

*R.S.G.B.*



# BULLETIN

**May 1953**

*The original front cover for this edition was not available.*

*The original front cover for this edition was not available.*



**£60**

# Here is a VALVE TESTER

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sufficient scope  
for YOUR  
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**When purchasing a Valve Tester,  
ask the following questions:—**

*Is it a simple Go/No Go instrument, or will it enable you to take measurements at any point on a characteristic curve?*

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*Does the instrument depend for its operation on pre-determined empirical data issued by its manufacturer?*

The "AVO" Valve Characteristic Meter simulates normal working conditions for the valve under test and thus is capable of reproducing the valve manufacturer's data.

*If you are called upon to select a pair of accurately matched valves, will the valve tester carry out the required checks, and maintain your reputation as an expert?*

The "AVO" Valve Characteristic Meter enables the slope, and anode, screen, or grid current of a multi-electrode valve to be checked with any voltage between 0 and—100V on the control grid.

*Before any information can be obtained about a valve, must the instrument be provided with a complex series of accessories which may become lost, mutilated, or are not available when an unusual or new type of valve has to be tested?*

The "AVO" Valve Characteristic Meter is provided with two handbooks. The first gives detailed information on the technique of valve testing, full circuit diagrams and adequate operating instructions. The second is a quick reference Data Manual covering more than 3,000 British, American and Continental valves, and gives inter-service equivalents. The Valve Data Manual is issued for the convenience of the instrument user, but even without it valves can, if necessary, be checked using data taken from the valve maker's data sheets.

*Will a high slope valve, when placed in the instrument, burst into spurious oscillation, thus giving rise to incorrect readings and possible damage to the valve?*

The "AVO" Valve Characteristic Meter incorporates a specially designed panel layout and wiring system (prov. patent) which virtually eliminates spurious oscillation.

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*Does the instrument test diodes and rectifiers under load?*

The "AVO" Valve Characteristic Meter checks diodes and rectifiers under load conditions.

The "AVO" Valve Characteristic Meter measures inter-electrode insulation in megohms with valve cold or hot, also cathode/heater insulation with the valve hot, and indicates any breakdown below 10 megohms. It will carry out tests on small thyristors, tuning indicators, etc. It is fitted with bases for most valves in current use and adaptors will be available to keep the instrument fully up-to-date should new bases come into use. A special form of polarised relay is incorporated to give protection against inadvertent overloads or valve failure.

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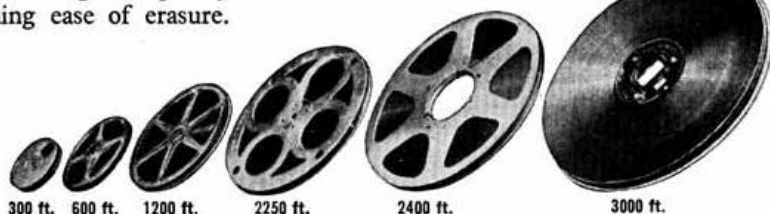




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**G2AK**

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# R·S·G·B· BULLETIN

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1953



PUBLISHED ON OR ABOUT THE 15th OF EACH MONTH AS ITS OFFICIAL JOURNAL BY THE  
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THE R.S.G.B. IS A MEMBER SOCIETY OF THE I.A.R.U. AND ACTS AS THE REGION 1 BUREAU OF THE I.A.R.U.

# Forthcoming Events

## REGION 1

- Blackpool (B. & F.A.R.S.).**—May 26, 7.30 p.m., 5 Albion Avenue, Blackpool.  
**Bury.**—May 14, June 11, 7.30 p.m., Y.M.C.A., The Rock, Bury.  
**Chester (C. & D.A.R.S.).**—Tuesdays, 7.30 p.m., Tarran Hut, Y.M.C.A., Chester.  
**Crosby.**—Thursdays, 8 p.m., Scouts' Hall, East Street, South Road, Waterloo, Liverpool.  
**Darwen & Blackburn.**—May 22, June 12, 7.30 p.m., Y.M.C.A., Limbrick, Blackburn.  
**Liverpool.**—May 23, June 6, 20, 3 p.m., Larkhill Mansion House, West Derby, Liverpool.  
**Rochdale (R.R.T.S.).**—Thursdays, 7.45 p.m., 1 Law Street, Sudden.  
**South Manchester (S.M.R.C.).**—Alternate Fridays, 7.30 p.m., Ladybarn House, Mauldeth Road, Manchester 14.  
**Southport.**—May 18, June 1, 8 p.m., Y.M.C.A., off Eastbank Street, Southport.  
**Stockport (S.R.S.).**—Alternate Tuesdays, 8 p.m., Blossoms Hotel, 2 Buxton Road, Stockport.  
**Wirral (W.A.R.S.).**—May 20, June 10, 24, 7.45 p.m., Y.M.C.A., Whetstone Lane, Birkenhead.

## REGION 2

- Barnsley.**—May 22, June 12, 7.30 p.m., King George Hotel, Peel Street.  
**Bradford.**—May 29, visit to Bradford and District Newspaper Co.; June 9, 7.30 p.m., Cambridge House, 66 Little Horton Lane.  
**Catterick.**—Wednesdays, 7 p.m., Loos Lines, Catterick Camp.  
**Darlington.**—Thursdays, 7.30 p.m., 129 Woodlands Road.  
**Doncaster.**—June 10, 7.30 p.m., Black Bull, Market Place.  
**Gateshead.**—Mondays, 7.30 p.m., Mechanics' Institute, 7 Whitehall Road.  
**Hull.**—May 26, June 9, 7.30 p.m., Rampant Horse, Paisley Street.  
**Middlesbrough.**—Thursdays, 7.30 p.m., Joe Walton's Boys' Club, Faversham Street.  
**Newcastle-upon-Tyne.**—May 18, June 15, British Legion Rooms, 1 Jesmond Road.  
**Pontefract.**—June 11, 8 p.m., "Fox Inn," Knottingley Road.  
**Rotherham.**—Wednesdays, 7 p.m., Cutlers Arms, Westgate.  
**Scarborough.**—Thursdays, 7.30 p.m., B.R. Rifle Club, West Parade Road.  
**Sheffield.**—May 27, 8 p.m., "Dog and Partridge," Trippet Lane; June 10, 8 p.m., Albreda Works, Lydgate Lane.  
**Slough.**—Fridays, 7.30 p.m., 3 Dartmouth Street.  
**Spokenborough.**—May 20, June 3, 7.30 p.m., Temperance Hall, Cleckheaton.  
**York.**—Thursdays, 7.30 p.m., Club Rooms, Y.A.R.S., Fetter Lane.

## REGION 3

- Birmingham (South).**—June 5, 7.15 p.m., Stirchley Institute (Room 7), Sale of surplus gear.  
**Coventry.**—May 22, 7.30 p.m., Priory High School, Wheatley Street.  
**Kenilworth, Warwick & Leamington.**—May 21, 7.30 p.m., Dalehouse Lane.  
**Malvern.**—June 1, 8 p.m., Foley Arms.  
**Stourbridge (S. & D.R.S.).**—June 2, 8 p.m., King Edward's School.  
**Worcester (W. & D.A.R.C.).**—Thursdays, City Library (basement), Foregate Street.  
**Wrekin (W.A.R.S.).**—Mondays, 8 p.m., Wrekin Service Club, Roseway, Wellington.

## REGION 4

- Alvaston.**—Tuesdays, Thursdays, 7.30 p.m., Sundays, 10.30 a.m., Nunsfield House, Boulton Lane, Alvaston, Derby.  
**Chesterfield.**—May 19, 26, June 9, 16, 7.30 p.m., Bradbury Hall, Chatsworth Road.  
**Derby (D. & D.A.R.S.).**—May 20, 27, June 3, 10, 7.30 p.m., Derby College of Arts and Crafts (sub-basement), Green Lane.  
**Leicester (L.R.S.).**—May 18, June 1, 15, 7.30 p.m., Hollybush Hotel, Belgrave Gate.  
**Lincoln (L.S.W.C.).**—May 27, June 10, 7.30 p.m., Technical College, Cathedral Street.  
**Loughborough.**—May 20, 7.30 p.m., Great Central Hotel.  
**Mansfield (M. & D.A.R.S.).**—June 7, 3 p.m., Swan Hotel.  
**Newark.**—May 24, June 7, 7 p.m., Northgate House, Northgate.  
**Northampton (N.S.W.C.).**—Fridays, 7 p.m., June 5, 6 p.m., Clubroom, 8 Duke Street.  
**Nottingham.**—May 15, 7.30 p.m., Trentbridge Hotel.  
**Peterborough.**—June 3, 7.30 p.m., New Inn, New England, Peterborough.  
**Retford.**—June 8, 7 p.m., Community Centre, Chapel Gate.

## REGION 5

- Chelmsford.**—June 2, 7.30 p.m., Marconi College, Arbour Lane.  
**Ipswich.**—May 27, June 10, 7.30 p.m., T.A. Drill Hall, Woodbridge Road, Ipswich.  
**Lowestoft (L. & B.A.R.C.).**—May 27, June 10, 7.30 p.m., Y.M.C.A., Lowestoft.

## REGION 6

- Cheltenham.**—June 4, 8 p.m., 128 Prestbury Road.  
**Gloucester.**—Thursdays, 7.30 p.m., The Cedars, 83 Hucclecote Road.  
**Oxford.**—Alternate Wednesdays, 7.30 p.m., The Club Room, Magdalen Arms, Illey Road.  
**Portsmouth.**—Tuesdays, 7.30 p.m., Signals Club Room, Royal Marine Barracks, Eastney.  
**Southampton.**—June 6, 7.30 p.m., 1 Prospect Place.  
**Stroud.**—Wednesdays, 7.30 p.m., Subscription Rooms.

## REGION 7

- Acton, Brentford, Chiswick.**—Tuesdays, 7.30 p.m., A.E.U. Rooms, Chiswick High Street, W.4.  
**Barnes, Putney, Richmond.**—June 9, 7.30 p.m., 337 Upper Richmond Road, East Sheen, S.W.14.  
**Barnet (B. & D.R.C.).**—Wednesdays, 8 p.m., "Hopedene," The Avenue.  
**Bexleyheath (N.K.R.S.).**—May 28, June 11, 7.30 p.m., Congregational Hall, Chapel Road, Bexleyheath.  
**Bromley (N.W.K.A.R.S.).**—June 5, 8 p.m., Shortlands Tavern, Station Road, Shortlands.  
**Chingford.**—May 19, June 2, 8 p.m., A.T.C. H.Q., Pretoria Road; May 25, Exhibition Station at Chingford Hospital.  
**Croydon.**—Summer Recess.  
**Dorking.**—Tuesdays, 7.30 p.m., 5 London Road, Dorking.  
**Dulwich & New Cross.**—June 9, 7.45 p.m., N.F.D. Discussion, "The Walmer Castle," Peckham Road, S.E.15.  
**Ealing.**—Sundays, 11 a.m., A.B.C. Restaurant, Ealing Broadway.  
**East Ham.**—May 26, June 9, 8 p.m., 57 Leigh Road.  
**East London.**—Summer Recess.  
**East Molesey.**—June 3, 8 p.m., N.F.D. Meeting, "Carnarvon Castle," Hampton Court.  
**Eltham & Sidcup.**—Summer Recess.  
**Enfield.**—May 17, June 21, 3 p.m., George Spicer School, Southbury Road.  
**Finbury Park.**—May 19, June 23, 7.30 p.m., 164 Albion Road, N.16.  
**Guildford & Woking.**—May 17, 3 p.m., Royal Arms Hotel, Guildford.  
**Harlow.**—Summer Recess.  
**Hendon & Edgware (E. & D.R.S.).**—Wednesdays, 8 p.m., 22 Goodwins Avenue, Mill Hill.  
**Hoddesdon.**—June 4, 8 p.m., Salisbury Arms.  
**Ilford.**—Thursdays, 8 p.m., 579 High Road, Ilford.  
**Kensington & Shepherds Bush.**—June 12, 8 p.m., 38 Royal Crescent, W.11.  
**Kingston (K. & D.A.R.S.).**—May 20, June 3, 17, 7.45 p.m., Penrhyn House, Penrhyn Road.  
**Lewisham (R.A.R.C.).**—Wednesdays, 8 p.m., Durham Hill School, Downham.  
**Norwood.**—June 20, 7.30 p.m., Windermere House, Westow Street, Crystal Palace.  
**Slough.**—June 18, 7.45 p.m., Labour Hall, Chandos Street.  
**Southgate & Finchley.**—June 11, 7.30 p.m., Arnos School, Wilmer Way, N.11.  
**Sutton & Cheam (S. & C.R.S.).**—May 19, "The Harrow," Cheam Village.  
**Uxbridge.**—June 5, 7.30 p.m., "The Vine," Hillingdon.  
**Watford (W.A.R.S.).**—June 2, 16, 7.30 p.m., "Cookery Nook," The Parade.  
**Welwyn.**—June 9, 8 p.m., N.F.D.—Final Briefing, Council Offices.

## REGION 8

- Brighton.**—T.R. at Home, Wednesdays from 7.30 p.m., 27 Warren Avenue, Woodingdean.  
**Chatham (M.A.R.T.S.).**—Mondays, 7.30 p.m., Club H.Q., Five Bells Lane, Rochester; Monday, May 18, 7.30 p.m., "City Arms," Victoria Street, Rochester.  
**Hastings (B. & H.A.R.C.).**—May 19, June 2, 16, 7.30 p.m., Saxon's Cafe, Denmark Place, Hastings.  
**Isle of Thanet (I.O.T.R.S.).**—Fridays, 7.30 p.m., George Hotel, Hawley Street, Margate.  
**Maidstone (M.K.A.R.S.).**—Fridays, 7.30 p.m., Elms School, London Road.

## REGION 9

- Bath.**—May 18, 7.30 p.m., Y.M.C.A., Broad Street.  
**Bristol.**—May 22, 7.15 p.m., Carwardine's Restaurant, Baldwin Street, Bristol 1.  
**Exeter.**—June 5, 7 p.m., Y.M.C.A., St. David's Hill.  
**North Devon.**—June 4, 7.30 p.m., Rose of Torridge Cafe, The Quay, Bideford.

(Continued on page 499.)

# R·S·G·B· BULLETIN

Volume 28 No. 11

May, 1953

## Current Comment . . .

### Those Articles

IN his "Presidential Chat" in the last issue of the BULLETIN, Mr. Cooper expressed the hope that it would be possible to hold a Special General Meeting on June 19 to consider those Articles of Association which would permit an increase in subscription rates to be made. The President was rightly careful to say that this date was only tentative; and now, as it has turned out, the meeting will have to be held at a rather later period in the year. Members should be apprised of the reasons for this change being made. Here they are:

At an adjourned meeting of the Council held at the end of April, very careful consideration was given to the eventual introduction of the revised Articles of Association and particularly to Article 19, which deals with subscription rates. At that date (April 27) the complete draft of the new Articles was still with the Board of Trade for consideration and approval, as is required by the Companies Act. When draft Articles of Association are deposited with the Board of Trade they receive a very thorough "vetting" from Treasury Counsel. Such legal processes mean of course that "the job cannot be rushed."

The Society's Council therefore decided that it would be quite wrong to convene another Special General Meeting for as early as June 19. Not only would such an action anticipate the Board of Trade's approval of the draft by then, but it would certainly not allow adequate time for briefing the membership. By the Council's decision to hold a Special General Meeting at the end of September, breathing space is now allowed for both of these processes to occur. Perhaps, then, it will be possible for this long and protracted job of introducing the new Articles to be, at last, put behind us all.

\* \* \*

### By-Election

THE by-election for the two vacancies on the Council prompts some thoughts on the democratic way in which this Society of ours works. "Of course, it *should* be democratic" is likely to be the immediate retort of many members—and they would be quite right. They would be right, too, to remember that a democratic organisation, though slower sometimes to operate than an autocratic one (simply because both sides to a question must be examined—and examined by all) is one of the fundamental concepts that allow men to be free, not bound.

The working of the R.S.G.B. bears close resemblance to the democratic working of our

own national Parliament. The back-benchers at Westminster can be likened to our own Town Representatives in the manner of their direct contact with "the Country" and the quiet unassuming people who are the backbone of a society—and of our Society. The front-benchers—far fewer in number—are the Regional Representatives. Between come the "junior ministers" paralleled by our own County Representatives. And the Cabinet is the Council.

When the set-up is described in this way it becomes—or should become—clear to all. It shows the logical "chain of responsibility" which extends in this Society from the President himself, right through to the newest and remotest Town Representative.

Many are chosen—and many are called. The turnover of office-holders brings during any one year a great spread of R.S.G.B. administrative experience to some hundreds of members. And it brings to them also an insight into the problems of "government" that must be of great value and assistance to them.

Our Parliamentary analogy breaks down in one important respect. Whereas a democratic Government in this country is usually returned by about 75 per cent. of the electorate, our equally democratic R.S.G.B. Council is returned by about 20 per cent. of the Corporate membership who are entitled to vote. Maybe this does not matter a lot; maybe the result would come out the same if 75 per cent. (or 100 per cent.) of the membership voted. Even so, no one will pretend that a small poll is a good thing. And to say that it is the *normal* thing, not only in our Society but in Municipal elections as well, is no excuse for sitting back and saying it cannot be improved.

Many factors conspire against a full vote. Circumstances may so press upon the individual member that he postpones or forgets about voting until it is too late. Perhaps he feels that his vote "won't make much difference"—and one hears similar expressions of apathetic fatalism (the negation of democracy) when General Elections come round. Perhaps he does not know the candidates for Council sufficiently well to want to return any of them to the Governing Body.

There may be many explanations. Whatever they are it would be pleasant to think that the membership at large took a positive interest in affairs outside the immediate pursuits of construction and communication. A strong and active Governing Body, enjoying the loyalty and support of the membership as expressed in voting figures, feels itself well placed when negotiating for the facilities that allow that construction and communication to continue.—J.H.



# Amateur Microwave Experiments

## Part III

By D. Clift [G3BAK]\*

In this final instalment of the present series, the author describes complete equipment for both home station and portable use. It is hoped that the practical information given here will promote increased activity in the 10,000 Mc/s band.

SINCE activity on 10,000 Mc/s commenced at G3BAK and G3LZ, the policy has been for the operator at the latter station to work portable and for the writer to operate from his home address. Somewhat different equipments have therefore been evolved, although both stations now possess higher power transmitters using CV129 klystrons. As a means of "inter-com" when setting-up the s.h.f. equipment, low power 70 cm gear is employed.

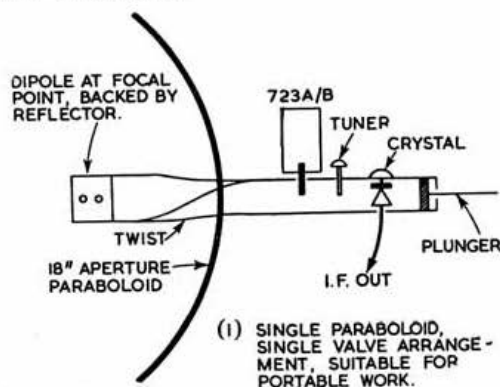


Fig. 1.—(i) Simple arrangement of a centimetric communications system.

### Portable Equipment

The portable transmitter-receiver used by G3LZ is shown in one of the photographs and in Figs. 1(i) and 2. An APS-3 paraboloid and feed is used. All the 3 cm. components are mounted on a short length of rectangular waveguide, perpendicular to the plane of feed, as the waveguide (obtained on the surplus market) has a 90° twist. Using this type of equipment, the two stations are tuned up to operate at the first i.f. apart, the transmitted signal of one beating with the received signal from the other to give the necessary i.f.

Power is fed to the waveguide by the integral aerial of the 723A/B oscillator; approximately one half of the available 15 mW is radiated, the other half being used in the crystal mixer. A tuner, which is movable in both the vertical and horizontal planes, is used in conjunction with the plunger to obtain a compromise between radiated power and i.f. output. A small co-axial wavemeter and a sighting telescope are fitted.

The i.f. strip and power supplies are enclosed in a TU-type cabinet and the apparatus may be run from mains or battery supplies.

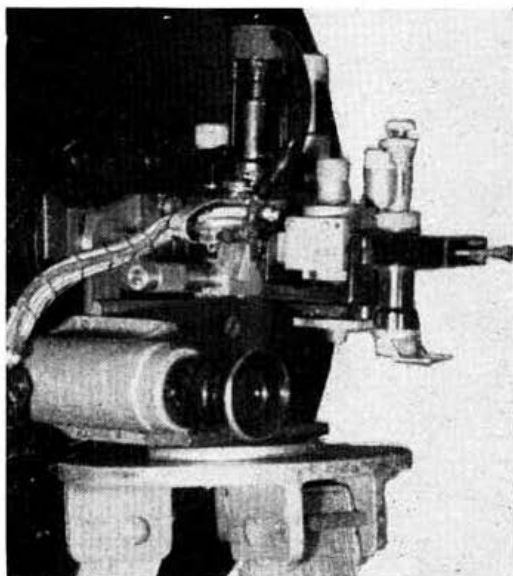
### High Power Apparatus

The equipment used at G3BAK, which employs a CV129 klystron, has been successfully used in the arrangements shown in Fig. 1(ii) and (iii) and is illustrated in the photograph. When a local

oscillator is used, all the power of the CV129 is radiated; without the use of a separate local oscillator about 90 per cent. is radiated.

The arrangement shown in Fig. 1(ii) can be used to test the system without the use of another station, because it has its own local oscillator. Reflections from nearby objects produce good signals in the receiver. Two similar aerials are used and the output of the CV129 is fed into the waveguide by one of the methods illustrated in Fig. 2 (Part II). The plunger is adjusted for maximum output and the received signal is fed via a rectangular-to-circular waveguide conversion to a 10DB/6492 crystal cavity which operates in the  $TE_{11}$  mode (the dominant mode for circular waveguide). This cavity appears to be ideal for use when commencing operations in the 10,000 Mc/s band, as it can easily be fitted to 15/16 in. inside diameter tubing. The  $TE_{11}$  mode is used throughout. If an arrangement similar to Fig. 1(i) were used, it would be necessary to alter the position of the local oscillator probe so that it would be in the same plane as the crystal. The aerial for the latter system could be in the form of a horn, or circular tubing could be bent to feed a paraboloid, bearing in mind the limitations mentioned in Part II.

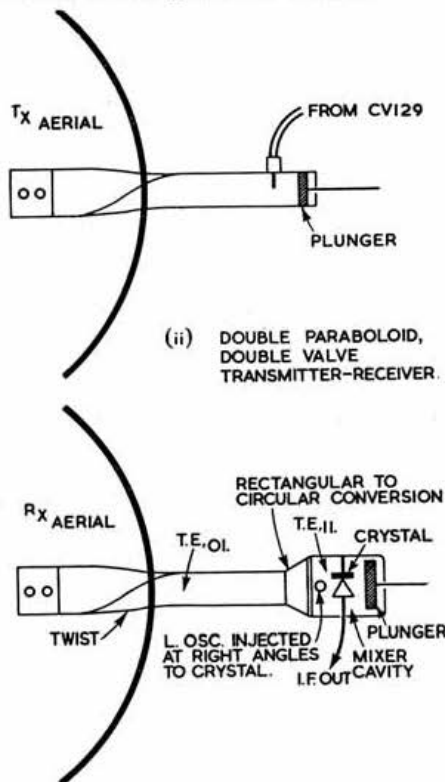
The layout illustrated in Fig. 1(iii) operates in a similar manner to that of Fig. 1(i) but with the separate aerial systems of Fig. 1(ii). The transmitter supplies the local oscillator voltage but without the compromise between r.f. and i.f. output. Use is made of a simple home-made directional coupler to produce a current flow of 0.7 mA



The portable 3 cm. transmitter-receiver mounted on an APS-3 paraboloid. It is fitted with a sighting telescope.

\* 6, Isis, Damhead Hall, Glazebrook, Manchester.

through the crystal. The aerials (which terminate in the crystal probe and CV129 plunger respectively) are tuned to frequencies which are the i.f. apart. This type of directional coupler uses two waveguides at right-angles to one another and coupling is done by means of two diagonally placed holes in the common wall of the waveguides. In Fig. 3, which shows the arrangement, both paraboloids and the receiving feed system have been omitted for the sake of clarity; the use of bends and twists in both planes is illustrated.



the only part of the circuit which is not fairly conventional is the power supply for this valve. The other two d.c. supplies are for the i.f. amplifier, a.f. amplifier and modulator, derived from T1 and V3 and for the i.f. pre-amplifier and associated 70 cm receiver, obtained from T3 and V4. It has been found that the use of separate h.t. supplies for the two sections of the very high gain i.f. amplifiers lessens the tendency for the amplifier to oscillate at maximum gain.

The CV129 klystron receives its negative c.h.t.

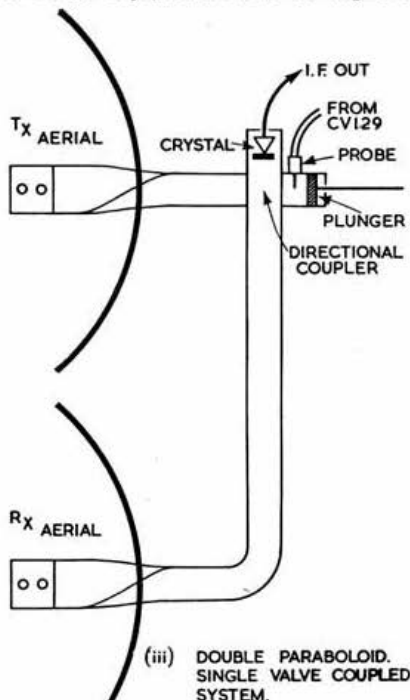


Fig. 1 (ii) and (iii).—Other methods of setting up apparatus for a centimetric communications system.

## Modulation

Modulation methods are very simple and can be either amplitude or frequency or a mixture of both. An examination of Fig. 3 (Part I) will show that alteration of the reflector voltage of the klystron will alter the generated frequency. This property, which is used in radar automatic frequency control systems, can also be used to modulate the klystron in a manner which produces frequency modulation with a small amount of amplitude modulation. The modulating voltage required is small, 10-20 V being ample for both the 723A/B and CV129. In the latter, the grid is brought out to a separate pin, so that grid modulation, which gives a larger percentage of a.m. and less f.m., can be used. Experiments are being made with a view to modulating grid and reflector simultaneously to secure a.m. without f.m. in the CV129, but it seems likely that a rather complicated network will be required to proportion the voltages correctly. Frequency modulation alone has not been tried as the mixture of a.m. and f.m. has always given good results over short distances.

## Circuit Arrangements

The circuit diagram of a complete 10,000 Mc/s station, with 70 cm inter-com facilities, is shown in Fig. 4. The klystron used is a CV129 (V8) and

from T1, V1, V2 and V7. V1 and V2 and the 1000 V winding on T1, with C1, C2, constitute a voltage doubling circuit, the output of which is controlled by means of V7 acting as a variable series resistor. The network R1, R2 and R3 is connected from the negative output to the positive side of the 200 V regulated supply. The grid potential for V7 is taken from a point on R2 which is slightly negative, thus allowing V7 to conduct. R2 is set so that the correct negative supply of 2200 V is fed to V8. Thereafter, alteration of the negative end of the chain (caused by supply or load variations) will cause the anode resistance of V7 to alter, owing to the grid voltage change, so that the e.h.t. supply will be restored to its original value.

The i.f. amplifier is an 8-stage wide band strip of 60 Mc/s mean frequency. This wide bandwidth is not really required but as the strip was on hand at the time of construction it was used. The final valve of the strip (V17) is the detector, the a.f. output from which, suitably by-passed, is fed to a single stage amplifier and thence to headphones. The main i.f. amplifier output stage and heater transformer T4 are mounted on one chassis. The output of the 70 cm mixer is fed to the junction of the i.f. pre-amplifier and the main i.f. implifier.



Modulation is applied to the grid or reflector of the CV129 by S2. A small moving-coil microphone and a 6SK7 (V9) speech amplifier supply the necessary modulating voltage.

The output of V8 is fed to the waveguide through a short length of co-axial cable in one of the arrangements shown in Fig. 1. The i.f. output is taken from one side of the crystal. The current, which is indicated by M1, may be reversed by means of the switch S5 to allow use of both British and American crystals.

The 70 cm "inter-com" transmitter is a surplus radio altimeter unit using 955s in push-pull with which a 6-element Yagi with a three wire folded dipole driven element, fed with 93 ohm co-axial cable and balanced step up transformer, is used.

square wave modulated or pulse-modulated signal over the same frequency range at a level 38 to 77 db below one milliwatt; (d) acts as a monitor.

Facilities (b) and (c) take place over the complete frequency range, but are most accurate in two ranges approximately 200 Mc/s wide—e.g. in the American radar band and the 10,000 Mc/s amateur band.

The power supply, which uses a series low impedance triode (V6), is similar to that described in the R.S.G.B. *Amateur Radio Handbook*. It produces 250 V stabilised for the klystron cavity and modulator, whilst a negative 150 V supply regulated by V3, is available for the variable reflector voltage and the thermistor bridge.

The waveguide components are: (a) klystron

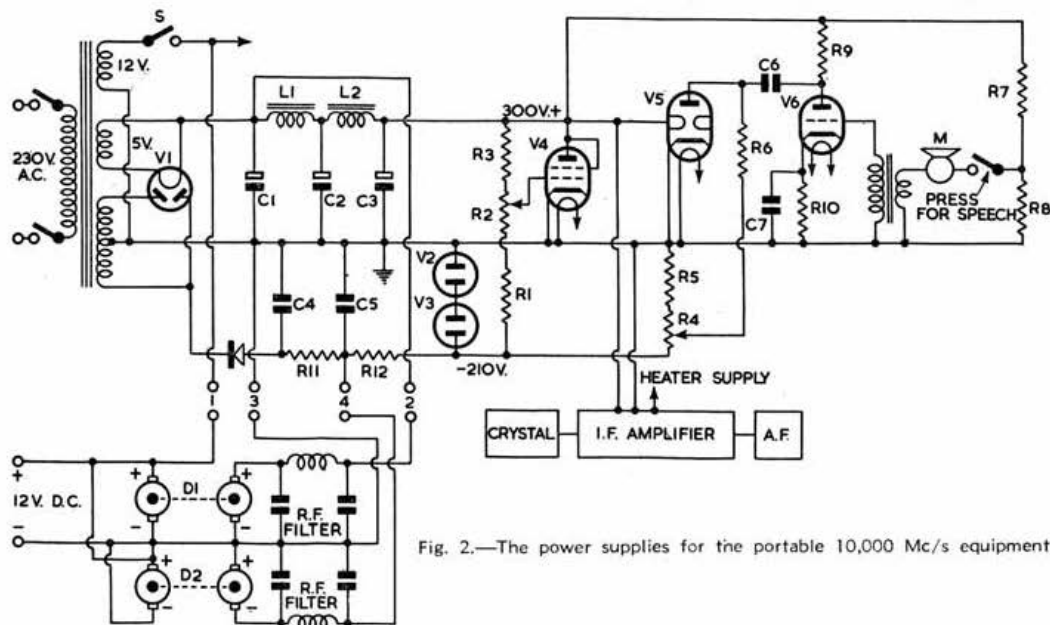


Fig. 2.—The power supplies for the portable 10,000 Mc/s equipment.

## The Test Set

The measuring devices used in early experiments were very crude. A crystal cavity and a horn aerial gave an indication of field strength and a co-axial wavemeter, with a linear scale which was extrapolated to 10,100 Mc/s, served for frequency measurement. Waveguide components employed in

(723A/B) holder and uncalibrated attenuator; (b) T junction; (c) thermistor head; (d) cavity wave-meter; (e) calibrated attenuator; (f) waveguide to co-axial cable transformer or waveguide input to the calibrated attenuator. The centre T junction, which is home-made, is the only part not available as surplus.

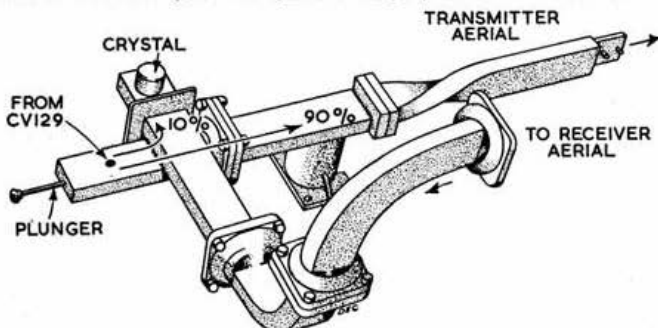


Fig. 3.

Microwave wave-guide system in which bends and twists are illustrated.

the test set now in use are shown in one of the photographs and the circuit in Fig. 5. This instrument which employs waveguide parts intended for an American test set—believed to be the TS146UP—provides the following facilities:

(a) measures frequency to within 2 Mc/s from 9285 to 10,250 Mc/s; (b) measures power from 5 to 32 db above one milliwatt; (c) generates a c.w.

## Operation

The operation of the test set when used as a power meter is as follows. Power input is fed by the co-axial cable or waveguide to the input calibrated attenuator (any attenuation in cables or other external apparatus is added to the final reading) which attenuates the input to a value suitable for application to the bridge.

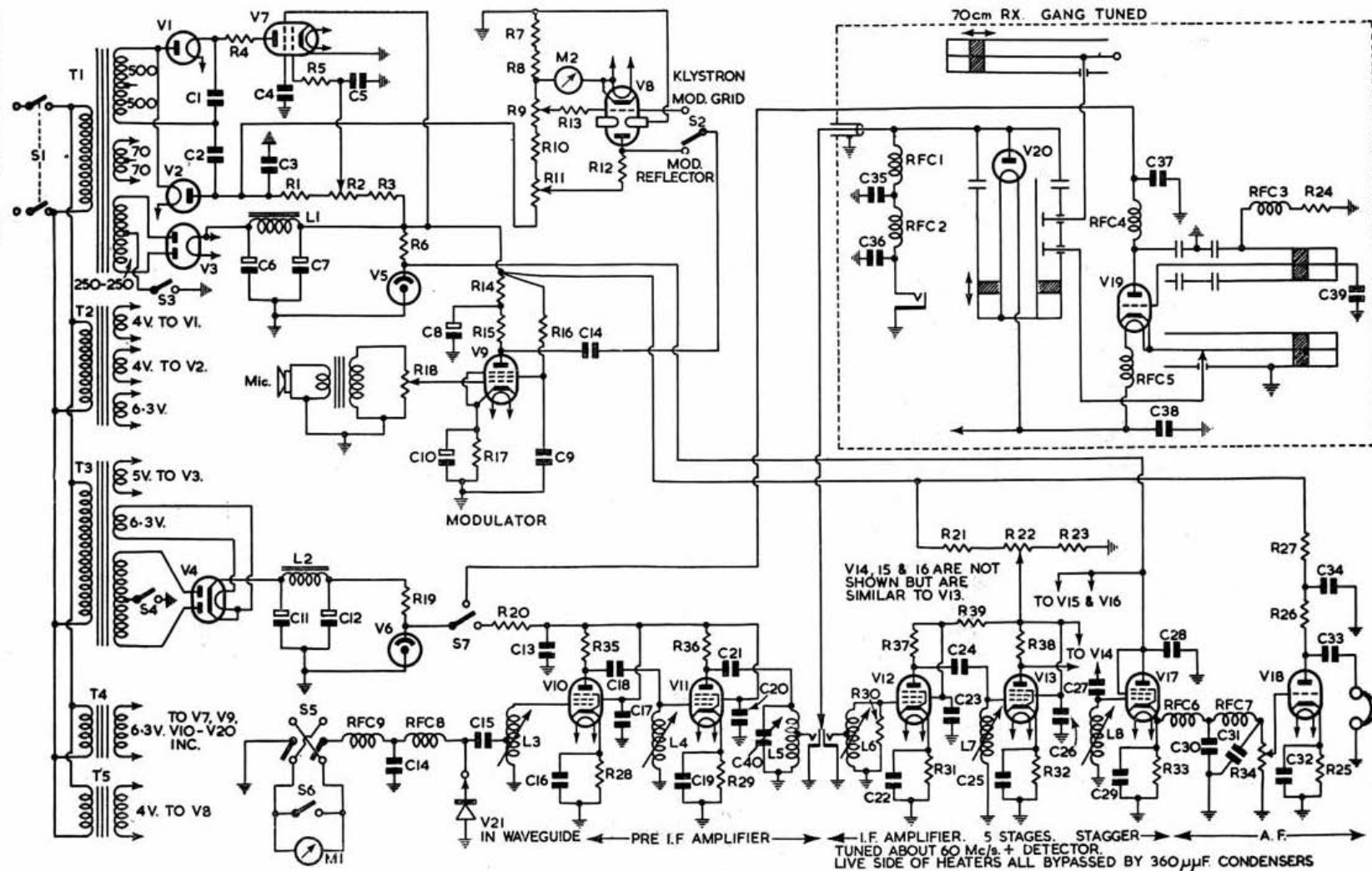
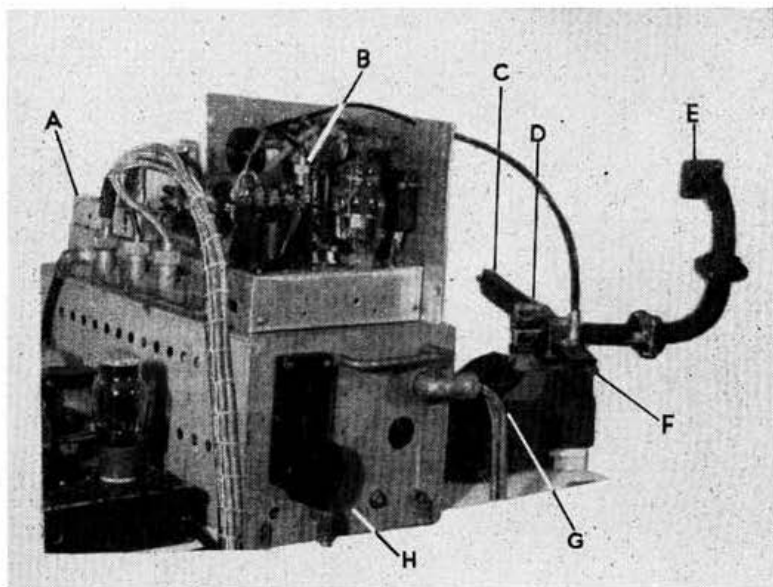


Fig. 4.—Circuit of the complete 10,000 Mc/s transmitter-receiver with 420 Mc/s "inter-com" facilities.

In the T junction the power incident on either of the two bottom arms will divide equally between the other two, providing the matching is good. In

manner. The main element A (Fig. 5) is a variable resistance element the value of which decreases with increasing temperature, so that when it is

Complete 10,000 Mc/s transmitter-receiver with 420 Mc/s "inter-com" facilities. The various items may be identified as follows:  
A, pre-amplifier; B, CV129;  
C, transmitting aerial; D, crystal; E, receiver aerial input; F, tuning plunger; G, i.f. output to pre-amplifier; H, 420 Mc/s receiver and common i.f. amplifier. The circuit is illustrated in Fig. 4, and may be used in the arrangements illustrated in Fig. 1 (ii) and (iii).



the test set, all the arms are well matched, so that the power passing the calibrated attenuator splits, half being dissipated in the uncalibrated attenuator, the other half passing up the vertical arm to the thermistor head which works in the following

placed across the waveguide an increase in temperature, caused by the dissipation of power, is used to throw a bridge circuit out of balance. The other two elements, B and C, are a refinement, but are used because they are already present in the

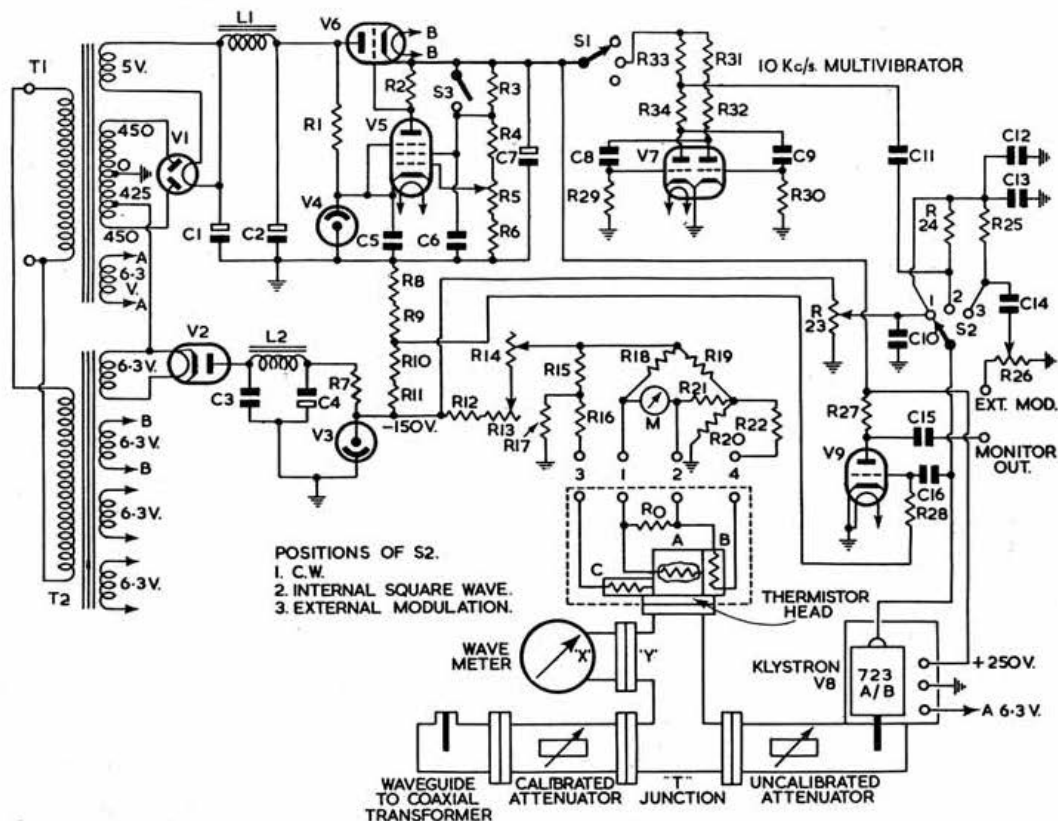


Fig. 5.—The 10,000 Mc/s test set, the uses of which are described in the text.

units. The thermistor B—a disc type as opposed to the bead type A—is used to compensate for changes in the sensitivity of the bridge; the disc type C compensates for balance drift. A more graphic description of the circuit may be found in References (1) and (2).

Course and fine controls for balancing the bridge are provided; the meter is balanced when no power is being dissipated by the thermistor. When the incident power causes a deflection of the meter, the calibrated attenuator is used to provide a reading of 150  $\mu$ A (half-scale) when  $\frac{1}{2}$  mW of power is being dissipated. In this way, the attenuator, referred to 1 mW, gives the power at the input, since the T junction divided the power by half.

When used as a signal generator the reverse action takes place. A signal, generated by the 723A/B oscillator and controlled by the uncalibrated attenuator, is fed to the bridge to give a

half scale deflection on the meter. Output is then calculated and referred to db below 1 mW as read on the calibrated attenuator dial. External losses are added to give the total attenuation.

The cavity wavemeter in the side of the T junction is spaced a  $\frac{1}{4}\lambda$  in the waveguide from the vertical arm of T. When off tune, the point X (Fig. 5) is effectively a short circuit so that the point Y is also effectively short circuited. The wavemeter, therefore, has no effect on the T junction or thermistor head. However, at resonance, X is open circuited so that Y is also. A small amount of power, approximately half that flowing to the thermistor, is thereby diverted to the wavemeter, so causing a drop in the meter reading.

The two segments, 9285-9465 Mc/s, and 9900-10,100 Mc/s, are the most accurate because both the thermistor head and the distance XY are

#### Components List for Fig. 2.

C1, 2, 3	8 $\mu$ F	M	Carbon microphone	R12	1,400 ohms, 3 W
C4, 5	1 $\mu$ F	R1	100,000 ohms	T1	Microphone trans-
C6	0.02 $\mu$ F	R2, 3	250,000 ohms		former
C7	10 $\mu$ F	R4, 9	50,000 ohms	V1	524
D1	Dynamotor 350 V	R6	120,000 ohms	V2, 3	VR105/30
	output	R7	150,000 ohms	V4	6V6G
D2	Dynamotor 250 V	R8	1,000 ohms	V5	723 A/B
	output	R10	1,200 ohms	V6	6J5
L1, 2	10 H chokes	R11	3,000 ohms, 5 W		

#### Components List for Fig. 4.

C1, 2	0.25 $\mu$ F, 2.5 kV	R9	15,000 ohms variable	S3	s.p.s.t. h.t. on/off
C3	0.1 $\mu$ F, 3.0 kV		(grid control)	S4	s.p.s.t.
C4, 5, 36	0.1 $\mu$ F	R10, 23, 33	10,000 ohms	S5	d.p.d.t. reverse crystal
C6, 11	4 $\mu$ F	R11	35,000 ohms	S6	s.p.s.t. short crystal
C7, 8	8 $\mu$ F	R12, 13, 15	100,000 ohms		meter
C9, 34	2 $\mu$ F	R14, 26	50,000 ohms	S7	s.p.d.t. receive
C12	16 $\mu$ F	R16	350,000 ohms		3/70 cms
C13	500 $\mu$ F	R17	500 ohms	T1	500-0-500 80 mA
C14	0.1 $\mu$ F, 2.5 kV	R18	100,000 ohms variable	T2	250-0-250 200 mA
C15, 18, 21,			(modulation control)		4 V, 1 A
24, 27	50 $\mu$ F	R19	7,000 ohms, 10 W		4 V, 1 A
C16, 17, 19,		R20, 39	100 ohms		6.3 V, 1 A, 3kV wkg.
20, 22, 23,		R21	5,000 ohms, 5 W	T3	350-0-350 V, 80 mA
25, 26, 28,		R22	20,000 ohms, 2 W		5 V, 3 A
C30, 31, 35,			variable (gain control)		6.3 V, 4 A
37, 38, 39				T4	6.3 V, 6 A
C32	50 $\mu$ F	R24	7,800 ohms	T5	4 V, 1 A, 3kV working
C29	25 $\mu$ F	R25	1,500 ohms	V1, V2	VU111
C33	1 $\mu$ F	R27	25,000 ohms	V3	5U4G
C40	2-9 $\mu$ F, variable	R28, 29, 31,		V4	6X5G
L1	20 H, 200 mA	32	330 ohms	V5, V6	VR150/30
L2	10 H, 100 mA	R34	1 megohm variable	V7	807
M1	1 mA m.c. meter		(a.f. gain)	V8	CV129
M2	25 mA m.c. meter	R35, 36, 37,		V9	6SK7
R1	700,000 ohms, 10 W	38	2,000 ohms	V10-V17	6AK5
R2	50,000 ohms variable	RFC 1, 2, 6,	Ohmite Z-O or Eddy-	V18	6J5
	(e.h.t. control)	7, 8, 9	stone v.h.f. choke	V19	9002
R3	100,000 ohms, 2 W	RFC 3, 4, 5	6 turns, 22 s.w.g., $\frac{1}{4}$ "	V20	CV58
R4, 5	47 ohms		diameter	V21	1N21, 1N23, CV111,
R6	3,300 ohms 10 W	S1	d.p.s.t. mains on/off		etc.
R7, 8	200,000 ohms, 5 W	S2	s.p.d.t. mod. refl./grid		

#### Components List for Fig 5

A	Bead type thermistor	R4	10,000 ohms	R24, 25	470,000 ohms
B	Disc type thermistor	R5	10,000 ohms, variable	R26	1 megohm, variable
C	Disc type thermistor	R6, 29	5,000 ohms	R27, 33	1,000 ohms
C1, 2, 4	16 $\mu$ F	R7, 12	5,000 ohms, 10 W	R28, 30	1 megohm
C3, 5, 12	2 $\mu$ F	R8, 10	4,700 ohms	R31, 32	5,000 ohms, 2 W
C6	1 $\mu$ F	R9	2,000 ohms	R34	10,000 ohms, 3 W
C7	8 $\mu$ F	R11	47,000 ohms	S1, 2	3 position, 2 wafer
C8, 10, 11, 14	0.1 $\mu$ F	R13	5,000 ohms, 10 W		(c.w.-square wave
C9	100 $\mu$ F		variable (coarse		modulation-external
C13	500 $\mu$ F		balance)		modulation selector
C15, 16	0.01 $\mu$ F	R14	2,000 ohms, 5 W		switch; shown in
L1	20 H, 200 mA		variable (fine		c.w. position)
L2	15 H, 80 mA		balance)	V1	5U4G
M	0-150 $\mu$ A or 0-200 $\mu$ A	R15	39 ohms	V2	6Z4/84
	m.c. meter	R16	36 ohms	V3	VR150/30
	Resistance near to 68	R17	470 ohms	V4	V570
	ohms	R17, 18, 19,	250 ohms, $\frac{1}{2}$ W, 1%	V5	6J7G
R	75 ohms $\pm$ 1 ohm	20, 21	tolerance	V6	4033A
R1	500,000 ohms	R22	20 ohms	V7, 9	6SN7
R2	250,000 ohms	R23	250,000 ohms, variable	V8	723A/B
R3	15,000 ohms		(reflector)		

critical regarding frequency response. Two thermistor mounts and T junctions are used, one tuned to the original band the other retuned to the edge of the amateur band. The bandwidths of the other components and the attenuators appear to be adequate to cover the whole frequency range of the test set. The attenuators are sections of waveguide in which pieces of resistive material

activities which have appeared from time to time in the R.S.G.B. BULLETIN, the following have intimated that they are interested in microwave work: G3LZ (Glazebrook), G3FDU (Alderley Edge), G3ETI (The Wirral), G3BTV (Oxford), G3ECA (Ilford), G3GOP (Southampton), G3GFD (Bradford), G3HWG (Ilford), B.R.S. 2036 (Brentwood) and Aubrey Hickman (Northern Ireland).

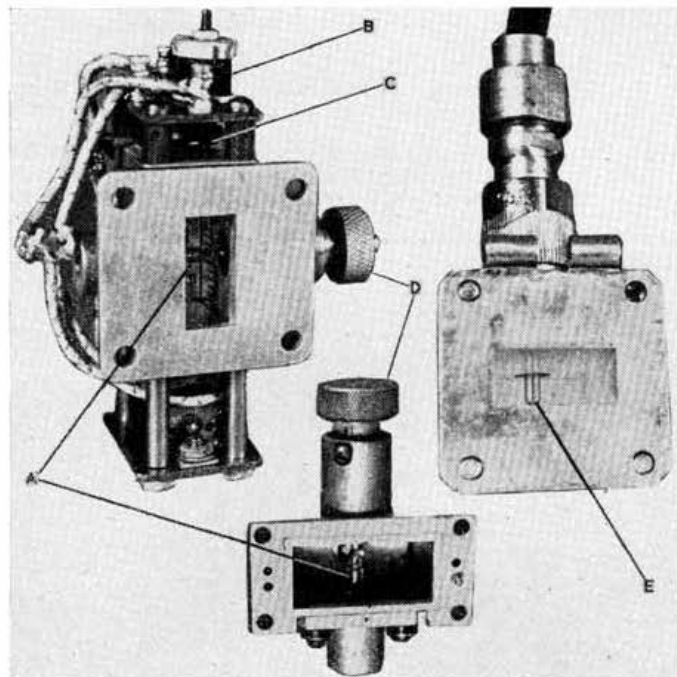
The descriptions and circuits which have appeared in these articles have been based on the data anyone unfamiliar with operation on 10,000 Mc/s would require in order to commence. The author will be pleased to help with the calibration of wave-meters, modification of valves and equipment, etc.

#### Acknowledgements

Thanks are expressed to F. W. D. Rouse (G3LZ) for his painstaking co-operation in the many tests of the equipment described.

#### References

- (1) *The Principles and Practice of Waveguides*, Huxley. Cambridge University Press.
- (2) *Techniques of Microwave Measurements*, Radiation Labs. Series, Vol. II.



Test set components. Left: Thermistor head used in the test set described in this article. Right: Waveguide - to - co-axial transformer showing the  $\frac{1}{4}\lambda$  aerial. Lower centre: A simpler form of thermistor head. A, bead thermistors; B, meter shunt; C, disc thermistor; D, tuning for thermistors; E, aerial.

are moved from the side to centre when the power "set" and "attenuator" knobs are rotated. The field is maximum at the centre of the waveguide so that the dissipated power increases as the resistive material (platinised glass) is moved towards it.

The other components form the multivibrator circuit (V7) which is used to square-wave modulate the klystron (V8). The test set is used with auxiliary equipment in this service to measure standing wave ratios and as a signal source when tuning up. External modulation may also be used and monitoring facilities are provided.

#### Conclusion

As the result of references to the author's s.h.f.

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# Low Pass Filters for T.V.I. Reduction

## A Simple Approach to Filter Design for the Amateur

With the B.B.C. television network now virtually nation wide, and the possibility of low power commercial stations being set up in more than 50 cities, the prevention of TVI becomes ever more necessary. In this article, the author explains, in simple language, the design and construction of low-pass filters which, if suitably employed, prevent the radiation of signals in the bands allocated to television.

IT is well known in Amateur Radio circles that the radiation of harmonics from stations operating on frequencies below 30 Mc/s is one of the main causes of TVI. Not so well known is the fact that the problem becomes easier of solution once the radiation of harmonics from

a number of basic sections. These are designed to have a characteristic impedance equal to that of the transmission line, so that any number can be connected in series without affecting the matching.

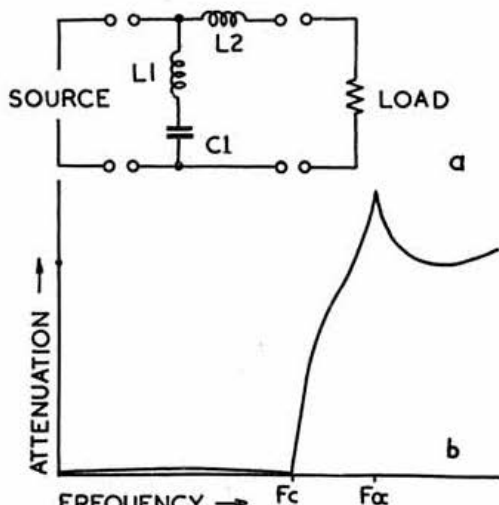


Fig. 1.—Basic filter section and response curve.

the transmitter itself has been effectively suppressed. The insertion of a properly designed low-pass filter in the aerial feeder will effectively prevent undesired harmonics reaching the transmitting aerial. A suitable filter was described by R. L. Varney (G5RV) in the June, 1952, issue of the R.S.G.B. BULLETIN.

The purpose of this article is to indicate the principles involved in the design of such filters and to suggest how they may be built to meet particular requirements.

### Introduction

The normal type of low-pass filter is made up of

\*28a Glebe Road, Letchworth, Herts.

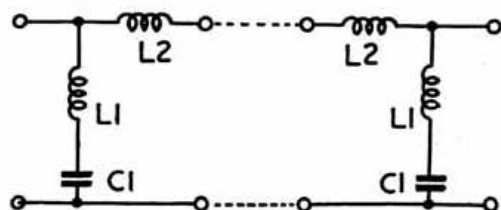


Fig. 2.  
Symmetrical arrangement of the basic filter section.

### Possible Designs

The basic filter section most useful for amateur purposes is illustrated in Fig. 1a. Fig. 1b shows

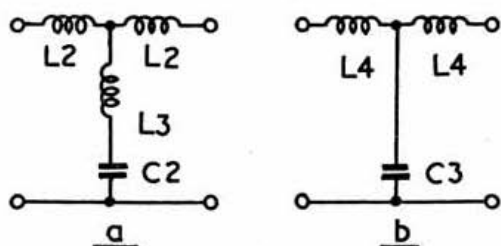
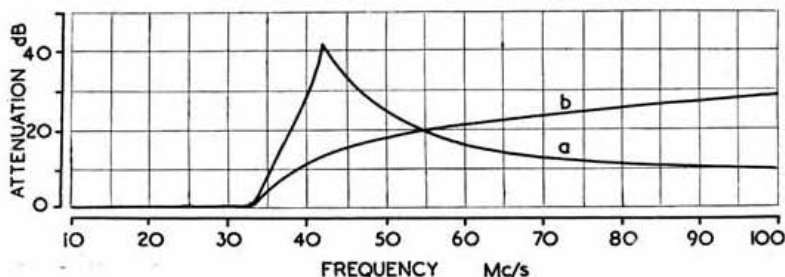


Fig. 4.  
Alternative intermediate filter sections

the type of frequency response obtained. The cut-off frequency ( $F_c$ ) is the point below which there is negligible attenuation.  $F_{cc}$  is the frequency of maximum attenuation and it is here that  $L_1$  and  $C_1$  resonate, forming a short circuit across the line. The best impedance match is obtained when  $F_c$  is  $0.8 \times F_{cc}$ . If the lowest television frequency, i.e. 41.5 Mc/s, is chosen for  $F_{cc}$ ,  $F_c$  becomes 33.2 Mc/s which is sufficiently greater than 28 Mc/s to prevent any appreciable attenuation in that band.

Fig. 3.  
Response curves of (a) simple filter, (b) two end sections with intermediate section of Fig. 4(b).



The filter section shown in Fig. 1 can be connected the reverse way round, in fact it is common practice to insert one of these sections at each end of the complete filter in a symmetrical arrangement such as that shown in Fig. 2. Indeed, if a simple filter is required, the two end sections can be connected together without any intermediate sections. Curve "a" in Fig. 3 shows the

curve of two end sections (Fig. 2) with one intermediate section (Fig. 4a), would be like that shown in Fig. 5 (curve "a") with one Fig. 4(b) intermediate section like Fig. 5 (curve "b") and with two Fig. 4(b) intermediate sections like Fig. 5 (curve "c").

### Calculation of L and C Values

Curves for determining the values of inductance and capacitance required for matching into an impedance of 72 ohms are given in Figs. 6 and 7 respectively. Other impedance values can be found from the following formulae:—

$$L1 = \frac{0.17 \times Z}{F_c} \quad C1 = \frac{96000}{Z \times F_c}$$

$$L2 = 0.57 \times L1 \quad C2 = 2C1$$

$$L3 = \frac{1}{2}L1 \quad C3 = 3.3C1$$

$$L4 = 0.95 \times L1$$

where  $Z$  is the impedance of the feeder in ohms;  $C$  is in  $\mu F$ ;  $L$  is in  $\mu H$ ;  $F_c$  is in Mc/s and  $F_c = 0.8 \times FOC$ .

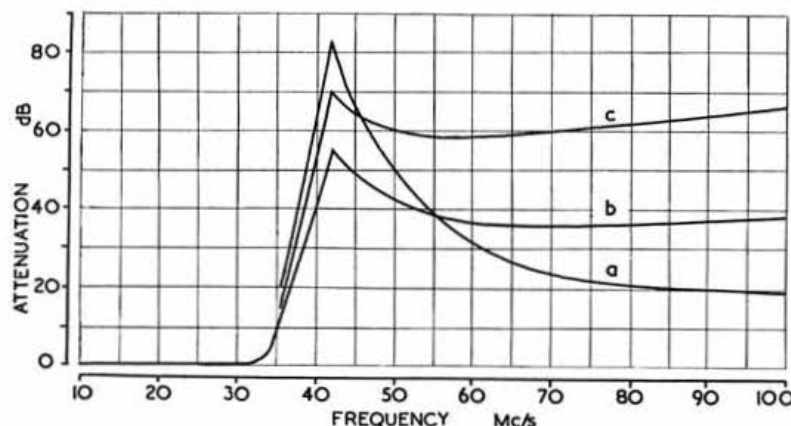


Fig. 5.—Response curves of composite filters.

frequency response which may then be expected,  $FOC$  being taken as 42 Mc/s and  $F_c$  as 33.6 Mc/s. The actual attenuation obtained at 42 Mc/s will depend on the  $Q$  of the tuned circuits ( $L1C1$ ) but will normally be about 40 db.

Intermediate sections as shown in Fig. 4, may be inserted between the two sections illustrated in Fig. 2, to produce more elaborate filters. That in 4(a) really consists of two sections of the Fig. 2 type, connected back to back. The frequency response of this section will be the same as for the two end sections. The intermediate section of Fig. 4(b) starts attenuating at  $F_c$ , but instead of having a peak in its response curve, becomes more effective as the frequency increases. Curve "b" in Fig. 3 shows the response to be expected in practice from this type of section.

Although any number of intermediate sections mixed in various combinations may be used, every section in the filter must be designed for the same cut-off frequency.

The response curve of a complete filter may be predicted by adding together the curves of the individual sections. For example, the response

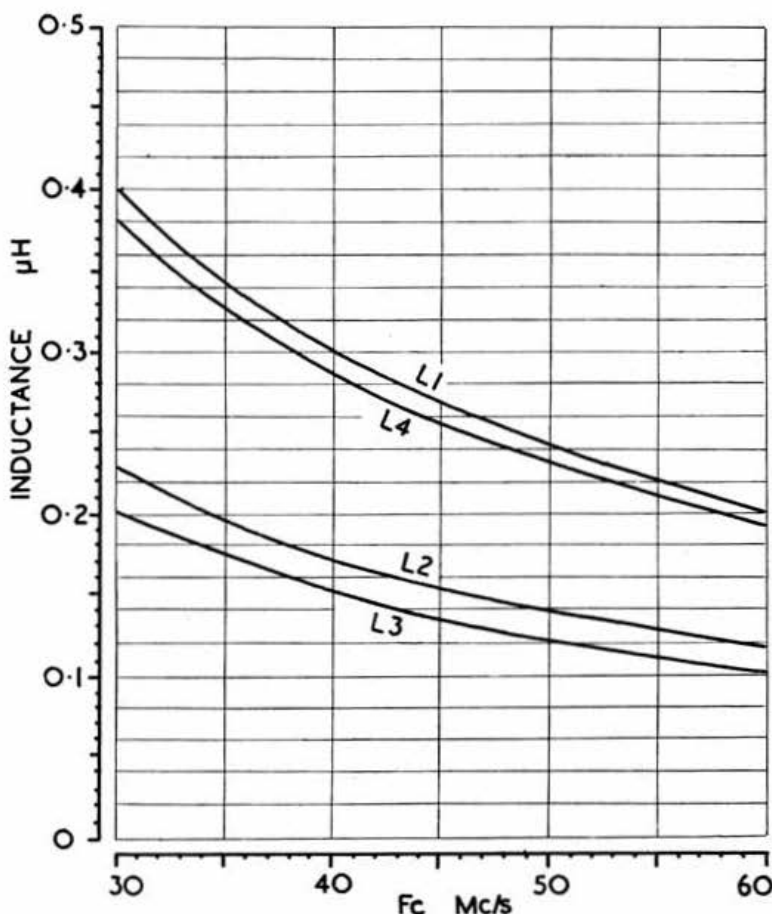


Fig. 6.—Curve for determining the value of inductance.



### A Design Example

To make the design procedure clear, consider the filter in Fig. 8. This is to be used in the Wenloe area and is to have its maximum attenuation at 63.25 Mc/s, the primary aim being to

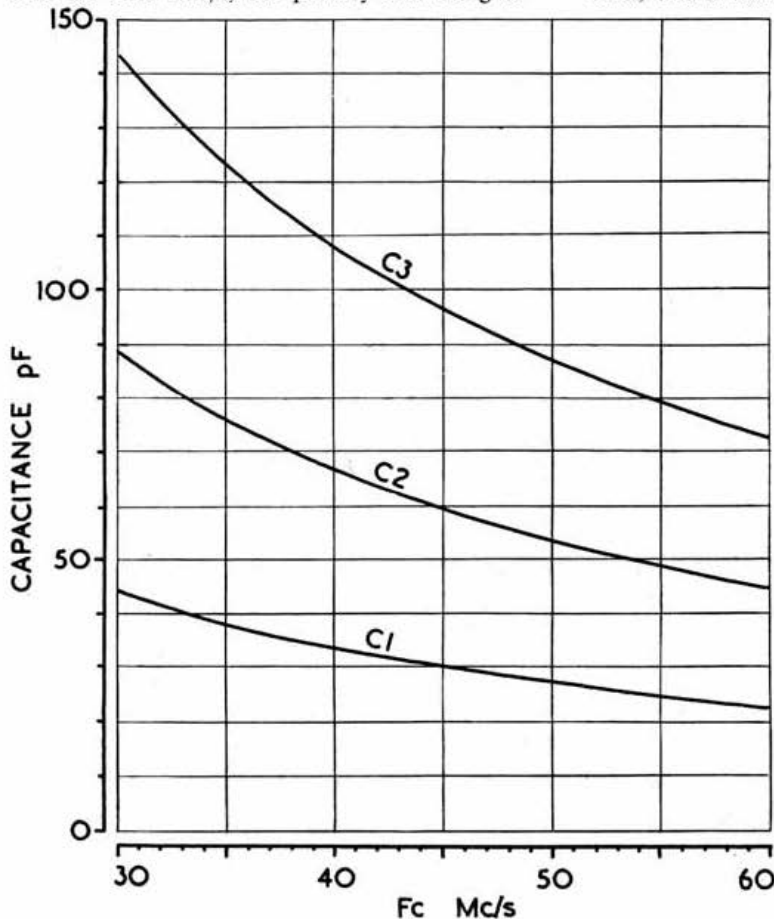


Fig. 7.—Curve for determining the value of capacitance.

stop interference to TV sound by the third harmonic from a 21 Mc/s transmitter.

As  $F_{CC} = 63.25$  Mc/s,  $F_c = 0.8 \times 63.25$  Mc/s = 50.6 Mc/s.

Now from Fig. 6,  $L1 = 0.24 \mu H$ ,  $L2 = 0.14 \mu H$  and  $L4 = 0.23 \mu H$ ; from Fig. 7,  $C1 = 26 pF$  and  $C3 = 85 pF$ .

The circuit may now be simplified to that of Fig. 9, from which it will be seen that wherever two inductances appeared in series in Fig. 8 there is now only one whose value is the sum of the original two.

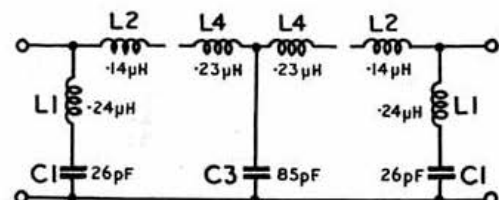


Fig. 8.—An example of filter design for use in the Wenloe service area.

### Practical Considerations

If the filter is to operate properly care must be taken with the mechanical construction. For example, there should be no coupling between coils; this is normally achieved by placing each section in a separate screened compartment. Ideally, each coil should be separately screened, but it is permissible to place two in one compartment if they are at right angles to one another. The dotted lines in Fig. 9 show one way of dividing up the sections.

If self-supporting coils are used they can be wired directly to the capacitors and the input and output sockets. This reduces any stray inductance which may cause unwanted coupling from one section to another and also helps to keep the inductance close to the calculated value. Coils should not be placed too close to the screens because by doing so both their inductance and Q factor will be lowered.

When estimating the dimensions of a coil some allowance should be made for the stray inductance of the wiring. With a fairly compact layout, this may be about  $0.05 \mu H$ . Thus, in the example illustrated in Figs. 8 and 9,  $L1$  is designed to have an inductance of only  $0.19 \mu H$  instead of the calculated value of  $0.24 \mu H$  and  $L2 + L4$  to be  $0.32 \mu H$  instead of  $0.37 \mu H$ . The winding data for the coils is then obtained from Fig. 10:—

- |           |   |
|-----------|---|
| $L1$      | 5 turns spaced to a length of $\frac{1}{4}$ in. |
| $L2 + L4$ | 7 turns spaced to a length of 1 in.             |

The capacitors may be silver mica or ceramicon types, but it is preferable to use small receiver type air spaced variables so that the rejection circuits  $L1C1$  and  $L4C2$  may be peaked accurately to  $F_{CC}$ . In the case of the intermediate section shown in Fig. 4(b), there is no sharp rejection point and the use of a variable capacitor is not so important. If  $C3$  is tuned it should be adjusted for minimum rejection at  $F_c$ . The capacitors

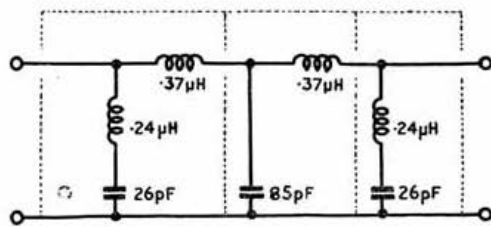


Fig. 9.—Simplified practical version of the filter design shown in Fig. 8.

should be earthed to the screening box with the shortest and stoutest wire practicable.

The lid and sides of the screening box must

## Filters for Balanced Lines

Fig. 11 shows how the filter of Fig. 9 can be modified for a 72 ohm balanced line instead of

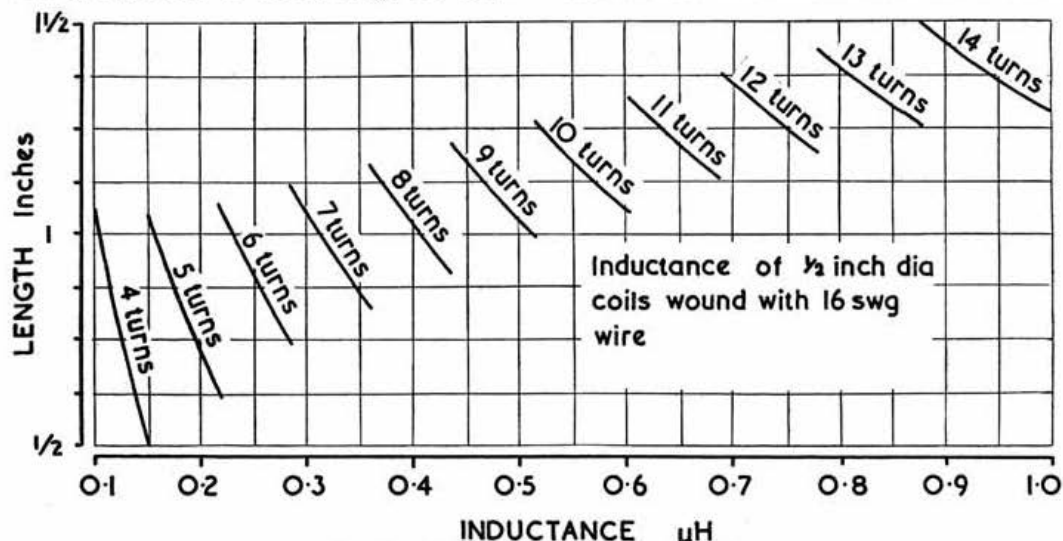


Fig. 10.—Winding data for coils used in filters.

be tightly fitted or there will be r.f. leakage from one section to another. A generous number of fixing screws should be used or alternatively the partitions could be soldered in position.

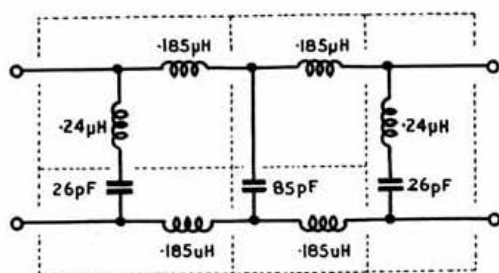


Fig. 11.—Filter for use in balanced filter

a co-axial one. It will be seen that the horizontally drawn inductances have been split in two and one half placed in each line. It should be particularly noted that the capacitors cannot be earthed. In fact, only the screening box, which now requires more compartments, may be earthed.

Because of these complications, it is preferable to have a co-axial output from the transmitter, taking this to an aerial tuning unit which matches to a balanced feeder.

\* \* \*

The filter sections described in this article are not the only ones possible, but they are probably the most economical in components and most useful for amateur purposes. There are several text-books<sup>(1)</sup> which deal very thoroughly with filter design, the study of which will enable other filter configurations to be devised.

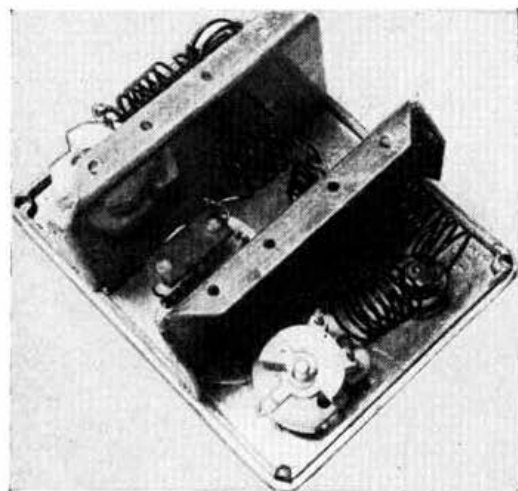
## Reference

- (1) Shea: *Transmission Networks and Wave Filters*, D. Van Nostrand, New York.
- Terman: *Radio Engineers' Handbook*, McGraw-Hill.

## "British Radio and Television"

THE current (May) issue of *British Radio and Television* (Edited by D. McIlwain, formerly Assistant Editor, R.S.G.B.) contains an article on R.F. Interference Suppression Filters for Television Reception. The author is Louis Varney, A.M.I.E.E. (G5RV). Various types of interference are analysed and design data and constructional details for practical interference suppression filters suitable for domestic television receivers are given.

The publishers of *British Radio and Television* (which is a trade paper) will, on receipt of 1/3, send a copy of the current issue to any member of the Society who is engaged in the radio or television trade or industry. That fact must be stated when writing. The address of the publishers is 92 Fleet Street, London, E.C.4.



A low pass filter consisting of two end sections and a centre section of the type shown in Fig 4a. The two screens are attached to the walls and bottom of the die-cast box by self-tapping screws.

# A G8PO Aerial without any "cut and try"

By ROTH JONES (VK3BG)\*

**P**ROBABLY no aerial has aroused so much controversy during recent years as the G8PO uni-directional beam. Many amateurs have achieved remarkable results with it, while others, less successful, have finally dismantled it, convinced that it would never work. Difficulties encountered in practice have arisen from the fact that no ready-made formulae have been available to assist in design, and the "cut and try" methods used instead often proved unsatisfactory (quite apart from the waste of time and of twin-feeder involved). The writer claims that the version of the G8PO described in this article, if made and erected strictly in accordance with the simple data given, will work—without the need for "cut and try."

## Types

Since the aerial was first introduced by Lt. Cdr. E. H. Ironmonger, R.N. (ex-G8PO and VK3WU), the designs which have followed have fallen into three main categories.

- Single-wire flat-top aerial with 72-ohm coaxial-cable feed line (as used by VK3WU).
- Three-wire flat-top aerial with 300-ohm twin feeder and delay lines.
- Single-wire flat-top aerial with either 150-ohm or 72-ohm twin feeder, using  $\frac{1}{4}$ -wavelength delay lines of 150-ohm or 72-ohm twin feeder.

Each system has its own particular merits. Coaxial cable does not provide the balance experienced with twin feeder, and—apart from its expense—is more difficult to work and cut. The three-wire flat-top version is heavier and uses 300-ohm twin feeder, which is prone to moisture effects and breakage in high wind.

The type used by the writer was originally designed by H. Chapman (VK3GU), and is extremely light, remains unaffected by rain, and does not move unduly in windy weather.

## Construction

The secret of the system (Fig. 1) is the aerial loading coil and condenser, which allow the whole aerial to be tuned, thus ensuring the correct disposition of standing-waves. It is assumed that the centre impedance of the two dipoles spaced

$\frac{1}{4}$ -wavelength apart is about 40 ohms. If the feeders are an even number of quarter-waves in length (less the velocity factor), then the impedance at their ends will be 40 ohms, irrespective of the overall transmission line impedance. To match this, two separate  $\frac{1}{4}$ -wavelength sections of twin feeder (one 72-ohm, the other 150 ohm) are connected in parallel, forming a delay line having an impedance of about 40 ohms.

A  $\frac{1}{4}$ -wavelength of 300-ohm lead is then taken from either of the feeder and delay-line junctions (depending on the direction in which the aerial is firing). This forms a step-up transformer raising the impedance from 20 ohms (the 40 ohms at the end of the lead-in and the 40-ohm delay line being in parallel) to about 4,500 ohms. The other end of the 300-ohm feeder is connected directly across the ends of the tuned circuit, the tap for loading being taken one turn either side of the centre. To secure balance, the centre of the coil should be earthed; alternatively, if a split-stator condenser is used, then its rotor can be earthed.

## Operation

Tuning is simple and quick, provided two hands are used. The coupling-coil condenser is tuned for maximum current, and the p.a. tuning condenser for minimum. The former will tune more sharply if the system is working satisfactorily. Eventually a point will be found where the current maximum will coincide with the current minimum during tuning, and this is the correct adjustment. Light coupling will suffice for maximum input.

The switching system employed by the writer consists of two two-pin sockets connected to the junctions of the down-feed lines and delay sections, with a plug on the 300-ohm  $\frac{1}{4}$ -wave transformer. To reverse the direction of the beam, the plug on the 300-ohm  $\frac{1}{4}$ -wavelength feeder is switched from one socket to the other.

In this way, the whole aerial system can be quickly switched, or, with two more connectors, used as a single-section W8JK by discarding the delay lines and connecting the feed-lines together after twisting one of them through 180 degrees.

## Results

During the period of operation, in spite of poor and erratic conditions, sufficient DX has been worked to convince the writer that the G8PO beam provides a gain of two S-points over an efficient long-wire (which has worked more than its share of DX during the past few years).

The aerial was cut for 14075 kc/s, allowing band-edge working for c.w. and phone between 14100 and 14150 kc/s, and was directed at Europe, where most stations reported signal strength as above average.

## V.H.F. Equipment

The Editor will be pleased to consider for publication, photographs and descriptions of V.H.F. Equipment.

Write to Headquarters for a copy of "Hints to Contributors."

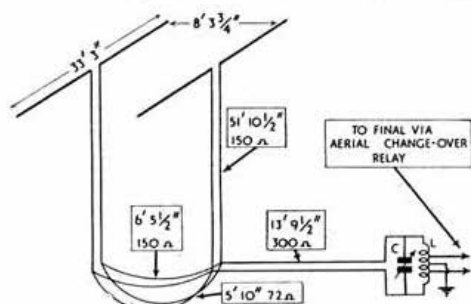


Fig. 1.

Layout diagram of the G8PO uni-directional beam. C=100pF variable; L=10 turns, 2" diam., self-supporting. Dimensions quoted are for a frequency of 14,075 kc/s. Velocity factors: 300-ohm feeder=0.83; 150-ohm feeder=0.78; 72-ohm feeder=0.7.

\* 52 Panoramic Road, North Balwyn, E.9, Victoria.

# A Modulation Monitor

By T. R. SMITH (G3BMN)\*

MODULATION can be monitored in several ways, the method adopted depending upon individual requirements and the equipment available. At G3BMN a visual monitor, using a cathode-ray tube, was required, and so the apparatus to be described was evolved. Though using a minimum of components, it is capable of excellent results.

## The Time Base

The usual method of connecting a cathode-ray tube to a transmitter for checking modulation is to feed a portion of the modulating voltage and the modulated r.f. voltage to the X and Y plates respectively; this arrangement gives the familiar trapezoid trace. This system was not favoured, however, since the monitor was also required to check the modulation pattern of incoming signals. A time-base circuit had, therefore, to be included, and a suitable scanning waveform was achieved without the use of an additional valve.

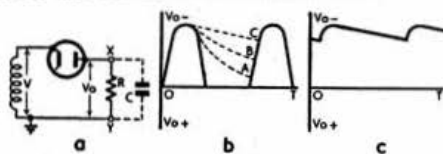


Fig. 1.

(a) Half-wave rectifier circuit; (b) rectified d.c. voltage waveform across R; (c) linear saw-tooth waveform obtained by suitable choice of C.

When observing speech waveforms on an oscilloscope, low time-base speed is desirable. A suitable scanning frequency is readily available from the a.c. mains supply, the necessary saw-tooth voltage being obtained in the following manner.

The circuit, illustrated in Fig. 1a, shows a half-wave rectifier working with an input derived from the a.c. mains. The waveform of the voltage output developed across the load resistance R is represented by the full line in Fig. 1b. If a condenser C is connected across the load resistance (points X and Y), the waveform becomes that indicated by the dotted lines A, B and C. Line A results from a small condenser, and B and C from progressively larger condensers. By selecting a condenser of suitable capacity, the voltage gradient between the rectified peaks can be made almost linear. The resulting waveform is a saw-tooth with a repetition rate of 50 c/s, having a linearity that is adequate for the purpose required (Fig. 1c).

## Circuit Details

The complete circuit of the time base is illustrated in Fig. 2. The 500V a.c. supply is rectified by the 5Z4GT,† one anode providing h.t. for the cathode-ray tube, and the other supplying the time-base voltage. Adequate smoothing is provided by the 1μF condenser C3. Brilliance and focus controls are omitted, as no adjustment should be necessary, the resistor chain R4, 5, 6 and 7 being made up to supply the correct electrode voltages.

\* 89 Yarnsgate Road, King's Heath, Birmingham 11.

† The author has also used an EB34 (VR54) double diode as rectifier, operating without trouble at the maximum voltage rating quoted by the makers. The EB34 is slightly smaller, and passes appreciably less heater current than the 5Z4GT.

The resistance-capacitance combination C1, R1, from which the saw-tooth scanning voltage is obtained, is connected to the second anode of the 5Z4GT, the output being applied via a d.c. blocking condenser C2 to one X-plate of the cathode-ray tube. The modulated r.f. signal from the transmitter is applied via the 0.1μF condenser C4 to one of the Y-plates, the remaining X and Y plates being connected to anode 3 of the c.r.t. The circuit will operate satisfactorily with condensers and resistors of the normal 20 per cent. tolerance.

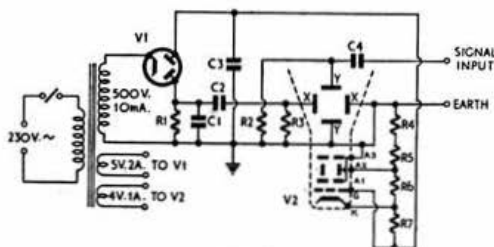


Fig. 2.

Circuit of the Modulation Monitor

C1, 2: 0.1 μF, 750 V; C3: 1 μF, 1,000 V; C4: 0.1 μF, 500 V; R1: 1 MΩ, 1 W; R2, 3, 4: 2 MΩ, ½ W; R5: 680 kΩ, ½ W; R6: 500 kΩ, ½ W; R7: 10 kΩ, ½ W; V1: 5Z4GT/G; V2: VCR139A.

At G3BMN the monitor is fed from the coaxial lead connecting the transmitter tank coil to the aerial coupler. With an input of five watts to the p.a. on 160 metres, a trace of ample dimensions is easily obtained. Where higher power is used, an attenuator should be inserted in the signal input lead to the monitor to limit the size of the trace.

For monitoring incoming signals, an isolating-amplifying stage should be connected between the monitor input and the final i.f. stage of the receiver.

## Versatile Loudspeaker Unit

A SMALL loudspeaker may be wired up as shown in Fig. 1 to provide a number of useful facilities. The six position switch enables the unit to be used as a low impedance speaker (position 1); to provide for the use of high resistance headphones from the low impedance output of a receiver (position 2); as a high impedance speaker (position 3); to supply a "hoot" calling note (position 4); as a microphone with a "press to talk" switch (position 6). Position 5 is the "off" or muted position.

The speaker and other components may be conveniently mounted in a small cabinet, which should preferably be lined with material such as kapok to deaden undesirable resonances. —B.R.S.12480.

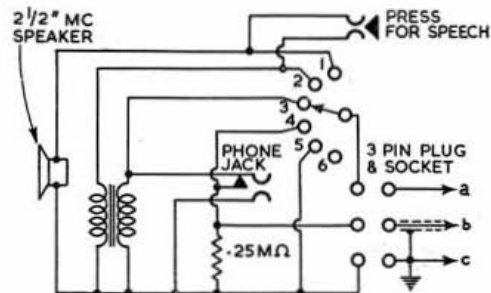


Fig. 1.—Terminals "a" and "c"—input. Terminal "b"—to grid of a.f. valve.



# Components Exhibition

AS might have been expected, the national newspapers made headline news of the gold-plated components exhibited at the Tenth Annual Radio Components Show, organised by the Radio and Electronic Component Manufacturers' Federation, held at Grosvenor House, London, from April 14 to 16, 1953. Not all the exhibits were perhaps so spectacular but nevertheless this great display of British products was of interest to all who are concerned with the construction of radio and electronic apparatus. It is unfortunate that the show is open only to those in the radio industry, because there is no doubt that it would attract many thousands whose interest is solely amateur. Perhaps, in future years, some way may be found to admit, on a particular day possibly, *bona fide* members of recognised radio societies. Strangely enough, acknowledgment was made in the early years of the industry as a result of the great demand for components from amateurs.

## A Review of the Stands

Practically every type of component, ranging from carbon resistors to the latest microwave parts, was exhibited on one or more of the 120 stands.

The Ministry of Supply exhibit attracted much well deserved attention with a display of miniature parts. AB Metal Products, Ltd., showed *Clarostat* controls and resistors which are now made in England, and the AB range of switches, including miniature types. Advance Components, AVO, Dawe, Marconi Instruments, Pye, and Taylor displayed test equipment.

The solder manufacturers were represented by Enthoven Solders who made a feature of *Superspeed* and *Actol*, and by Multicore Solders, who were exhibiting, in addition to their well-known cored solders, a new solder tape which makes a perfect joint with the heat of only a match. Henley's Telegraph Works exhibited an item of particular interest to the amateur: the new *Solon* instrument-type soldering iron.

Television aerials and fittings were shown by Aerialite, Antiference, Wolsey and Belling-Lee. The latter firm also introduced the "Minitrip" a cheap and simple cut-out designed for radio and television receiver circuit protection and similar applications. Components with gold-plated contacts and a new mast-head amplifier were also displayed.

## Multi-Channel Tuning Units for Television

Although their stand was primarily devoted to a display of beautifully made *Cyldon* condensers, Sidney S. Bird and Co., Ltd., caused some surprise by exhibiting the first British 5 and 12 channel tuning units for television.

Small components—control knobs, warning lights, microswitches, plugs and sockets, etc.—were to be seen on the Bulgin stand, while a large selection of *Cinch* radio and electronic components, including tag strips and dial accessories, were shown by the Carr Fastener Co., Ltd.

Fixed condensers were exhibited by Daly, Dubilier, Erie, Mycalex, Wego, Stability Radio, Suflex, and Hunts, who also showed printed circuits—one for a speech amplifier. T.C.C. introduced tantalum electrolytic condensers (developed for highly specialised miniature equipments), metallised polystyrene condensers intended for use in tuned filters, the new "Super Metalmit" and "Super Metalpack" types which are now impregnated with "Visconol X" and a series of sub-

miniature electrolytics reputed to be the smallest condensers of this type ever made.

Transradio showed precision co-axial plugs and sockets, in addition to the new *Microdual* two-speed precision drives. It is claimed that these dials are entirely free from backlash. The same company produces air-insulated articulated ultra-low attenuation transmission lines in several power ratings.

Magnetic Devices, Ltd., exhibited an interesting co-axial changeover relay. The *Ledex* range of rotary solenoids and circuit selectors were shown by N.S.F. Ever-Ready featured the *Mallory* mercury battery which is now being produced in the U.K.

## New Valve Types

Mullard, Ltd., displayed magnetic materials and components and a new series of miniature valves with 25mA filaments. Two sub-miniature types which take only 10mA were also shown.

Brimar featured their *Trustworthy Range* of long life valves and Osram their "Q" series of special service types.

A useful addition to the products of McMurdo Instruments was a socket which will accommodate crystals with both  $\frac{1}{2}$  in. and  $\frac{1}{4}$  in. pins. The wide range of moulded valveholders made by this firm was most attractively displayed.

Jackson Bros. showed many types of variable capacitor and associated scales and drives. New stand-off insulators were also exhibited. Hellermann, Ltd., showed a new one-piece fixing strap and stud for securing and wrapping cables. Evidence of the current interest in recording was to be seen on the B.S.R., Truvox and Wright & Weare stands.

Although emphasis is mainly on those cables particularly suitable for television use, the range of feeders now made by such firms as Aerialite, Antiference, Belling-Lee, Permanoid, Telcon and Transradio, is very comprehensive.

## The Amateur Market

It is impossible in this brief review to mention all the items which caught the eye of the enthusiastic amateur who was lucky enough to visit this remarkably comprehensive exhibition. One question will inevitably arise: what chance has the amateur of obtaining supplies? From conversations with representatives of many of the exhibitors, the impression was gained that manufacturers are no longer *entirely* disinterested in the amateur and home-constructor's market. Several unhesitatingly stated that all their products could be readily obtained through retail channels. It must also be remembered that many of the more interesting exhibits are designed for use in the expanding television market. They must, therefore, become available as spares for replacement purposes if in no other way.

## Telling the World

AN example of the right kind of publicity for Amateur Radio appeared recently in the *Surrey Advertiser* which devoted more than half a page to an illustrated article in simple language explaining what Amateur Radio is. Mention was made of the high technical standard required; of the R.S.G.B. and its Royal Patron, H.R.H. the Duke of Edinburgh, and of the service amateurs render in times of war and emergency. The article stressed that the hobby is a serious one. The Guildford and Woking Group is to be congratulated on securing such an excellent Press notice.

## Amateur Television Topics

By M. Barlow (G3CVO)\*

ONE of the greatest stimulants to Amateur TV research in the U.K. so far is the news that an almost unlimited number of highly sensitive vidicon-type camera tubes are to be made available at a very reasonable price by an English firm. These tubes have been rejected for minor faults, but are nevertheless very satisfactory for amateur use. Using simple equipment, the results are much superior to those obtained from the R.C.A. 5527. This means that there is no longer any brake on the construction of television cameras. Already, 10 English tubes are on order and no doubt more will be purchased when results become known.

### Notes and News

Members in the Hereford-Gloucester-Bristol area interested in Amateur TV or 420 Mc/s transmissions are invited to contact C. G. Dixon, 23 Wye Street, Ross-on-Wye. The display of partially completed colour TV equipment at Ross-on-Wye Hobbies Exhibition aroused considerable interest.

The Romford group has its plans for Dagenham Town Fair well under way. At least two cameras will be used, in addition to telestill and possibly telecine facilities. G3AKJ, the organiser, recently purchased a complete airborne TV camera in full working order. The unit is extremely neat, light and compact, occupying about as much space as a radar indicator unit. Unfortunately, when the scans are turned right up, the edges of the mosaic can be seen, but no picture. It would seem, therefore, that the tube is no use, and as it is not a replaceable type, a new one—probably a vidicon—will have to be installed in the unit.

As the result of a paragraph in the March issue TV groups are now active in Birmingham and Derby.

### Irish Amateur TV Show

A demonstration of Amateur TV (organised by the Irish Amateur Television Society in association with the International V.H.F. Research Society) was recently held in Dublin as part of the *An Tostal* (Ireland at Home) celebrations. A considerable quantity of Amateur TV equipment was sent over from the U.K. for the occasion. As there is no public service in Eire, and reception of Holme Moss is rather erratic, the I.A.T.S. hopes that its efforts will induce the Eireann Government to accelerate its own TV plans.

### Dutch Activity

In Holland PA0ZX and the Groningen group have almost completed a rebuild of their equipment. The camera pre-amplifier is now a cascode. A portable 70 cm transmitter is being installed in a small van so that pictures can be relayed back to the main 2m transmitter whilst the vehicle is in motion. "Official" TV has still not reached Northern Holland, but amateur transmissions on 145.2 Mc/s each Sunday, from 1500 to 1700 C.E.T., continue. Reports, especially from British viewers, will be appreciated.

### London Area

G3CTS/T, the Television Society's station, at the Norwood Technical College, will soon be operating on 429 Mc/s. Both 405 and 625 lines will be used, the latter as a service to the industry.

\* Cheyne Cottage, Dukes Wood Drive, Gerrards Cross, Bucks.

The 405 line transmissions will probably be radiated in the evenings and at weekends.

G3FNL is not so active, owing to exams, but the 445 Mc/s transmitter, which is being constructed by G2FKZ, is well on the way. At G3CVO, the main pulse generator (using only seven valves) and the pulse-vision mixers are in operation. The flying spot scanner is being rebuilt by J. Adams and the 5527 camera unit by A. Sale. It is hoped to commence transmissions on 438 Mc/s during the summer, using a straight CV53 p.a. in the transmitter. The modulator is a "bootstrap" type using three EF55s; aerials so far tested with G3GDR have included a helical array and a stack of 4 three-half-wave 5° fans. The helical seems to be slightly better than the stack.

### TV DX

It may be expected that during conditions of good propagation 70 cm TV signals will be heard in various parts of the country. If you hear a 50 c/s buzz, try connecting your TV set to the mixer stage of the 420 Mc/s converter. During the recent spell of good conditions, G2WJ/T (Dunmow) could have transmitted a TV picture across the Channel but none of the Continentals had a TV receiver. Are you prepared?

### Reseau des Emetteurs Français

THE French National Amateur Radio Society—R.E.F.—has just succeeded, after long negotiation, in gaining recognition from the Minister of the Interior as a "Utilité Publique."

Under French Law, it would seem that an ordinary Society is debarred from obtaining income from sources other than subscriptions and must, perforce, finance all its activities from this source alone.

Recognition such as has now been received by R.E.F., besides making available a small amount of money from State funds, also confers the right to publish technical books for sale, the profits from which may be used for the furtherance of the organisation's aims and objects.

The term "Utilité Publique" indicates that the Minister has recognised the organisation as one whose existence is an advantage to the well-being of the State and worthy of encouragement as a matter of public policy. A number of fiscal and other advantages also accrue.

The R.S.G.B. congratulates R.E.F. on this interesting development.

### Balloon Borne Aerials

MEMBERS who intend to conduct experiments with balloon-borne aerials are reminded that Air Navigation Order 1949 (S1 1949, No. 349), Article 35 provides, *inter alia*, that a captive balloon shall not be flown at any place within the U.K. except with the permission in writing of the Ministry of Civil Aviation. Applications for permission should be addressed to the Secretary, M.C.A., Ariel House, Strand, London, W.C.2 (Telephone TERminus 3366, Extension 4016).

Applications should be made as far in advance as possible. For instance, it is not too early to apply now for permission to use balloons next winter.

### Radio Teletype

THE Southern California Radio Teletype Society, 3769 East Green Street, Pasadena 10, is now publishing an attractive 12 page monthly bulletin—RTTY. The subscription rate is \$1.80 per year. The Society hopes to publish the first RTTY Handbook in late September.

# NATIONAL FIELD DAY, 1953

## OFFICIAL LIST OF STATIONS

### REGION 1

Town or Area	Stn.	Call Sign	Location
<i>Blackpool</i> ...	A	G6LD/P†	I. Lamb, Pittfield Farm, Singleton, nr. Blackpool.
	B	G5ND/P†	H. G. Newland. Site as A station.
<i>Bury</i> ...	A	G2GA/P	T. C. Platt, Scout Camp, Ashworth Valley, Heywood, Lancs.
	B	G3BRS/P	c/o T. C. Platt. Site as A station.
<i>Chester</i> ...	A	G3HPM/P	P. Mullock, Poulton Hall, Poulton, nr. Chester.
	B	G2YS/P	J. W. Swinnerton, "Manor Croft", Christleton, nr. Chester.
<i>Darwen and Blackburn</i>	A	G2HW/P	H. Whalley, Land Adjoining Royal Hotel, Tockholes, nr. Darwen, Lancs.
	B	G4JS/P	J. Simpson. Site as A station.
<i>Liverpool</i> ...	A	G3AHD/P	c/o D. M. Bolton, Electric Supply Sports Field, Thingwall Rd., Liverpool 15.
	B	G3DVB/P	D. M. Bolton. Site as A station.
<i>Manchester (North)</i>	A	G6OM/P	I. Auchterlonie, Heaton Park, Prestwich, nr. Manchester.
	B	G3RP/P	R. Denham. Site as A station.
<i>Preston</i> ...	A	G3IQC/P	F. Clark, Fishwich Hall Golf Club, Mornington Road, Preston, Lancs.
<i>Stockport</i> ...	A	G3LX/P	H. Arnfield, The Quarry, Ridge End, Marple.
	B	G3A00/P	D. J. Birch, Golden Springs Farm, Harrop Edge, Mottram, nr. Stalybridge, Cheshire.
<i>Southport and Formby</i>	A	G3EFA/P	T. F. Wareing, 150 Liverpool Road, Birkdale, Southport.
	B	G2ART/P	F. H. P. Cawson. Site as A station.
<i>Warrington and District</i>	A	G3CKR/P	Rear of Davyhulme Cottage, Lower Whitley, Cheshire.
	B	G8TR/P	S. Allen. Site as A station.
<i>West Cumberland</i>	A	G3DNI/P†	G. Wise, Tarn Flatt Farm, St. Bees, Cumberland.
	B	G3BJD/P†	J. Caldbrook. Site as A station.
<i>Westmorland</i> ...	A	G3HMR/P	G. B. Moser, Little Borwick Fold, Crook, nr. Kendal, Westmorland.
<i>Wirral</i> ...	A	G2AMV/P†	B. O'Brien, Manor Farm, Noctorum, Birkenhead.
	B	G8BM/P†	J. Wild, Site as A station.

### REGION 2

<i>Barnsley and District</i>	A	G4JJ/P	J. A. Ward, Pooh Hill, Denby Dale, nr. Huddersfield.
	B	G5IV/P	C. T. Malkin, Keresforth Hill Farm, Broadway, Barnsley.
<i>Bradford</i> ...	A	G6KU/P	C. A. Sharp, Croft Rd., Crossflats, Bingley, Yorks.
	B	G4GJ/P	J. H. Macdonald, The Quarry, Morton Lane, Morton, nr. Bingley.

### REGION 2—continued

<i>Cleckheaton</i> ...	A	G6PL/P	F. Popplewell, Grounds of 40 Dale Lane, Heckmondwike, Yorks.
	B	G3FQH/P	J. Clegg. Site as A station.
<i>Co. Durham and South Shields*</i> (1)	A	G6VG/P	T. L. Peterson, Simon-side Hall, Newcastle Road, South Shields.
<i>Hexham</i> ...	A	G4LA/P†	J. G. Wardhaugh, "Burntridge", nr. Whitley Chapel, Hexham.
	B	G5RI/P†	F. J. U. Ritson. Site as A station.
<i>Hull</i> ...	A	G2CNX/P†	A. Beautement, Field adjoining Flagstaff House, Welwick.
	B	G5PQ/P†	D. H. Allerton. Site as A station.
<i>Middlesbrough</i>	A	G5YP/P	J. H. Wood, Hemlington Grange Farm, nr. Middlesbrough.
	B	G3CBW/P	H. Walker. Site as A station.
<i>Newcastle-on-Tyne</i>	A	G4LX/P†	L. G. Spencer, Fenwick, nr. Stamfordham, Northumberland.
	B	G3AKH/P†	D. G. Lucas. Site as A station.
<i>Pontefract</i> ...	A	G3US/P	R. Shadlock, Grammar School Playing Fields, Hemsworth, nr. Pontefract.
	B	G6MF/P	M. H. Munroe. Site as A station.
<i>Rotherham</i> ...	A	G3ELG/P	H. N. Gubby, Keppels Column, Chapelton Road, 3 Miles West of Rotherham.
	B	G4BD/P	R. Palmer, South Whiston Farm, 1 Mile South of Whiston.
<i>Scarborough</i> ...	A	G2CP/P†	H. P. Wiggins, Boys' School Field, Olivers Mount, Scarborough.
	B	G8KU/P†	P. B. Briscoe. Site as A station.
<i>Sheffield</i> ...	A	G8NN/P†	G. B. Neale, Field adjoining 580 Redmires Road, Sheffield 10.
	B	G5TO/P†	J. Thorpe. Site as A station.
<i>Sunderland*</i> (1)	B	G5GI/P	L. Gill, The Bede School Recreation Ground, Durham Rd., Sunderland.
<i>York</i> ...	A	G3DSA/P†	R. R. Wilkinson, Beckfield Lane School Playing Fields, Beckfield Lane, Acomb, Yorks.
	B	G6XM/P†	W. James, Wards' Field, Heslington Rd., York.

### REGION 3

<i>Birmingham (South)</i>	A	G8PN/P†	C. Newton, "Domo Leca", Carters Lane, Quinton, Birmingham 32.
	B	G5JU/P†	J. N. Walker. Site as A station.
<i>Coventry</i> ...	A	G5PP/P†	R. Palmer, Oaken End Farm, Allesley, nr. Coventry.
	B	G5SK/P†	H. Maycock. Site as A station.
<i>Hereford</i> ...	A	G3EYH/P†	M. J. Pullen, Dinedor Hill, nr. Hereford.
	B	G3ESY/P†	P. W. F. Jones. Site as A station.
<i>Rugby</i> ...	A	G3GG/P†	G. Mortimer, Water Tower Farm, Barby Road, Rugby.
	B	G3AUT/P†	I. T. Haynes. Site as A station.



REGION 3—continued

Town or Area	Stn.	Call Sign	Location
Stourbridge ...	A	G8GF/P†	A. Higgins, Compton Park Farm, Compton, Kinver, nr. Stourbridge.
	B	G4MI/P†	N. Harper, Hill Farm, Kinver.
Walsall and District	A	G2FPR/P†	F. J. Merriman, King George Memorial Playing Fields, Bloxwich, nr. Walsall.

REGION 4

Boston ...	A	G6GH/P†	G. Hutson, Glebe Field, Stickney.
	B	G6LH/P†	Rev. L. C. Hodge, The Mill, Old Bolingbroke.
Derby ...	A	G5BP/P	H. N. D. Bailey, Rear of Glebe Farm, Blagreaves Lane, Littleover, Derby.
	B	G5RW/P	R. Bonner-Williamson. Site as A station.
Grimsby and Cleethorpes	A	G2FT/P†	J. W. Marlow, nr. Site 26 Humberston Foreshore, Humberston.
	B	G4XC/P†	J. Browne. Site as A station.
Leicester ...	A	G2RI/P†	L. Ridgway, Sconsborough Hill, nr. Somerby, Melton Mowbray, Leics.
	B	G4BB/P†	M. Storey. Site as A station.
Lincoln ...	A	G4BU/P	R. Draper, Willow Close, Nettleham, nr. Lincoln.
Loughborough...	A	G2KK/P†	K. J. Cook, "Fox Cover", Stanford-on-Soar, Notts.
	B	G8RY/P†	F. E. Wier. Site as A station.
Mansfield ...	A	G3FR/P	A. W. Fowler, Rushcliffe Farm, Nottingham Road, Mansfield, Notts.
Newark ...	B	G3FAT/P†	F/O. K. W. Bullock, Hill Farm, Dry Doddington, nr. Newark, Notts.
Nottingham ...	A	G8DZ/P	A. E. Clipstone, Hill Farm, Epperstone, Notts.
	B	G4DU/P	A. Hyde. Site as A station.
Peterborough ...	A	G2NJ/P†	R. Carter, "Alwalton", 3 Miles West Peterborough.
	B	G3EEL/P†	L. Critchley. Site as A station.
Retford*(1) ...	B	G3BTU/P	H. White, Bolham Hall Farm, Tilt Lane, Retford.
Worksop*(1) ...	A	G3HKQ/P	V. Westmoreland, Bolham Hall Farm, Tilt Lane, Retford.

REGION 5

Baldock*(1) ...	B	G3CEU/P	N. F. Wilshire, Weston Hills, Baldock.
Cambridge ...	A	G5IG/P†	C. Babbs, The Water Tower, Rivey Hill, Linton, Cambs.
	B	G8PB/P†	P. Tremaine. Site as A station.
Chelmsford ...	A	G5RV/P†	R. L. Varney, Field at rear of "Running Mare" Public House, Galleywood, Chelmsford.
	B	G3ABB/P†	C. L. Fenton. Site as A station.
Gt. Yarmouth...	A	G3AMK/P	B. Littleproud, Gorleston Cliffs, nr. Gt. Yarmouth.
	B	G3CFK/P	P. Harrison. Site as A station.

REGION 5—continued

Town or Area	Stn.	Call Sign	Location
Lowestoft and Beccles Area	A	G3IFI/P†	c/o A. J. Barber, Church Farm, Shipmeadow, nr. Beccles, Suffolk.
	B	G3DDK/P†	E. Hartley. Site as A station.
Luton ...	A	G3CGQ/P†	F. W. Tyler, Galley Hill, nr. Streatley, Luton.
	B	G3AST/P†	J. A. Plowman, Old Brickworks Field, Stopsley, nr. Luton.
Norwich ...	A	G4KO/P†	C. Staff, Norwich Union Athletic Assoc. Sports Ground, School Lane, Thorpe St. Andrew, Norwich.
	B	G2YU/P†	R. Lowe. Site as A station.
Shefford*(1) ...	A	G4OL/P	R. J. Pullin, Newrowney Farm, 1½ miles, N. Shefford.
Southend-on-Sea	A	G5QK/P	K. Crispin, Thundersley Glen, Thundersley, Essex.
	B	G2BHA/P	T. Hudson, Covetside, Hockley, Essex.

REGION 6

Bletchley ...	A	G3CPT/P†	D. A. Capp, Rectory Farm, Loughton, Bletchley, Bucks.
	B	G3AZ/P†	J. Hunter, Peters' Farm, Drayton Road, Newton Longville, Bletchley.
Cheltenham ...	A	G3CGD/P†	J. J. Yeend, Field previously Stoke Orchard Aerodrome, 3½ miles North-west of Cheltenham.
	B	G5BM/P	F. H. Watts. Site as A station.
Christchurch ...	A	G3CSX/P	A. E. Rhodes, Bure Homage A site, Bure Lane, Mudeford, Christchurch.
	B	G4RP/P	Maj. A. T. Kingston, Bure Homage B site, Bure Lane, Mudeford.
Gloucester ...	A	G3MA/P	E. A. Perkins, Green Farm, Minsterworth, nr. Gloucester.
	B	G2RT/P	C. Partridge. Site as A station.
High Wycombe	A	G3FAS/P	A. B. Dixon, nr. Pond Farm, Green Road, Radnage, Bucks.
	B	G6JK/P	H. J. Sherry. Site as A station.
Oxford ...	A	G2DU/P†	P. G. Tandy, Grace's Farm, Berick Salome, Benson, Oxon.
	B	G5RP/P†	E. Wake. Site as A station.
Petersfield and District	A	G6DT/P	R. T. Dealey, Hornead Community Association Ground, Merchiston Road, Hornead.
Portsmouth ...	A	G6NZ/P	L. E. Newnham, Field of V. G. Gauntlett, Crookhorn, nr. Portsmouth, Hants.
	B	G8WC/P	J. S. K. Stephens. Site as A station.
Southampton ...	A	G5LR/P†	Dr. W. P. Cargill, Netley Hill Common, nr. Southampton.
	B	G5OB/P†	G. H. Johns. Site as A station.
Stroud ...	A	G3FFN/P†	H. M. Gardner, Lypiatt, nr. Stroud, Glos.
	B	G5HC/P†	F. N. Hitchcock. Site as A station.
West Wilts ...	A	G2PS/P†	E. A. Parsons, The Chalk Quarry, Long River, Westbury, Wilts.

REGION 7

Town or Area	Stn.	Call Sign	Location
Acton, Brentford and Chiswick	A	G3IU/P	c/o R. G. Hinde, Borough of Kensington Playing Fields, Western Avenue, Northolt, Middx.
Barnet ...	A	G4BX/P	J. W. Heffernan, Rowley Green, Barnet, by Rowley Green Farm, Herts.
	B	G3EVR/P	G. W. Gilbert. Site as A station.
Bexley, Erith and Dartford	A	G3ENT/P	c/o A. K. Wall, Field, Site of Pavilion, Baldwyn's Park, Bexley, Kent.
Brentwood ...	A	G3LA/P	G. L. Turner, The Plovers Barron, Wyatt's Green, Dodinghurst, Brentwood, Essex.
	B	G4AK/P	J. R. Seager. Site as A station.
Bromley and Beckenham	A	G2MI/P	A. O. Milne. Field opposite Buxton Browne Research Farm, Downe Village, Kent.
Chingford ...	A	G2XG/P†	J. Davie, Ludgate House, "High Beach", Loughton, Essex.
Coulsdon and District	A	G2DN/P	N. E. Guy, Field above Hall & Co. Lime Works, Coulsdon.
	B	G8TB/P	B. Wynn. Site as A station.
Croydon ...	A	G3BCM/P†	D. Deacon, Goodman's Farm, Tittlepitshaw Lane, Hamsley Green, Surrey.
	B	G4QK/P†	J. Roscoe. Site as A station.
Dorking and Leatherhead	A	G3HZJ/P†	W. J. Walsh, Forty Acre Field, Ashcombe Road, Dorking, Surrey.
Dulwich and New Cross	A	G2HP/P	C. R. Waterer, Upper Playing Field, Goldsmiths College, New Cross, S.E.14.
Ealing ...	A	G5SX/P†	J. B. Walker, Hanger Hill Estate, between Hanger Lane, W.5, and Heathcroft, Ealing, W.5.
	B	G2TJ/P†	T. P. Auzeas. Site as A station.
East Ham ...	A	G2ZZ/P	W. H. Peek, Lady Trowers Sports Ground, Burges Road, E.6.
	B	G4CM/P	C. G. Middle, Young's Farm, Lambourne End, Essex.
East Molesey ...	A	G6MB/P	F. Hicks-Arnold, Broadmoor, nr. Dorking, Surrey.
	B	G8SM/P	A. Mears. Site as A station.
Edware and Hendon	A	G5FG/P†	F. George, Hendon Park Farm, Nan Clarks Lane, N.W.7.
	B	G2IM/P†	R. Radford. Site as A station.
Enfield ...	A	G8SK/P†	H. T. McFarlane, "The Forge" Grounds, Hertford Road, Enfield.
Gravesend ...	A	G2TN/P†	A. Daines, Shorne Mill, Shorne, nr. Gravesend.
	B	G3HLF/P†	P. Jobson. Site as A station.
Guildford and Woking	A	G5WP/P†	W. E. Russell, Staple Lane, Clandon, Surrey.
	B	G6BZ/P†	Sqdn./Ldr. M. C. Bunting. Site as A station.
Harlow and District	A	G6UT/P	T. A. St. Johnston, Dorrington's Farm, Rye Hill, Epping, Essex.
	B	G3ERN/P	G. E. Read. Site as A station.
Ilford ...	A	G3FCU/P†	J. Dyer, P.L.A. Sports Ground, The Drive, Ilford.
	B	G2QI/P†	J. Tyndall, Site as A station.

REGION 7—continued

Town or Area	Stn.	Call Sign	Location
Norwood and District	A	G3IIR/P	E. W. Yeomanson, Old Crystal Palace Site, Crystal Palace Parade, London, S.E.19.
	B	G2VB/P	W. D. Gilmour. Site as A station.
Putney, Barnes and Richmond	A	G6RC/P†	R. Cole, Richmond & East Sheen County School Playing Fields, Hertford Avenue, East Sheen, S.W.14.
	B	G4GD/P†	N. Anslow. Site as A station.
Reigate and Redhill	A	G5LK/P	L. G. Knight, Field off Madeira Walk, Reigate, Surrey.
	B	G2AJ/S/P	W. N. Maddock, Field off Caterham School, Caterham, Surrey.
Romford ...	A	G4KF/P	E. Otter, Bedfords Park, Havering-atte-Bower, Romford, Essex.
Slough ...	A	G3XH/P	J. White, Taplow Court, Taplow, Bucks.
	B	G6CJ/P	F. Charman. Site as A station.
Southgate ...	A	G3GBN/P†	S. H. Feldman, Trent Park, nr. Oakwood, Middx.
	B	G5FA/P†	P. Solder. Site as A station.
Sutton and Cheam	A	G6KM/P	S. Kember, Banstead Hall Playing Fields, Banstead, Surrey.
	B	G8DF/P	A. E. Mitchell. Site as A station.
Uxbridge and Hayes	A	G2FMF/P	F. J. Rutter, Uxbridge Municipal Golf Course, Harefield Place, Uxbridge, Middx.
	B	G3HRG/P	V. Whitaker. Site as A station.
Welwyn Garden City	A	G5UM/P	J. Hum, nr. Sherrieff's Field, Digswell Road, Welwyn Garden City.
Woolwich ...	A	G3IKW/P†	K. W. Ireland, Shooters Hill, Woolwich, S.E.18. (At rear of Woolwich War Memorial Hospital.)
	B	G3HSO/P†	c/o R. Halls, Site as A station.

REGION 8

Ashford ...	B	G2QT/P	F. Cooper, Paddock Hill, Smeeth, nr. Ashford, Kent.
Brighton ...	A	G5AO/P	A. E. Lambourne, Turner's Farm, Woodingdean, Brighton.
	B	G3YY/P	C. T. Fairchild. Site as A station.
Hove and District	A	G3CUY/P†	E. Paul, nr. Devil's Dyke, Brighton, Sussex.
	B	G3FXB/P†	A. Slater. Site as A station.
Isle of Thanet ...	A	G8QB/P	G. H. Wheatley, Foreness Recreation Ground, Margate, Kent.
	B	G2IC/P	G. A. Chapman. Site as A station.
Maidstone*(1)	A	G2BMP/P	C. C. Pratt, Police Sports Field, Police Headquarters, Sutton Road, Maidstone, Kent.
Medway Towns	A	G2CBA/P	W. B. N. Althorp, S. E. E. B. Sports Ground, Valley View Road, Rochester.
	B	G6NU/P	W. Nutton, King's School Rugby Ground, Borstal Rd., Rochester.
Tunbridge Wells* (1) and Tonbridge	B	G4IB/P	L. S. King, Opposite "Elm Tree Inn", Paddock Wood, Kent.
Worthing ...	A	G3BF/P	H. Palmer, Field Place Farm, Palantine Road, Durrington, Worthing.
	B	G3HQQ/P	W. L. Ely, Highfare Farm, Billingshurst, Sx.

## REGION 9

Town or Area	Stn.	Call Sign	Location
Bath ...	A	G8DX/P†	R. Lavis, Chapel Farm, Lansdown, Bath.
	B	G6UR/P†	H. Punch. Site as A station.
Bristol ...	A	G6GU/P	E. Gaukrodger, Hill Farm, Dundry, Bristol.
	B	G6GN/P	H. J. Gratton. Site as A station.
Dorchester ...	A	G2TZ/P	C. E. Biggs, Opposite Asker's Road House, nr. Dorchester, Dorset.
Exeter ...	A	G3ID/P	A. E. Tupman, The Camp, Woodbury Common, nr. Exeter, Devon.
	B	G3IPS/P	P. Sterrett. Site as A station.
Falmouth ...	A	G3AGA/P	L. Davy-Thomas, Ashfield House, Ponswarden, Falmouth.
	B	G3AET/P	J. N. Watson. Site as A station.
North Cornwall	B	G2AYQ/P†	J. E. Bowden, St. Agnes Beacon, St. Agnes, Cornwall.
North Devon ...	A	G6GM/P	H. Merriman, Featherlands, Holsworthy, Devon.
Plymouth ...	A	G3BLO/P	F. Sargent, Collaford Farm, Lynham, nr. Plympton, St. Devon.
	B	G3TX/P	J. Eddy. Site as A station.
Torquay ...	A	G3GDW/P†	L. Webber, Milber Down, nr. Newton Abbott, Devon.
	B	G2WW/P†	D. J. Beattie, Quarry Dump, Paul, Penzance.
West Cornwall (Penzance)	A	G5TN/P†	W. C. Holley, Worlebury Golf Course, Weston-super-Mare.
Weston-super-Mare	A	G5TN/P†	W. C. Holley, Worlebury Golf Course, Weston-super-Mare.
	B	G8FC/P†	c/o A. E. Seymour, Site as A station.

## REGION 10

Cardiff...	A	GW5BI/P	V. Bartlett, Field adjoining "Church House", Lavernock, nr. Cardiff.
	B	GW5FN/P	S. A. Howell. Site as A station.
Neath and Port Talbot	B	GW2AVV/P†	G. Evans, Pen Ton Hill, Port Talbot.

## REGION 11

Wrexham ...	A	GW3IHL/P	J. H. Parry, Cheetham's Manor Farm, Gyfelia, Sontley, nr. Wrexham.
	B	GW3GWA/P	R. G. Goulding. Site as A station.

## REGION 12

Aberdeen ...	A	GM6IZ/P†	T. Ingram, Woodside Croft, Banchory-Devenick, Kincardineshire.
	B	GM2CAS/P†	J. Douglas, Home Farm, Drum Castle, Aberdeenshire.
Dundee ...	B	GM4HR/P	S. Ramsay, Muirloch Farm, nr. Fowlis, Angus.
Forfar ...	A	GM6RI/P	W. Robertson, Baldoukie Farm, Tannadice, Angus.
	B	GM3EAK/P	R. McFarlane, Lour Hill, Forfar, Angus.

## REGION 13

Town or Area	Stn.	Call Sign	Location
Berwick and District Dunfermline ...	A	GM5BA/P	F. G. Steven, Mordington, Berwickshire.
	A	GM3EGW/P†	J. F. Shepherd, Carlingnose Barracks, North Queensferry, Fife.
Edinburgh ...	B	GM3EGU/P†	A. Mercer, Hilton of Pitfirrane, Cairneyhill, by Dunfermline.
	A	GM8FM/P†	J. Shankland, Edgfield Farm, Penicuik, Mid-Lothian.
	B	GM3UM/P†	C. Millar, Loanhead, Mid-Lothian.

## REGION 14

East Renfrewshire	A	GM3CAR/P	W. T. McDowall, North Kirktonmoor Farm, Eaglesham, Renfrewshire.
	B	GM3AR/P	J. K. McDowall. Site as A station.
Falkirk ...	A	GM3OM/P†	O. M. Derrick, One mile South of Carron-bridge Hotel.
	B	GM3WO/P	J. Bell. Site as A station.
Glasgow ...	A	GM8MJ/P	J. Sey, Lickprivick Farm, East Kilbride.
	B	GM3CSM/P	I. Hamilton. Site as A station.

## CHANNEL ISLANDS

Guernsey ...	A	GC2FZC/P†	W. E. Butt, Icart, St. Martins, Guernsey.
	B	GC2ASO/P†	G. H. Smith. Site as A station.

\* Indicates station is combining with another for the purposes of scoring. Where no asterisk is shown, and only one station call is given, the town or area is not operating a second station.

† Indicates A station will operate on 1.8 and 7 Mc/s and B station on 3.5 and 14 Mc/s.

## N.F.D. Permits

WITH a view to effecting an economy the Post Office has decided to dispense with the issue of individual special permits to those responsible for the operation of official National Field Day stations.

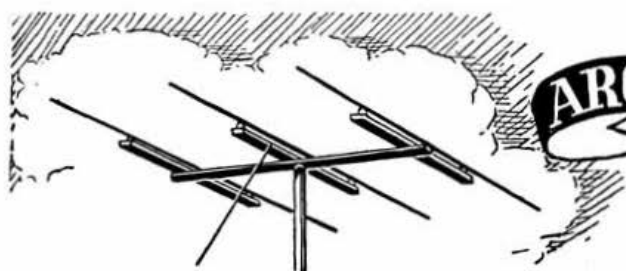
A list of call-signs and sites has, however, been approved by the Overseas Telecommunications Dept. of the G.P.O. and details sent to the appropriate G.P.O. Regional Officers.

## Midland Topfest

MORE than 50 radio amateurs attended a hamfest—the first organised in the Midlands by the Tops C.W. Club—at the Black Horse Hotel, Wolverhampton, on April 11, 1953.

The President of the Club, A. D. Taylor (G8PG) drew attention to the need for active support of emergency services, organised by both the Armed Forces and by the amateur networks. Bob Palmer (G5PP) spoke of his experiences whilst operating portable with his wife. C. J. Morris (G3ABG) referred to the work of School Radio Clubs. G. V. Haylock (G2DHV) described the aims and objects of the British Two-Call Club, and the Hon. Secretary, J. P. Evans (GW8WJ) reviewed the Tops C.W. Club's recent activities.

Among those who attended were: G2DHV, 2FPR, 2JZ, 2YM, 3ABG, 3APZ, 3CNY, 3COI, 3CST, 3CUG, 3CVB, 3CVX, 3ECH, 3ESY, 3EYH, 3FOP, 3FWD, 3GBQ, 3HRR, 3IGK, 3INR, 3IOB, 5PP, 6FK, 8KL, 8PG and GW8WJ. The meeting was organised by J. Norris (G3ABG) and J. Worthington (G3COI).



## AROUND THE V.H.F.'s

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

**A**FTER the quite remarkable conditions experienced on both 2 m and 70 cm during the first three weeks of March an inevitable decline took place with the break-up of the fine weather system. The following month was, however, by no means devoid of interest and at times really good spells of propagation were experienced with many old hands and newcomers to take advantage of them.

### European 2m Record Again Broken

Belatedly comes the astonishing news that on March 22, 1953, at 0122 G.M.T., 2m signals were exchanged between G5UF (Dorchester, Dorset) and SM6ANR (Gothenburg) over a distance of 752 miles, thus beating the previous European record of 651 miles set up by E12W and DL3VJ/P in August, 1952. During the opening which enabled this record to be made, G5UF worked stations in DL, F, GC, ON and OZ.

### The GW/ON 70 cm Record

The distance for the 70 cm World Record held by GW2ADZ and ON4UV, details of which were published last month, has been calculated by the method described in the *R.S.G.B. Radio Handbook Supplement* at 362 miles. In addition to the original contact on c.w. a QSO was made shortly afterwards by the two stations on 'phone. GW2ADZ also worked DL3FM (Essen) cross-band from 2 m early in March, receiving the German station's c.w. on 70 cm at RST 569. The distance is 435 miles.

### Two Metre Transatlantic Tests

A series of Transatlantic Tests, organised by the International V.H.F. Society (new name of the V.H.F. Research Society of Ireland) and the American Radio Relay League, will take place from July 4 to 12, 1953.

Special permission to use a 300 Watt transmitter on 144.20 Mc/s at Kilkeel, Co. Clare, has been obtained by E12W. The station, which will be in continuous operation throughout the period of the tests, will be manned by Irish members of the I.V.H.F.S.

### The Month on Two Metres

G3MY operated portable in Derbyshire on March 22 and heard signals from France, Germany and Sweden between 1100 and 1500 G.M.T. With great forbearance he called none of them but concentrated on the numerous British operators anxious to work a station in Derbyshire. The outstanding contact was with GC3EBK who was received RST 599 and who reported G3MY/P as RS59. G2HQ/P was active in the evening and had many excellent contacts with the South Coast and the Continent. He also worked GC3EBK.

G2AOL (Otford, Kent), situated immediately below the eastern end of the North Downs, is closely hemmed in by hills all the way from east to north, consequently signals from Europe, apart from stations in France, are extremely rare. Both transmitter and receiver are of G6VX design and

consist of a 6J6 Squier oscillator followed by a pair of EL91 doublers and p.p. 6C4s running 18 watts input in the final on 144.99 Mc/s. The converter line-up is a 12AT7 as e.g.t. amplifier and mixer and 6J6 c.o./multiplier. Despite the fact that the 4-element Yagi is only 10 ft. above ground, contacts have been made with G3GHO (Reade, Northants), HVO (Parkstone, Dorset), MY/P (Yorks.), 5ML (Coventry) and GC3EBK (Guernsey). In just over a week 70 stations were heard, including G2FCL, HQ/P and 5YV all in Yorkshire, Derbyshire, Leicestershire and Nottingham, G5YK (Bristol), 3AUS (Torquay) and from the Continent DL6EP, F8NW and ON4BZ. An interesting point regarding the German station was that his signals on March 21 were a steady RS57 while beaming north west but unreadable on his correct bearing. All other stations preserved their correct direction.

G3FD (Southgate, N.14) who worked PA0WI and DL3VJ/P on 'phone at S9 on March 23 was told by the latter that many DL and OZ stations were operating around his frequency (144.9 Mc/s.)

G3BHS (Eastleigh, Hants.) enjoyed the March 1 to 6 opening which he considered was the best experienced since we first had the band. He submits the following suggestion for consideration. Stations in the south of England often feel that those in the north do not search the band carefully with their beams trained south and vice versa. Would it be practicable to arrange a "North/South evening" once a week, say on Fridays between 1900 and 2300 B.S.T. during which efforts could be made from both ends to break-down the alleged barrier? If the Midland stations were willing it would be of great assistance if they were to work both ways, informing northern stations of the situation and frequency of those in the south and in like manner attempting to put southern stations in contact with their northern confreres. No doubt if something of this nature *could* be arranged it would prove possible for many more N/S contacts to be made even under "normal" conditions.

GW8UH (Cardiff), again active on 2 m, now operates most evenings from 2230 B.S.T. (input 100 watts). Both he and GW3BNQ find that many operators appear to search the band from 144 to about 145.3 Mc/s, leaving the h.f. end for the most part severely alone. This is not confined to South Wales and the tendency for stations to move towards the l.f. end of the band to ensure getting contacts is to be deprecated.

G3EKS (Bath) should be operating on 145.64 Mc/s by the time these notes appear. On the receiving side he has a pair of EC91s as p.p. r.f., 6J6 p.p. mixer with cathode injection from a 955 oscillator and a 9002 cathode follower coupling the output at 10 Mc/s into a VRL communications receiver.

At G6XX (Goole, Yorks.) 2 m conditions remained good until March 22 when SM7BE was audible all day; F8BY, 80L, 9MX, ON4BZ and SM7AC were also logged. DL3QA was worked

\* 32 Earls Road, Tunbridge Wells, Kent.



on the 21st. From March 22 onwards conditions deteriorated but were not bad enough to prevent a contact with G3DA at 90 miles on most evenings. New stations in the Goole area are G3AEP and G3AZU.

**G3GBO** (Denham, Bucks.) runs a sked with G3YH (Bristol) and finds that the best results are obtained not when the band is wide open but when the maximum range is up to 150 miles or so and most signals are suffering from fading. 'GBO has improved his converter which now comprises a 6AK5/12AT7 cascade with the second half of the valve as a mixer and a 9002 tunable oscillator.

After some troubles with feeders **G3FIJ** (Colchester, Essex) is again regularly active with an input of 18 watts. From March 14 he worked G2AVR, CZS, 3DIV, 8MW, VR, GW2ADZ and PA0FC.

During the recent Hobbies' Exhibition held in Tunbridge Wells, the **West Kent Radio Society** operated a station from their stand and at times cross-band duplex 'phone contacts were obtained with transmission on the 160 m band and reception on 2 m. For other than purely local signals it was noticeable that reception on 2 m was considerably better than on the lower frequency for up to 50 miles or so. During tests for this event on April 14 the 2 m receiver was used in connection with an **Eddystone** 4-element Yagi beam inside the steel-framed building. As would be expected electrical interference was bad and even local signals were severely attenuated but nevertheless G3DIV (Eastbourne) and 5NF (Farnham, Surrey) were received together with very weak c.w. from GC3EBK.

**G2DTQ** (Mansfield, Notts.) suffers from a bad location and can only erect an indoor beam. During the first week in April he did, however, work G3APY, BPD, CC, FR, FRE, WS and 5YV. The converter in use is a 6AK5/6C4 cascade and the transmitter has an 832 in the final.

**G3GHO** (Reade, Northants.) worked GC3EBK and G13BIL as well as several Continental stations on March 1-2. Other good periods were March 20 to 22 which brought G3IOE (Northumberland), DL6EP, F3XY, F8GH, PA0FC and PE1PL and April 20 when G2HGR and 3EPW (Lancashire) were both worked with S9 plus reports and no fading. 'GHO remarks upon the complete absence of GM stations.

#### Two Metres in Ireland

**E13S** (Dublin) on 145.27 Mc/s now has a 5-over-5 Yagi array which gave him contacts with several G and GW stations during the good conditions in early March. **E16A** (Wicklow)—144.31 Mc/s—situated at sea level 30 miles south of Dublin, has worked G5YV at midday and had a successful contact with G13GQB when the latter was using an indoor aerial. He is active most nights after 2300 B.S.T. **E12B** (Foxrock, Dublin)—the home call of E12W—with the aid of a 5-over-5 at 48 ft. has made a number of contacts with G, GI and GW and has been heard in Denmark and Norway. From May 1 operation will again be from his Sandyford site under the call sign E12W. A 7-over-7 array will be employed on 144.18 and 144.20 Mc/s; a frequency of 145.81 Mc/s will be used for local contacts.

E13L, 9C and 9N, all in Dublin, operate on 144.14, 145.89 and 144.14 Mc/s respectively. 9C is also active on 437.67 Mc/s. Other EIs about to be operational on 2 m include 3W (Ballyshannon), 4E (Killarney), 4R (Listowel, Co. Kerry), 6D (Naas, Co. Kildare), 7M (Cahir, Co. Tipperary), 8C (Drogheda) and 9W (Dublin).

## Regional V.H.F. Ladder

### TWO METRE BAND

Psn.	Call & Location	Worked		
		Regions	Stations	Countries
1.	G3BW ..... <i>Whitehaven, Cumbs.</i>	15	63	5
2.	G5YV ..... <i>Leeds, Yorks.</i>	14	318	12
3.	G3WW ..... <i>Wimblington, Cambs.</i>	13	283	11
4.	G2HIF ..... <i>Wantage, Berks.</i>	13	115	9
5.	G3CHO ..... <i>Reade, Northants.</i>	12	179	8
6.	G6XX ..... <i>Goole, Yorks.</i>	12	108	10
7.	G2YB ..... <i>Caversham, Berks.</i>	11	219	7
8.	G5DS ..... <i>Surbiton, Surrey.</i>	11	211	7
9.	G6TA ..... <i>London, S.W.12.</i>	11	179	4
10.	G4RO ..... <i>St. Albans, Herts.</i>	11	136	4
11.	G3FAN ..... <i>Ryde, I.O.W.</i>	11	115	4
12.	G3FD ..... <i>London, N.14.</i>	11	103	7
13.	G6YU ..... <i>Coventry, Warks.</i>	11	81	7
14.	G2DKH/P ..... <i>Stanley, Co. Durham.</i>	11	81	6
15.	G2FNW ..... <i>Melton Mowbray, Leics.</i>	11	78	3
16.	G6LI ..... <i>Ludborough, Lincs.</i>	11	59	6
17.	G2FJR ..... <i>Sutton Bridge, Lincs.</i>	10	141	6
18.	G3HBW ..... <i>Wembley, Middx.</i>	10	113	4
19.	G3BHS ..... <i>Eastleigh, Hants.</i>	10	103	4
20.	G5BM ..... <i>Cheltenham, Glos.</i>	10	86	4
21.	G5MR ..... <i>Hythe, Kent.</i>	10	81	6
22.	G3COP ..... <i>Southampton, Hants.</i>	10	81	2
23.	G3CBO ..... <i>Denham, Bucks.</i>	9	206	7
24.	G2AHP ..... <i>Perivale, Middx.</i>	9	107	2
25.	G8PX ..... <i>Oxford.</i>	9	78	2
26.	G3BVU ..... <i>Witney, Oxon.</i>	9	70	3
27.	GW8UH ..... <i>Cardiff, Glam.</i>	9	65	3
28.	G3DO ..... <i>Sutton Coldfield, Warks.</i>	9	58	4
29.	G3ACS ..... <i>Manchester 8.</i>	9	36	3
30.	G2DDD ..... <i>Littlehampton, Sussex</i>	8	81	5
31.	G3FIJ ..... <i>Colchester, Essex.</i>	8	52	6

### SEVENTY CENTIMETRE BAND

Psn.	Call & Location	Worked		
		Regions	Stations	Countries
1.	G2FKZ ..... <i>London, S.E.22.</i>	6	20	2
2.	GW2ADZ ..... <i>Llanymynech, Mont.</i>	6	7	2

In Northern Ireland activity is also on the increase. **G13FZQ**, who made his debut on the band on March 27 with the best GI signal so far heard in Dublin, worked both E12B and 3S at 108 miles. Other stations already active or about to become so are G12BZV, 2DZG, 3BIL, HNM and 6YW, all in Belfast, 2FHN and 3ML (Bangor) and 3ILK (Lisburn).

#### Seventy Centimetre News

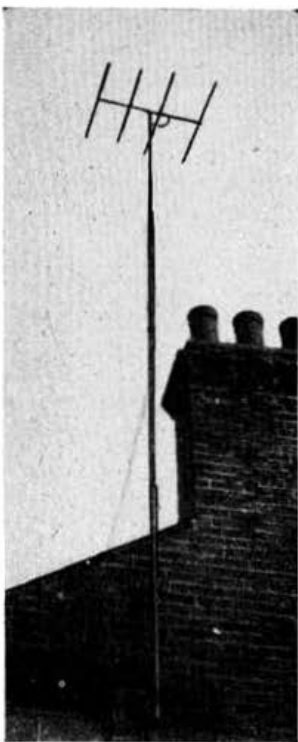
**G5YV** (Leeds) has made his promised appearance on the band and was received by G2FKZ (London, S.E.22) at RST 559 and by G3APY

(Kirkby-in-Ashfield, Notts.) at 569 on March 22 around 2200 G.M.T. **G6YP** (London, S.E.5.) reported him RST 559 on the 24th which was after the spell of good conditions had passed. So far, attempts to put a 70 cm signal over the Pennines to **G3DA** (Liverpool) have failed, but tests continue.

Referring to last month's article on **G2WJ**, **G3MY** remarks that back in November 1950 he was using a high-Q filter between oscillator and mixer to ensure injection free from frequencies other than that required and found that the noise factor of the receiver, which consisted of a 1N21 crystal mixer and 6AK5 head amplifier, was much improved, being of the order of 10 db. The addition of a 2C40 e.g. r.f. stage did not improve the performance of the receiver.

**G8DM** made cross-band 2 m/70 cm contacts with **G2WJ**, **3GDR**, **3IRA** (Swindon) and **6YP** on March 4 and heard **G2FKZ**, **RD**, **5DT** and **6NF**. On the 10th, operating from his alternative address in Shrivensham, he joined in the **G2WJ/4AP** sked at 2100 G.M.T. **G2WJ**'s 2 m signal was fully readable although fading from **S9** to **S2** and a five minute c.w. transmission on 70 cm from the same station was also **R5** although again severe fading was in evidence. **G8PX** (Oxford) is now regularly active on the band.

**G2FKZ** says that he is being kept busy answering correspondence on 70 cm matters following the "advert" from **G8PX** in the March **BULLETIN** and has had enquiries from as far afield as Geneva. **DL3FM** was worked on 2 m on March 23 and was received by **G2FKZ** at **S6/7** on 70 cm but the latter's 70 cm transmission could not be heard in Essen despite the fact that the full input of 55 watts was in use. The German station is being supplied by **'FKZ** with a high-Q filter for his receiver and it is hoped that this will enable him to overcome some of his receiving difficulties in the near future.



The 2m. beam at **G6CH**.

**G2RD**'s activity list for the month ending April 20 includes: **G2DD**, **FKZ**, **MV**, **RD**, **WJ**, **XV**, **3CVO**, **ECA**, **FP**, **GDR**, **HBW**, **5AA**, **CD**, **DT**, **RD**, **TP**, **6NF**, **RH**, **YP**, **8DM**, **KZ**, **GW2ADZ**, **DL3FM**, **ON4UV**, **PA0NL**, **OWL**, and **PE1PL**—quite an impressive number of stations.

From **G3HAZ** (Birmingham) it is learned that the stations active in that area during the same period were: **G2AOK/A**, **ATK**, **BFT**, **FNW**, **3APY**, **BKQ**, **EUP**, **GZM**, **HAZ**, **HTY**, **4AP** and **6YU**.

Stations worked on 70 cm by **GW2ADZ**, other than those mentioned earlier in this article, include **G2MV**, **5DT**, **6NF** and **6YP**, all at distances around 170 miles, **G2XV** (Cambridge) 145 miles, **2BVW**, 90 miles and **3BKQ** at 85 miles. The latter station is worked on sked on Mondays, Thursdays and Fridays at 2030 B.S.T. and so far excellent results have been obtained. **G3BKQ** (Leicester) now employs only a crystal mixer in his converter and obtains better results than he did with two r.f. stages.

#### London U.H.F. Group

There was the largest attendance so far at the April meeting of the Group, discussion centring on the excellent conditions of the previous weeks; **G2WJ** gave a short talk on his cross-band contact with **DL3FM**. At the May meeting an even larger attendance was recorded when **G6CJ** gave a demonstration-lecture on v.h.f. aerials.

#### Sixty Feet up for £1

The accompanying photograph shows the 2 m four-element Yagi beam erected by Bill Evans, **G6CH**, at Strood, Kent. The total cost of raising the aerial to the very satisfactory height of 60 ft. was just £1: a 25 ft. telescopic steel mast for 12s. 6d. and 7s. 6d. for the local blacksmith to make and fit two iron supporting brackets. It is understood that plenty of these masts are available on the surplus market at a cost not exceeding 18s. 6d.—unless you are able to drive as hard a bargain as **G6CH**!

Please send reports for the June issue of the **BULLETIN** to arrive by May 20. Reports from B.R.S. Members active on 2 m or 70 cm will be particularly welcome.

#### LONDON U.H.F. GROUP

will meet at the Bedford Corner Hotel, Bayley Street, Tottenham Court Road, at 7.30 p.m., on June 4, 1953. All u.h.f. enthusiasts welcome.

#### Side Slips

IN the description of "A Top Band Low Power Transmitter-Receiver" which appeared in the April, 1953, issue of the **BULLETIN**, two errors occurred in the circuit diagram. The bottom of the tapped aerial loading coil **L6** should be earthed and the anode of **V6** should be connected to **C22** and **L5**. **C17** is 75  $\mu$ F, and **C23** 150  $\mu$ F. The receiver section does not, as implied by the final paragraph of the article, cover the medium wave band; the reference should be to Welsh and Northern amateur stations.

IN the report of the March London Lecture Meeting, published in the April issue, it was stated that the vote of thanks to the lecturer was proposed by Mr. D. N. Corfield, **G5CD**. This was incorrect; the vote of thanks was proposed by Mr. E. A. Dedman, **G2NH**. Mr. Corfield contributed to the discussion.

#### Vale

THE many radio amateurs who have attended the Annual Party at the home of Miss Nell Corry, **G2YL**, will be grieved to learn of the death of her mother on April 11, 1953.

Mrs. Corry will ever be remembered for her interest in Amateur Radio, her kindly nature and her unbounded hospitality.

**T**HE North-East Greenland Expedition station, G3AAT/OX, is now on 'phone (14150) and c.w. (14040) on Sundays. According to G4LP the operator is particularly interested in contacts with Plymouth.

F9RS reports that the R.E.F. hold photostat copies of the official licence which is issued to amateurs in Indo-China (F18). The calls are in the series F18AA-AJ, although it is possible that a new prefix, 3W, may be in use soon. All contacts with FI stations after September 1, 1952 will be eligible for the D.U.F. Award. It is to be hoped that the Administration will notify the I.T.U. quickly so that the A.R.R.L. will be able to allow contacts to count for DX.C.C. QSL cards can be sent via the R.S.G.B. or direct to Box 527, Saigon, Viet-Nam.

GM6MD reports that GM3AFG has paid another flying visit home and is now in Qatar. If anyone still lacks a card from one of his many DX locations they should re-QSL.

G3IAD (ex-VS6AC VS6CF) seems to have done pretty well in the last two months, despite poor conditions, with among others ZD2, ZD4, ZS3Q, ZS8D, ST2AC, AR, VS9AS, VK1JC, on 14 Mc/s; FP8AK, FM7WD, EA0AC, ZD2DCP, OA4ED, MP4BAU, VS9AP, VP8AW, VP8AP, on 7 Mc/s; and PY6FI, CT2BO, VO2N, KP4UB and VQ4CW on 3.5 Mc/s. His 7 Mc/s plums are, however, HC2OT (2310), HH2LD (0010), CM8AA (2300) and OQ5RA (0100). No. 4UAJ does not count as a separate country. G3IRM is pestered by a 3.5 Mc/s pirate.

ZC4XP/P will be active during N.F.D. on 1790 and 3550 using balloons again. He will also operate on 7, 14, 21 and 28 Mc/s.

B.R.S. 18130 (Wallington) heard in one hour on 14 Mc/s FQ8AR, PYIEZ, PY4CT, HK1DZ, HK1FE, CN8AG, CT2DL, KP4CN, CO2OZ and W4CRA. Not bad for a dead band! G5FA has now worked 116 countries on 7 Mc/s. Recent catches include VS6AC, VS9AP, ST2AR, VP5SC, OD5, YI, VP9GK, MP4BBL, JY1RT, CO7, MI3AB, KV4AA, SU and SV. Anyone still needing a card from 5A2CB can QSL via R.S.G.B.

ZC5VS wants contacts with G stations. His normal frequency is 14076, daily from 1400 G.M.T. The address is P.O. Box 136, Sandakan, British North Borneo. G4CP says '5VS puts in a very nice signal with his 20 watts. Will SU1HG please collect the cards waiting for him at G4CP?

B.R.S. 2947 (Warwick) heard the following on 21 Mc/s 'phone during Easter: VQ4RF, HP3FL, OD5AB, VP9BG, MI3SL and MD5EB. He comments on the deep slow-fade conditions which affect all signals. G3ETQ (Doncaster) has heard KF3AA on the floating ice-island, Fletcher Is., around 14030 kc/s.

John Goddard (Warwick) offers FF8AD, 14060, 1855; VS9AD, 14050, 1820; VS9AP, 1705 (also

on 21 Mc/s); WINWA/MM, 14060 and ZB2B/ZB1, all on c.w. On 'phone he has heard ZD1BR, 14200, 1812; SU1MR, ZD2RRW, 14150, VQ3DY, 14250; VQ5CQ, 14210 and OQ0DZ, Ruanda Urundi, 14110, 1830, worked by G3CAS and G2MI. G3FHN has worked YI3EOR; anyone had a QSL? 'FHN has concentrated mostly on Top Band and has worked 5-OHs, DL2PT, HB9T and 2-OKs.

#### News from Bulgaria and South Georgia

G2CHI says that although there are a number of call-signs held by private individuals in Bulgaria, they are not allowed to use them at present but must operate from a club station. The following club calls are on the air: LZ1KAB, KAC, KDP, KNB, KSA, KSI, KSK. G2CHI has worked SM5LF/2 located 50 miles north of the Arctic circle.

VP8AU (G. W. J. Bowles, 72 Warminster Road, Bathampton, Bath) is arriving home on leave this month but will return to South Georgia in the early autumn. He says there are four amateurs in the island, three of whom are active. VP8AT is a police officer, VP8AR/GM3FSU (Joe Williams), is a Radio/Radar Mechanic, and VP8AU himself, who is a Customs official. VP8AV (John Kendall) is not so far active.

#### MacQuarrie Island

The accompanying picture shows that life on MacQuarrie Island, even if not all "beer and skittles," does not entirely lack some of the former! Eric Middleton, VK1EM, in a letter to VK3RJ, kindly forwarded to us, says that the afternoons are the best time for DX but that some trouble has been experienced owing to the amateur station interfering with the radio-sonde equipment operating on 72 Mc/s. This gear is



The MacQuarrie Island Team, 1952-3

Back row (left to right): J. McCarthy, Rob Gurr (VK1RG), M. Taylor, Eric Macklin (VK1EM); centre row F. Strock-netter, Gersh Major (VK1AE), Roy Arnell (VK1RR), P. McGregor; front row: L. Brooks, Dr. Soucek, D. Sweetman and A. Riddell. The photograph was taken by another member of the party, B. Pritchard.



very broad-band and as it is only 30 ft. from the amateur station and runs from the same power line, QRM is difficult to clear. The amateur station consists of a 50 watt transmitter to a Lazy-H with two 807s in Class AB-1 as modulators. The receiver is home-made. VK1EM comments on the large numbers of OH, SM, OZ and DL stations heard. No signals from F, EA or North Africa have been heard and only a few from G. Some Europeans have been worked on 7 Mc/s in the early mornings. Life on the island is not too bad. The work is interesting and there is a good selection of films, a billiards table and plenty of hunting and shooting. The team shown in the picture is due to be relieved this month.

### Easter Island

There have been many conflicting reports about the expedition to Easter Is. The correct information (passed on to us on April 26 by CE3AG) is that the expedition is due to leave Chile late this month; CE0AA should therefore be active early in June. Both 'phone and c.w. will be used but mainly the latter.

### Who's Who

G3HOI who is the operator at ZE2KQ (an R.A.F. club station), uses about 80 watts and looks for Gs on 14 Mc/s between 1800 and 2000 G.M.T. Y12FD has QSL'd all his contacts but if anyone is still without a card, please re-QSL to R. G. Dobson, 130 Fairholm Road, Newcastle-upon-Tyne. W4YKO (Arlington, Virginia), is ex-W0MCF/C1/C3, who gave many of us our first contact with the island of Formosa.

G3IFG is going to Indonesia where he hopes to get on the air as a PK. If so, he will not contact anyone who calls on his own frequency! ZD2S, active again on 21 Mc/s with 50 watts to a dipole, is looking for G contacts. The call-sign, although not in the tradition of full initials, is nevertheless quite O.K.

SV0WG (Island of Rhodes) works around 14020 kc/s. The operator was SV5UN until recently. Dick McKercher should be on the air soon as CN8HF from Port Lyautey in French Morocco. He hopes to go to Rio de Oro later in the year. VS1FK (ex-G3FPG/MB9BG), is looking for U.K. stations, especially GM2CUV. ZD4AE/GM3IZE has returned to the Gold Coast and is active between 1600 and 1800 G.M.T. daily.

VP6FO will be in England for three months from June 1. His address will be 1 Dudley Road, Church End, Finchley (Tel. FINchley 3829). G5DW reports that VE7APL (ex-G3MG) on 14025 kc/s, is looking for Gs.

### B.E.R.U. Contest

G5MP has sent some observations on conditions during the B.E.R.U. contest. He says that it is unavoidable that some time elapses before the results of the contest are published and by then many of the highlights have been forgotten. His impressions were as follows: on 21 Mc/s the Africans were good during the Saturday afternoon of the c.w. event but otherwise rather disappointing. 14 Mc/s was good for Africa and Canada around sunset on both Saturday and Sunday but otherwise signal strengths were poor. There were very few Asians and Australians.

On 7 Mc/s there was some good DX but signal strengths were rather poor. The exception was the fine strength of a number of ZLs on Sunday morning. 3.5 Mc/s was a washout at the times it was tried. Skip on all bands was long and signals from such places as DL2, ZC4 and MD5 were consistently weak.

### QSL Bureau

A great deal of unnecessary work and extra expense is caused by members who do not keep a sufficient supply of envelopes with the appropriate sub-Manager. There are too many members who send in *one* envelope when a reminder card is sent to them. Please remember to keep a proper supply at the Bureau and so ensure that you get your cards quickly, thus helping the Bureau to run smoothly.

The problem of the unclaimed card is now so acute that instructions have been given to sub-Managers to destroy all cards addressed to stations who have ignored two of the Bureau's blue reminder cards. Surely it is not asking too much to write and say you do not want your cards! If you *do* want them, then please send some envelopes TODAY.

## The Story Behind VS9AW

By John Wheeler (G3CUK)\*

WHEN the writer arrived in Aden more than two years ago, application was at once made for an Amateur Radio transmitting licence. By the time it was issued, 18 months later, a move had been made to the Royal Air Force Detachment at Salalah—some 600 miles distant from Aden. Work began at once on the construction of a modest station which finally took the air on August 5, 1952—thus VS9AW became the first amateur station ever to operate from the Sultanate of Oman. The transmitter line-up was Clapp v.f.o., 6SN7 (buffer amplifier), 6V6 (doubler), 807 (doubler/tripler) and 813 (p.a.), with an input of approximately 100 watts. The modulator consisted of a 6J5-6SN7-p.p., 6V6s-p.p. 807s in Class AB2.



The operating position at VS9AW.

Initially, an old HRO Senior—roughly re-aligned with the aid of a BC221 frequency meter—was used for reception, but it was never very satisfactory. Eventually a Hallicrafters SX71 was borrowed from the American Archaeological team in Salalah.

Numerous types of aerial were tried, of which the normal half-wave dipole running North and South, was found most satisfactory in this particular location. Unfortunately, no materials were available for the construction of either rotary or long wire beams.

It was soon realised that operating with a "rare DX" call was vastly different from working as a "G." Of the bands used, 14 Mc/s proved the

\* 25 Culverden Avenue, Tunbridge Wells, Kent.

most consistent. Stations could be heard at almost any time, and when DX signals were not coming through, "locals" such as VS7 and VQ4 could be worked. The most consistent of the U.K. stations were G3FNN, G3HLS, G4ZU and GM3DHD. Conditions on the 21 Mc/s band were very rarely good and 3.5 Mc/s was completely unusable. The 7 Mc/s band, however, yielded a number of enjoyable contacts with VQ3, VQ4, VS7, MP4, Y1 and some Europeans but no U.K. stations were heard.

#### Top Band Successes

As a result of discussions with VS1EV, VS7EA, VS7WA and MP4HBK—all "local" stations!—it was decided to carry out some Top Band tests. These were arranged to take place at times when the paths between the co-operating stations were favourable for both 1.8 Mc/s and 14 Mc/s operation, as VS9AW could not receive too well on the former band due to the high static level. During the first tests—on November 15, 1952—VS9AW was heard at excellent strength by all the stations mentioned. The following day, MP4HBK was worked on telephony.

On November 22, 1952, the first Kenya-Oman Top Band c.w. contact was made with VQ4AQ. Since then, reports have been received from many sources, including one that a Canadian had heard a VS9 station at a time and on a frequency which agreed with the log.

During a contact on 14 Mc/s, PY1AQT informed VS9AW that his signals had been heard in Brazil at S9 plus 10 db. G6LX and a number of other British stations are known to have heard and called VS9AW during the Top Band tests. VS9AW finally closed down on January 26, 1953.

\* \* \*

QSL cards have been sent in return for all received, but those still requiring verification of contact are asked to send another card direct or through the R.S.G.B. QSL Bureau. Further reports on the Top Band transmissions from VS9AW will be most welcome.

#### International Short Wave League

The Correspondence Manager of the I.S.W.L. (W. A. Winchester, 4 Woodgate Road, Eastbourne) will be glad to hear from any reader who wishes to correspond with amateurs in other countries.

#### Can You Help?

• R. A. Gibbs, ZL3SA (ex-G3CUK, ex-ZL2AMG), who is anxious to acquire the issues of *S.W.M.* from July, 1946, to July, 1947. He lost those issues en route from England to New Zealand.

### Slow Morse

**D**UE to the changed conditions which now apply on the Top Band, details of the stations which send Morse Practice Transmissions have been omitted from this issue.

Members affected by the changes are asked to advise the Honorary Organiser (Mr. C. H. L. Edwards, A.M.I.E.E., G8TL, 10 Chepstow Crescent, Newbury Park, Ilford, Essex), of their new frequencies. A completely new list will appear next month. In choosing a frequency for slow Morse practice due regard should be paid to the list of vulnerable frequencies published on page 494.

#### Direction Finding Field Day

**D**ETAILS of the Qualifying Field Day to be held on Sunday, May 31, 1953, are as follows:

**Organiser:** H. Bone, 104 Montague Road, Watton, Peterborough.

**Call Sign:** G3EEL/P.

**Frequency:** 1915 kc/s.

**Assembly Point:** Milton Ferry, by River, on Peterborough-Wansford Road. N.G.R. 143985.

**Map:** Ordnance Survey, New Popular Edition, Sheet 134.

**Assembly Time:** 1330 B.S.T.

Intending competitors should notify the organiser by Monday, May 25, stating the number in their party requiring tea. The location of the restaurant will be notified to competitors when their entries are acknowledged.

#### Two-Metre Open Contest, 1952.

**T**HE following are the results of the Two-Metre Open Contest held on July 26-27, 1952.

Position	Call Sign	Location	Points	Contacts
1	GW2ADZ	Llanymynech, Mont.	6026	45
2	G5YV	Morley, Leeds, Yorks.	5890	55
3	G3WW	Wimlington, Cambs.	5383	63
4	G3CGQ	Luton, Beds.	3360	31
5	G2HIF	Wantage, Berks.	3041	50
6	G3FAN	Ryde, I.O.W.	2898	44
7	G3BW	Whitehaven, Cumb.	2847	21
8	G3BCY	Greenwich, S.E.10.	2627	61
9	G4RO	St. Albans, Herts.	2615	57
10	G3HVO	Parkstone, Dorset.	2447	37
11	G5DS	Surbiton, Surrey	2424	66
12	G5JU	Birmingham, Warwicks.	2273	31
13	G5MR	Hythe, Kent.	2236	21
14	G2HDZ	Pinner, Middlesex.	2228	66
15	GWSUH	Cardiff, Glam.	2207	20
16	G2BAT	Falmouth, Cornwall.	2177	14
17	G3FIJ	Colchester, Essex.	1747	19
18	G3FD	Southgate, N.14	1780	46
19	G3GBO	Denham, Bucks.	1604	68
20	G3ANB	Brightlingsea, Essex.	1310	11
21	G3ASG	West Ewell, Surrey.	1153	43
22	GM3EGW	Dunfermline, Fife.	1035	12
23	G8DA	Gloucester, Glos.	932	14
24	G3BPM	Kensington, W.10.	760	45
25	G3IWA	Bath, Somerset.	499	6
26	G6PJ	Sheffield, Yorks.	260	8
27	G2DHV	Lewisham, S.E.	75	7

**Disqualified:** G2AJ (claimed score 6,365) for inaccuracies in log. G2OI (claimed score 1,727) for unsigned declaration.

**Check Logs:** G2UJ, G2YB, G3AGA and G4JJ are thanked for submitting check logs.

### Contests Diary

1953

May 31	D.F. Qualifying (Peterborough)
June 13-14	National Field Day
June 21	144 Mc/s Field Day (No. 1)
June 28	D.F. Qualifying (High Wycombe/Oxford)
August 16	D.F. Qualifying (Rugby/Slade)
August 30	144 Mc/s Field Day (No. 2)
September 6	Low Power Field Day
September 6	D.F. Qualifying (Romford/Southend)
September 13	420 Mc/s Tests
September 27	D.F. National Final
October 3-4	Low Power
November 7-8	"Top Band" (No. 2)

# International Amateur Radio Union

Latest News from Headquarters

**D**URING 1952 seven Societies were elected to membership of the Union bringing the total up to 49. The newcomers represent the radio amateurs of Bermuda, Ecuador, Germany, Mozambique, Netherlands Antilles, Southern Rhodesia, and Yugoslavia.

During the year 682 W.A.C. certificates were issued of which 240 represented work on radio telephony. Twelve 3.5 Mc/s endorsements were issued, one of which was for telephony.

An agreement between the U.S. and Cuba was concluded which provides for the exchange of third party message traffic by amateur stations of both countries. Like earlier agreements with Liberia and Ecuador it stipulates that the traffic must be of the type which would not normally go by established means of communication except in an emergency, when any type of message may be handled.

The Netherlands Society V.E.R.O.N. requests that all QSL cards for Dutch amateurs should be sent only to VERON QSL Bureau, Post Box 400, Rotterdam.

More than half the Member Societies have reported that their respective Governments have authorised amateur operation in the 21 Mc/s band. Knowing that the promptness with which individual governments act in such matters depends largely on the leadership of amateurs, Headquarters was not

too surprised to learn of swift progress in many areas. With a more complacent group to contend with, these same governments might still have the 21 Mc/s band "tucked away" in some far corners of their minds. This forward step by amateurs all over the world is an indication that future action on the part of National Societies, in co-operation with their Governments, can be expected with a minimum of delay.

The International Telecommunications Union held a Conference in Buenos Aires during 1952 but as this was at plenipotentiary level and dealt only with such matters as organisation and the conduct of I.T.U., the need for amateur representation did not arise.

The L.C.R.A. (Colombia) offers a special certificate to amateurs who have contacted all of the Colombian Districts (HK1-HK8) on any amateur frequency, c.w. or phone. Claims are to be sent to P.O. Box 584, Bogota.

Details of the Member Societies forming the I.A.R.U. are set out below. From this list it will be seen that 23 of the Societies are located in Region I (Europe and Africa) 19 in Region II (the Americas) and 7 in Region III (Asia and Australasia). The Headquarters Society is the American Radio Relay League. The R.S.G.B. acts as a central bureau for the societies in Region I.

## I.A.R.U. Member-Societies

**A.A.E.M.**: Association des Amateurs Emetteurs du Maroc, P.O. Box 2060, Casablanca, French Morocco.

**A.R.C.I.**: Amateur Radio Club, India, P.O. Box 6666, Bombay 20, India.

**A.R.I.**: Associazione Radiotecnica Italiana, Via S. Paolo 10, Milan, Italy.

**A.R.R.L.**: American Radio Relay League, 38 La Salle Road, West Hartford, Conn., U.S.A.

**B.A.R.S.**: Burma Amateur Radio Society, P.O. Box 376, Rangoon, Burma.

**Canadian Section, A.R.R.L.**: Canadian Director, 240 Logan Avenue, St. Lambert, P.Q., Canada.

**C.R.A.G.**: Club de Radio Aficionados de Guatemala, P.O. Box 12, Guatemala City.

**D.A.R.C.**: Deutscher Amateur Radio Club, Roonstrasse 9, Kiel, Germany.

**E.D.R.**: Experimentierende Danske Radioamaterer, P.O. Box 79, Copenhagen, Denmark.

**G.R.C.**: Guayaquil Radio Club, Casilla 784, Guayaquil, Ecuador.

**H.K.A.R.T.S.**: Hong Kong Amateur Radio Transmitting Society, Box 541, Hong Kong.

**I.A.R.C.**: Israel Amateur Radio Club, P.O. Box 4099, Tel-Aviv, Israel.

**I.R.A.**: Islenskir Radio Amatorar, P.O. Box 1080, Reykjavik, Iceland.

**I.R.T.S.**: Irish Radio Transmitters Society, 17 Butterfield Crescent, Rathfarnham, Dublin, Eire.

**L.A.B.R.E.**: Liga de Amadores Brasileiros de Radio Emissao, Caixa Postal 2353, Rio de Janeiro, Brazil.

**L.C.R.A.**: Liga Colombiana de Radio Aficionados, P.O. Box 584, Bogota, Colombia.

**L.M.R.E.**: Liga Mexicana de Radio Experimentadores, Lucerna 1 Altos, Apartado Postal 907, Mexico, D.F., Mexico.

**L.P.R.A.**: Liga Panamena de Radio Aficionados, Apartado 1616, Panama, Rep. de Panama.

**L.R.E.M.**: Liga dos Radio Emissores de Mocambique, P.O. Box 812, Lourenco Marques, Mozambique.

**N.R.R.L.**: Norsk Radio Relae Liga, P.O. Box 898, Oslo, Norway.

**N.Z.A.R.T.**: New Zealand Association of Radio Transmitters, P.O. Box 2666, Auckland, C.I. New Zealand.

**O.V.S.V.**: Osterreichischer Versuchssenderverband, Plainstrasse 20/1, Salzburg, Austria.

**P.A.R.A.**: Philippine Amateur Radio Association, 2046 Taft Avenue, Pasay City, R.P.

**R.C.A.**: Radio Club Argentino, Av. Libertador General San Martin 1850, Buenos Aires, Argentina.

**R.C.C. (Chile)**: Radio Club de Chile, Casilla 761, Santiago, Chile.

**R.C.C. (Cuba)**: Radio Club de Cuba, Lealtad 660, Habana, Cuba.

**R.C.D.**: Radio Club Dominicano, Calle Palo Hincado Edificio Gomez (bajos), Cd. Trujillo, Dominican Rep.

**R.C.P. (Paraguay)**: Radio Club Paraguayo, Calle Palma No. 310, Asuncion, Paraguay.

**R.C.P. (Peru)**: Radio Club Peruano, Casilla No. 538, Lima, Peru.

**R.C.U.**: Radio Club Uruguay, Casilla 37, Montevideo, Uruguay.

**R.C.V.**: Radio Club Venezolano, P.O. Box 2285, Caracas, Venezuela.

**R.E.F.**: Réseau des Emetteurs Français, 3 Avenue Hoche, Paris 8, France.

**R.E.P.**: Rede dos Emissores Portugueses, Travessa Nova de S. Domingos 34-1, Lisbon, Portugal.

**R.L.**: Réseau Luxembourgeois des Amateurs d'Ondes Courtes, 27 rue d'Amsterdam, Luxembourg.

**R.S.B.**: Radio Society of Bermuda, Hamilton Hotel, Hamilton, Bermuda.

**R.S.G.B.**: Radio Society of Great Britain, New Ruskin House, 28/30 Little Russell Street, London, W.C.1, England.

**R.S.S.R.**: Radio Society of Southern Rhodesia, P.O. Box 2377, Salisbury, Southern Rhodesia.

**S.A.R.L.**: South African Radio League, P.O. Box 3911, Capetown, South Africa.

**S.R.A.L.**: Suomen Radioamatoorilitto r.y., P.O. Box 306, Helsinki, Finland.

**S.R.J.**: Savez Radioamatera Jugoslavije, Trg republike 5/IV, Belgrade, Yugoslavia.

**S.S.A.**: Sveriges Sandreamatorer, Stockholm 4, Sweden.

**T.I.R.**: Technical Institute of Radio, P.O. Box 35, Damascus, Syria.

**U.B.A.**: Union Belge des Amateurs Emetteurs, Post Box 634, Brussels, Belgium.

**U.C.A.R.**: Union Congolaise des Amateurs de Radio, P.O. Box 271, Leopoldville, Belgian Congo.

**U.R.E.**: Union de Radioaficionados Espanoles, Apartado 220, Madrid, Spain.

**U.S.K.A.**: Union Schweiz Kurzwellen Amateure, Postbox 1367, Berne, Switzerland.

**V.E.R.O.N.**: Vereeniging voor Experimenteel Radio Onderzoek in Nederland, van Loostraat 105, The Hague, Netherlands.

**V.E.R.O.N.A.**: Vereeniging voor Experimenteel Radio Onderzoek in de Nederlandse Antillen, President Rooseveltweg 246, Curacao, Netherlands Antilles.

**W.I.A.**: Wireless Institute of Australia, Box 2611-W, G.P.O., Melbourne, Victoria, Australia.

# Society and Social News

## Coronation Relay

FURTHER to the announcement published in the March issue of the BULLETIN, members resident in the United Kingdom are asked to be on the look-out during the next two weeks for Coronation Relay messages.

Mr. Herbert Bartlett, G5QA, of Exeter, who is organising the Relay on behalf of the Council, has been advised that messages are to be originated from all parts of the British Commonwealth. Many will, undoubtedly, be transmitted direct to the U.K., but some may, due to poor radio conditions, be relayed via other amateur stations.

U.K. amateurs who accept messages should send them by post to R.S.G.B. Headquarters without delay.

Present plans are that the batch of messages will be handed in to Buckingham Palace on Friday, May 29.

## Fortieth Anniversary Dinner

TO mark the 40th anniversary of the foundation of the Society, as the Wireless Club of London, on July 5, 1913, a dinner will be held at The Horse Shoe Hotel, Tottenham Court Road, London, W.C.1, on Saturday, July 4, 1953 at 6.30 p.m. The dinner will be open to members and their ladies, the price of tickets will be one guinea and evening dress will be optional.

It is anticipated that a number of distinguished guests, including several surviving founder members, will be present on this historic occasion.

As accommodation is limited to about 150, early reservation is essential to avoid disappointment. Applications for tickets, with remittances made payable to Mr. John Clarricoats by name, should be addressed to the General Secretary, Radio Society of Great Britain, New Ruskin House, Little Russell Street, London, W.C.1, to arrive not later than June 1, 1953.

## The Top Band

DURING the currency of the Cairo Radio Regulations, the band 1,715-2,000 kc/s has been available (shared with other Services), for use by radio amateurs throughout the world. United Kingdom amateurs have been permitted to use the band subject to a power limitation of 10 W.

Under the Atlantic City Radio Regulations there is no allocation in Region 1 (Europe and Africa) to the Amateur Service but a footnote to the Frequency Allocation Table reads: "In the band 1,715-2,000 kc/s Austria, Ireland, The Netherlands, Northern Rhodesia, Southern Rhodesia, Switzerland, the Union of South Africa and the United Kingdom may assign up to 200 kc/s for the Amateur Service provided that the mean power of any amateur station does not exceed 10 W, and that no harmful interference is caused to the authorised Services of other countries."

This part of the Allocation Table and the frequency assignment plan based on it, and agreed to at the Geneva Conference in 1951, came into force on May 1, 1953.

In a recent letter to the Society, the Post Office indicated that they have been considering how far it will be practicable for U.K. amateurs to continue to use the band under the new arrangements. They think that it may prove very difficult for amateurs to use the band without causing harmful interference to the authorised services of other countries; but that this does not seem sufficiently certain to justify their exclusion from the band at this stage.

The Post Office has, therefore, decided to assign to U.K. amateurs a band 200 kc/s wide in this part of the spectrum subject to strict non-interference with other services (United Kingdom and foreign).

In communicating this decision the Post Office has pointed out that for some time

conditions in the band will be particularly difficult as stations settle down to their new assignments; and has asked that U.K. amateurs should use the band sparingly during the next few weeks.

Following a meeting between representatives of the Post Office and the Society it was announced that the 200 kc/s band is to fall between 1,800 kc/s and 2,000 kc/s.

In order to minimise the risk of interference with other Services using the band, the Post Office, in response to a request from the Society, has issued a list of frequencies which are likely to be particularly vulnerable to interference, and which U.K. amateurs would do well to avoid in the interests of both the Amateur and Marine Services.

In the list which follows centre frequencies are quoted, but all the assignments are for A3 working and normally occupy a band-width of 6 kc/s:

Frequencies	Assignments
1827	Wick (GKR) and Folkestone (GUR)
1834	Niton (GNI)
1841	Cullercoats (GCC) and Land's End (GLD)
1848	North Foreland (GNF) and Oban (GNE)
1855	Burnham (GRL), Stonehaven (GND), & Newhaven (GUV)
1869	Humber (GKZ)
1883	Portpatrick (GPK)
1911	Land's End, Niton and Seaforth (GLV)
1925	Land's End, Niton and Seaforth
1953	British Ships
1960	French Ships
1974	Dutch Ships
1981	British Ships
1988	Danish Ships
1995	Dutch Ships

Frequencies are in kc/s



### Region 5 Representative

FOR personal reasons Mr. R. F. G. Thurlow, G3WW, has found it necessary to resign from the office of Region 5 Representative. In accepting his resignation the Council placed on record its warm appreciation to Mr. Thurlow for his past most valuable services to the Society. Mr. Thurlow became a Regional Representative in 1950 and during the past two and a half years he has carried out his duties in a most efficient manner.

Nominations for his successor should be sent to reach the General Secretary by not later than June 30, 1953.

As a consequence of Mr. Thurlow's resignation the Council has decided that the Region 5 Official Meeting, scheduled to take place in Cambridge on July 5, shall be deferred for the time being.

### The Loyal Address

**A** LOYAL Address, congratulating Her Majesty Queen Elizabeth II on the occasion of her Coronation, and expressing the earnest hope that she may long be spared in health and happiness to reign over her loyal and devoted subjects, was signed and sealed by the Council at a meeting held on May 8, 1953.

The Address will be presented to Her Majesty on behalf of the Members of the Society and of Societies and Clubs affiliated thereto.

### Affiliated Societies

TO meet the wishes of those Affiliated Societies with a predominantly R.S.G.B. membership, the Council has decided that the fee to be paid by all Affiliated Societies shall be 21/- per annum if a copy of the R.S.G.B. BULLETIN is required and 10/6 per annum if a copy of the R.S.G.B. BULLETIN is not required.

### London Members' Luncheon Club

TWO well known Finnish amateurs, Charlie Selin, OH2PI, and Johnny Osterlund, OH2QM, were warmly welcomed at the meeting of the London Members' Luncheon Club held on Friday, April 24, 1953. Also present was B. Calder, of VP8AK, on leave from Deception Island. The President of the R.S.G.B. (Leslie Cooper, G5LC) and several other Members of the Council were in attendance. The Chairman (Stanley Vanstone, G2AYC) presided.

The next meeting of the Club has been fixed for the Friday before the Coronation (May 29) when it is anticipated there will be a record number of overseas amateurs in London. The support of London members on this special occasion to welcome the guests will be appreciated.

The Club meets at the Bedford Corner Hotel at 12.30 p.m. for 1 p.m.

### THE NEXT S.G.M.

The Council hopes to convene a Special General Meeting at some date towards the end of September, 1953, to consider the new Articles of Association.

### The Television Society

SIR ROBERT RENWICK, Bart, K.B.E., President of the Television Society, presided at the Annual Dinner held on Monday, April 13, 1953, at the Dorchester Hotel, Park Lane, London. There was an attendance of nearly 300.

The toast to the Society was proposed by the Assistant Postmaster-General, Mr. David Gammans, M.P. Referring to commercial television Mr. Gammans expressed the view—presumably on behalf of the Government—that the public will be best served if there is an element of competition. He suggested that sponsored TV would provide more scope for artists and engineers. Mr. Gammans hinted that colour television could be introduced without any appreciable delay if some simple method could be devised of modifying the present type of television receiver so that it can receive colour pictures.

In the course of his reply Sir Robert Renwick gave some details of the new 625 line Amateur Television station which the Society is to bring into operation shortly.

The Society's Silver Medal was presented to George Cansdale, B.A., B.Sc., F.L.S., in recognition of the high artistic merit of his presentations from the London Zoo.

Mary Malcolm, Joan Gilbert, Cecil Madden, McDonald Hobley, were among the many guests, which included representatives of the Services, the B.B.C., the Radio Industry, and the Technical Press.

### British Wireless Dinner Club

THE 30th Annual Dinner of the British Wireless Dinner Club was held at The Junior United Services Club, London, on Friday, April 17, 1953. The guest speaker was Admiral of the Fleet, Lord Fraser of North Cape, G.C.B., K.B.E., and the chair was taken by the President of the Club, Admiral A. J. L. Murray, C.B., D.S.O., O.B.E.

Among those present were Sir Archibald Gill, Sir Victor Tait, Vice-Admiral J. W. S. Dorling, C.B., Air-Vice Marshal C. W. Nutting, C.B.E., D.S.C. (elected President for the year 1953-4), Col. J. Reading, Wing Commander N. H. Hamilton, D.S.O., Capt. Round, Capt. P. P. Eckersley, Capt. S. R. Mullard, Capt. Echevarri, Capt. H. de A. Donisthorpe, Messrs. Hugh Pocock, C. E. Strong, H. Faulkner, A. H. Mumford, E. M. Lee, G. C. Clifford, Douglas Johnson, Robin Addie, Douglas Walters, C. R. Benham and John Claricoats.

The Club, which now has a membership in excess of 500, is open to those who have held commissioned rank in the Signals Branch of any of the three Services.

### Sussex Bucket and Spade Party

NOTWITHSTANDING an earlier decision that there should be a change of venue for this popular event, Sussex amateurs have decided that the 1953 Bucket and Spade Party shall be held in Worthing.

The date has not yet been fixed but a committee, consisting of G2DHG, G3BF and G3VH, is finalizing the arrangements. A further announcement will be made next month.

### Change of Address

COUNCIL Member P. W. Winsford (G4DC) has changed his address to 22 Forge Road, Three Bridges, Crawley, Sussex.



## It's Topical

**T**HE Council of the British Institution of Radio Engineers has authorised the establishment of a premium (value Rs. 250) to be awarded annually for the most outstanding paper contributed to the Journal of the Institution by an Indian member. It is to be known as the **Sir J. C. Bose Premium** in memory of the distinguished Indian physicist.

**Purchase Tax** on radio and television equipment has been reduced as a result of last month's Budget announcements. Wireless batteries are now exempt from tax.

A programme for radio amateurs is broadcast to the United Kingdom by the Swiss Shortwave Service at 1915 G.M.T. on the first Tuesday in each month. The frequencies used are 6.055 and 9.665 Mc/s.

The honour of effecting the first amateur two-way c.w. contact by the use of **single-stage transistor transmitters** is claimed by W2JEP and W2YTH. The contact—made on 7 Mc/s—took place over a distance of half a mile. *Mechanix Illustrated* reports that RCA has built a **television receiver employing transistors**. An interesting article on components for use with these devices appears in the May, 1953 issue of *Wireless World*.

Total membership of the **South African Radio League** is 1,431. Since January 1 last, South African amateurs have been operating under new regulations issued as a result of the 1952 Radio Act, which reduced the width of the 160, 80, 40, 20 and 10 metre bands and allotted new bands around 11 and 15 metres.

The latest licence figures issued by the G.P.O. show that there are **12,892,231 broadcast receiving licences** (including 2,142,452 for television and 183,996 for car radios) current in the U.K. Nearly 70,000 TV licences were issued during March.

Regular transmissions from **Glencairn** (Belfast) and **Pontop Pike** (Newcastle) television stations commenced at the beginning of this month. It is expected that some fading, interference and even complete loss of picture may occur from Glencairn, owing to the temporary nature of the link connecting the station to the main television network. Trouble is particularly likely when there are sudden changes in weather conditions.

The **biggest link-up** in radio history will be employed by the B.B.C. on Coronation Day to present a programme entitled "Coronation Day Across the World" in which every facility of short-wave radio will be employed. Excellent results were achieved in the initial tests of the temporary **international television network** which is to carry the B.B.C. Television Coronation commentary to France, Holland and Germany. By the autumn, it is expected that a permanent network will link these countries. Reviewing TV plans for the future, Sir Ian Jacobs, Director-General of the B.B.C., said he thought **colour television** might be in use within three years.

Madeline Streamer, née Madeline McKenzie, of Brisbane, Australia, known to many Old Timers as **VK4YL**, was heard in the B.B.C. programme "Welcome To Britain" on Sunday, April 26. Madeline, who received her licence when only 11 years of age, is in England with her husband. At the time of the B.B.C. recording she was on a visit to Mablethorpe, Lincs. She spoke of her interest in Amateur Radio and of the pleasure she had experienced in meeting Arthur Simons (G5BD) of that town. She and Arthur had regular skeds in pre-war days.

## Coronation Year Activities

**Chingford Hospital: May 25.** An amateur station will be in operation in the hospital grounds.

**Eltham Palace: May 23-25.** Two amateur stations will be in operation using the special call-signs GB2ER and GB3ER.

**Chelmsford Exhibition: June 6-7.** An amateur station will be in continuous operation using the special call sign GB2CRA.

**Hastings Hobbies Exhibition: July 4-11.** Hastings and District Amateur Radio Club will have a stand.

**Chingford Show: July 11.** An amateur station will be in operation.

**Southampton Show: July 17-18.** Three complete amateur radio stations will be manned by the local Group.

### Amateur Radio Station at Eltham Scouts' Coronation Celebration

**A**N Amateur Radio station, manned by members of the Eltham and Sidcup Group, will be in operation in the grounds of Eltham Palace from May 23 to 25 in connection with the Eltham Scouts' Coronation Celebration. The Group hope to make contacts with amateurs in towns named Eltham in Australia and New Zealand.

### Chelmsford Coronation Celebrations

**T**HE Chelmsford R.S.G.B. Group is to operate an amateur station in the Central Park, Chelmsford, on June 6 and 7 in connection with the town's Coronation celebrations. The equipment in use will include an HRO and the latest G5RV 150 W TVI-proof transmitter (to be described in an early issue of the BULLETIN.—Ed.). It is anticipated that a television receiver will be installed in the tent to demonstrate freedom from interference. Operation, which will be on all bands from 3.5-14 Mc/s and possibly on 21 Mc/s, will commence during the evening of June 5 and will be continuous until 7 p.m. on the following day. A low power station will also operate on Top Band.

The Essex C.R. and Chelmsford will be in attendance most of the time and will be glad to welcome visiting amateurs.

### Southampton Amateur Radio Exhibition

**A** MARQUEE at the Southampton Annual Show —to be held on the Common on July 17 and 18, 1953—has been allotted to the local R.S.G.B. Group. Stands will be set up to illustrate the development and world-wide fraternity of Amateur Radio and to exhibit home-constructed equipment. Three complete amateur stations will operate under the following call-signs: G3BHS/A (1.8, 3.5 and 7 Mc/s), G3TR/A (14, 21 and 28 Mc/s) and G3CGE/A (144 and 430 Mc/s). Amateur TV over a closed circuit will be demonstrated by the Hampshire C.R., E. R. L. Bassett (B.R.S. 16075). A cup, donated by R. Gardner (G3CGE) will be awarded for the best example of amateur construction displayed.

This will be the first Amateur Radio Exhibition ever staged in the area.

### Numbers!

"The number of television sets is increasing by leaps and bounds—the number of television licences is creeping up slowly."

Felicity Gray at The Television Society's Dinner

# Council Proceedings

*Résumé of the Minutes of the Proceedings at the Meeting of the Council of the Incorporated Radio Society of Great Britain held at New Ruskin House, Little Russell Street, London, W.C.1, on Tuesday, March 17, 1953, at 6 p.m.*

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

*Apology.*—An apology for absence was submitted on behalf of Mr. D. A. Findlay.

## Membership.

*Resolved:—*

- (a) to elect 32 Corporate Members and 16 Associates;
- (b) to grant Corporate Membership to 6 Associates.

## Life Membership.

Details were submitted of 16 Members who had applied for Life Membership since April, 1952.

Resolved to inform the Members concerned that the Council is now prepared to grant them Life Membership on receipt of the Life Composition Fee of £10.10.0. [The Council decided in April, 1952, to defer all applications for Life Membership in view of the fact that revised Articles of Association were then in course of being prepared for submission to the Membership.—ED.]

## National Radio Exhibition, 1953.

Consideration was given to a letter from Mr. A. C. Edwards (G6XJ), in which he suggested that the Society should exhibit at the National Radio Exhibition to be held at Earls Court in September, 1953.

Resolved to record that the Council is in favour, in principle, of participating in the 1953 National Radio Exhibition.

Consideration was then given to the layout of stands, a list of hire charges and the methods adopted by the organisers for allocating space. From the information available it appeared that a total expenditure of about £450 would be incurred if a first-floor stand occupying about 400 square feet was rented.

After further discussion it was resolved:—

- (a) to take no action at present in respect to applying for space at the 1953 National Radio Show;
- (b) to wait and see whether any suitable space is available at an economic price after the ballot.

## Provincial Meetings 1953.

*Resolved:—*

- (a) to authorise Mr. R. F. G. Thurlow to organise an Official Meeting in Cambridge on July 5, 1953, and to appoint the President, General Secretary and Mr. Hicks-Arnold as the Council's delegates;
- (b) to authorise Mr. W. Baker to organise an Official Meeting in Edinburgh on September 27, 1953.

[The Cambridge meeting has been deferred for the time being.—ED.]

## Honorary Membership.

In accordance with the Articles of Association, a Ballot was conducted for the election to Honorary Membership of Mr. W. A. Scarr, M.A. (a Past President of the Society). As a result of the Ballot (which proved unanimous in favour of the candidate) it was resolved that William Arthur Scarr be elected an Honorary Member of the Society.

## Articles of Association.

Resolved that the revised draft of the Articles of Association, as amended in accordance with suggestions put forward by Mr. Douglas Johnson, be approved and sent to the Board of Trade via the Society's Legal Advisers.

## Special Resolution.

Resolved to submit the revised Articles of Association to the Membership at a Special General Meeting to be held at the Institution of Electrical Engineers, London, W.C.2, on Friday, June 19, 1953. [The meeting has been deferred until late in September, 1953.]

## National Emergency Amateur Radio Communications Service.

Resolved to set up an Ad Hoc Committee comprising Messrs. Charman, Edwards, Milne, Newnham and Winsford to examine various proposals made by members in regard to the establishment of a National Emergency Amateur Radio Communications Service.

## Cash Account.

Resolved to accept and adopt the Cash Account for February, 1953, as submitted by the General Secretary.

## Income Tax Refund.

It was reported that a sum of £175.15.0 had been repaid to the Society by the Commissioners of Inland Revenue. This represented a refund of Income Tax deducted for dividends and interest received in the year ending April 5, 1953.

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

## Resignation of Members.

It was reported that

- (a) Messrs. Auchterlonie and McConnell had decided not to withdraw their resignations from the Council;
- (b) Mr. Firdlay had withdrawn his resignation.

Resolved to accept, with regret, the resignations of Messrs. I. D. Auchterlonie and H. McConnell from the Council of the Society.

## By-Election.

*Resolved:—*

- (a) to notify the Membership that two vacancies have occurred on the Governing Body of the Society as the result of the resignations of Messrs. Auchterlonie and McConnell;
- (b) to invite nominations from the Membership to fill the vacancies;
- (c) to conduct a ballot if more than two Members are nominated;
- (d) in the event of a ballot not to issue ballot envelopes.

## "Television Interference."

Resolved to authorise the Technical Committee to prepare a supplement to the booklet "Television Interference" covering the latest statistical information from manufacturers.

## "Bulletin" Paper.

After examining samples of BULLETIN pages printed on three different types of paper, it was resolved to accept a recommendation of the Technical Committee that, as from July, 1953, the BULLETIN shall be printed on a 51 lb. paper. The Secretary reported that the changeover was expected to produce a saving of more than £400 p.a. on the basis of 12,500 copies being printed of each 48-page issue.

## Membership and Representation Committee.

Arising from consideration of a Report of the Membership and Representation Committee it was resolved:—

- (a) to take no action at present on a proposal put forward by Bristol members that all subscriptions should become due on a fixed date annually;
- (b) to authorise the holding of not more than six Provincial Meetings during the period from July 1 to December 31, 1953.

The meeting terminated at 10.5 p.m.

## For your Bookshelf or Shack

### ★ R.S.G.B. Technical Publications

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

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

### ★ Sales Items

Car Plaque (R.S.G.B. Emblem) -	5/-
Car Plaque (R.S.G.B. Emblem with Call Sign) (5 characters)† -	6/-
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Log Books (Webbs') -	4/-
Great Circle Map (Webbs') -	4/6
Above prices include postage and packing.	
† Delivery 3-5 weeks.	

Send all orders to:—

Publications Dept.,  
Radio Society of Great Britain,  
New Ruskin House, Little Russell Street,  
London, W.C.1.

# Regional and Club News

**ACTON, BRENTFORD & CHISWICK RADIO CLUB.**—There was a record attendance at a recent meeting when amateur equipment was exhibited for the benefit of the local Press. The Club transmitter operates on Top Band on Tuesday evenings at the A.E.U. Rooms, 66 High Road, Chiswick. The Club is now affiliated to the R.S.G.B.

**BRADFORD AMATEUR RADIO SOCIETY.**—At the A.G.M., the following Officers were elected: *President*: E. Lancaster (G3BJP); *Vice-President*: D. Skirrow (G3GFD); *Hon. Secretary*: A. R. Bailey (G3IBN), Scarr Croft, Park Side, Bingley; *Treasurer*: G. F. Browne; *Committee Members*: D. Bottomley (G3GAQ), J. H. Macdonald (G4GJ), C. A. Sharp (G6KU), E. Haytock (G3HUV). Members are to visit a local newspaper on May 29.

**BRIGHTON.**—The T.R., Ron. Langridge, is at home every Wednesday evening after 7.30 p.m. and will be pleased to see members and prospective members. Amateurs visiting the town are also cordially invited.

**BRISTOL.**—At the April meeting D. F. Gibbs described how, by means of v.h.f. radio, the height of high-altitude balloons is measured in connection with cosmic research. The equipment used by Bristol University was demonstrated. A visit to Wenvoe TV station is arranged for June 27.

**CHESTER & DISTRICT AMATEUR RADIO SOCIETY.** The Annual Dinner, held at the Bars Hotel on April 17, was highly successful and was supported by representatives of several other North Western societies. A talk on the Radio Amateurs' Examination paper will be given on May 26.

**CHINGFORD.**—An amateur station will be in operation at Chingford Hospital on May 25 and at the Chingford Day show in Ridgeway Park on July 11.

**COVENTRY.**—At the April informal meeting, B.R.S. 19621 demonstrated his tape recorder. On April 17 members were conducted over the City Police Radio system by D. Bedford (B.R.S. 19613).

**COVENTRY AMATEUR RADIO SOCIETY.**—Club night on the air has been suspended for the summer but fortnightly meetings continue at the Y.W.C.A., Queen's Road. The next is on June 8 at 7.30 p.m., when G2BVW will give a talk on 70 cm equipment.

**EAST LONDON.**—Nearly 100 members attended the last meeting of the Winter session, held at the Town Hall, Ilford, on April 26, when H. T. Stott (Bulgin Ltd.) lectured on "The Super-regen. Receiver." At the same meeting the "5 Acker" Senior Trophy was awarded to R. N. Grubb (G3FNL) for a television waveform generator; Terry Clements (age 14) won the Junior Trophy with a home-made 70 cm. super-regen. receiver. The "Tobitsawud" Coronation Trophy, awarded to the town group scoring the most points in the Top Band Contest, has been won by Ilford District. F. G. Jarvis (G3HIW) accepted the trophy on behalf of the group. All students who attended the Ilford Literary Institute Morse Classes, conducted by J. Hunter (G6HU), have passed the G.P.O. Morse test.

**GRAFTON RADIO SOCIETY.**—E. A. Dedman (G2NH) gave an excellent talk, at very short notice, on "Single Sideband Transmission" at the meeting held on April 24. H. F. Knott (G3CU) was unable to be present, owing to

indisposition. Meetings are held at 7.30 p.m., on Mondays and Fridays, at Eburne Road School, Holloway, N.7. *Hon. Secretary*: A. W. H. Wennell (G2CJN), 145 Uxendon Hill, Wembley Park, Middlesex.

**HASTINGS & DISTRICT AMATEUR RADIO CLUB.**— "Oscillators," "Mains Transformers" and "Communications Receivers" have been the subjects of recent talks. The Club is to run a stand at the Hastings Hobbies Exhibition from July 4 to 11. *Hon. Secretary*: W. E. Thompson (B.R.S. 19773), 8 Coventry Road, St. Leonards-on-Sea, Sussex.

**PORTSMOUTH & DISTRICT RADIO SOCIETY.**—The Society is participating in the Coronation Ideal Homes Exhibition which is being held in the Connaught Drill Hall, Portsmouth. An amateur station is being operated under the Society's call sign G3DIT/A and special QSL cards are being sent to confirm contacts. Bands in use are 20, 40, 80 and 160 metres. The Society is co-operating with the



At the Isle of Thanet Radio Society's Sixth Annual Dinner-Dance, a large iced cake, decorated with a miniature "ham" (edible variety), made by Mr. and Mrs. Dean, was one of the attractions.

R.S.G.B. group in connection with N.F.D. Meetings are held every Tuesday evening at the Royal Marine Signa Club, Eastney Barracks.

**READING RADIO SOCIETY.**—At the A.G.M. the following Officers were elected: *President*: W. A. Smallcombe, B.Sc., F.M.A., F.I.C.; *Chairman*: Capt. I. G. Benbough, A.M.I.E.E. (B.R.S. 18116); *Hon. Secretary*: L. A. Hensford, B.E.M. (G2BHS), 30 Boston Avenue, Reading; *Treasurer*: R. Tufnail; *Committee Members*: H. Deadman (G2BYZ) and H. Woodhouse (G2AHY). Meetings are held at 7 p.m. on the second and last Saturdays in each month at the Abbey Gateway, Reading.



The amateur radio station (C4JS/P) at the Rotary Club Hobbies Exhibition, held in the Public Library Lecture Hall, Darwen, from April 15 to 18, 1953. C4JS is at the microphone, with G3GHZ standing to the left of the specially built transmitter. Other equipment shown includes a National HRO, Eddystone 750 and a BC221 frequency meter. The station was also in operation from April 22-25 at the Blackburn Rotary Club Hobbies Exhibition. Activity was principally on 80 metres, and all contacts have been QSL'd. Reports from B.R.S. members will be verified if accompanied by a stamp.

[Photo by Rudeni, Blackburn]

**ROCHDALE RADIO & TELEVISION SOCIETY.**—Meetings are now held at 7.45 p.m. on Thursdays at 1 Law Street, Sudden. The Club transmitter will shortly be on the air under the call sign G3IYD. *Hon. Secretary:* J. Riley, 1 Darsley Bank, Britannia, Bacup.

**SLADE RADIO SOCIETY.**—"Receiver Selectivity" is the title of the talk to be given by G3HKC at the meeting to be held on May 15 at 7.45 p.m. in the Church House, Erdington. The first D/F contest for the Harcourt Trophy is arranged for May 17 followed by an evening D/F test on June 12. The Dunlop Rubber Co.'s Research Dept. is to be visited on May 29. *Hon. Secretary:* C. N. Smart, 110 Woolmore Road, Erdington, Birmingham.

**SOUTHEND & DISTRICT RADIO SOCIETY.**—The Annual Hamfest will be held on May 16 from 7.30 to 11 p.m. *Hon. Secretary:* J. H. Barrance, 49 Swanage Road, Southend-on-Sea.

**TORBAY AMATEUR RADIO SOCIETY.**—At the recent A.G.M., when all the Officers were re-elected, the "V.H.F. Cup" was again awarded to G2BMZ for his consistently good work in the v.h.f. field. The President (G5SY), in the course of his address, stressed the need to introduce "new blood" into the Society and regretted the lack of interest in technical matters amongst young people in the area. *Hon. Secretary:* L. H. Webber (G3GDW), 43 Lime Tree Walk, Milber, Newton Abbot, Devon.

**YORK AMATEUR RADIO SOCIETY.**—At the A.G.M. the following Officers were elected: *Chairman:* E. Warwick (G3GDE); *Hon. Secretary:* G. Nottingham (G3DTA), 51 Carr Lane, Accomb, York; *Treasurer:* P. S. Robinson (G3FYP); *Committee Members:* W. James (G6XM), M. G. Linfoot (G3GCX), R. R. Wilkinson (G3DSA) and J. O. Yarker (G3GJY). Meetings are held in the Club rooms, Fetter Lane (facing the rear of the Queen's Hotel) on Tuesdays and Thursdays at 7.30 p.m. At the joint meeting with the R.S.G.B. Group, to be held in the Windmill Hotel, Blossom Street, on May 20 at 8 p.m., the Mullard film "It's a good sign" will be shown and C. H. Gardner (Mullard Ltd.) will give a talk.

## Book Review

**THE RADIO AMATEUR'S HANDBOOK** (Thirtieth Edition, 1953). By the Headquarters' Staff of A.R.R.L. 620 pages plus 180 pages of Catalogue Section. Price 31/6 post free, from R.S.G.B. Headquarters. Immediate delivery.

Almost 3 x 10<sup>6</sup> copies sold since 1926! What is new in it this year?

A 4-valve double-conversion superhet for 3.5 and 7 Mc/s is a welcome newcomer between a one-valve "bopper" with, believe it or not, reaction on the aerial circuit, and a new all-purpose super-selective i.f. amplifier.

All the new transmitters are believed to be TVI-proof. They include a compact 75-watt 6-bander, a 200-watt job for 1.7 Mc/s and 3.5 Mc/s, and a beat-frequency exciter using a balanced modulator circuit. An 807 amplifier for the novice's oscillator is described.

A remotely-tuned Clapp-type v.f.o. unit is of interest; the frequency-multiplier unit which follows it, uses 4-gang tuning with outputs on all bands from 3.5 Mc/s to 28 Mc/s. A new 1 kW tetrode amplifier is shown for the same frequency range, while a new and simple valve keyer is described. An account of baluns and bazookas is given in the line balancer section, and the section on "matching circuits" has been simplified and rewritten.

A new 6BQ7 pre-amplifier for 50 and 144 Mc/s will interest v.h.f. enthusiasts—who will show due respect, one hopes, for a description (running to 13 pages) of a complete transmitter for the 144, 50, 28 and 21 Mc/s bands. The exciter delivers up to 40 watts, while the p.a. gives 800 watts on c.w. cooled by an electrically driven fan. Very beautiful, but . . .

The section on the impedance matching of v.h.f. aerials has been rewritten and improved, and the problem of noise elimination, in the mobile equipment section, has been given wider treatment. Two new mobile converters, and a 4–29 Mc/s mobile transmitter are described.

The chapter on "Measurements" has been thoroughly revised and improved, and a simpler harmonic filter for TVI prevention is given.

Despite two minor criticisms, this edition is even better than its predecessors, and is still excellent value for money. T.P.A.

## Around the Trade

Clydesdale Supply Co., Ltd., 2 Bridge Street, Glasgow, C.5 has recently issued two useful catalogues, one devoted to surplus electronic and radio equipment (164 pages, price 1/6), the other to current-production radio and television components. The latter is available on request.

Technical information on *Plastapack* plastic film condensers and high voltage tubular ceramic condensers is given in Technical Bulletins 31 and 32 respectively, recently issued by the Telegraph Condenser Co., Ltd.

Southern Radio and Electrical Supplies have moved to new factory premises at Sorad Works, Redlynch, Salisbury, Wilts. (Telephone Downton 207.)

Mullard, Ltd. have made available three new B9A (Noval) based double triodes, the ECC81, ECC82 and ECC83, which are direct equivalents of the American types 12AT7, 12AU7 and 12AX7 respectively. The two triode sections in these valves are completely separate, with the cathodes connected to separate pins. An addition to the range of Mullard Picture Tubes is the MW43-64, an all-glass rectangular type with a 17 in. diagonal grey glass face.

The total number of valve types in the *Brimar Trustworthy Range* is now 22, the three most recent additions being equivalents to the 6AM5, 6C4 and R18.

## Representation

The following is an addition to the list of County Representatives published in the December, 1952, issue:—

### Region 1

#### Lancashire East

J. Simpson (G4JS), 1 Marsh Terrace, Darwen.

#### Result of Ballot:

J. E. Hodgkins . . . . . 4 votes  
J. Simpson . . . . . 19 votes

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

### Region 1—Lancashire West

#### Southport & Formby

N. Horrocks (G2CUZ), 32 Sandbrook Road, Ainsdale, Southport.

### Region 4—Lincolnshire

#### Spalding

P. Hazeldene (G3BTI), Broadgate, Weston.

### Region 7—London North

#### Barnet, Boreham Wood & Whetstone

A. D. Cliff (B.R.S. 19421), 39 Oakleigh Park North, Whetstone N.20.

### Vacancies

Messrs. W. A. Martin (G3FVG) and W. A. Allwright (G2AON) have resigned as Representatives for Balham and Eastbourne respectively.

Nominations for their successors should be made in the prescribed form and sent to reach the General Secretary by June 30, 1953.

## FORTHCOMING EVENTS.—(Continued from page 466).

**Penzance.**—June 4, Railway Hotel.

**Plymouth.**—May 16, 7 p.m., Tothill Community Centre, Tothill Park, Knighton Road, St. Jude's.

**Torquay.**—May 16, 7.30 p.m., Y.M.C.A., Castle Road.

**West Cornwall (W.C.R.C.).**—May 21, June 4, Fifteen Balls, Penryn, near Falmouth.

**Weston-super-Mare.**—June 2, 7.30 p.m., Y.M.C.A.

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

### REGION 10

**Cardiff.**—June 8, 7.30 p.m., "The British Volunteer," The Hayes, Cardiff.

### REGION 13

**Edinburgh.**—May 28, June 11, 7.30 p.m., Chamber of Commerce, 25 Charlotte Square.

**Dunfermline.**—Mondays and Thursdays, 7.30 p.m., behind 34 Viewfield Terrace, Dunfermline.

### REGION 14

**Falkirk.**—May 29, June 12, 7.30 p.m., Temperance Cafe, High Street.

**Glasgow.**—May 27, 7.15 p.m., 39 Elmbank Street.

## Regional and Club News

*Contributions to this feature should be topical, concise, and typed—using double spacing—and sent to reach Headquarters by not later than the 28th of the month preceding publication.*





### Mixer Master Oscillators

DEAR SIR.—Having just completed reading Part II of the article "Mixer Master Oscillators" in the February issue of the BULLETIN, I would like to inject a comment regarding the use of such techniques.

The writer having designed and built a number of such oscillators, deems it wise that readers should be adequately cautioned that random selection of the two frequencies is not permissible. cursory examination of the mathematics involved will show that sum and difference frequencies up to the tenth or higher will be generated in a non-linear mixer of the type described and should the sums or differences of these components fall within the pass band of the following circuit there is no method of preventing them from appearing in the output as spurious or unwanted frequencies.

During the war I was project engineer for certain Press Wireless 15 and 40 kilowatt frequency-shift telegraph transmitters and though we did use mixer oscillators, we had to select our crystals in such a fashion that we were able to prevent unwanted components from being radiated. Later experimental work using a mixer oscillator on the amateur bands produced several notices from the F.C.C. that I was radiating signals outside the amateur bands. Upon examination of the output of the transmitter this was confirmed.

As a specific example: If the crystal is assumed to be 4,350 kc/s and the variable oscillator 850 kc/s to produce an output of 3,500 kc/s, there will also appear in the output of the transmitter a component at 3,400 kc/s (which is the fourth harmonic of the v.o.) unless extreme care is taken to insure that the v.o. is a pure sine wave with no distortion; practical experience will tell us that this is difficult. Another problem exists if one attempts to double the output of the mixer and obtain output in the 7 Mc/s band.

However, I will state that with a reasonable selection of frequencies to be mixed, and extreme care in isolation of circuit components, along with critical adjustment of the mixer balance, it is possible to obtain a desired output, with spurious outputs down at least 50 db. However, if doubling is attempted it is nearly impossible to prevent appearance of spurious components in the output that will be down even as much as 30 db referred to the carrier level in both cases. Even when a spurious output exists, and it falls within the amateur band, there is only minor interference. However, in the case where the spurious output is just outside the amateur band, it is impossible to build circuitry with sufficient selectivity to prevent radiation of these unwanted frequencies.

I do agree that this is about the only practical method of obtaining perfect keying characteristics from a c.w. transmitter, but so far I have found that the end does not justify the means due to the ever present possibility of having low-level "birdies" outside the band.

In the event Mr. Allen (G2UJ) has found a method of eliminating these undesirable features, I would welcome correspondence and possible collaboration in perfecting this phase of the art.

Yours faithfully,

AMBROSE KRAMER, P.E., (W2OJM/W4HQN),  
A.R.R.L./R.S.G.B.

Bumpass, Virginia, U.S.A.

DEAR SIR.—Mr. Allen's article on the Mixer Master Oscillator drew largely upon experimental models which I had described to him during a visit to see this equipment. Some features, good or bad, were bound to escape full attention. Mr. Kramer rightly draws to my notice the possibility of the following:—

- (1) Amplification of direct harmonics of one of the oscillators.
- (2) Passage through the pass-band of mixtures produced by harmonics of one or other of the oscillators beating together to form signals not harmonically in relation to either fundamental.
- (3) Generation of harmonics by the mixer stage.

With regard to (1), care in the choice of frequencies will have to be observed. The use of a push-pull low frequency oscillator will reduce to a very low level the output of an even harmonic train. The effect of mixing a 500 kc/s wave with the output from a crystal oscillator between, say, 6 and 8 Mc/s will not produce a beat note of any power repeated every 500 kc/s. The first beat will be 1,500 kc/s away. If the

mixer output is tuned to 6 or 7 Mc/s, frequencies 1.5 Mc/s away should not be producing an effective voltage in the tank circuit.

With regard to (2), I recommended to Mr. Allen that a Mixer Master Oscillator for 3.5 Mc/s be the subject of special construction and, whilst it may operate well enough at 7 or 14 Mc/s, clearly it is an advantage to keep the l.f. low, so that 3,500 kc/s is many harmonics distant from the l.f. fundamental. For operation on the higher frequency bands a separate unit is needed having its output direct on 7 or 8 Mc/s, or even higher. Using, say, 500-900 kc/s as the variable frequency there will be times when its harmonics fall on to the mixer output frequency—e.g. output 7,000 kc/s and input 500 kc/s. Intermodulation takes place as they approach closely giving rise to two small parasites that close in on the fundamental as the frequencies come into lock. The power output of these can be regarded as positively minute. As the frequencies diverge output is lost. Mr. Kramer would be right in saying that they cannot be eliminated after mixing.

With regard to (3), if the mixer is balanced and run as a full wave square law detector, the output always contains a sinusoidal difference frequency component, free of harmonics, irrespective of the relative amplitudes of the two inputs. A linear mixer however, gives a difference frequency output that will be substantially free of harmonics only when one signal is larger than the other.

Considering the three problems as a whole, it may be said that the wave shape of the difference frequency is determined largely by distortion in the mixer and, if high order mixtures are to be quite removed, one of the applied signals should be smaller than the other and one of the oscillators should have its harmonics removed.

I would disagree with Mr. Kramer that a harmonic filter is out of the question. Experiments of a very rough nature made by G3COJ have already shown that undesired mixtures can be reduced to a negligible quantity in a case where no special measure was taken in selecting suitable mixing frequencies. It is not necessary to filter two oscillators before applying voltages to the detector. If it so happens that harmonics of the l.f. oscillator are being directly amplified—there being more of these within the pass bands—the choice is obvious. The problem of high-order mixtures and non-harmonic relationship to either fundamental falls within the scope of the filtering question. In view of the success of TVI filters any doubt is greatly lessened. From a practical viewpoint, there seems nothing against having an l.f. oscillator remote from the mixer coupled through a concentric line and filter.

If it is found that suitable output is obtained without filtering it is as well to say that very little harmonic reduction will be achieved by the use of transformer coupling from oscillator to mixer—or in the output circuit. Capacity, as suggested in the experimental designs, may be used. I do feel that Mr. Kramer has rather exaggerated the possibilities of "birdies" considering the output level when passed through a 40 kW transmitter. The same emissions coming out through a 150 W set would have a magnitude proportional to the illegal radiation which occurs from any oscillating detector receiver—probably much less—something that many heard loudly in the early days of broadcasting!

In concluding, readers may have noticed that some American designs have employed l.f. oscillators between 3 and 5 Mc/s. This seems to be a bad feature, if it is intended to prevent spurious signals. There may be less direct beat notes with which to contend, but the harmonics are within the range of being important and powerful as far as 30 Mc/s.

Yours faithfully,

A. E. LIVESEY (G6LI).

Grimsby, Lines.

References: *Radio Engineer's Handbook*—Terman. Pages 566, 569, 508.

### 807s on Top Band

DEAR SIR.—I am one of those who use 807s on Top Band, and for the same reason that many others do. That is, I have not the room nor the cash to make a separate transmitter for each of the six bands on which I work, so I have just the one rig, running 20 watts on other bands and 8 watts on Top Band by the simple expedient of switching in a voltage-dropping resistor and cutting out doubler stages.

The loss in efficiency (referred to by G4AY in the April issue) caused by using this valve for such a low input is negligible when expressed in "S" points at the receiving end: I obtain an efficiency of 60% instead of the nominal 70% to 75%. This represents only a tiny fraction of an "S" point, and is nothing in view of the convenience of an all-band transmitter.

But what has the size or type of the p.a. valve got to do with key clicks? Does G4AY key the cathode of his 813 when running 150 watts on other bands? Key clicks are caused by ignorance or lack of consideration, and by nothing else.

I can make a fair guess at the identity of the station which had such bad clicks during the recent Top-Band contest: the station I am thinking of was certainly in the contest, and his clicks were certainly very bad. I have seen the rig and an 807 is not used, but I believe he has had trouble in "taming" his electronic key.

Yours faithfully,

V. G. P. WILLIAMS (G3FYY).

London N.W.2.



### The Use of 807s

DEAR SIR,—Are large valves necessarily so inefficient at low power, except in terms of heater watts? If I set out to design a 10-watt transmitter now, I should run it at 250-300 V 40-33 mA (not 1,000 V 10 mA), and I should use an 807. This is not the ideal valve, in my opinion, as it is physically rather large, but it will surely out-perform a 6F6 or similar audio type. As long as 807s remain at their present artificially low price, I will advocate their use (parasitics and all), and the only protests that will receive sympathetic attention will be from the manufacturers of more suitable valves. I have even run one at 1.4 watts in a QRP contest—with some success.

Yours faithfully,

J. B. ROSCOE (G4QK).

Croydon.

### The Constitution of the Society

DEAR SIR,—The rejection of the 30/- subscription is hardly surprising when so many members are frustrated into regarding the R.S.G.B. as little more than a monthly magazine and QSL bureau.

Seldom has the ordinary member the opportunity to feel he is taking an active part in the affairs of the Society, since the present scheme of representation does not allow a free flow of information through its many links.

The Council thus rules in splendid isolation, secure in the knowledge that little short of organised opposition from a majority of members can ever assail their position.

The individual vote in the Council Ballot means little, for choice has always to be made between candidates not only of unknown viewpoints, but also largely of the retiring Council's nomination. Not until candidates are allowed free speech in the BULLETIN in which to make known their aims and principles will a Council be elected that truly represents the membership.

The constitution of the Society should be remodelled on more democratic lines, and the present costly representation scheme replaced by one in which only a single link exists between local groups and H.Q.

These local groups should meet regularly to discuss Society business, and should submit resolutions determining future policy to the Society's A.G.M.

Each group should send its representative to the A.G.M. with powers to vote on their behalf. The Council members, nominated through these local groups, and elected at the A.G.M., should have the responsibilities of putting into effect those resolutions receiving the majority vote.

The constitution of many successful organisations is based on these lines, and there seems to be no obvious reason why the R.S.G.B. should prove to be any exception.

A progressive R.S.G.B. cannot be maintained on a 15/- subscription, but before any appreciable increase can be acceptable to the membership, I am convinced they will demand not only an increase of efficiency, but also a greater control in the affairs of the Society.

In closing may I say I firmly believe that the interests of Amateur Radio can be represented by no other organisation but the R.S.G.B., and that I offer these criticisms as a loyal member in the belief that such criticisms are not only healthy, but are for the ultimate well-being of the Society.

Yours faithfully,

C. SHARPE (G2HIF).

### An Australian Point of View

DEAR SIR,—I read with interest the Editorial in the January issue and noticed the result of the motion to increase subscriptions. I feel those members who empowered their representatives to vote against the increased fee for membership were, to say the least, short sighted in their outlook. How can any organisation keep going on a pre-war income with a post-war liability? I wonder how many stopped to think of increased wages, increased printing costs, higher postage and the general all round rise in the price of materials. If we are level headed I am sure we will see that the increase is well overdue. As a visitor to the U.K. last year I saw the full value of the R.S.G.B. I wish it many years of useful purpose.

Yours in radio,

W. H. BARBER (VK6DX).

Kalgoorlie, Australia.

### The February Special General Meeting

DEAR SIR,—Having read the minutes and report of the Special General Meeting, I would like to explain why a large number of provincial members voted against the Special Resolution, and why the amendment was rejected with such an overwhelming proxy vote.

There has been a distinct feeling that the Resolution was being pushed through without any opposition views being given publicity in the BULLETIN. Many provincial members no doubt felt they were having a 100 per cent. increase of subscription rammed down their throats without regard for any opinions that the proposed subscription was too large and that to charge an entrance fee would deter amateurs from joining at all.

The large proxy vote against the amendment can be accounted for by the fact that a proxy against the Special Resolution must necessarily be against the amendment, too. Only proxies with no instructions attached (i.e. "general")

proxies) could be used in favour of the amendment. It was therefore not possible for most people who voted against the Resolution to vote for the amendment. These points were not mentioned in the BULLETIN prior to the S.G.M. I have no doubt that most of the members who voted against the Special Resolution would have supported the amendment making the subscription 25/- and omitting the entrance fee.

It is to be hoped that the Council will explain these things to the membership, and permit the opposition views to be expressed in the BULLETIN. I cannot believe that no letters expressing such views have been received.

We have been told that the publications department has been subsidising the BULLETIN. Does this matter? The greater part of the sales of publications have surely been made to existing members of the Society, not to outsiders. If this is so, members are still paying for the BULLETIN and it is hardly being subsidised by anyone else.

With due respect to Mr. Howell (GWSFN), this Society does not have to declare a dividend in cash. Our dividend is the services provided by the Society, and as long as it is solvent and has a reasonable reserve I see no reason why it should be expected to make a large profit each year. It is to be hoped that the Council will inform us more fully about the developments it intends to pursue, which we heard about only after the first Special Resolution had been rejected.

The resignations of the Council members are regretted, and it is to be hoped Mr. Auchterlonie and Mr. McConnell will reconsider their decisions. The complete rejection of the Special Resolution was not a vote of no-confidence, but largely expressed the resentment of members at the high-handed way in which it was being, to all appearances, forced upon them.

Yours faithfully,

ALAN G. DUNN (G3PL).

Hull, Yorks.

DEAR SIR,—The Report (in the April BULLETIN) of the Special General Meeting records that I said that "the Council should never have allowed the present situation to arise." In fact, I was criticising this remark, which was made by a previous speaker.

Yours faithfully,

HAROLD CHORLEY (G5YH).

Chiswick, London, W.4.

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### Silent Ike

It is with deep regret we record the death of Hector Wrigley Sadler, G2XS, a Vice-President of the Society, at his home in Mansfield, Nottinghamshire, on April 4, 1953. Mr. Sadler became interested in wireless soon after leaving school. Later he attended the old Nottingham Wireless School where he passed an examination for the P.M.G.'s Certificate. For two years he served as an ocean-going operator with the Marconi Company. He left that service to join the National Provincial Bank and was posted to Worksop. In 1928 he obtained an Amateur Transmitting licence. Four years later he moved to King's Lynn, in which town he took a leading part in R.S.G.B. affairs. He became County Representative for Norfolk in January, 1934, and District Representative for East Anglia in April of the same year, an office he retained until the new scheme of Regional Representation was introduced just after the last war. In recognition of his outstanding services to the Society he was elected a Vice-President in March, 1947.

In recent years his chief interest centred around the very high frequencies, during which time he helped to place Norfolk on the 2-metre map.

Although he never enjoyed robust health, Mr. Sadler was a frequent visitor to R.S.G.B. functions in many parts of the country. By his death the Society has lost a staunch supporter and a true friend.

He leaves a widow and daughter, to whom we extend our deepest sympathies.

E.R.M.

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16	.064	1/4	2/-	1/4	2/-	1/4	2/-	1/4	2/-
17	.056	1/4	2/1	1/4	2/1	1/4	2/1	1/4	2/1
18	.048	1/4	2/2	1/4	2/2	1/4	2/2	1/4	2/2
19	.040	1/4	2/3	1/4	2/3	1/5	2/3	1/6	2/5
20	.036	1/5	2/4	1/5	2/4	1/5	2/4	1/7	2/8
21	.032	1/5	2/5	1/5	2/5	1/5	2/5	1/8	2/10
22	.028	1/6	2/6	1/6	2/6	1/6	2/6	1/9	3/-
23	.024	1/7	2/7	1/7	2/7	1/7	2/7	1/10	3/2
24	.022	1/7	2/8	1/7	2/8	1/7	2/8	1/10	3/2
25	.020	1/8	2/9	1/8	2/9	1/8	2/9	1/11	3/4
26	.018	1/8	2/10	1/8	2/10	1/9	2/11	2/-	3/6
27	.0164	1/9	2/11	1/9	2/11	1/10	3/1	2/1	3/8
28	.0148	1/9	3/-	1/9	3/-	1/10	3/2	2/2	3/10
29	.0136	1/10	3/1	1/10	3/1	1/11	3/4	2/3	4/-
30	.0124	1/10	3/2	1/11	3/5	2/-	3/6	2/4	4/2
31	.0116	1/11	3/3	2/-	3/6	2/1	3/7	2/5	4/4
32	.0108	1/11	3/4	2/1	3/8	2/1	3/8	2/7	4/8
33	.010	2/-	3/5	2/2	3/10	2/3	3/11	2/10	5/2
34	.0092	2/-	3/6	2/3	4/-	2/4	4/2	2/11	5/4
35	.0084	2/1	3/7	2/4	4/2	2/6	4/5	3/11	5/8
36	.0076	2/1	3/8	2/6	4/5	2/7	4/8	3/3	6/-
37	.0068	2/2	3/10	2/7	4/8	2/11	5/6	3/5	6/4
38	.006	2/3	4/-	2/9	4/11	3/4	6/2	3/7	6/8
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26	2/-	2/4
27	2/-	2/6
28	2/2	2/6
29	2/2	2/6
30	2/2	2/6
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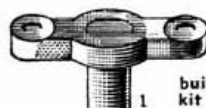
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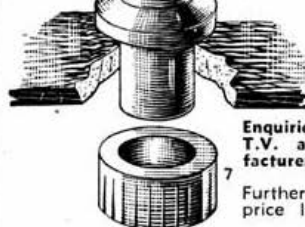
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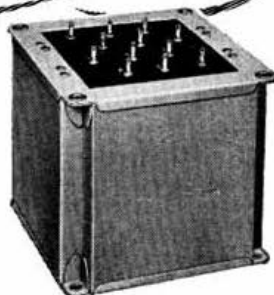
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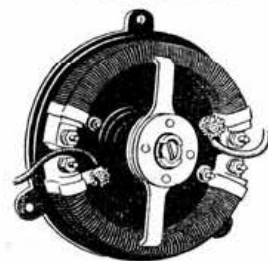
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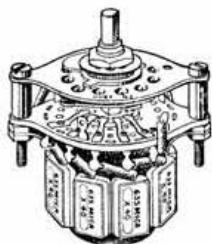
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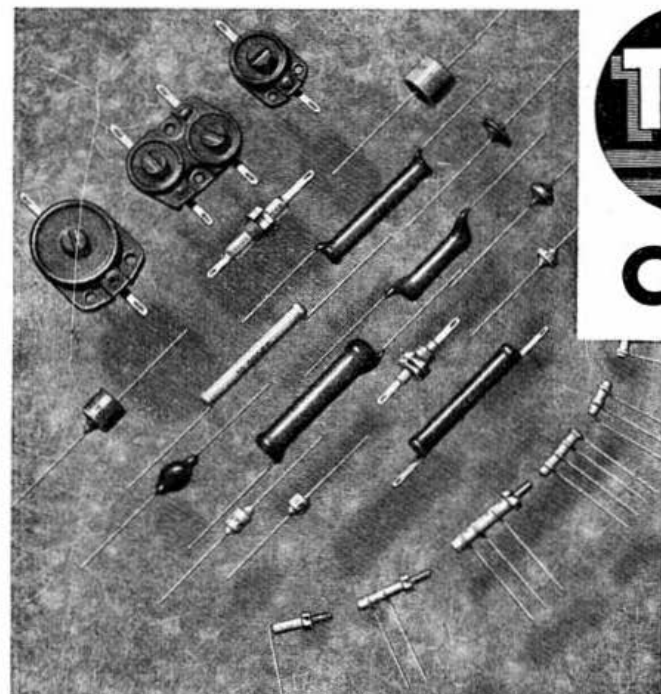




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(Continued on page 508)

## EXCHANGE & MART SECTION

(Continued from page 507)

**MINISCOPE** i.f. alignment unit wanted.—A. K. HEAD, 10 Chertsey Road, Bristol 6. (133)

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**Q-MAX** B4/40 transmitter, cost £75, will exchange for AR.88, SX.28, or other good communication receiver, or sell.—Details and offers S.A.E. to G3HLY, 20 Croft Road, Godalming, Surrey. (117)

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

**RACK** mounting type H.R.O. Senior, complete with power pack and 4 coils 1.7 to 30 Mc/s. Coils need re-alignment, but otherwise good working order; £25 or offers.—Box 136, THE NATIONAL PUBLICITY CO., LTD., 36-37 Upper Thames Street, London, E.C.4. (136)

**RECEIVER** 1224A, very good condition; little used. Goods carriage paid; £4 7s. 6d.—G3EJD, 151 Eglesfield Road, South Shields, Durham. (997)

**R** 1155, little used, as new; A.M. power unit: £10. Carriage extra.—G3CER, BM/HWMO, London, W.C.1. (110)

**SALE**—Marconi B.36 receiver, practically new, 1 to 21 Mc/s, coil turret, two r.f. three i.f. output meter and heater transformer. Circuit and nine new valves plus seven boxed spares, sensitivity better than one microvolt for 10db S/N ratio, £16 10s., carriage extra. The following brand new, Q-MAX 10 in. x 6 in. communications dial with drive and blank scales, 19/-; calibrator 6 in. x 4 in. dial, separate band-set and bandspread drives, blank scales, 11/-; meters: 10 amps a.c., 4 in. square, rectifier, 9/-; 500/50 volt d.c., 4 in. round, with shunt, 9/-; 200mA d.c., 3 in. round, 7/-; Valves stripped from new gear, 6B7, 6G6, VR150/30, 12SG7, SP61, EB34, lot 21/-; 6R7, VT501, 12J5 (2), EA50, SP61, EB34, lot 21/-; RF.26 less EF54's and dial, 12/-; Class "C" wavemeter, new but repainted, with valve and spare, vibrapack, circuit and chart, 32/-; Recently purchased commercial and surplus gear, 27 items, cost £8, all brand new, £4, S.A.E. list, 1951 and 1952 S.W.M.'s complete, pound's worth Bernard's Radio Manuals, 21/-, all carriage paid.—Box 139, THE NATIONAL PUBLICITY CO., LTD., 36-37 Upper Thames Street, London, E.C.4. (139)

### IMPORTANT NOTICE

All Exchange & Mart advertisements must be sent with remittance made payable to:

**THE NATIONAL PUBLICITY CO., LTD.,**  
36-37 Upper Thames Street, London, E.C.4.

Copy required by 25th of month preceding date of issue. For Advertisement Rates see above.

**SALE**—£35! SX.28 Super Sky rider, .55-42 Mc/s. Good condition; other gear includes signal generator, wavemeter, U.S.A. parts, also domestic receivers, mains/battery portables, etc. Stamp list.—Box 114, NATIONAL PUBLICITY CO., LTD., 36-37 Upper Thames Street, London, E.C.4. (114)

**SALE**—Hammarlund Super Pro receiver and power unit (110V), good condition, excellent performance, 8 watts audio, rack mounting, with circuit and data; bargain, £22 10s. Valves, four HK24G, 12/6 each; one each 8019, 8012, PT15, 7/6 each.—Box 104, THE NATIONAL PUBLICITY CO., LTD., 36-37 Upper Thames Street, London, E.C.4. (104)

**SELLING** 150 watt station in units or as components. Lots of other gear. Bargain prices. S.A.E. list.—G2FCI, "Little Pleasance," Ashburton, Devon. (118)

**SELLING UP**—H.R.O. senior; Collins T.C.S. receiver; 25 watt 80/40 v.f.o. controlled transmitter; oscilloscope; offers.—PEGG, 38 Melton Avenue, Littleover, Derby. (115)

**T** S.C.6 receiver 1.5-12 Mc/s internal p.a. and speaker; £10. Marconi oscillator type 12A, 30-41 Mc/s, 12 volts input; £7 10s.—Box 998, THE NATIONAL PUBLICITY CO., LTD., 36-37 Upper Thames Street, London, E.C.4. (998)

**URGENTLY** wanted.—600 ohm headset, buy or swap.—G3IRM, Aspin Avenue, Knaresborough, Yorkshire, (107)

**VALVES**, mostly new and boxed. At 1/6: D1, EA50, 215P, 7193, CV54, SP61, EB34, RK34, DDR5. At 2/-: 6H6. At 4/6: 6AC7, 6N7, 6J5, 6AG5, 6C4, 12SK7, 12SH7, 12AW6, EF36, 7V7, 28D7, EF50, EF54, 9004, 956, 955. At 6/6: 6SH7, 6SL7, 6F5, 6SG7, 6SJ7, 6F6, 6SS7, 6AT6, 6N5, 12A6, 12SG7, 12AH7, 12AU6, 12AT6, ACP4, 313C, T41, U76, 7475, 2A3, ECC91, 1S5, 3V4, 3A5, UL41, EF80, UF41, UCH42, ECL80, Q8150/15, 1625. At 9/-: 6AB4, 807, 717A, HVR2A. At 12/6: 8012, GU50. At 20/-: 446B, TZ40, 834. At 30/-: 805. At 50/-: 289, 931A. Add 3d. each postage. Receiver R1426 with 200-250V a.c. power supply, complete all valves and type 25 convertor, £5. I.F. strip ex R1426 complete all valves, 40/-; BC.624A receiver with all valves, 60/-; Wavemeter W1185A 20-100 Mc/s incorporating crystal calibrator, o.w./m.c.w., 200-250V a.c., £8 10s. Meters. 2in. at 7/6: 0/5mA, 0/30mA, 0/3A thermocouple, 0/100mA, 0/75mA, 0/150mA, 0/0.5A thermocouple, 2in. at 10/-: 0/500mA, 0/100mA, 0/250mA, 0/1A thermocouple, 0/350V/700V. At 30/-: 3in. Mirror edge scale 0/15db Weston rectifier type, with switched wirewound attenuator. HRO gang tuning condenser and drive less dial, 20/-; 6in. Muirhead drive complete, 8/-; Type 27 convertor less valves, 20/-; Type 32 convertor with valves, 30/-; 3in. Muirhead drives, 5/-; 4in., 6/-; 100 assorted half and quarter watt resistors, 7/6; 50 assorted silver mica condensers, 7/6; 10 assorted high voltage tubular mica condensers, 7/6; 25 assorted aluminium can electrolytic condensers, £1. 50 assorted multi-pin and co-ax plugs, sockets, etc., 10/-; 50 assorted tubular paper condensers, 10/-; 25 assorted wirewound and carbon potentiometers, 12/6; 15 assorted bathtub condensers, 12/6; 25 assorted 2-15 watt resistors, 10/-;—G. A. JEAPE, 129 Cambridge Road, Trumpington, Cambs. (108)

**WANTED**—Three B.C.453 85 kc/s i.f. transformers and one T.U.5 tuning unit.—COOPER, 62 Ringstead Crescent, Crosspool, Sheffield 10. (123)

**WANTED**—1.5 to 3.0 Mc/s convertor for R.1155. Set of plugs for AM6/APA-1 repeater indicator. Circuits and all details for indicators 73, 154, Strobe 61. Receiving unit 50A. Wavemeter 1409. Crystals for R-28/ARC5-100-156 Mc/s control units and other accessories for above, and all aircraft equipment.—T. E. SIMPSON, Boston Road, Holbeach, Spalding, Lincs. (119)

**WANTED**—Eddystone "S" meter and speaker, new condition.—Phone after 5 p.m. WIM 2197. CANNING, 59 Camberley Avenue, London, S.W.20. (121)

**WANTED**—BC.610 Hallicrafters, ET.4336 transmitters, SX.28s, AR.88s, receivers and spare parts for above; best prices.—P.C.A. RADIO, The Arches, Cambridge Grove, W.6. (102)

**WANTED**—R.C.A. speech amplifiers type MI-11220 J or K and aerial tuning units BC.939A. Coils and tuning units for BC.610 transmitters. Offers, stating quantity and price to.—P.C.A. RADIO, The Arches, Cambridge Grove, W.6. (103)

**WANTED**—CR.100 receiver, preferably unmodified and in good condition, with handbook.—CRABTREE, 180 Halifax Road, Nelson, Lancs. (145)

**WANTED**—Buy or borrow for short period, Hallicrafters SX.24 manual or circuit; please help.—LEWIS, 46 Clydesdale Road, Hornchurch, Essex. (138)

**WANTED**—New Hallicrafters, models SX.62, SX.63 or other late model. Also required: SX.28 in good condition.—Box 128, THE NATIONAL PUBLICITY CO., LTD., 36-37 Upper Thames Street, London, E.C.4. (128)

**WANTED**—160 and 80 metre crystals, reasonable.—"Westway," Lower Lane, Newton with Clifton, Near Kirkham, Lancs. (130)

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

**WANTED**—H.R.O. Senior, must be in excellent condition with bandspread coils for all h.f. bands.—Full particulars and price to E19Q, 16 Manor Street, Waterford, Eire. (141)

**W** 1117 and W1191 wavemeters, complete with accessories and spare valves, cases slightly modified, £5 the pair. Grampian 32/6 mains/battery amplifier as new, perfect, £20 or offer.—Box 141, THE NATIONAL PUBLICITY CO., LTD., 36-37 Upper Thames Street, London, E.C.4. (141)

**16 MM** Projector, silent/sound, Bell and Havell model, 156 V, complete as new. Bargain at £100.—DORMAN, 183 Pikeman Road, Glasgow, W.3. (144)

## APPOINTMENTS SECTION

### Appointments vacant

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**CARDIAC TECHNICIAN**, male or female, for specialised work. Working knowledge of electronics and experience in catheterization and operation technique; £410 x £15 (3) x £20 (1)—£475.—Apply Personnel Officer. (120)

**MICHAEL RADIO LTD.** require experienced Radio Technicians for the inspection, testing and servicing of Government radio and electronic equipment.—Apply to Personnel Officer, Wexham Road, Slough. (121)