the Council any request from a representative body of members for a Special General Meeting. After pointing out that two important motions had not been carried at the A.G.M. he asked to be furnished with a letter prior to the January Council meeting setting out the matters which it is proposed to discuss at the proposed meeting.

Mr. Hollington commented upon the falling-off in membership and referred to the report of the London O.R.M. published in the BULLETIN which he contended conveyed no idea of what took place. The Chairman pointed out that the motions considered at the London O.R.M. were subsequently discussed by the Governing Body and their decisions, together with the motions, were published in full in the BULLETIN.

A member stated that at the London O.R.M. the President had agreed that the various points mentioned would be considered by the Council. In particular he asked whether the Council had considered holding summer meetings in the Provinces. The Chairman stated that the Council had discussed this matter and had made every effort to arrange a Technical Congress at Birmingham University in September 1950. Unfortunately the University authorities could not provide the requisite facilities. The membership had been kept fully informed on this matter through the medium of the BULLETIN.

Mr. C. Newton, speaking on the question of representation, expressed the view that the Society has a duty to go out to the members as well as *vice versa*. Representation should be on a much wider basis. He asked what would be the cost of sponsoring six large Provincial meetings each year. If £250 was spent for this purpose the Society would, in his view, still only be meeting the provincial membership halfway.

A member expressed the view that the meeting had so far been very unsatisfactory. He thought that many members present shared his view. Helpful and constructive criticism had not been accepted by the Council.

Mr. W. H. Matthews referred to the new arrangements which had been approved by the Council regarding visits by Regional representatives to meetings within their Region. To limit him, as the London R.R., to three visits a year, when he had 38 town groups in his Region, could only mean that the matter had been very hurriedly considered by the Council.

Mr. R. Clews suggested that the Society, and particularly its paid staff, should have a sense of service. It was his experience that the staff are usually too busy to attend to the requirements of members. He suggested that the Society should provide one good lecture annually for each affiliated Society. He referred to the facilities available to A.R.R.L. members.

Mr. Peter Bradley, G8KZ, referred to the fact that Miss May Gadsden had just completed 21 years of unbroken service with the Society and spoke of the sense of service which she and the

other members of the staff shared. He hoped that her long service would be suitably recognised. The Chairman thanked Mr. Bradley for his remarks and assured him that Miss Gadsden's service would be recognised by present and past Council members in a fitting manner.

Mr. Arthur Milne, G2MI, pointed out that the A.R.R.L. employs upwards of 40 people and that the League is a large commercial publishing concern. He suggested that it is not as fully dependent upon subscriptions as is the R.S.G.B. because *QST* is on sale at bookstalls. Mr. P. W. Winsford expressed the view that the Society is also a commercial concern and that it should follow the lead of the A.R.R.L. by placing the BULLETIN on sale at bookstalls. He pointed out that membership in the I.E.E. is eagerly sought-after whereas membership in the R.S.G.B. is not. He wondered whether the Society could become an examining body for amateur licences. He admitted that the Society is not a professional body but he felt that educational courses should be arranged.

Mr. W. E. Russell (G5WP) commented that he was aware that certain of the members present had put in a great amount of effort in preparation for the meeting. He much regretted that dissention existed and hoped that every effort would be made to reach agreement. He suggested that this could be done by calling a Special General Meeting. The President thanked Mr. Russell for his comments and assured him that he personally would do everything possible, during 1951, to clear up the difficulties which appear to exist.

The meeting terminated at 8.45 p.m.

* *The four motions which Mr. W. H. Matthews wished to put were as follows:*

(1) That in view of the change in economic conditions since the inauguration of the subscription rates of the Society, in 1926, the Council be instructed to consider as a matter of urgency whether it is advisable to amend these rates to ensure that each grade of member shall pay a subscription justly computed in accordance with the services that are available to him.

(2) That the Council within six months from the date of this meeting will prepare a full report on their deliberations on the subject matter of the foregoing motion and that this report be delivered to the members present at the business meeting to be held on June 24, 1951, during the National Convention of the Society in London, and that such report be inserted in full in the BULLETIN *to be next published.*

(3) That in the report to be delivered to the members present at the business meeting on June 24, 1951, particular consideration be given to the lack of services available to the country members of the Society bearing in mind the provisions of Article 37.

(4) That the Regional Representatives of the Society shall be entitled to receive notice of and to attend at meetings of the Council convened under Article 52 of the Society's Articles of Association and that they be entitled to place items on the agenda of such meetings and to enter into discussion thereon provided that no Regional Representative shall be entitled to vote on any resolution at such meeting unless he be a member of the Council.

Presentation of Society Trophies

THE following presentations took place at the Institution of Electrical Engineers on Friday, December 29, 1950:

Norman Keith Adams Prize to Mr. H. A. M. Clark, G6OT.

Founders Cup to Mr. Arthur E. Watts, G6UN.

B.E.R.U. Senior Trophy to Mr. W. E. Russell, G5WP.

B.E.R.U. Receiving Trophy to Mrs. J. P. Haydon, BRS.15,961.

Col. Thomas Trophy to Mr. W. E. Russell, G5WP.

Miniature Cup to Mr. W. R. Joss, G2AJ (leading station in B.E.R.U. Senior Telephony Contest).

Mitchell Milling Trophy to Mr. W. R. Joss, G2AJ (winner of 1950 145 Mc/s. Contest).

Arthur Watts Trophy to Messrs. H. F. Knott, G3CU, C. E. Newton, G2FKZ and G. M. C. Stone, G3FZL (combined winners of 420 Mc/s. Test).

N.F.D. Shield.—Cheltenham Group.

N.F.D. Replica. — Leading B Station (West Cornwall).

Edgware Trophy. — West Kent Radio Society (leading entrant in Affiliated Societies Contest).

President's Absence

As the President (Mr. W. A. Scarr) will be on business abroad during February, he wishes it to be known that he will be unable to receive or reply to correspondence until the beginning of March.

Ten Minute Quiz

Answers to the questions set on page 295.

1. (a) Spain; (b) Algeria; (c) Peru; (d) Turkey.
2. A "padder" is generally connected in series in a tuned circuit whereas a "trimmer" is usually in parallel with the main condenser or inductance.
3. 33,000 ohms.
4. $N = \sqrt{\frac{R_L}{Z}}$ where N is the turns ratio, R_L the optimum load resistance of the output stage, and Z the audio load impedance.
5. 100 volts on the anode and zero volts on the grid.
6. Selective fading due to multipath transmission/reception resulting in excessive distortion.
7. The words used must not be of a facetious character nor be capable of undesirable misinterpretation.
8. (a) Ampere; (b) Coulomb; (c) Volt; and (d) Farad.
9. B7G base. Anode pins 1 and 5; Heater pins 3 and 4; Grid 6; and Cathode 7.
10. 7,487.

TECHNICAL ARTICLES WANTED

ANNUAL GENERAL MEETING

Minutes of Twenty-Fourth Annual General Meeting held at the Institution of Electrical Engineers, London, W.C.2, on Friday, December 29, 1950, at 6.30 p.m.

Present:

The President (Mr. W. A. Scarr, M.A., in the Chair), Messrs. W. H. Allen, M.B.E., L. Cooper, D. N. Corfield, D.L.C.(Hons.), A.M.I.E.E., W. N. Craig, B.Sc., C. H. L. Edwards, A.M.I.E.E., J. W. Mathews, A. O. Milne, P. A. Thorogood, A. J. H. Watson, F.S.A.A. (Members of the Council), Messrs. A. D. Gay and A. E. Watts (Past Presidents), Mr. John Clarricoats (General Secretary) and some 200 members. The Society's legal adviser (Mr. D. Johnson) was also in attendance.

Notice Convening the Meeting

The Honorary Secretary (Mr. J. W. Mathews) read the notice convening the Meeting.

Apologies for Absence

Apologies for absence from Messrs. F. Charman (Acting Vice-President), A. P. G. Amos (Member of Council), V. M. Desmond (Immediate Past President), Basil Wardman and C. R. Perks were reported.

Minutes of Twenty-third Annual General Meeting

It was proposed by Mr. L. Cooper, seconded by Mr. W. H. Allen and put to the Meeting that the Minutes of the Twenty-Third Annual General Meeting as published in the January, 1950, issue of the R.S.G.B. BULLETIN be received, approved and confirmed.

The motion was lost.

Report of the Council

It was proposed by the Chairman and resolved that the Annual Report of the Council for the year ended June 30, 1950, be received, approved and adopted.

Report of the Honorary Treasurer and the Audited Accounts

The Honorary Treasurer (Mr. A. J. H. Watson) read the Auditor's Report and a statement on certain aspects of the Society's financial affairs. Mr. Watson then proposed and Mr. W. N. Craig seconded that the Audited Annual Accounts for the year ended June 30, 1950, be received, approved and adopted. In reply to a question, the meeting was advised that the Audited Accounts and Treasurer's Report must be taken together. The motion, as amended, was put to the meeting and lost.

Election of Council for 1951

The Chairman read a letter which he had received from the Scrutineers setting out the result of the Ballot for the election of officers and other Council Members for the year 1951, as follows:

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

President:	W. A. Scarr, G2WS	Returned unopposed
Executive Vice-President:	F. Charman, G6CJ	Returned unopposed
Hon. Treasurer:	A. J. H. Watson, G2YD	Returned unopposed
Hon. Secretary	L. Cooper, G5LC	1,226 votes. Elected
	B. Wardman, G5GQ	1,141 votes.
Hon. Editor:	A. O. Milne, G2MI	1,488 votes. Elected
	J. Hum, G5UM	881 votes.

Members:

C. H. L. Edwards	G8TL	1,684 votes.	Elected
W. H. Allen,	G2UJ	1,464 votes.	Elected
T. L. Herdman	G6HD	1,407 votes.	Elected
P. A. Thorogood	G4KD	1,365 votes.	Elected
A. P. G. Amos	G3AGM	1,243 votes.	Elected
W. N. Craig	G6JJ	1,216 votes.	Elected
P. Winsford	G4DC	966 votes.	Elected
H. A. Bartlett	G5QA	939 votes.	
J. Wardhaugh	G4LA	896 votes.	
S. F. Sharpe	G3CKX	859 votes.	
W. E. Russell	G5WP	820 votes.	
G. Webster	G5GK	793 votes.	
R. Jones	GW3JI	758 votes.	
R. Walker	G6QI	718 votes.	
T. J. Parker	G4HA	519 votes.	

Total Number of Ballot Papers Wholly Accepted 2,237

Total Number of Ballot Papers Partially Accepted 144

Total Number of Ballot Papers Rejected 27

(Signed) H. W. Evens, P. C. Bond, A. Sewards, N. A. T. Stockley, A. M. Rix."

The President thanked the Scrutineers for their work, congratulated the newly-elected Council, and thanked the unsuccessful candidates who had offered themselves for election.

Auditors

It was proposed by Mr. A. J. H. Watson, seconded by Mr. A. E. Watts, and resolved to confirm the appointment of Messrs. Edward Moore & Sons as Auditors for the year ending June 30, 1951, at a fee of seventy-five guineas.

Institution of Electrical Engineers

On the motion of the Chairman it was resolved that a cordial vote of thanks be passed to the President and Council of the Institution of Electrical Engineers for allowing to the Society the continued use of the Institution's building for the holding of meetings.

This concluded the business of the Annual General Meeting.

AFFILIATED SOCIETIES

SINCE the publication of the list of affiliated societies in the December, 1950 issue of the BULLETIN, the following additions and amendments have been reported:

BALDOCK DISTRICT RADIO CLUB, c/o Mr. E. W. Edwards, 164 Ickineld Way, Letchworth, Herts.

BRIGHTON & DISTRICT RADIO CLUB, c/o Mr. R. T. Parsons, 14 Carlyle Avenue, Brighton 7.

DERBY & DISTRICT AMATEUR RADIO SOCIETY, c/o Mr. E. Shimmin, Leafmoor Mount, Derby Lane, Derby. (Tel. Derby 2792).

EDGWARE & DISTRICT RADIO SOCIETY, c/o Mr. R. H. Newland, 10 Holmstall Avenue, Edgware, Middlesex.

GATESHEAD & DISTRICT AMATEUR RADIO CLUB, c/o Mr. L. Blackie, 109 Brighton Road, Gateshead 8.

LEEDS AMATEUR RADIO SOCIETY, c/o H. G. Swarthmore Educational Settlement, Woodhouse Square, Leeds.

MEDWAY AMATEUR RECEIVING & TRANSMITTING SOCIETY, c/o Mr. R. Farrow, 55 Windmill Street, Frinsbury, Kent (inadvertently omitted from previous list).

SOUTH MANCHESTER RADIO CLUB, c/o Mr. E. Taylor, 12 Marton Avenue, Didsbury, Manchester 20.

TAUNTON & WEST SOMERSET RADIO SOCIETY, c/o Mr. K. Farrell, 27 Victory Road, Taunton.

WEST KENT RADIO SOCIETY, c/o Mr. L. S. King, Glenisla, Maidstone Road, Pembury, Kent.

WEYMOUTH & DISTRICT RADIO CLUB, c/o Mr. R. Figg, 4 Dorset Place, Rodwell, Weymouth.

NATIONAL FIELD DAY, 1951

1. The event will commence at 1700 B.S.T. (1600 G.M.T.), Saturday, June 2, 1951, and conclude at 1700 B.S.T., Sunday, June 3, 1951.

2. The event will be confined to properly constituted R.S.G.B. Town or Area Groups within the British Isles, which, for the purpose of the event, comprise the prefix zones G, GC, GD, GI, GM and GW.

3. Each Town or Area Group taking part will be permitted to place two stations ("A" and "B") into operation. Station "A" will operate on the 1.8 Mc/s. and 3.5 Mc/s. bands and Station "B" will operate on the 7 Mc/s. and 14 Mc/s. band. Both stations may operate from the same site or from different sites, provided they are located within the agreed limits of the area covered by their Regional Representative. It will be permissible for two or more towns or areas within a single Region to amalgamate for the purpose of this event.

4. Each station must be licensed to use a different call sign. T.R.s are responsible for forwarding to Headquarters applications for N.F.D. permits. Such applications should be set out as follows:

National Field Day, 1951

On behalf of the members in.....(Town or Area) I submit this application for permission to operate portable stations for the duration of the above event, as follows:—

"A" Station Call Sign...../P Licensee.....

Site .....

"B" Station Call Sign...../P Licensee.....

Site .....

(If applicable) I desire to combine with..... (Town or Area) for the purpose of scoring.

Signed.....(T.R. or A.R.)

Call Sign..... Address.....

.....

The above application, which is necessary to obtain the permission of the G.P.O., will also be regarded as an entry for the event. Permission is normally sent to the licensee direct by the G.P.O.

Applications, duly signed, must be in the hands of the Hon. Secretary, R.S.G.B. Contests Committee, New Ruskin House, Little Russell Street, W.C.1, NOT LATER THAN APRIL 2, 1951. A list of portable stations and their locations will be published in the May issue of the BULLETIN.

5. Equipment at any "A" or "B" station must not exceed one transmitter and one receiver. Reserve equipment may be kept available, but not connected.

6. The total D.C. input to the anode circuit of the valve or valves energising the aerial or to any previous stage of the transmitter shall not exceed 5 watts. Power for any part of the station shall not be derived from supply mains.

7. Any aerials may be used up to a total of 3 per station (including the receiving aerial) subject to the following limitations:—

(*a*) The aerials must be fixed for the duration of the event (e.g. not rotary).

(*b*) No part of the aerials shall exceed a height of 45 feet above ground level.

8. Stations must be operated from tents.

9. No apparatus may be erected on the site prior to 1200 B.S.T. on June 2, 1951. This rule includes aerial and aerial fittings as well as tented accommodation.

10. The event is restricted to the use of C.W. (A1) only. Any station receiving consistent tone reports lower than T8 may be disqualified.

11. All transmissions must be completed with an indication of the band in use; the numerals 1, 3, 7 and 14 signifying the four bands (e.g. ". . . AR 7 K").

12. An exchange of reports must be made before points can be claimed. In the case of portable-to-portable contacts, the report must include the time (e.g. QTR 1701 RST 569). The time to be sent is that entered in the log for the contact. Proof of contact may be required.

13. Points will be scored for established contacts on the following basis:—

A.—Between all Town or Area Portable Stations and Fixed Stations:— *Points.*

(*a*) Outside the Town or Area (or Town or Area Group), but within the British Isles 1
(*b*) In the rest of Europe (including Eire) 2
(*c*) Outside Europe 3
(*d*) In the British Empire 6

B.—Between G, GD and GW portable stations on the one hand and:— *Points.*

(*a*) Portable stations outside their Town or Area (or Town or Area Group), but within the prefix zones G, GD and GW 3
(*b*) Portable stations in the prefix zones GC, GI and GM 4
(*c*) Portable stations in Europe (including Eire) .. 4
(*d*) Portable stations outside Europe 6
(*e*) Portable stations in the British Empire .. 12

C.—Between GC, GI and GM portable stations on the one hand and:— *Points.*

(*a*) Portable stations outside their Town or Area (or Town or Area Group), but within their own prefix zones 3
(*b*) Portable stations outside their own prefix zones, but within the British Isles and Eire .. 4
(*c*) Portable stations in Europe 5
(*d*) Portable stations outside Europe 6
(*e*) Portable stations in the British Empire .. 12

14. Only one contact with a specific station may be made on each band during the contest.

15. In addition to the *National Field Day Trophy* and miniature replica which will be awarded to the Town or Area Group obtaining the highest combined score, miniature replicas will be awarded to the Town or Area Groups with the leading "A" and "B" station scores. Should the winning Town or Area Group also lead with the highest "A" or "B" station score, it will only be eligible for one replica; the other would not then be awarded. A certificate will be awarded to the chief operator of the British Empire or foreign portable station contributing the largest number of points to stations taking part in the event.

16. Contacts with ships, or unlicensed stations located in countries where licences are obtainable, will not be permitted to count for points. The decision as to whether a station is to be classed as unlicensed will rest with the Contests Committee.

17. All entries must be submitted and signed by the T.R. or A.R., who will be solely responsible for the conduct of the event in his Town or Area.

18. Entries must be made on the approved log sheets which will be issued to all competitors by Headquarters. Log sheets must reach the Hon. Secretary, R.S.G.B. Contests Committee, New Ruskin House, Little Russell Street, W.C.1, postmarked *not later than* Monday, June 18, 1951.

19. The *N.F.D. Trophy* will be held by the winning Town or Area Group for one year and will be handed to the T.R. or A.R., who will be held responsible for its custody during the year.

20. Operators of portable stations competing in the event must be holders of a G.P.O. Amateur Transmitting Licence and must be fully paid-up corporate members of the Society at the time of the contest.

21. The Contests Commitee reserves the right to amend or alter these rules at any time prior to the commencement of the event. The decision of the Council of the R.S.G.B. will be final in all cases of dispute.

Silent Keys

With sorrow we record the passing on January 19, 1951, of Charles Leonard Wood, G5WY, of Exeter. Licensed in 1929, Mr. Wood was a founder member of the Exeter & District Wireless Society, of which Society Sir Ambrose Fleming was the first President. Mr. Wood's views, particularly on wave propagation and the Heavyside layer theory, did not always conform to accepted theory, nevertheless, his talks were always keenly followed at Society meetings.

Mr. Wood and Mr. H. A. Bartlett, G5QA, were responsible for the pioneer radiophone transmissions to emanate from Exeter and it is recorded that both stations had to wait until the electric trams stopped running for the night before completing their first contact.

The equipment used at the first Exeter N.F.D. site was supplied by G5WY, who was noted for his patience in trying out new ideas and circuits. In his passing, Amateur Radio has lost a generous-hearted exponent of the Ham Spirit. The sympathies of his many Society friends are extended to his family and close relatives.

T.M.S.

* *

It is also with sorrow that we announce the death, after a long illness, of Mr. R. H. F. Gammons, G3BGS, of Kidlington, Oxfordshire.

During the last war Mr. Gammons was a radio operator in the Merchant Navy until invalided out by illness. He took a keen interest in good operating practices and worked chiefly on 40 and 80 metres. He was an inspiration to others in the way he overcame his difficulties. Heartfelt sympathies are extended to Mrs. Gammons and her family.

F. A. J.

HEADQUARTERS CALLING

COUNCIL, 1951

President :
WILLIAM A. SCARR, M.A., G2WS.
Executive Vice-President : F. Charman, B.E.M., G6CJ.
Hon. Treasurer : A. J. H. Watson, F.S.A.A., G2YD.
Hon. Secretary : L. Cooper, G5LC.
Hon. Editor : Arthur O. Milne, G2MI.
Immediate Past President : V. M. Desmond, G5VM.

Members : W. H. Allen, M.B.E., G2UJ, A. P. G. Amos, G3AGM, W. N. Craig, B.Sc., G6JJ, C. H. L. Edwards, A.M.I.E.E., G8TL, T. L. Herdman, B.A., A.M.I.R.E., G6HD, P. A. Thorogood, G4KD, P. W. Winsford, G4DC.

General Secretary : John Clarricoats, G6CL.

December Council Meeting

Résumé of the Minutes of a Meeting of the Council of the Inc. Radio Society of Great Britain held at New Ruskin House, Little Russell Street, London, W.C.1, on Tuesday, December 12, 1950.

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

Apology.—An apology was submitted for the absence of Mr. Milne who, it was reported, was in hospital recovering from an operation.

The Secretary was instructed to write to Mr. Milne and offer him the best wishes of the Council for a speedy recovery.

Cash Account.

Resolved to accept and adopt the Cash Account for the month ended November 30, 1950, as prepared by the Honorary Treasurer.

Finance and Staff Matters.

The Chairman (Mr. A. J. H. Watson) reported upon certain financial and staff matters. Staff increases amounting in all to £1 15s. per week were approved.

QSL Bureau.

Resolved to award honoraria totalling £145 to the 14 members who had acted as sub-managers during the past 12 months.

Resolved to recognise the efforts of the Sub-Managers for Northern Ireland, the Isle of Man and the Channel Islands and the Sub-Manager responsible for handling B.R.S. cards by arranging for the Society to pay their subscriptions when next due.

Circulars to Members.

Resolved to continue the existing practice of reimbursing Town Representatives for the cost of circularising local members in connection with the convening of local R.S.G.B. meetings.

Regional Representatives.

Arising from matters discussed at the recent Regional Representatives' Conference it was resolved :—

(a) To authorise each Regional Representative to attend not more than three properly constituted meetings of R.S.G.B. members within the boundaries of his Region in any one year.

(b) To agree that the total claim made by any Regional Representative against the Society in respect of such visits must not exceed £10 in any one year.

(c) To advise the Regional Representatives that if private transport is employed their claim may not exceed the cost which would have been incurred if public transport had been employed.

Membership.

Resolved to approve :—
77 applications for Corporate Membership
24 applications for Associate Membership
2 applications for Junior Associate Membership
9 applications for transfer to Corporate Membership.

Regional Representatives' Conference, 1950.

Resolved to issue the Report of the Conference to the Regional Representatives.

"The Founder's Cup."

A letter was submitted from Mr. R. H. Klein wherein he suggested that the Cup which he had agreed to present to the Society should be called "The Founder's Cup" and that it be awarded annually to a member who, in the opinion of the Council, has rendered great service to the cause of Amateur Radio.

Resolved to adopt the suggestion put forward by Mr. Klein.

Resolved further to award "The Founder's Cup" and a miniature for the year 1950 to Mr. Arthur E. Watts, G6UN (Past President and Honorary Member), in recognition of his long and zealous service to the Society as the G.P.O. Liaison Officer.

Talking Book Scheme.

A letter was submitted from the National Institute for the Blind thanking those Society members who had responded to the recent appeal in connection with the Talking Book scheme.

Political Propaganda.

A letter was submitted from a member wherein he protested against the decision of the Council not to handle QSL cards bearing political propaganda.

Resolved to advise the member in question that the Council can find no reason to alter their earlier decision not to handle QSL cards bearing political propaganda

Amateur Television.

Resolved to request the Technical Committee to look into the question of setting up one or more amateur stations for the purpose of establishing whether or not television transmissions made on frequencies within the 420-460 Mc/s. band are likely to cause interference with other services using that band.

A letter was submitted from the British Amateur Television Club thanking the Society for permitting the Club to demonstrate amateur television at the recent Amateur Radio Exhibition.

R.S.G.B. Bulletin.

It was reported that the November issue of the BULLETIN had been published on the 28th of that month and that the December issue was expected to appear to time, thus three issues (totalling 120 pages) had been published in a little over four weeks. The revenue due to the Society from advertising in the November issue was an all-time record.

Resolved to place on record the warm appreciation of the Council to the General Secretary and all those associated with him in the preparation and publication of the October, November and December, 1950, issues of the BULLETIN.

I.A.R.U. Calendar.

It was reported that I.A.R.U. Headquarters had, at the request of the R.S.G.B., issued a special calendar to all I.A.R.U. Member Societies dealing with matters discussed at the Paris I.A.R.U. Congress.

Resolved to record "aye" votes in favour of Proposals 73 (Planning the 21 Mc/s. band on a world-wide basis) and 74 (I.A.R.U. Representation at future I.T.U. Conferences).

It was stated that the Calendar contained a reference to the offer of the R.S.G.B. to accept, in principle, the invitation of the I.A.R.U. Congress to establish at R.S.G.B. Headquarters a Central Bureau for Region 1. Member Societies had been asked to submit their comments on the proposals.

Two-Metre Field Days.

It was agreed to request the Contests Committee to give consideration to a proposal submitted by Mr. Glaisher, and supported by a number of other members, that the Society should organise two 2-Metre field days annually.

Frequency Measuring Contest.

It was reported that five members had written in support of the suggestion that the Society should organise a frequency measuring contest.

Mr. Craig offered to prepare a scheme for the consideration of the Council at a later date.

Note Headings

The West London D.R. (Mr. S. F. Sharpe) inquired whether the Council would be prepared to issue to Representatives, note headings bearing the words "Official Correspondence."

The Secretary was instructed to explain to Mr. Sharpe that the only official correspondence issued by the Society emanates from Headquarters.

Reports of Committees.

The Council dealt with Reports covering meetings of the Contests Committee and the Membership and Representation Committee and approved the recommendations contained therein.

The Recommendations of the Contests Committee related to the judging of recent contests and those of the Membership and Representation Committee to Regional boundaries, and an amended version of the circular issued to Representatives.

Amateur Radio Exhibition.

The Secretary forecast that a profit would accrue to the Society due chiefly to economies effected in connection with the printing of the Catalogue.

Resolved:—

(a) To thank those members, whose names had been listed in a report prepared by the Secretary, for their co-operation in manning the Society's stand or in loaning equipment for display.

(b) To thank the Exhibition Manager (Mr. H. Freeman) for the highly effective manner in which he attended to the arrangements for the Exhibition.

(c) To recommend the 1951 Council to give early consideration to the question of organising a further Amateur Radio Exhibition during 1951.

Thanks to Retiring Members.

The retiring Members of Council (Messrs. D. N. Corfield and J. W. Mathews) were cordially thanked by their colleagues for their past services to the Society and for their loyal support over a period of many years. Messrs. Corfield and Mathews made suitable replies.

The meeting terminated at 9.15 p.m.

Representation

The following are additions or amendments to the list published in the February, 1950, issue of the R.S.G.B. BULLETIN.

County or District Representatives

Region 3: Staffordshire:
R. Bowers, G3CXD,* 9 Kingsway East, Newcastle.

Region 7: London South-East:
R. Halls, G3EIW, 48 Raglan Road, S.E.18.

Town Representatives

Region 3: Warwickshire:
Coventry.—J. R. Tuck, G6TD, 121 Grayswood Avenue.

Region 5: Suffolk:
Beccles, Bungay & Lowestoft.—A. J. Baker, BRS.18397,* 98 Fair Close, Beccles.

Region 7: London North:
Southgate Area (Postal Districts N.8, 10, 11, 13, 14, 21, 22).—S. H. Feldman, G3GBN, 10 Oak Way, N.14.

London South-East:
Welling, Bexleyheath, Bexley, Crayford.—R. F. Ward, BRS.18584,* 73 Lynmere Road, Welling.

London West:
Beaconsfield.—A. M. Alcock, G3DAG, 8 Penington Road.
Hampstead.—E. R. Cooper, G3GTH,* 90 Hillfield Road, N.W.6.

Region 8: Hampshire:
Bournemouth.—F. G. Baker, G3ALW, 6 Sunningdale Crescent, Kinson.

* *New appointments.*

Vacancies

County Representative: Region 1:
Mr. C. E. Williams, G8DP, has resigned as Representative for the County of Cumberland.

Town and Area Representatives:
Messrs. W. Lishman, G2AKK; E. P. Inman, G2DRA; W. Hudson, BRS.18081; and C. A. Wheaton, G2DNY; have resigned as Representatives for Darwen & Blackburn, Harrogate, Leeds and North Devon respectively.

Nominations for their successors should be made in the prescribed form and sent to reach the General Secretary, R.S.G.B., New Ruskin House, Little Russell Street, London, W.C.1, by February 28, 1951.

For your bookshelf or shack

★ **Society Publications**

Transmitting Licence (Third Edition)	1/–
Service Valve Equivalents (Third Edition)	1/3
Transmitter Interference	1/6
Simple Transmitting Equipment ..	2/3
Microwave Technique	2/3
Receivers	3/9
Valve Technique	3/9
V.H.F. Technique	3/9

★ **Shack Requisites**

*Call Sign Lapel Badges (5 characters) (Additional characters 6d. each)	5/–
Car Plaque, R.S.G.B. Emblem	4/6
*Car Plaque, R.S.G.B. Emblem with Call Sign	5/6
*Car Plaque (De Luxe Type)	15/–
Webb's Radio World Map	4/6
R.S.G.B. Headed Notepaper per 100 sheets	5/6
Webb's Radio Log Book	3/9

*Delivery about 4 Weeks.

ABOVE PRICES INCLUDE POSTAGE & PACKING

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LONDON LECTURE MEETINGS

All meetings are held at the Institution of Electrical Engineers, Savoy Place, Victoria Embankment, W.C.2.

Friday, Feb. 23, 1951. **H. A. M. Clark, B.Sc. (Eng.), A.M.I.E.E. (G6OT).**
"POST-WAR DEVELOPMENTS IN TELEVISION."

Friday, March 30, 1951. **R. H. Hammans (G2IG).**
"HIGH SELECTIVITY 'PHONE RECEPTION."

Friday, April 27, 1951. **A. O. Milne (G2MI).**
"LOW POWER PORTABLE EQUIPMENT."

All Meetings commence at 6.30 p.m. Tea will be served from 5.30 p.m.

Readers are reminded that the meetings listed are open to all members of the Society.

London Lecture Meeting

More than 100 members were present at the Institution of Electrical Engineers on Friday, January 26, when Mr. D. N. Corfield, D.L.C. (Hons.), A.M.I.E.E. (G5CD), lectured on "Equipment for the 420 Mc/s. Band." Examples of suitable components and valves were exhibited and a number of slides displayed. Items of 420 Mc/s. equipment—several of which will shortly be described in the BULLETIN—were demonstrated, including a new form of feeder system known as the "G String." The latter, which embraces a pair of copper-mesh conical horns, enables a V.H.F. transmitter, located for example in the basement of a large block of flats, to be fed efficiently into an aerial array mounted on the roof.

Messrs. Newton, Haydon, Royle and others took part in the subsequent discussion, after which Mr. E. A. Dedman voiced the thanks of the meeting to the lecturer.

The Chair was taken by the President (Mr. W. A. Scarr, M.A.).

Region 3: Coventry—Result of Election

The Ballot for the vacant office of Town Representative for Coventry resulted as follows:—

J. R. Tuck, G6TD	40 votes
L. W. Gardner, G5GR	24 votes

FORTHCOMING EVENTS

(Continued from page 283)

New Barnet.—March 17, 7.30 p.m., "Bunny's Restaurant," Station Road.
St. Albans.—March 14, 8 p.m., "The Beehive," London Road.
Slough.—March 15, 7.45 p.m., "The Golden Eagle Hotel," High Street.
Sutton & Cheam.—February 20, March 6, 7.30 p.m., Sutton Adult School, Benhill Avenue.
Welwyn.—March 6, 8 p.m., Council Chambers.
Woolwich & Plumstead.—February 28, March 14, 8 p.m., "Bull Tavern," Vincent Road., S.E.18.

REGION 8

Brighton.—Tuesdays, 7.30 p.m., "Eagle Inn," Gloucester Road.
Chatham (M.A.T.R.S.).—Mondays, 7.30 p.m., Co-operative Hall, Luton Road.
Eastbourne.—March 2, 7.30 p.m., Christchurch Club Rooms, Hanover Road.
Gillingham (G.T.S.).—Alternate Tuesdays, 7.30 p.m., Medway Technical College.
Portsmouth.—Tuesdays, 7.30 p.m., Royal Marines Signal Club, Eastney Barracks.
Reading (R.R.S.).—February 24, Main Society, 7 p.m., Abbey Gateway.
Southampton.—March 3, 7.30 p.m., 22 Anglesea Road, Shirley.

REGION 9

Bristol.—March 16, 7 p.m., Keens Cafe, Park Row, Bristol 1.
Exeter.—March 2, 7 p.m., Y.M.C.A., 41 St. David's Hill.
Gloucester.—Alternate Thursdays, 7.30 p.m., Spread Eagle Hotel, Market Parade.
North Devon.—March 2, 7.30 p.m., Rose of Torridge Cafe, The Quay, Bideford.
Plymouth.—February 16, 7 p.m., Tothill Community Centre, Tothill Park, Knighton Road, St. Judes.
Stroud.—Wednesdays, 7.30 p.m., Subscription Rooms.
Torquay.—February 17, 7.30 p.m., Y.M.C.A., Castle Road.
West Cornwall (W.C.R.C.)—March 1, 15, "Fifteen Balls," Penryn.
Weston-super-Mare.—March 6, 7.30 p.m., Y.M.C.A.
Yeovil.—Wednesdays, 7.30 p.m., Grove House, Preston Road.

REGION 14

Falkirk.—February 23, March 9, 7.30 p.m., Temperance Cafe, High Street.
Glasgow.—February 28, 7 p.m., 39 Elmbank Crescent.

AROUND THE REGIONS

Brighton and District Radio Club

The A.G.M. was held on January 2, when the Club's activities during 1950 were reviewed. New officers elected for 1951 include: Chairman, Capt. R. Dainty; Secretary, Mr. R. T. Parsons; and Treasurer, Mr. E. Cole. The programme for 1951 already includes talks, demonstrations and film-strip lectures, while the monthly "Brighton Link" has now reached Volume III.

Bristol

Considerable amusement—and some consternation—was caused at the December meeting when G6YA presented a series of recordings of fourteen local "Top Band" telephony stations, made without their knowledge. There has since been a noticeable improvement in quality of transmissions! At the January meeting, G5JU, aided by Mr. C. Smith, demonstrated the latest *Eddystone* equipment. G6GN is to describe stabilised bias power packs at the next meeting on February 16, when it is also hoped that G5QA (Region 9 Representative) will be present.

Cambridge Amateur Radio Club

An amateur television demonstration at the Cavendish Laboratory on February 26 at 8.15 p.m. has been arranged in conjunction with the Cambridge University Wireless Society. R.S.G.B. members wishing to attend should get in touch with Mr. T. A. T. Davies, G2ALL, Meadow Side, Comberton, or with Mr. B. Briggs, G2FJD, 28 Hardwick Street, Cambridge. The A.G.M. will be held on March 16.

Coventry

At the January meeting Mr. J. R. Tuck, G6TD, read a paper on Taylor Super Modulation which did much to place this system in a proper perspective as compared to other forms of amplitude modulation.

Coventry Amateur Radio Society

After several successful social events over the Christmas period, the Society is now settling down to its normal lecture programme. Plans, however, are being made for the Annual Dinner to be held on March 16 at the "Hare and Squirrel" and applications for tickets should be made to the Honorary Secretary. Forthcoming meetings include: February 26—"Super Modulation," by G3RF; March 12—"Radio-controlled Models"; and April 9—"Mathematics—Why?" by T. R. Theakston, B.Sc.

Isle of Man Radio Society

Monthly meetings will be held at the headquarters of the Society—Broadway House, Douglas, at 7.30 p.m.—on the first Wednesday in each month until May next.

The Club station (call sign GD3FLH) is now in operation from Broadway House. Permission has been granted to use telephony.

North Staffs

North Staffordshire members now meet at 8 p.m. on the second Wednesday in the month at "The Vine Inn," Hanley. A local net is being operated at 8 p.m. on the other Wednesday evenings in the month using the H.F. band. The 2-metre band will be used later.

Future activities will include inter-group visits and field days. Ex-VE7HB is warmly welcomed to the area. He hopes to obtain a G call soon.

Region 5—Granfield Trophy

The annual DX contest for the Granfield Trophy, open to all R.S.G.B. members in Region 5, will take place during two three-hour periods: 2300 March 31 to 0200 April 1 and 1400-1700 April 1. Scores will be based on the best 12 DX contacts made during these periods. B.R.S. members are invited to submit check logs. Full details may be obtained from Mr. T. A. T. Davies, G2ALL, Meadow Side, Comberton, Cambridge.

Slade Radio Society

Visitors are cordially invited to the Society's meetings held at the Parochial Hall, Broomfield Road, Erdington, Birmingham 23. The programme for the first quarter of 1951 includes: February 16—*Mullard* film-strip lecture, "Television, Part I"; March 2—"High-quality Tape Recording"; March 16—"Television, Part II"; and March 30—"Spring-cleaning Sale."

Sutton and Cheam

Arrangements for the area entry in the 1951 National Field Day are now being made by the T.R.—Mr. R. I. Clews, G3CDK, 1 Hurstcourt Road, Sutton, Surrey—and the support of all local members is invited.

Sutton and Cheam Radio Society

Recent meetings have included a lecture on "Filters" by Mr. A. Brookman, G3FLP; "A Resistance Capacity Bridge," by Mr. J. Laursen, OZ3FN; and a junk sale.

Thames Valley Amateur Radio Transmitters' Society

The Society held a successful "Ladies' Night" in December at which 90 people were present, including representatives from several other Societies in the district. The A.G.M., in January, was also well attended. The President, Mr. Leslie Cooper, G5LC (Honorary Secretary, R.S.G.B.), was re-elected together with all officers. After the official business, Mr. Alan Mears, G8SM, gave a talk on 70 cm. operation. The Society meets on the first Wednesday of each month at the Carnarvon Castle Hotel, Hampton Court (8 p.m.).

Uxbridge

Plans are now under way for the participation of local members in the Uxbridge Festival of Britain Trades Fair (June 29 to July 7). It is hoped that an amateur station will be a feature of the projected Radio Amateurs' Exhibit. The Committee has been in touch with an amateur in Uxbridge, Mass., U.S.A., with a view to arranging schedules between the sister towns during the Fair.

West Kent Radio Society

The *QLF Newsletter* which brings monthly news from the Society has recently been enlarged. The January issue contains, in addition to full details of past and future activities of the Society, a New Year's message from the President (G2UJ), a sad poem of what happened to the ten members of the local net, a frank discussion of the difficulties of serving both professional and amateur enthusiasts, and rules for the Society's first receiving contest. Future events will include a D/F Hunt for a hidden transmitter operating on 7 Mc/s. Meetings are held at 7.30 p.m. every second Wednesday (February 28, etc.) at Culverden House, Culverden Park Road, St. John's, Tunbridge Wells.

Worcester Amateur Radio and Television Club

At the recent A.G.M., Mr. P. Bolton, G3CVK, was elected Chairman and Mr. H. M. Rudge, BRS17576 (21 Teme Road, Worcester), Honorary Secretary. The club transmitter, G3GJL, will be operating shortly from the new H.Q. at the Rainbow Club, where meetings are held on Thursdays at 7.30 p.m. New members and visitors are always welcome.

Worthing and District Amateur Radio Club

Recent activities have included a 7 Mc/s. Contest for a silver trophy and Slow Morse transmissions. Meetings are held on the second Monday of each month at the Adult Education Centre (7.30 p.m.).

Fourteen members attended the annual dinner of the Exeter R.S.G.B. Group last December, including (*seated left to right*) G5QA (R.R.), BRS13968 (C.R.), G3EFY (T.R.), G2AZC, G3JW, BRS8133, G3FLK, BRS7200, BRS—, G3EAZ, G2DOL (*standing*) A1131, BRS13512 and G3GWH. After a review of local activities the Regional Representative emphasised the need for more experimental V.H.F. work in the South-West.

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DEAF-AID miniature valves, DL72 and CK512AX, new, **9/-**, post paid.

SELENIUM RECTIFIERS.—H.W. 250 V. 60 mA., **5/6**; 120 mA., **8/6**; F.W. 6 or 12 V. 1 A., **8/6**; 6 or 12 V. 4 A., **26/-**. Post paid.

VCR138/ECR35.—We have now a further supply of these 3¼" scope tubes, new and boxed, **20/-**, plus 1/- post paid.

WESTINGHOUSE.—1 mA. Bridge meter rectifiers, **9/6**, post paid.

TYPE R1359 Receiver Power Unit.—In grey steel case 8" x 9" x 6¼". Contains two separate complete power units with outputs of 390 V. at 80 mA., and 300 V. at 60 mA., each with 6.3 V. 3 A. L.T. Price **£4/12/6.**

MAINS TRANSFORMERS.—12 months' guarantee. Input 200/240 V. Output 6.3 V. 1.5 A., **7/6**; post 10d.; 4 V. 8 A., **25/6**, post 10d. 350-0-350, 80 mA. 6.3 V. 3.5 A., 5 V. 2.5 A., **21/6**, post 1/-. Input 200/240 V. Output 250-0-250, 60 mA. 6.3 V. 3 A., 5 V. 2 A., shrouded, **22/6**, post paid.

100 kc/s. R.C.A.—Crystals, 1st grade, **25/6**, post paid.

NEW MINIATURE CONDENSERS in ali-cans, 450 V. D.C.W., 8 μF., **3/6**; 8+8 μF., 16+8 μF., and 32 μF., 16+16, **4/9** each, post paid; 32+32 μF. 350 V. **6/6**, post paid.

TU9B UNITS.—New, complete in black crackle cases, **17/6**, carriage paid.

BRITOOL 0-9 B.A. TOOL KITS.—Chrome alloy steel. In steel boxes, **26/-**, post paid.

24 V A.C./D.C. MOTORS.—5" x 3", fitted with powerful blower fan, **14/-**, post paid.

RF24 UNITS.—Converted to 28 Mc/s. band. Variable tuned with 100-1 geared S.M. dial. Complete with plug and leads for immediate use, **£2/5/0**, post paid.

P.M. SPEAKERS.—5", **12/6**; 8", **16/-**; 10", **20/-**, postage 1/- each.

TWIN-GANG VARIABLE CONDENSERS.—.0005 μF., **4/6.**

NEW 250 W. Double Wound **TRANSFORMERS.**—230 V./115 V. Made by G.E.C. in grey steel cases. **47/6** each, carriage paid.

M/C MICROPHONES.—With pressel switch, **6/-**, post 6d. **Transformers** to match, **5/-.**

"A.M." MAINS TRANSFORMERS.—Input 200/250. Output 525-0-525 V., 250 mA., 6.3 V. 4.5 A., 5 V. 3.5 A., **32/6** post paid.

METERS.—M/c., 2", 0.300 V., **10/-**; 0.40 V., **7/6**; 0.250 mA., 2½", **10/6**; 0.1 mA., 2", **11/6**; 0.500 μA., 2", **10/6.** Post paid.

TRANSFORMERS.—230/24 V., 1 A., **13/6**, post paid.

SNIP.—Signal generator A.M. Type 22. 200 Mc/s. Easily convertible for 144 Mc/s. or T.V. Band, **11/6.** Post paid. 6 V. Vibrator Unit in separate closed steel case for fitting into this unit, **20/-.**

ADMIRALTY 3¾" S.M. DIALS.—100-1 drive, with vernier. White ivorine dial 0-100. Worm driven. Beautifully made. New and boxed, **8/6.** Post paid.

NEW ULTRA 12".—Oval energised speakers, 400 ohm with transformer, **21/6.** Post paid.

R1132A.—We have a few of these splendid 10-valve Receivers, 100-120 Mc/s. New **£4 19s. 6d.** Carriage and packing, 10/-.

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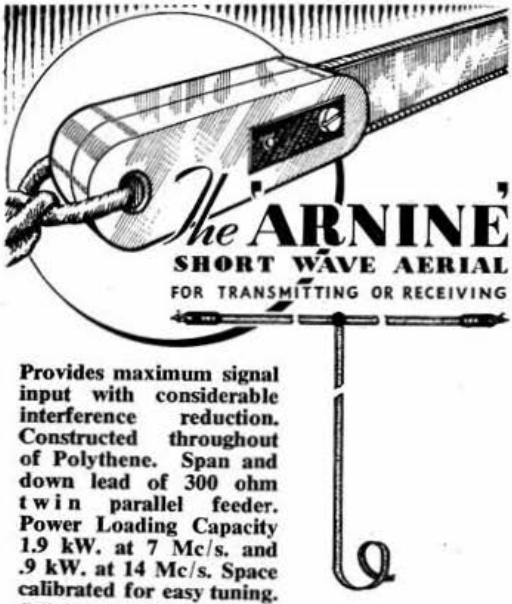

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BC357 Marker Beacon Receivers, 2 valves, 12C8 and 12SQ7, Super Sensitive Relay **12/6,** post 1/-.

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SWITCHING RELAY UNIT TYPE CZR.—Incorporating double coil, two makes, one change-over locking relay, 12 V. 1¼ A., contacts rated 6 A. at 16 V., etc., in black crackle case, **15/-,** post free.

RELAYS We can supply all 600 and 3,000 G.P.O. types, with resistances from 1.9—42,000 ohms. Multi-contacts, Siemens high-speed, etc., etc. Price list on request. Manufacturer's enquiries invited.

R.3584 RECEIVERS.—Absolutely brand new in sealed manufacturer's packing case, including complete 45 Mc/s. I.F. strip, 15 valves, type EF50, EF36, EBC33, 2 SP61, 2 EB34, relays, motor, dial, drive, pots, and hundreds of resistors and condensers. Only **£6** each (plus 10/- packing and carriage).

STROBE UNIT, Type 68.—Absolutely brand new in sealed cartons including 6 valves type EF50, 5 type EA50, 5Z4G, SP61, relays, transformers, potentiometers, slow-motion dial and drive, hundreds of resistors and condensers. Price **69/6,** plus 5/- carriage and packing.

MODULATOR UNIT, Type 169.—Absolutely brand new, includes Klystron type CV67, EF50, 5U4G, 3 Neons type CV71, rectifiers, transformers, and shoals of condensers and resistors. At **35/-,** plus 5/- packing and carriage.

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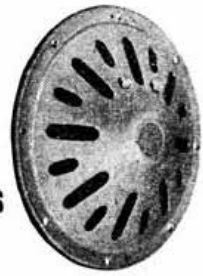

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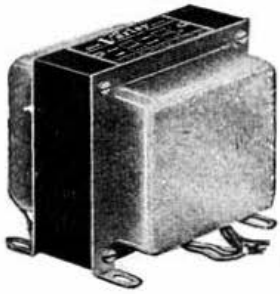

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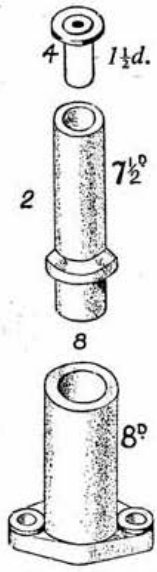

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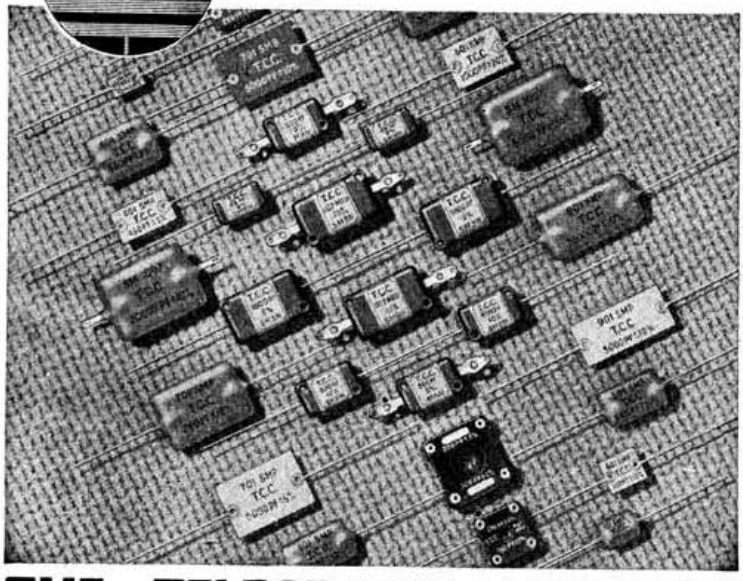

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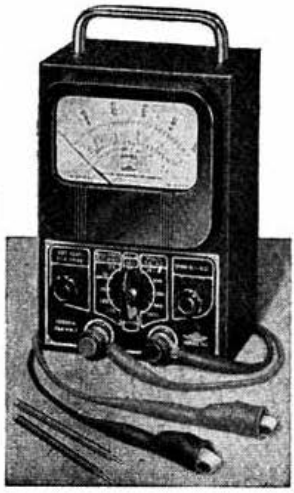

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The following valves are Brand New and in their Original Cartons : 7193, **3/6**; 6J5GT, **3/9**; 2C26, 2X2, 6C5, 6N7GT, **4/9**; 6J5, 6SK7, **5/3**; 6AC7, **5/6**; 6K7GT, 6K7G, 6K7, **5/9**; 6B8, **6/-**; 524, 807, **6/3**; 6Q7GT, 6C4, 6F6G, **6/9**; 6J6, **10/-**.

The following are new, but in plain cartons or unboxed : EB34, **2/-**; 6J5G, SP41, EA50, 12SH7, **3/6**; 2C26, 2X2, **4/3**; 6SK7GT, 6SK7, **4/9**; 6B8, RL18 (EC53), **5/-**; 524, **5/9**; 6J7, **6/-**; 6C4, 6V6G, 6Y6G, 6F6G, **6/3**; 7V7, KTW61, **6/6**; 6J6, **7/9**.

We also offer a number of electrically perfect SP41 valves, ex-equipment, at **2/6**; also EF50 at **3/6** each. Some of these valves are soiled, all are tested, but none have damaged pins.

Please allow for postage on orders under 15/-

REED & FORD

46B GROSVENOR ROAD, SOUTHPORT.

H. WHITAKER G3SJ

10 YORKSHIRE STREET, BURNLEY *Phone: 4924*

TANNOY: Public address amplifiers or loud hailers. Type 7a, Input 110/250 V. 50 c/s. six 6L6s in Parallel P.P. Output 60 watts. Complete with power mike, matching trans. and connecting cables. Brand new and unused in original crates. Output Imp. 15 ohms. Neon output indicator. Will run up to 20 speakers out up to one mile. Carriage paid **£19 10s.**

1155 RECEIVERS: Brand new in original crates, **£10** Used, but in perfect condition, **£7 10s.** carriage paid.

THIS MONTH'S SPECIAL OFFER: Sturdy Elec. Plate transformers. Input 200/250 V. 50 c/s. Output 2200/0/2200 V. at 200 mA. plus 4 V. 1 A. for pilot light, **35/-**, carriage paid.

SIX-BAND COIL TURRETS: Basis for signal generator. Complete with coupling windings, switched with single pole, 6-way, 5-wafer Yaxley switch. Freq. coverage 100 kc/s. to 20 Mc/s. All coils not in use are shorted. Complete in rigid frame with 4 fixing feet. 6" x 4" x 4". Ideal for 6-band exciter unit. Circuit supplied, **7/6** each.

BC221 FREQ. METERS: Brand new. Few only **£17 10s.**

METERS: 0-150 mA., 0-200 mA., 3" round flush, Mc/s. at **10/6.** 0-1 mA. Mc/s., 2" round flush, **8/6**; ditto 2½" square, flush, **10/6**; ditto Ferranti 3" sloping desk type, **15/-**; 0-250 V.A.C. rec. type, 3" round, flush, **15/-**; Westinghouse 0-15 V. A.C. 3" round, flush, **15/-**; ditto 2" round, flush, **7/6**; 0-100 mA., 2" round, flush, 0-500 mA., ditto **8/6**; Ferranti thermocouple 0-½ A. 2" square, flush, **3/-**; 0-8 A. ditto **5/-**.

R.C.A. Et.4336H. TRANSMITTER: Frequency coverage 2-20 Mc/s., 5' rack and panel, weight 4cwt. nett. Input 230 V. 50 c/s. Line-up is an 807 driving a pair of 813s, modulated by a pair of 805s. Complete with all valves, including four 866 rectifiers. New and unused, in perfect condition. A speech amplifier is required giving approx. 8 W. to drive the 805s, the input circuit of which is for 500 ohm line. Offered at the nominal price of **£60.** Carriage paid.

CONDENSERS: 4 μF. 2,000 V. wkg. 5x4x3, **5/-**; Cornel Dubilier, 25 μF. 25 V. tubular, **1/-, 10/-** doz.; Mica, 100 assorted 350 to 1,000 V. wkg., **10/-**; Mica 2,500 V. wkg., **12/-** doz., ass. Mica 5,000 V. wkg., all values at **2/-** each; Kellog 4-4-4-2-1 650 V. wkg., **7/6**; R.C.A. 10 μF. 50 V. wkg. tub. met. can, **1/-**; Cornel Dubilier tub. met. 40 μF. 250 V. wkg. **1/6**; Sprague Bfth tub., all values, **5/-** doz., assorted. Sprague 2 μF. 750 V. wkg, **2/-**; Mallory 1,000 μF. 15 V. wkg., met. can, round, **12/-** doz.; T.C.C. 4 μF.+ 2 μF. 2,000 V. wkg., 9x5x3, **7/6**; Mica 1,000 V. wkg., at **15/-** per 100, well assorted.

CRYSTALS: 3.5 Mc/s. band. Any spot freq. BC610 or ¾" British pin spacing, **15/-**; 7 Mc/s. band, any spot freq., FT243 ½" pin spacing, **12/6**; 8,000/8,110 kc/s. FT243, any spot freq., **15/-**. All G3SJ Crystals are precision machine ground and acid etched to final frequencies. I.F. freqs. by Weston, 450 kc/s. to 510 kc/s., any freq., **12/6.** R.C.A. Sub-standard 100 kc/s. **17/6.** Valpey, Bliley or Somerset 1,000 kc/s. standard ¾" pin spacing, **20/-**.