




R.S.G.B



BULLETIN

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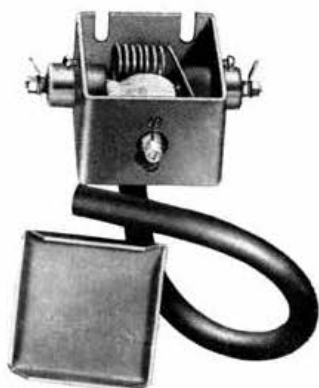


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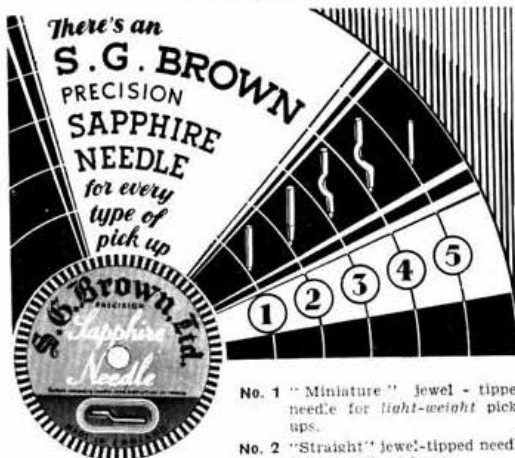
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One head can excel at two jobs: A TURNOVER PICK-UP CARTRIDGE COMES TO STAY

The introduction of commercially produced micro-groove recordings brought to the user the complication of having to use two different styli. At once the question arose as to the best way of changing over from one stylus to the other. From the layman's point of view—and the largest proportion of the gramophone-playing public are laymen—the "best way" means the "simplest way." This explains the popularity of pick-ups with both styli fitted to the same cartridge and the provision of mechanical means, such as a simple swivel action, to bring one or the other stylus into use. The Acos G.P.25 has been one of the most popular cartridges of this type. Unfortunately, there have been serious technical objections to such dual stylus cartridges, and technical people as a rule have been accepting them merely as a concession to an over-riding demand for simplicity.

Technical Objections

There were principally two objections, both of which were concerned with the output characteristics of such cartridges. First, it was argued, the considerable difference in the recording characteristics of the Standard and the Long Playing records required either two cartridges with two different reproducing characteristics or two separate compensating circuits. Neither is very simple or easy with a single cartridge. Secondly, it has been found that the free stylus tends to vibrate at its own resonant frequency, producing a deep trough in the overall response, thus spoiling the quality of reproduction to a noticeable extent.

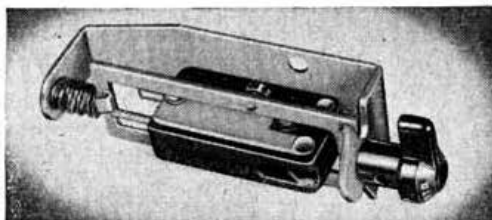
The system of using two separate heads avoids all these difficulties, as must be obvious to every sound engineer. The heads can be designed each to fulfil its specific purpose and they can be provided with means for plugging in or clipping on for comparatively easy change-over. The Acos G.P.20 is a good and well-known example of such a pick-up.

Practical Advantages

Nevertheless, a pick-up which can be changed from Long Playing to Standard and vice versa is so enormously attractive for all commercial and general-purpose applications, that Cosmocord just could not help making a thorough investigation into the possibility of mass-producing a dual-stylus cartridge with acceptable

reproducing characteristics for both types of records. It was established from purely theoretical considerations that, given a set of critical conditions, the solution was possible. The real difficulties arose when trying to stipulate these critical conditions in terms of practical engineering and finding means of maintaining them in large quantity production. These difficulties could have proved insurmountable had it not been for a realistic approach right from the start by Cosmocord engineers, combined with the wide scope of Cosmocord's resources, which include considerable experience in the development and manufacture of special-purpose materials. Eighteen months of intensive work resulted in the introduction to the Radio Industry by Cosmocord of the Acos G.P.29 cartridge.

THE G.P.29 PICK-UP CARTRIDGE



This new Acos cartridge is designed to give the best possible reproduction of both Standard and L.P. Records with the normal run of domestic radio sets under home conditions. No input correction is required apart from exceptional cases. The usual tone control on the set could provide additional adjustment to suit individual taste, but is not essential. The output of around 0.7 V at 1,000 c/s from Standard and about half that from Long Playing Records is right for present day requirements. The difference between the two output levels is no greater than variations found between recordings, and is no more noticeable in use. The response characteristics of the two sides of the dual cartridge unit are tailored to give optimum performance in both cases. The "Standard" side gives a falling characteristic beyond 5 kc. The bass end is compensated to within around -3 db at 70 c/s. The result is well balanced reproduction suggesting wide range but no or very little needle scratch. Long Playing Records with their softer and smoother surface require no top cut except to compensate for pre-emphasis in recording. However, the amount of top cut already in existence in a domestic receiver more than compensates for this. So much so that to give best overall balance the long playing output of the G.P.29 cartridge had to be raised substantially above 5,000 c/s. A very important feature of this cartridge is that it will truly track both types of record at 10 grams needle pressure. This, coupled with the appreciable vertical compliance of the cantilever stylus to compensate for pinch effect, ensures long record life and freedom from distortion.



The cartridge takes two sapphire tipped cantilever styli which are held in the needle chuck by a set screw. They are easily replaceable when so required in service. The cartridge is supplied either with two side brackets or mounted in a turn-over mechanism, and is available to manufacturers only. Insist that it is incorporated in your new equipment.

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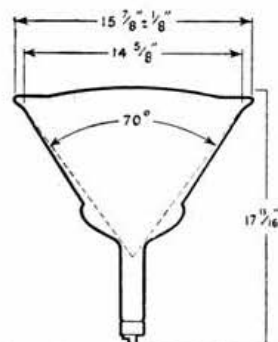
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R.S.G.B. Bulletin

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May, 1952

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Forthcoming Events

REGION 1

Blackpool (B. & F.A.R.S.).—May 20, 20 Fordway, off Newton Drive.
Bury.—June 12, 7.30 p.m., Y.M.C.A., The Rock.
Chester (C. & D.A.R.S.).—Tuesdays, 7.30 p.m., Tarran Hut, Y.M.C.A.
Crosby.—May 27, June 10, 8 p.m., over Gordon's Sweet Shop, St. John's Road, Waterloo.
Darwen & Blackburn.—May 16, 7.30 p.m., Y.M.C.A., Limbrick, Blackburn.
Liverpool.—May 17, June 14, 2.30 p.m., Larkhill Mansion House, West Derby.
Preston.—May 23, June 6, 20, 7.30 p.m., Three Tuns Hotel, North Road, Preston.
Southport.—May 19, 26, June 9, 8 p.m., Y.M.C.A., Eastbank Street.
West Cumbria.—June 7, 7 p.m., Kells Community Centre, Whitehaven.
Warrington (W. & D.R.S.).—May 20, June 3, 7.30 p.m., King's Head Hotel.
Wirral (W.A.R.S.).—May 21, June 11, 25, 7.45 p.m., Y.M.C.A., Whetstone Lane, Birkenhead.

REGION 2

Barnsley.—May 23, June 13, 7.30 p.m., King George Hotel, Peel Street.
Bradford.—May 20, 7.30 p.m., Cambridge House, 66 Little Horton Lane.
Catterick & Richmond.—Wednesdays, 7 p.m., Loos Lines, Catterick Camp.
Darlington.—Thursdays, 7.30 p.m., 129 Woodlands Road.
Doncaster.—June 11, 7.30 p.m., Black Bull, Market Place.
Gateshead.—Mondays, 7.30 p.m., Mechanics' Institute, 7 Whitehall Road.
Hull.—May 28 (General), June 11 (Beginners), 7.30 p.m., R.E.M.E. Canteen, Walton Street.
Leeds.—Wednesdays, 7.30 p.m., Swarthmore Educational Centre, Woodhouse Square.
Middlesbrough.—Thursdays, 7.30 p.m., Joe Walton's Boys' Club, Faversham Street.
Newcastle-upon-Tyne.—May 19, June 16, 8 p.m., British Legion Rooms, 1 Jesmond Road.
Pontefract.—May 22, June 5, 8 p.m., Fox Inn, Knottingley Road.
Rotherham.—Wednesdays, 7 p.m., Cutlers Arms, Westgate.
Scarborough.—Thursdays, 7.30 p.m., L.N.E.R. Rifle Club, West Parade Road.
Sheffield.—June 25, 8 p.m., Dog and Partridge, Trippet Lane; June 11, 8 p.m., Albreda Works, Lydgate Lane.
Slaitwhait.—Fridays, 7.30 p.m., 3 Dartmouth Street.
Sunderland.—May 28, June 11, 7.30 p.m., 16 North Bridge St.
York.—Wednesdays, 7.30 p.m., Club Rooms, Y.A.R.S., Fetter Lane

REGION 3

Birmingham South.—May 18, 10.30 a.m., *Transmitter Topics*, by G8PN, Stirling Institute. June 1, *Final N.F.D. Arrangements*.
Coventry.—May 23, 7.30 p.m., *G5PP's Quiz Programme*, and *N.F.D. Arrangements*, Priory High School, Wheatley Street.
Hereford.—May 14-17, 2.30-9 p.m., *Hobbies Exhibition*, Shire Hall.
Kenilworth, Warwick & Leamington.—June 19, 7.30 p.m., Dalehouse Lane.
Rugby.—June 3, 7.30 p.m., Public Library, Mather Street.
Stourbridge (S. & R.D.S.).—May 23, Informal, Corn Exchange Vaults; June 3, 10, 8 p.m., King Edward's School.
Worcester.—Thursdays, 7 p.m., City Library (basement), Foregate Street.
Wrekin (W.A.R.S.).—Mondays, 8 p.m., Y.M.C.A. Canteen, Wellington.

REGION 4

Alvaston (D.S.W.E.S.).—Tuesdays, Thursdays, 7.30 p.m., Sundays, 10 a.m., Nunsfield House, Alvaston, Nr. Derby.
Chesterfield.—May 20, June 3, 17, 7.30 p.m., Bradbury Hall, Chatsworth Road.
Derby (D. & D.A.R.S.).—May 21, 28, June 4, 11, 18, 7.30 p.m., Derby College of Arts and Crafts, Sub-Basement, 119 Green Lane, Derby.
Leicester (L.R.S.).—May 19, June 16, 7.30 p.m., Hollybush Hotel, Belgrave Gate.
Loughborough.—May 21, June 18, 7.30 p.m., Great Central Hotel.
Mansfield (M. & D.A.R.S.).—May 25 (June meeting), 3 p.m., Swan Hotel.
Newark.—May 25, June 22, 7 p.m., Northgate House, Northgate.
Northampton (N.S.W.C.).—Fridays, 6 p.m., June 6, 7 p.m., Clubroom, 8 Duke Street.
Retford.—May 25 (June meeting), 3 p.m., Community Centre, Chapel Gate.
Worksop.—May 26 (June meeting), 7 p.m., King Edward Hotel.

REGION 5

Chelmsford.—June 3, 7.30 p.m., Marconi College, Arbour Lane.
Ipswich.—Second and last Wednesdays, 7.30 p.m., T.A. Drill Hall, Woodbridge Road.
Southend.—May 21, 7.45 p.m., G2BHA, 27 Park Road.

REGION 6

Gloucester.—Alternate Thursdays, 7.30 p.m., Spread Eagle Hotel, Market Parade.
North-West Wilts.—Fridays, 8 p.m., G3HXA, London Road Inn, Calne.
Petersfield & District.—May 29, 7.30 p.m., The Market Inn, The Square.
Southampton.—No meetings in June. Meet at N.F.D. site.
Stroud.—Wednesdays, 7.30 p.m., Subscription Rooms.
Swindon.—May 17, June 23, 7.30 p.m., Connaught Rooms (off Regent Street).

REGION 7

Acton, Brentford, Chiswick.—Every Tuesday, 7.30 p.m., A.E.U. Rooms, 66/68 High Road, Chiswick, W.4.
Barnes & Richmond.—June 10, 7.30 p.m., 308 Upper Richmond Road.
Barnet & Boreham Wood (B.A.R.S.).—June 14, 7.30 p.m., Bunny's Restaurant, New Barnet. (B. & D.R.C.)—Wednesdays, 8 p.m., "Hopedene," The Avenue, Barnet.
Bexley (N.K.R.S.).—Second and fourth Mondays, 7.30 p.m., The Freemantle Hall.
Bromley, Kent (N.W.K.A.R.S.).—June 6, 7.45 p.m., The Shortlands Hotel, Station Road, Shortlands.
Chingford.—May 22, June 5, 8 p.m., A.T.C. Headquarters, Pretoria Road, E.4.
Dulwich & New Cross.—June 2, 7.45 p.m., "The Kentish Drivers," Rye Lane, Peckham.
East Ham.—May 20, May 27, June 10, 8 p.m., 57 Leigh Rd.
East London District.—Summer recess. Next meeting September 28, 3 p.m., Ilford Town Hall.
East Molesey (T.V.A.R.T.S.).—June 4, 8 p.m., "Carnarvon Castle," Hampton Court.
Enfield.—June 15, 3 p.m., George Spicer School, Southbury Road.
Finsbury Park.—May 20, 7.30 p.m., 164 Albion Road, Stoke Newington, N.16.
Grays.—May 23, June 6, 8 p.m., Baird's Cafe, Orsett Road, Grays.
Guildford & Woking.—May 25, 3 p.m., Royal Arms Hotel, North Street. No Meetings in June.
Hayes & Uxbridge.—June 6, 7.30 p.m., The Vine, Uxbridge Road.
Hendon & Edgware (E.D.R.S.).—May 21, 28, June 4, 11, 8 p.m., St. Martin's School, 22 Goodwin Avenue, Mill Hill.
Hoddesdon.—June 5, 8 p.m., *N.F.D. Arrangements*, "Salisbury Arms."
Holloway (G.R.S.).—Mondays, Wednesdays & Fridays, 7.30 p.m., Grafton School, Eburne Road, N.7.
Ilford.—Every Thursday, 8 p.m., "Junko," 579 High Road, Ilford.
Kensington & Shepherd's Bush.—June 13, 8 p.m., 38 Royal Crescent.
Lewisham (R.A.R.C.).—Every Wednesday, 8 p.m., Durham Hill School, Downham.
Norwood.—June 21, 7.30 p.m., 35 Grangecliffe Gardens, South Norwood.
Slough.—Third Thursday, May 15, June 19, 7.45 p.m., "The Golden Eagle," High Street.
Southgate.—June 12, 7.30 p.m., Arnos Secondary Modern School, Geography Room, Wilmer Way, New Southgate.
Watford (W.R.A.T.S.).—May 20, 7.45 p.m., *Home-Constructed Gear*, June 3, 7.45 p.m., *N.F.D. Equipment Demonstration*, "Cookery Nook," The Parade Watford.
Welwyn.—June 3, 8 p.m., *Inquest on N.F.D.*, Council Offices, Welwyn Garden City.

REGION 8

Brighton (B.D.R.C.).—Tuesdays, 7.30 p.m., Eagle Inn, Gloucester Road. (E.B.S.W.C.)—Thursdays, 7.30 p.m., 27 Warren Avenue, Woodingdean.
Chatham (M.A.R.T.S.).—Mondays, 7.30 p.m., Co-operative Hall, Luton Road.
Eastbourne.—May 15 and 29, June 12, 7.30 p.m., Swallow Cafe, 333 Seaside.
Gillingham (G.T.S.).—Alternate Tuesdays, 7.30 p.m., Medway Technical Institute.
Hastings (B. & H.R.C.).—May 20, June 3 and 17, July 1, Saxon's Cafe, Seaford, Hastings.
Isle of Thanet.—Fridays, 7.30 p.m., George Hotel, Hawley Street, Margate.

REGION 9

Bath.—May 19, 7 p.m., Y.M.C.A., Broad Street.

(Continued on Page 507)

R.S.G.B. BULLETIN

Official Journal of the

Incorporated Radio Society of Great Britain

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Editorial Office:

NEW RUSKIN HOUSE,
LITTLE RUSSELL STREET,
LONDON, W.C.1

Telephone: Holborn 7373



Advertisement Manager:

HORACE FREEMAN

Advertising Office:

THE NATIONAL PUBLICITY
CO., LTD.
358 STRAND, LONDON, W.C.2

Telephone: Temple Bar 0948-9

Issued free to members.

Hon. Editor: JACK HUM

Published on or about the 15th of each month.

VOLUME XXVII No. 11

MAY 1952

CURRENT COMMENT

Contest Lore

EACH year the approach of National Field Day—surely the most popular of all R.S.G.B. annual events—is heralded by a sudden flutter of interest not only in the whys and wherefores of portable operation but also over the entire field of Contest technique and administration.

At such a time a visitor from Mars, privileged to attend the back-room plotting of any one of the more ambitious local groups, might well imagine that a continual state of cold-war existed between it and what he would gather were a set of crabbed, archaic spoil-sports completely out of touch with modern Amateur Radio practices—to wit, the body known as the Contests Committee! In the circumstances, he would argue it was natural that the sharpest-witted "barrack-room lawyers" should be deputed the task of examining the rules to discover all possible loop-holes or ambiguities capable of profitable exploitation.

Should, on the other hand, our Martian drop in at the pre-N.F.D. proceedings of a less ambitious group—one of those that enter primarily for the social enjoyment rather than for the glory of a lofty position in the table of results—then he would find that although the complaints might vary, the adjectives applied to the Committee would be much the same. "Why can't they leave the rules alone instead of chopping and changing them about each year?" or "Look at what happened last year: disqualified simply because we left out some trifling details in the log sheet—some people take Committee work much too seriously!"

So it might well be that our Martian visitor would conclude that N.F.D.—or indeed, for that matter, any other R.S.G.B. Contest—could be much improved by one simple operation: the elimination of the Committee responsible for its "mis-organisation." But it is to be hoped that, before returning to his own planet, our visitor, with his advanced scientific training, would wish to see for himself something of the view from the other side of the hill. If, for example, he looked in at one of the frequent meetings of this Committee of volunteers, what exactly would he find?

First, he would probably note that the Committee was composed of active amateurs, not unlike those that make up the local groups; divided about

equally between the holders of two and three letter call-signs with interests covering every band from 1.7 to 420 Mc/s. A Committee, incidentally, that is frequently re-invigorated by the introduction of new members to replace those who find the burden too heavy to shoulder for long, and which values—but is not over-awed by—the opinions of those of its members whose keen interest in Contests has encouraged them to give their services for a number of years.

FLASH!

As from July 1st 1952, United Kingdom amateurs will be permitted to operate on frequencies between 21,000 and 21,200 kc/s—telegraphy only.

Our Martian would soon note other features: the extraordinary amount of detail work involved in the checking of masses of log entries (N.F.D. 1951, for example, required 400 man-hours of log checking); the consideration paid to all suggestions received from members; the desire to make each Contest something that is more than just a source of enjoyment to those who participate but also to give it a definite role in the advancement of technical and operating skills.

For, as our Martian would soon discover, the problems of running a Contest, other than on the most frivolous lines, are much more complex than might be imagined at first sight. How can scoring systems be devised—particularly for v.h.f. and u.h.f.—that give equal opportunities to members living in all parts of the United Kingdom? Does operating or technical skill merit greater reward? How can rules be framed so as to take into account the uncertainties of propagation conditions? If scoring zones are used, how much account must be paid to the man who lies just outside the main centres of activity? (Contrary to the commonly held belief, it is seldom the operator who lives in one of those main centres that receives the greatest benefit from such systems). How about the isolated member in Thurso, Penzance or Guernsey? How many points should be deducted for faulty

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A MODERN STRAIGHT RECEIVER

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

One of the most persistent of all controversies in amateur circles is the question of "straight v. superhet." receivers. With modern advances in valve and circuit design, there is little doubt that where utmost sensitivity and selectivity are required, and where complication and cost are of secondary consideration, the superheterodyne circuit is the answer. For many amateurs—particularly those who are enjoying the varied interests of Amateur Radio for the first time—cost and complexity may well be the stumbling blocks. It is primarily for them that the straight receiver described in this article has been designed.

THE straight receiver, upon which the pioneers of Amateur Radio depended, can still do a good job today provided its fundamental limitations are recognised. These include an inherent lack of selectivity, the inability to resolve weak modulated transmissions, and a tendency towards "swamping" by high-powered signals on adjacent frequencies. Nevertheless, it can hold its own with all but the best superhets in the realm of c.w. reception, provided that extreme selectivity is not a first requirement.

Many of the advances in technique which have so benefited the superhet may be pressed into service to improve the performance of the straight receiver, as an examination of this design will show.

Specification

Three modern miniature valves are employed, in a tuned radio-frequency circuit, as r.f. amplifier, reacting detector and tetrode output. As the circuit is conventional and well-tryed, no difficulty should be experienced in obtaining comparable results with other valves of similar characteristics.

The 1.7, 3.5, 7, 14, 21 and 28 Mc/s amateur bands are covered, bandspread being provided on each. Although the receiver is designed primarily for reception on headphones, provision has been made for the connection of a loudspeaker when desired.

A self-contained mains-supply unit is included which has sufficient capacity to provide h.t. and l.t. supplies for auxiliary apparatus (such as a frequency meter) in addition to the requirements of the receiver. Provision is also made for battery-powered portable operation, as the small current consumption of the valves renders this economically possible. With 250 volts h.t., a current of approximately 25mA is drawn, but this falls to



Front view of the receiver. Controls from left to right: A.F. Gain, Band Switch, Send-Receive Switch, Reaction and R.F. Gain.

less than 10 mA when a 120-volt battery is used. The necessary circuit modifications to ensure satisfactory operation with the reduced voltage are made automatically when the battery plug is inserted into a socket on the rear drop of the chassis, in place of the normal plug which makes the necessary interconnections between the internal power supply and the receiver.

The Circuit

There is ample room on the chassis for all the components, so that a fairly open lay-out is possible, with consequent ease of construction. Besides giving a worth-while amount of gain, the r.f. stage isolates the detector from the aerial, preventing that valve from radiating interference to nearby receivers. Also, by ensuring a more constant loading of the detector tuned-circuit, smoother control of regeneration and constancy of calibration are obtained.

Provision is made for the connection of either

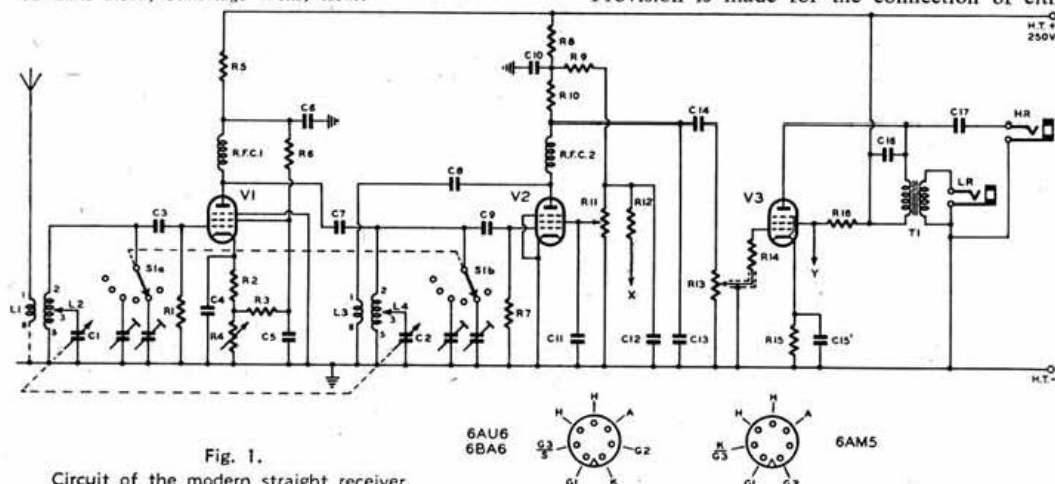


Fig. 1.

Circuit of the modern straight receiver.

a long wire aerial, or one having a balanced feeder (such as a dipole). When using the former, one of the two aerial terminals should be connected to chassis.

The r.f. gain may be varied by means of a potentiometer in the cathode circuit of the first valve, while R2 ensures that the minimum bias for the valve is always present. Regeneration is obtained from the anode of V2 via the blocking condenser C8 and coil L3, control being effected by varying the screen voltage by means of R11. The secret of smooth control of regeneration is to run the valve in a low gain condition, with no more than 25 volts on the screen grid. A higher voltage would result in greater stage gain, but regeneration would then tend to start with a "plop," making it impossible to hold the receiver in its most sensitive condition—i.e., on the threshold of oscillation. With the component and coil values given, the receiver may be made to slide almost imperceptibly into oscillation at any point on its six frequency ranges.

No difficulties were encountered in using only one r.f. choke in the anode circuits of V1 and V2, despite the wide frequency range over which they have to operate, but as this can be a troublesome point it is strongly recommended that the types specified be used in these positions.

Smoothness of regeneration is improved by connecting C12 across R11, and not from the screen grid to earth, as is sometimes done. When operating on mains supply, R12 is connected in parallel with the potentiometer R11, limiting the voltage developed across the latter. When working the receiver from a lower-voltage battery supply, this resistance is no longer necessary and is disconnected when the battery plug is inserted in the power socket.

The a.f. stage follows normal practice, and is adequately decoupled for r.f. by C13 and the grid stopper resistance R14. To be effective it is essential that one end of the latter be connected directly to the grid tag on the valve-holder.

The primary winding of the output transformer acts as a choke for the connection of high-resistance headphones or a loudspeaker having its own output transformer. The step-down ratio

between primary and secondary is chosen to suit the impedance of a low-resistance speaker or headphones.

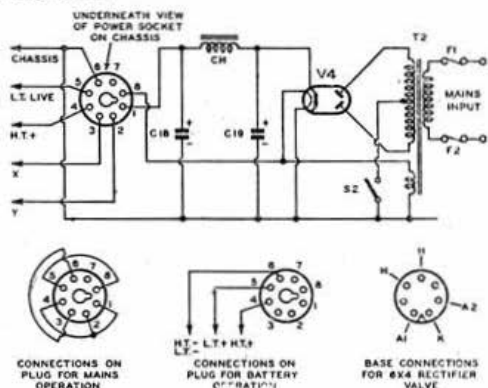


Fig. 2. Circuit diagram of the power supply and power socket. The plug connections for mains and battery operation are also shown.

Power Supply

The mains power supply is of conventional design and should deliver approximately 250 volts of h.t. on load. The rectifier valve is also a miniature type, designed with high insulation between heater and cathode so that the former may be run from the same 6.3 volt supply as the other valves in the receiver. The mains transformer specified does, however, possess a 5-volt winding which could be used to supply another type of rectifier.

When mains operation is desired the octal socket on the rear drop of the chassis provides connection between the power-supply section and the rest of the receiver and is also the point to which batteries may be connected. Fig 2 shows the necessary internal connections to the two octal plugs, R12 is brought into or cut-out of circuit by means of these plugs, as is R16—the resistance in series with the screen of V3—which cuts down the anode consumption of that valve when battery power is being employed.

COMPONENT LIST

CONDENSERS

- C1, 2 45 μ F variable (Webbs' Wavemaster).
- C3, 8, 9 100 μ F silver mica (T.C.C. Type GMC).
- C4, 5, 6, 10, 11 0.05 μ F (T.C.C. Metallite).
- C7 15 μ F ceramic disc (T.C.C.)
- C12 2 μ F paper (G.E.C.)
- C13 200 μ F (T.C.C. Type CM20).
- C14 0.01 μ F (T.C.C. Metallite).
- C15 25 μ F, 50 V working (T.C.C. Type CE18d).
- C16 500 μ F (T.C.C. Type CM20)
- C17 0.5 μ F (T.C.C. Metallite)
- C18 16 μ F (T.C.C. Type CEN6L)
- C19 8 μ F (T.C.C. Type CE108a)

RESISTORS

- R1, 3, 10 100,000 ohms, $\frac{1}{2}$ -W (Erie).
- R2 57 ohms, $\frac{1}{2}$ -W (Erie).
- R4 25,000 ohms potentiometer (Colvern Type CLR 3001).
- R5 10,000 ohms, $\frac{1}{2}$ -W (Erie).
- R6 33,000 ohms, $\frac{1}{2}$ -W (Erie).
- R7 2.2 megohms, $\frac{1}{2}$ -W (Erie).
- R8 50,000 ohms, $\frac{1}{2}$ -W (Erie).
- R9 220,000 ohms, $\frac{1}{2}$ -W (Erie).
- R11 50,000 ohms potentiometer (Colvern Type CLR 3001).

- R12, 16 50,000 ohms, $\frac{1}{2}$ -W (Erie).
- R13 470,000 ohms potentiometer (Erie).
- R14 10,000 ohms, $\frac{1}{2}$ -W (Erie).
- R15 750 ohms, $\frac{1}{2}$ -W (Erie).

INDUCTANCES, &c.

- RFC1 R.f. choke (Eddystone Type No. 737).
- RFC2 R.f. choke (Eddystone Type No. 1010).
- T1 Output transformer (Wharfedale Type OP3).
- T2 Mains transformer, 275—0—275 V 100 mA, 5 V 2 A, 6.3 V 3 A (Webbs' Type 942).
- CH Smoothing choke 12 H 60 mA, resistance 250 ohms (Webbs' Type 2298).

VALVES

- V1 6BA6 Brimar.
- V2 6AU6 Brimar.
- V3 6AM5 Brimar.
- V4 6X4 Brimar.

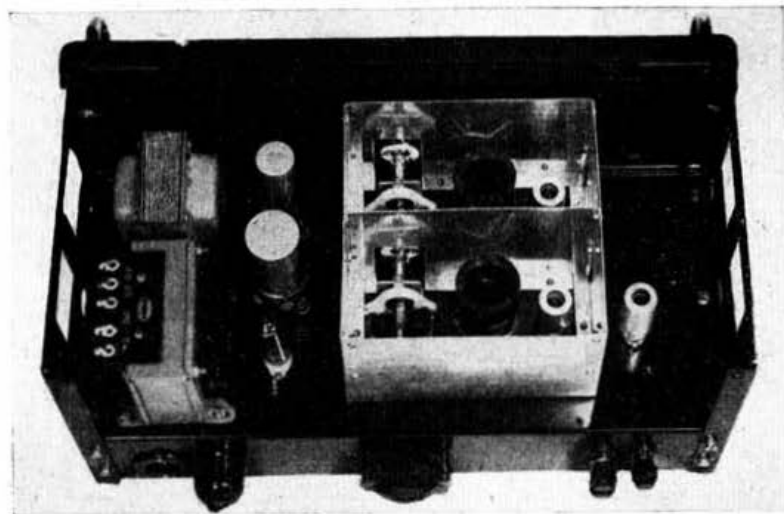
MISCELLANEOUS

- Ten 50 μ F mica compression trimmers (Webbs').
- Two 3—30 μ F air-spaced concentric trimmers (Phillips).

- Two 6-pin coil bases (Eddystone Type No. 964).
- Two shaft-couplers (Eddystone Type No. 550).
- Twelve 6-pin coil formers (Eddystone Type No. 537).
- One slow-motion dial (Eddystone Type No. 598).
- Four control knobs (Eddystone Type No. 592).
- One cabinet and chassis (Eddystone Type No. 787).
- One pair chromium-plated 7in cabinet handles (Eddystone Type No. 608).
- Two open-circuit jacks (Igranic).
- One single-pole toggle switch (Bulgin).
- One two-pin mains plug and socket (Bulgin Type P74).
- One international octal valveholder (Webbs').
- One international octal plug (Webbs').
- Three B7G ceramic valveholders and screens.
- One B7G ceramic valveholder.
- Three insulated terminals (Belling-Lee Type B).
- One 6-way 2-wafer ceramic switch and fittings (Wearite Type No. 28).
- One double-pole fuse-holder and 2 A fuses (Belling-Lee).

Bandspread

In this receiver only one tuning gang is required, made up of two $45\mu\text{F}$ variable condensers joined by a flexible coupler. A connection from the stator plates is made to a tapping on the coils L2 and L4 so that the effective capacity variation is just sufficient to cover the desired band. Band-setting is accomplished by trimmers associated with the two coils of each frequency range. These trimmers are brought into circuit by a six-way ceramic wafer switch. This may seem to be an unnecessarily complicated arrangement, but by keeping the trimmers inside the receiver, they cannot be subjected to unwanted alteration in handling as would happen if they were mounted in or on the coil formers. Apart from it being poor practice electrically to have the trimmers in the field of the coils, the mechanical difficulties encountered would be considerable. Any losses which may be introduced by the switching system are negligible in practice, even on the highest frequencies covered by the receiver.



Top view of the receiver chassis. The gang condenser and coils inside the screening box can be clearly seen, as can the mains socket, power socket, fuse holder, and aerial and earth terminals on the rear drop of the chassis.

Construction

The receiver illustrated was built into an Eddystone type 787 cabinet and chassis, the latter measuring 16in. by 7 $\frac{1}{2}$ in. by 3in. deep. As metal supplies are very uncertain at the present time, it is unlikely that an exact replica will be obtainable, but this is relatively unimportant as only the r.f. and a.f. sections of the receiver matter from the point of view of layout, and these can be accommodated on a chassis 9 $\frac{1}{2}$ in. long of the above-mentioned width and depth, with a separate power supply. Provided that the lead from the anode circuit of the detector valve is run in screened wire to the a.f. gain control (R13), and thence by a further screened lead to the grid of V3, this valve may be mounted on either side or at the rear of the coil screens, the chassis dimensions being chosen accordingly. If the power supply is on the same chassis, however, it would be inadvisable to mount the output transformer in close proximity to either the mains transformer or the smoothing choke, without first ascertaining whether mains hum is being introduced. The disposition of the r.f. components should not be changed radically unless the constructor is prepared to redesign the receiver and coils.

Any good slow-motion dial may be used in place of the Eddystone type 598 specified, but if this

is done, the height of the chassis must be considered, and the mounting brackets for the ganged condensers adjusted accordingly. The positioning of the band-switch in relation to the tuning condensers and coils is important, so that leads can be kept short, but the regeneration and r.f. gain controls, being in d.c. circuits only, may, if desired, be placed elsewhere.

The dimensions of the coil-box and the mounting brackets for the tuning condensers are given in Fig. 3. The wiring is arranged so that no leads pass through the coil box, which may, therefore, be placed in position after all other components on the top of the chassis have been fixed and wired in place. The holes in the brackets, through which the single-hole fixing bushes of the condensers pass, may with advantage be filed slightly oval in a vertical direction to facilitate lining up of condenser and dial shafts.

The two wafers of the six-way ceramic switch should be spaced 3in. apart, centre to centre, the switch spacers being adjusted so that the wafers are in the same relative positions in respect of the two coil bases. Thus the wiring in both r.f. and detector circuits will be of similar length. This will bring the rear switch-wafer approximately 3in. from the front panel.

The five ceramic and mica-compression trimmers for the 1.7 to 21 Mc/s bands inclusive are soldered at one end to their respective switch contacts and at the other end

bolted to a piece of sheet brass mounted on the side members of the switch. The spacers on the latter must be adjusted in length so that this becomes possible, washers being inserted, if necessary, to preserve the correct distances. The trimmers for the 28 Mc/s band

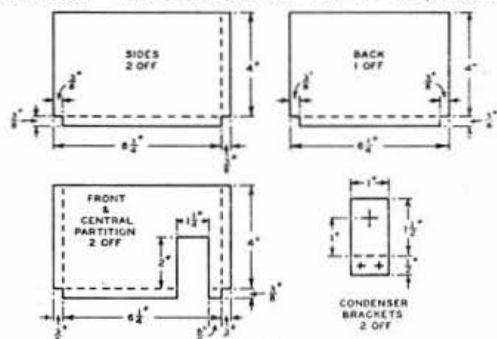


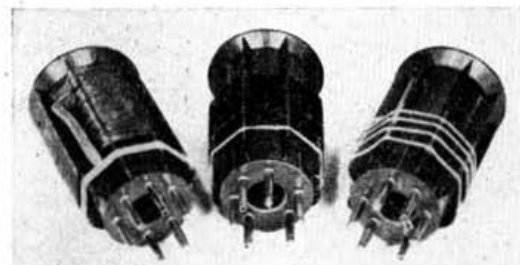
Fig. 3

The screening box for the coils and tuning condensers is made from No. 20 s.w.g. aluminium. All lower edges are bent towards the inside of the box and secured to the chassis with 6 B.A. bolts and nuts. The apertures in the front and central partition provide clearance for the condenser shaft couplers. No. 16 s.w.g. aluminium is used for making the condenser brackets.

are 30 μ F concentric Philips types; one of the tabs on the stator is soldered to the sixth switch contact and the rotors are connected to the brass plates by about $\frac{1}{2}$ in. of No. 20 s.w.g. wire. To preserve a low-impedance earthing contact, the brass plates are each joined to pin 5 on their respective coil bases by short lengths of copper braid.

A piece of thin brass sheet, $1\frac{1}{2}$ in. high by $1\frac{1}{2}$ in. long, is mounted across the valveholder of V1, which is arranged so that the grid tag is to the rear of the chassis and the anode tag is on the opposite side of the brass screen. A lead is taken from this screen to the earthy pin (No. 5) of the first coil base, all earth-return leads for the stage being made either to this lead, or directly to the brass screen.

All components should be firmly anchored to prevent movement and vibration, which would adversely affect the performance of the receiver. The time and trouble spent in arriving at a satisfactory layout, using group boards where necessary, and cabling lengthy supply leads together with twine, improve both the appearance and performance of the receiver. A group board holding RFC2, C14 and R8, 9 and 10 may be mounted vertically about one inch from the detector valveholder, between that component and the output transformer.



A group of plug-in coils for (left to right), 1.7, 14 and 28 Mc/s bands.

The Coils

The six pairs of coils are wound on Eddystone type 537 six-pin plug-in formers, each pair of coils being of similar construction. Full details of the windings and the spacing between them are contained in the coil data table. A diagram showing the relationship between the position of the pins and the eight faces of the formers is also given. In all cases the aerial coupling and reaction windings start and finish through the same hole in the former on face "h." In the case of the 21 and 28 Mc/s coils, which are wound with stout wire, it is easier to take the earthy—or lower—end of the coil through the central hole in the base of the former, and solder it to the top of pin 5, rather than attempt to take it down the pin from the inside as was done with all other coils and windings. All L2 and L4 coils have an additional half turn of wire, to enable the windings to start and finish on opposite sides of the former so that leads do not cross inside.

The figures against the ends of L1, 2, 3 and 4 in Fig. 1 indicate the connections to the coil formers and coil bases. The dimensions given for the lengths of the coils are the distances between the holes drilled in the former for the start and finish of the winding, the turns being arranged evenly in the space indicated. The hole for the windings of L1 or L3 is located $\frac{1}{2}$ in. from the base of the former in all coils except those for the

21 and 28 Mc/s bands where the distance is $\frac{3}{4}$ in. The hole for the earthy ends of the coils (pin 5) is drilled $\frac{1}{2}$ in. from the base of the former (on face "f") in the case of the 21 and 28 Mc/s coils, $\frac{1}{4}$ in. for the 3.5, 7 and 14 Mc/s and $\frac{1}{2}$ in. for the 1.7 Mc/s coils. The tapping is brought through the former at a suitable point and connected to the main winding in all coils except those for 1.7 and 3.5 Mc/s. Since the latter are close wound, the tapping passes through the wall of the former between the two windings, and is then brought to the required point outside of the turns, a piece of sleeving being slipped over the tapping wire for insulation purposes. This may be seen clearly on the left-hand (1.7 Mc/s) coil in the photograph.

Ganging and Calibration

After the circuit has been completed and checked, a pair of coils should be inserted, the range switch turned to the appropriate band, and the detector trimmer set at about half capacity. With the r.f. gain at minimum, the regeneration potentiometer should be slowly advanced until the detector goes into oscillation with a faint "breathing" sound. If this point is reached when the control is about one third or half-way round, all is well. Should oscillation commence much earlier, the reaction winding should be slid slightly away from the grid winding and another test made, or *vice versa* as necessary. If the r.f. portion of the receiver conforms with the layout of the original model, no difficulties should arise in this respect, otherwise it may be necessary to increase or reduce the number of turns on L3. Before doing so, however, a careful check of the entire circuit and its values should be made.

The next step is to adjust the detector trimmer so that the desired band is covered in approximately four-fifths of the tuning scale. This will require a frequency meter, or the use of another receiver, the scale accuracy of which is known, calibration being carried out by listening for the signal from the oscillating detector, and adjusting the trimmer on the latter accordingly.

Having lined up the detector stage the aerial should then be connected, the r.f. gain control advanced (but not to maximum) with the dial set towards the h.f. end of the band, and the trimmer on the r.f. stage slowly adjusted. At one point

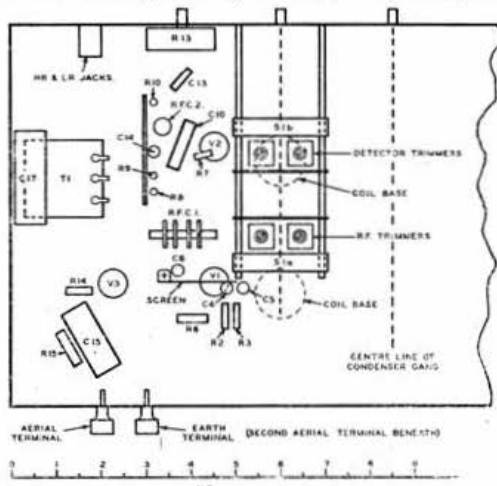


Fig. 4.

Scale drawing of part of the under-side of the chassis showing the location of the main components. For clarity only two trimmers are shown attached to the chassis.

it will be found possible to reduce slightly the setting of the regeneration control and still maintain oscillation. This is the point where the tuning of the r.f. stage corresponds with that of the detector; it is sharp on all ranges, and care should be taken to ensure that the correct point has in fact been reached.

The receiver is next tuned to the l.f. end of the band, and the r.f. trimmer adjusted again. Provided that the coils have been properly constructed, and are exactly alike, and that the wiring in the two stages is of similar length, there should be no appreciable change necessary in the r.f. trimmer capacity. If the circuits are found to be seriously out of gang at the l.f. end, the position of the aerial coupling coil (L1) relative to the r.f. stage grid coil should be altered slightly, and another attempt made to gang the circuits.

No difficulty was experienced in ganging the prototype, and the process takes considerably longer to describe than to perform. In all cases the final adjustment to the r.f. trimmers should be made at or near to the h.f. end of each band.

Television Interference

The completed receiver was checked on all bands for radiation from the oscillating detector on the Alexandra Palace television frequencies, but no trace of such spurious emissions could be detected, even when the search coil of a sensitive harmonic indicator⁽¹⁾ was placed right over L4. As a standard of comparison, an efficient superhet, of modern design was found to produce a considerable reading on the indicator when the search coil

was held in the vicinity of the oscillator tuning condenser on both the 14 and 21 Mc/s bands.

Acknowledgements

In order that the receiver should represent a practical design, only parts readily obtainable were incorporated, and all, with the exception of the

valves which were supplied by Standard Telephones & Cables, Ltd., were obtained from Webb's Radio, 14 Soho Street, London, W.1, to whom the author wishes to tender his appreciation and thanks for their assistance and advice in regard to the selection of components.

The labels for the various panel controls, which add so much to the appearance of the finished receiver, were supplied by T. A. Butler & Co., Ltd., of 48-52 Victoria Street, Birmingham 1.

Conclusion

It is hoped that the foregoing description will

assist many readers to construct a satisfactory straight receiver capable of efficient and reliable service. The finished product need bear little outward resemblance to that depicted, but provided the layout of the first two stages is not radically altered no difficulty should be encountered. The author will be pleased to hear from readers on the subject, and will do his best to advise and assist them by correspondence, but it must be pointed out that what would amount to a complete redesign of the circuit cannot, for obvious reasons, be undertaken, nor can coil-winding data for other frequencies be supplied.

(1) MATHEWS, "A Sensitive Harmonic Indicator," R.S.G.B. BULLETIN, February, 1952.

COIL DATA

Band	L1-L3				L2-L4		
	Mc/s	Turns	Length	Wire s.w.g.	Turns	Wire s.w.g.	Spacing L1/L2
1.7	67½	1½"	24 (enam.)	51½(d)	5	26 (d.c.c.)	⅜"
3.5	35½	1"	24 (enam.)	14½(d)	4	26 (d.c.c.)	⅜"
7	20½	1½"	24 (enam.)	6(f)	2	26 (d.c.c.)	⅜"
14	9½	1"	20 (enam.)	2½(g)	2	26 (d.c.c.)	⅜"
21	5½	1"	20 (tin)	1½(h)	2	26 (d.c.c.)	⅜"
28	3½	¾"	20 (tin)	1½(h)	2	26 (d.c.c.)	⅜"

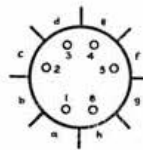
When viewed from the pin end of the formers, L2 and L4 are wound clockwise, starting at the earthy end on face "f" of the former. L1 and L3 start at pin 1, and are wound clockwise to finish at pin 6. Tapping points are counted from the earthy ends of the windings. The letters in the "Tap" column indicate the face of the former on which the tapping is made. Other pin connections are:

Pin R.F. Coils

1	aerial
2	grid
3	tap
4	blank
5	chassis
6	aerial

Detector Coils

to C8
grid
tap
blank
chassis
chassis



EDITORIAL—(Continued from Page 479)

operating? Or for inaccuracies in the log? Should any latitude be allowed in the interpretation of the rules or would this react against those members who scrupulously observe them? Why does the standard of operating drop so sharply in contests involving more than one operator at each station? Where should the boundary be drawn between sharp practice and ingenuity? Should the Committee frame its basic rules on popular—though sometimes misinformed—demand or should it be guided by its own experience, even though in doing so it may bring a swarm of angry bees buzzing around its head?

Above all, how can it pay due attention to all such questions, deal with a heavy load of correspondence, judge contests and prepare reports on them, and carry out research into questions of entirely new events, in the course of evening meetings that have to be sandwiched into already crowded lives?

There are, of course, no simple answers to these questions. And certainly none that would satisfy the Committee itself. For it is well aware that, despite the care and trouble it takes, the rules of its contests and the procedure adopted to judge them cannot, in the nature of things, be expected always to be ideal; that location and luck still too often play a large part in determining final results; that the quick-witted can sometimes spot unsuspected loop-holes in the rules, and that ideas which seem sound and laudable on paper and in the course of discussion, do not always work out in practice exactly in the manner intended.

Only by repeatedly and impartially reviewing its rules and procedure in the light of experience gained from exhaustive analyses of past results can the Committee hope to make steady progress towards its ultimate aim: adequate, fair and unbiased framing of rules and subsequent judging of worth-while contests that can be won only by the exertion of genuine skill.

Valve Keyer for Amateur Transmitters

*Circuit details of the valve keying equipment exhibited on the Royal Air Force stand at the R.S.G.B. Amateur Radio Exhibition, 1951.**

DURING recent years the demands of national, commercial and other communication services have increased enormously, while more and more active Amateur Radio stations are operating in the h.f. bands (1.5 to 30 Mc/s.). The number of communication channels which can be accommodated in these bands is limited, and can only be increased without mutual interference by reducing the frequency width of each individual channel.

The necessity for reducing channel-width is probably more acute in the amateur bands than on other frequencies. So far as telegraphy transmissions are concerned, channel-width can be minimised if the transmitter possesses the following characteristics:

- (i) Stable frequency, which must be maintained during keying and at least for the duration of the transmission.
- (ii) Direct-current tone, with negligible unwanted modulation of the carrier.
- (iii) Clean keying which will not produce clicks in a receiver (provided the latter is tuned to resonance and adjusted so that the incoming c.w. signal does not cause overloading of the r.f. stages).

The first two requirements can be met easily enough. A stable frequency is obtained by the use of a crystal oscillator or a high stability v.f.o., while the acquisition of a pure d.c. tone depends largely upon adequate power-pack design. On the other hand, clean keying is often difficult to achieve, since it requires a suitably shaped keying wave-form seldom obtained in practice.

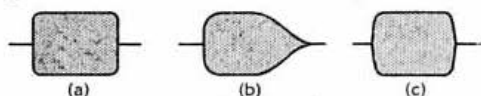


Fig. 1.

Keying waveform envelopes (a) Square-wave, producing clicks; (b) "Pear-shaped" with woolly sound; and (c) correct shape with slightly sloping edges providing clean signal.

Keying Waveforms

One of the exhibits on the Royal Air Force stand at the Fifth Annual R.S.G.B. Amateur Radio Exhibition, 1951, was a combination of equipment intended to demonstrate the ill-effects of incorrect keying-circuit adjustment in transmitters. A keyed r.f. source—comprising a crystal oscillator followed by an amplifying stage, the latter being keyed in the cathode circuit by means of a valve keyer—provided a signal which, after reception by a standard receiver, was applied to an oscilloscope for visual display. By appropriate adjustment of the

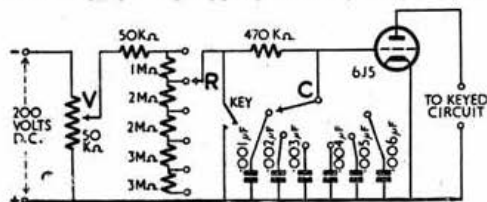


Fig. 2.

Circuit diagram of the valve keyer described in text.

keying circuit, the wave-envelope of the keyed signal could be varied over a wide range. The two extremes are illustrated in Fig. 1—waveform (a) having almost square edges and resulting in hard clicks in the receiver, and waveform (b) "pear-shaped" with a "tail" and producing a soft woolly sound. The correct wave envelope (Fig. 1c) is in between these two, having a rectangular shape with corners slightly rounded and a perceptible slope to the make and break. This provides a clean signal, and will only produce clicks if it overloads the receiver.

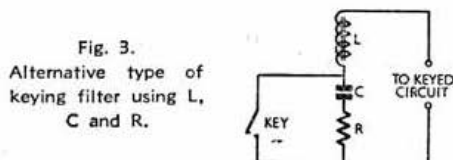


Fig. 3.

Alternative type of keying filter using L, C and R.

The Valve Keyer

The circuit diagram of the valve keyer is shown in Fig. 2, its main features being a triode valve (6J5) to the grid of which is applied a negative bias voltage via an intervening filter network. The keyed circuit is connected in the anode of the valve. The applied negative bias voltage is variable, the requisite amount being tapped from a 50,000 ohm potentiometer (V in diagram). A series of switched resistors (R) and condensers (C) constitute a wave-shaping resistance-capacity filter, determining the form of the leading and trailing edges of the keying voltage produced by the key, which is connected across the triode grid circuit. Recommended component values are indicated in the diagram.

The waveforms of Fig. 1 (a) and (b), and all intermediate shapes, can be conveniently obtained by adjustment of V, R and C; V should be set to completely cut-off the valve when the key is raised, after which R and C may then be adjusted to produce the desired keying envelope.

The same effect can be obtained by the use of other types of key filter, such as the L, C and R combination illustrated in Fig. 3, but this requires re-adjustment for different current values if used to key a cathode circuit.

The valve keyer provides a convenient means of keying a low-power exciter. The necessary interconnections to enable the keying envelope to be monitored on an oscilloscope are illustrated in Fig. 4a, where a short aerial coupled to a tuned

(Continued on Page 487)

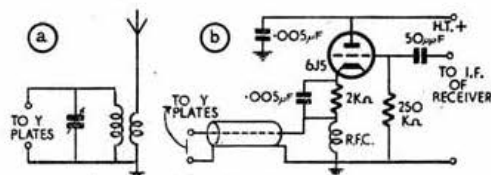


Fig. 4.

Interconnections for monitoring (a) a transmitted c.w. signal, and (b) a received c.w. signal, on a standard oscilloscope, the X-plates of which are set to scan at a slow time-base synchronised with the transmitter keying speed.

* Reprinted by permission of the R.A.F. Amateur Radio Society (G8FC).

KITE-BORNE AERIALS

By W. CARTER (G2NJ)*

There have been two main hobbies in the author's life: first—the design and flying of kites; second—Amateur Radio. This article demonstrates how the two can be combined in an interesting and novel manner.

BEFORE any experiments with kite-borne aerials are attempted, it is desirable that some experience should first be gained in the art of kite flying, particularly with the type of kite intended to be used for transmitting tests. The vagaries of the wind and the kite's reactions should be studied. Only when reliable and consistent flight can be readily achieved, should one think about substituting wire for cord or cotton.

If there is a fairly strong wind, it will be found that a small box-kite will stay aloft for hours; but if the wind is only moderate, then a lighter model, of the type illustrated in Figs. 1 and 2, is

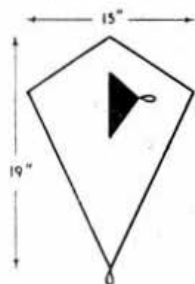
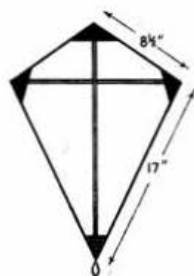


Fig. 1.
Front view of kite, showing dimensions and flap for attaching wire aerial.

required. Two-stick kites of this kind, made with coloured bunting material, can be purchased for less than 4s. from Messrs. Curry's, Ltd. Alternatively, anyone handy with the needle should, with the aid of the drawings, be able to cut out and machine a satisfactory model in quick time. The sticks are of cane, shaved down to the required thickness with a sharp knife.

The tail should consist of about 5ft. of crocheted cotton attached to the small loop at the bottom of the kite, with a piece of light material, such as a lady's handkerchief, tied to the other end. This is the stabilising device, but if the kite shows a tendency to bob about (as may happen if the wind is strong), a heavier piece of material is needed.

Fig. 2.
Rear view of kite, showing pockets for upright and across sticks, which are 19" and 15" long respectively.



Flown with Wire

Although a box-kite needs cord, the simpler type described above can be flown quite successfully with wire alone. An angler's reel (obtainable in bakelite for about 2s. 9d.) forms an ideal

winding spool. The final requirement is a bobbin of No. 36 s.w.g. single-strand art-silk-covered wire, which costs about 1s. 9d. As the bobbin contains 300ft. of wire, 36ft. should be removed, leaving sufficient for a half-wave aerial on 1.7 Mc/s., or a full-wave on 3.5 Mc/s. A full-wave for 1.7 Mc/s (i.e. 528 ft.) can, of course, be used if desired.

When operating portable, the writer takes a bicycle, with B2 transmitter and battery strapped to the carrier. With the machine propped against a tree, wall or fence, the reel (having the wire already wound on to it) can be firmly fixed to the handle-bars or cross-bar with the aid of an earth-clamp or similar device. Alternatively, the reel can be clamped to a stout wooden pointed stick or wicket driven a few inches into the ground. This acts as a stake for the kite, and facilitates reeling in the wire.

Having ascertained the direction of the wind, a short length of wire should be played out from the reel (the kite, complete with tail, having previously been attached to the end of the wire). If the wind is suitable, the kite will rise into open space with little or no effort. As it gains height, the pull on the wire will increase, and the latter should be unreeling until the necessary length is attained.

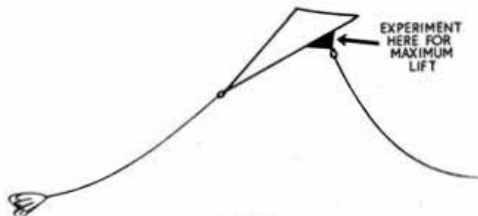


Fig. 3.
Diagram of the kite in flight.

To facilitate measurement, an inch or so of white cotton can be tied round the wire beforehand at pre-determined intervals—e.g. 132, 264 and 528 feet—so that the correct length for any given aerial is immediately known.

A Vertical Effect

If a box-kite is used, the wire should be tied to the cord at a suitable point. There is no reason why the kite should not be sent up several hundred feet before attaching the aerial. The wire and cord may be kept together, or, if preferred, the wire can be allowed to hang or sag below the cord, to obtain a more vertical effect. For this purpose the writer has used No. 30 s.w.g. single-strand cotton-covered wire, and obtained satisfactory results. Box-kites should be of the oblong type, about 2½ft. in length.

The smaller type of kite forming the basis of this article has, however, one important advantage over its "big brother" in that it requires less wind and can be flown directly from wire. The gauge of wire stipulated (i.e. No. 36) was the most satisfactory on test; No. 34 s.w.g. was too heavy

* 34 West Parade, Peterborough, Northamptonshire.

for the small kite in a fair wind, while No. 38 s.w.g. had a habit of snapping at 500ft.—it did so, in fact, during the R.S.G.B. Low Power Contest, and lost points for the station being worked!

If the kite fails to rise steeply when there is sufficient wind, then the point where the wire joins the kite may require alteration (Figs. 3 and 4). It will be found that there is one particular position of attachment where the best performance is

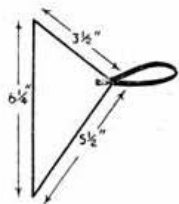


Fig. 4.
The flap, with loop of tape attached, for securing wire aerial.

obtained—i.e. the kite will rise most steeply. This position should be carefully determined by experiment, since it governs the height factor of the kite, and height is, of course, the important thing.

Results obtained were generally outstanding. With a power input of 8 or 10 watts on either 1.7 or 3.5 Mc/s., reports averaged S8 or 9, and reception was correspondingly of excellent strength.

One final word of warning: never fly a kite with wire when there is a possibility of a thunder storm. And, like the successful angler, exercise patience—particularly during initial attempts to get the kite into the air. Good flying!

QRP in '26

By Brian W. Warren G6CI

IT is gratifying to note from time to time in the BULLETIN that the flag of "VY QRP" is flying as strongly as ever, and it is hoped that present-day exponents of the art may find the following notes from the log of an old-timer of some interest.

It all started in this way. The majority of amateurs in the middle '20's were licensed to use an input power of ten watts, and to achieve this figure with the types of valves then available (G6CI used an AT40X, ex-World War I surplus!), one had to produce from somewhere about 500 volts of d.c. This was obtained, in the author's case, from a bank of chemical rectifiers—rows of small glass jars containing electrodes of aluminium and lead strips—followed by a "brute force" type of smoothing circuit.

While this arrangement worked quite well, it was never possible to obtain a pure d.c. note (now referred to as T9) from the transmitter. Consequently, it was decided to scrap the original h.t. supply and go over to dry batteries, which meant that low power would have to be used.

An Early QRP Rig

As a start, ten 4½-volt flat flashlamp batteries were wired in series and hooked-up to a Marconi R5 receiving triode in a t.p.t.g. circuit tuned to 45 metres. On load, the h.t. was 42 V., providing an input of exactly half a watt. The aerial was an inverted "L", 66 ft. in length, loaded by a direct tapping on the transmitter anode inductance. A key was inserted in the h.t. negative lead, and the transmission checked by listening on the station receiver. At last that much-sought-after goal—a pure d.c. note—had been achieved!

The first station heard at 6CI (no official prefixes then)—using an 0-V-1 receiver—was 6OU of Basingstoke. A short call and back he came with

an R4 report. Input was half a watt, distance about 100 miles and the date January 2, 1926.

A day or two later, a 100 V. battery was made up from more 4½ V. flat batteries, and this gave an input of one watt to the R5 triode, occasionally dropping to three-quarters of a watt whenever the h.t. batteries and the l.t. accumulator ran low.

DX at Low Power

Tests with this rig continued until the end of 1926, during which time some 200 stations were contacted in most parts of Europe and many parts of the British Isles were worked. The best DX was KPL in Koenigsburg (East Prussia) over a distance of 1,000 miles, signals being reported R3/4 when 6CI's input was only 0.75 watt!

Telephony was used for many contacts, the method employed being "absorption control"! This consisted of a carbon microphone connected in series with a small coil coupled to the transmitter tank circuit. An early form of f.m.! During one series of tests input was reduced to 0.03 watt (i.e.—15 V. h.t. at 2 mA.) to a Marconi LS5 triode. Even with this extremely low power, several stations up and down the country were contacted, signals being received R5 by 5NJ in Northern Ireland—who incidentally quoted 6CI as the best DX worked to date!

There was QRM in Those Days!

When assessing the results obtained with the simple equipment outlined above, younger readers should bear in mind that at the receiving end practically everyone in those days used either an 0-V-0 or 0-V-1 receiver. The "Q-5er" and the single-signal superhet were a very long way off, and contrary to what might be expected, QRM was a factor to be reckoned with. Amateurs were licensed to work on fixed wavelengths of 23, 45 and 90 metres, and what with broad signals, telephony, c.w., frequency drift, spacer-wave keying, to say nothing of those stations (not Gs!) who used 25 or 50-cycle raw a.c. on the transmitter valve anodes—and all this going on around a fixed wavelength—why, our present 7 Mc/s. band seems strangely quiet in comparison!

A Simple Audio Filter

T. G. HULL, G3FIE, author of the above article in the January issue, has been advised that toroidal inductances (serial numbers 4400-4800) of the type used in the filter are available from Bright Radio Service, Bright Street, Humberstone Road, Leicester, price 2/6d. each.

B.R.S. 11177 states that the filters from the ST2C Beam Approach Equipment are also suitable for this purpose.

VALVE KEYS—(Continued from Page 485)

circuit is used to apply a r.f. signal direct to the Y-plates of an oscilloscope. Received signals can also be checked by using the cathode-follower arrangement shown in Fig. 4b, but in this case the oscilloscope signal amplifier should be used. Note that if the receiver a.v.c. is switched on, the waveform will be affected. In both forms of monitoring the X-plates are switched to scan at a slow time-base synchronised with the transmitter keying speed—the signal preferably comprising a train of dots.

Films

Secretaries of clubs and local groups are asked to note that the new address of the 16 mm Division of Metro-Goldwyn-Mayer Pictures, Ltd., is 9 Arlington Street, London, S.W.1.

A CHEAP LIGHTWEIGHT LATTICE TOWER

By C. H. L. EDWARDS, (G8TL)*

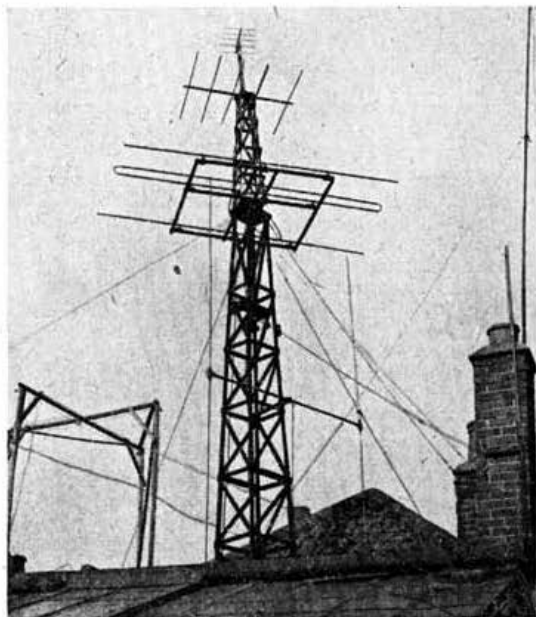


Fig. 1.

The lattice tower, with superstructure and beams fitted, mounted on the roof at G8TL.

SOME years ago, the writer decided to build a cheap lightweight lattice tower on which to mount a 5-metre 3-element rotary beam.

With no particular design in mind, other than that the required height would be approximately 30 ft., the following pieces of wood were purchased: 120 ft. of rough 1 x 1 in. (in 12-ft. lengths); 100 ft. of rough 1 x 1/2 in., and two bundles of ceiling slats.

Construction

Four uprights were laid out on the ground, each consisting of two and a half 12-ft. lengths of the 1 x 1 in. timber. The ends of the component pieces were then halved and joined as shown in Fig. 2a. Reinforcing metal strips (6 x 1 x 1/16 in.) were drilled and screwed flush against each joint. Two complete lengths were then placed 9 in. apart at the top and 2 ft. 6 in. apart at the bottom, and wooden cross-members each 1 x 1 in. were screwed in place at the open ends, forming a trapezium. The other two lengths were treated in the same manner, after which both pairs were propped on edge and, with the aid of more cross-members, screwed together in the form of a box, the whole resembling a section of an elongated pyramid.

Lengths of 1 x 1/2 in. wood were nailed horizontally at intervals of 3 ft. along this structure. Finally the ceiling slats were nailed diagonally across the separate sections, as illustrated in Fig. 2b and the photograph. To form a supporting platform for any superstructure (in this case the beam aerials), a piece of wood 9 x 9 x 1/4 in. was screwed to the top of the tower.

This work, including the application of a coat of

creosote, took only four hours to complete. The finished tower was very light and quite rigid, capable of standing vertically on its feet without support.

Installation

In practice, the full length was never used because it was decided to make use of the flat roof of the house, thus reducing the amount of additional height required from the tower. The latter was cut in half, the lower portion being used to carry a 10-metre beam in the garden, and the top half to support a 5-metre beam on the roof.

The tower was held in position by four multi-strand galvanised guy wires, broken with insulators at convenient lengths, firmly attached to the four uprights at the top of the tower. Then, with the mast accurately sited at the desired position on the roof, the guys were pulled out at as wide an angle as practicable, and firmly secured to the brickwork, tension being maintained by means of wire strainers.

The tower has been in position on the roof for more than five years, and has weathered winter gales with no other attention than occasional checking of the strain on the guys. During the past two years two additional beams have been added (144 and 430 Mc/s.), each being carried on small towers above the original 56 Mc/s. beam, with a 90° relative orientation, as shown in the accompanying photographs.

Provided strong, firmly anchored, guys are used, and adequate tension is maintained, the tower will be rigid and secure, even though the feet are not

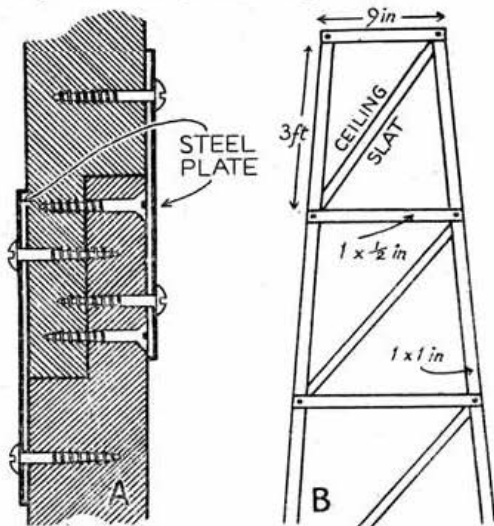


Fig. 2.

(A) Halved joint reinforced by steel plates.
(B) Structure of lattice (not to scale).

"bedded in." Additional structural strength can, if desired, be provided by using screws in place of nails, and by inserting further diagonals to intersect those already in position.

The total cost of the wood used is, at present-day prices, £1 10s. 6d.—120 ft. 1 x 1 in., 14s. 6d.; 100 ft. 1 x 1/2 in., 8s.; and two bundles of ceiling slats at 4s. each.

* 10 Chepstow Crescent, Newbury Park, Ilford.

Behind the Scenes at Lime Grove

A Technical Description of the new B.B.C. Television Studios

TO cover the expanding demands of the Television Service the B.B.C. acquired, early in 1950, the former film studios at Lime Grove, London, W.11, and work was immediately begun on the modifications necessary to convert them for television purposes. The premises contain five studios, designated D, E, F, G and H, three of which are now in regular use.

A number of fundamental problems had to be solved—apart from the installation of the technical equipment—before the studios could be used for television. The flooring had to be taken up and relaid with wood blocks and linoleum in order to correct its originally uneven condition and produce a silent surface. The rock wool covering on some of the studio walls had to be replaced by hard-board in order to increase reverberation time and so “liven” the acoustics.

Ventilation

Because of the heat produced by the intense lighting (more than 200kW being used for large productions in Studio G), elaborate systems of ventilation and air-conditioning were installed. In the Studio G plant, for instance, fresh air is drawn in over the coils of a pre-heater and, after being cleaned, is passed through cooling coils supplied with chilled water from a steam-driven absorption refrigeration system, and then through the main heater battery. Two delivery fans force the clean, dry air to a low-level duct in the studio. The air flow, which is controlled by 23 groups of louvers via a central control panel, can be delivered equally over the whole floor area, or over any part that is required.

The Studios

Studio H, with 5,400 sq. ft. of floor space, is used primarily for drama. It is equipped with three studio cameras manufactured by E.M.I., Ltd., fitted with C.P.S. Emitron pick-up tubes. A teletext channel enables film sequences to be inserted in the studio productions as necessary. The sound equipment, also of E.M.I. manufacture, comprises six microphones, four gramophone outputs (for music and sound effects), and a teletext sound channel.

Studio G, with a floor area of 6,000 sq. ft., is used mainly for light entertainment and ballet. It is equipped with vision apparatus manufactured by Pye, Ltd.; four studio cameras, using Photicon pick-up tubes, are provided, together with a spare camera channel. Teletext facilities are also available.

The sound equipment is the B.B.C. type “A” unit which caters for six microphones, four gramophone outputs, and one film sound channel. In the event of a breakdown, spare amplifiers are immediately available by throwing the appropriate switch. Each microphone output is provided with a variable degree of echo controlled by a rotary switch.

The sound and vision control rooms are separate, as shown in the accompanying photograph, an innovation which enables the sound and vision groups of the production team to function as a single unit (with the intervening window open), or independently (with the window closed).

Studio H, with a floor area of 2,800 sq. ft., was brought into service in February, 1952, for the Children's Programme, and is equipped with the vision apparatus (manufactured by E.M.I., Ltd.) used for televising the Olympic Games in 1948.



[Photo by courtesy of B.B.C.]

The Control Room at Studio G, showing, in the foreground, the gramophone reproducers and sound mixer desk, with vision monitors enabling the sound engineer to follow the production. Through the glass partition can be seen the vision control room, with monitor screens, vision mixer panel, and (on the right) the window overlooking the studio.

Line Termination

The sound and vision outputs from all studios appear on a bank of relays in the Lines Termination Room, where facilities for connecting the studios to the various transmitters are provided. Interlock circuits prevent more than one studio from being connected to any one line at the same time. The outgoing cables are routed to Broadcasting House and Alexandra Palace, and thence via the Post Office television distribution system to the B.B.C. transmitters at Sutton Coldfield, Holme Moss and Kirk O'Shotts.

D.C. supplies are used for studio lighting (to avoid stroboscopic effects at frame frequency), and are derived from four 125kW and two 250kW motor generators.

Future Plans

Development of the premises is still proceeding. By the end of the present year it is hoped to provide three 35mm telefilm recording channels. Later, Studio E, equipped with four Marconi Image Orthicon cameras, will be brought into service. There is to be a new Central Presentation Suite which will include a continuity studio equipped with two Pye Photicon cameras for announcements, and a new Central Control Room will eventually replace the one at Alexandra Palace. The fifth and largest studio at Lime Grove—Studio F, with a floor area of 9,600 sq. ft.—will not be developed for some time, but during the interim period will be used for scenery storage.

The technical installations at the Lime Grove Television Studios were planned and supervised by the Engineering Division of the B.B.C.

The España Diploma

A NEW award, recently created by U.R.E. and known as the España Diploma, is now available to radio amateurs who can prove by means of QSL cards that they have worked 125 Spanish stations in the nine districts of Spain, a minimum of three QSO's being required for each district. Only contacts made since January 1, 1952, are valid.

A copy of the rules may be obtained on application to U.R.E., Apartado de Correos, Num. 220, Madrid, Spain.

Components Exhibition

ONE hundred and eight firms took part in the Ninth Annual British Radio Component Exhibition held at Grosvenor House, London, W.1 from April 7 to 9, 1952. Organised by the Radio and Electronic Component Manufacturers' Association, the exhibition was, as in past years, of a private nature designed to give technicians, research engineers and manufacturers the opportunity of examining and discussing the latest developments of the industry.

To a visiting radio amateur, however, the exhibition had something of the flavour of forbidden fruit: not for him the latest products of the valve manufacturers offering "just the job" for a high-efficiency p.a. on 70 cm. or miniature trimmer and by-pass condensers which would fit so well into that projected v.h.f. converter or portable rig. The full force of the rearmament drive has fallen upon the radio and electronics industry, and time and again the hopeful question brought the answer "Government contracts only." However, even a rearmament drive cannot last for ever and one day it is to be hoped that many of the items on show, or later improvements on them, will find their way into amateur gear, not necessarily *via* the surplus market.

Although hardly of direct amateur interest, few can resist the fascination of really first class workmanship such as was evident in the types F and G precision variable condensers made by the Mullard Company. These are housed in cylindrical brass casings and outwardly resemble conventional variable condensers. The use of instrument-type ball bearings for the stainless steel ends of the rotor shaft, which itself is ceramic, and rotor and stator vane assemblies of specially prepared brass sheet free from local stresses, together with temperature compensation and watch-making standards of assembly, result in a variable condenser with negligible self-inductance in which capacity matching can be guaranteed to within ± 0.3 per cent. over long periods of time. These components are destined for use in high-stability oscillators, frequency meters and communication equipment where cost is of secondary importance to superlative performance.

Miniature components of many kinds were on show, including tiny air-spaced trimmers by Wingrove and Rogers, mounted on ceramic plates

approximately 4-in. square and having maximum capacities of 5 and 10 μF , and a volume control potentiometer by Egen Electric, Ltd., in which the resistance element is fitted inside a small control knob.

The new Ledex rotary solenoid was exhibited on the N.S.F. stand where, among other applications, it was smartly actuating an Oak wafer switch assembly several feet long!

The new rectangular cathode ray tubes displayed by Ferranti, Mullard and Brimar should be welcomed by television receiver manufacturers anxious to keep the size of their instruments as small as possible for a given area of picture. Not only is nearly the whole of the face of the tube available as screen but the body is also of rectangular section thus leaving more space in the cabinet for other components.

Few manufacturers can have so many separate items in their catalogue as A. F. Bulgin, Ltd., well known for their wide range of plugs, switches, indicator lamps and other small parts for the radio and allied industries. Although not brand-new products, the "Domina" multi-pole chassis plugs and sockets should be of considerable use in providing safe and easily made and broken contacts between power supply and chassis in either rack or table-top versions of amateur apparatus. The idea is delightfully simple. Plastic mouldings carry two flat prongs which mate with suitable sockets, and any number of these units may be bolted together either horizontally or in vertical stacks to provide the required number of contacts which line-up automatically with their respective sockets.

The Mullard QQVO6-40 is already making a name for itself in amateur circles as an efficient p.a. on 420 Mc/s and higher (see "A Survey of 70 cm. Equipment" by D. N. Corfield, G5CD, in the September 1951 BULLETIN). A new release from the same firm is the QQVO3-20 having all the features of the larger valve but with half its anode dissipation. These two valves should, subject to availability, be worthy successors to those mainstays of the v.h.f. enthusiast, the 829B and the 832. So far as is known the first public display of the QQVO3-20 was made to the Society in a lecture by two representatives of Mullard, Ltd., at a recent London lecture meeting. W.H.A.

Cullen Cup Contest

THE first transmitting Contest, for a Cup presented last year by Horace Cullen, G5KH, for annual competition between the Thames Valley and Sutton and Cheam Radio Clubs, took place during the afternoon of Sunday, April 6, and resulted in a win for Sutton and Cheam.

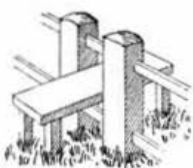
The rules allowed any licenced Club member to operate on any band with phone or telegraphy, each contact with a non-competing station counting 1 point. The arithmetical average score of each Club (total number of points divided by the number of stations operating) determined the winners. The final scores were Sutton and Cheam 20.5 points, Thames Valley 19.9 points. Eleven stations operated on behalf of the winners and eight on behalf of the losers.

G6MB made the highest score for Thames Valley (63 points) and G3CDK the highest for Sutton and Cheam (41 points).

Contests Diary

- | | |
|--------------|--|
| May 25 | - D/F Qualifying—Romford |
| June 7-8 | - National Field Day |
| June 15 | - D/F Qualifying — B.T.M.
(Rugby) and Slade |
| June 22 | - 420 Mc/s Tests |
| July 6 | - (European V.H.F.)
D/F Qualifying—
Peterborough |
| July 26-27 | - 144 Mc/s Open Event |
| August 17 | - D/F Qualifying—High
Wycombe and Oxford |
| September 7 | - Low Power Field Day
D/F Qualifying—Edgware |
| September 21 | - 144 Mc/s Field Day (No. 2) |
| September 25 | - D/F National Final |
| October 4-5 | - Low Power |
| November 8-9 | - "Top Band" (No. 2) |

THE HELPING HAND



TO AMATEUR RADIO

Part XI—Aerials (1)

Aerial Length

IF the speed of radiation of radio waves (984,000,000 ft. per second) be divided by frequency, the result is wavelength in feet. This figure relates to waves travelling in free space, and is rather too great for aerials, where the waves are travelling in a solid conductor. Accordingly a lower speed of 936,000,000 ft. per second must be used, the resulting formula for calculating aerial length being:

$$L \text{ (feet)} = \frac{936}{\text{Frequency (Mc/s)}}$$

Practical considerations may limit the length of an aerial to a half-wave, the expression for L then being halved. The formula still applies, though a different radiation pattern will result.

By

B. W. F. MAINPRISE
B.Sc. (Eng.), A.M.I.E.E. (G5MP)

Feeder Systems

Power is fed from a transmitter to an aerial via a feeder (or transmission line), which normally consists of two conductors whose arrangement will depend on whether the system is to be tuned or not.

(i) *Tuned Feeders*: The conductors consist of two wires (about No. 16 s.w.g.) running parallel to each other and spaced some 6 in. apart by light rods of ceramic or impregnated wood. The aerial top and the feeder wires need not be cut accurately to any specified length as the whole system is resonated by means of a coupling coil and condenser at the transmitter end.

Tuned feeders have the advantage of permitting operation on several bands and on any desired frequency in those bands. A disadvantage is that some radiation occurs from the feeder itself, leaving less power for the aerial; such radiation may interfere with the radiation pattern of the aerial.

(ii) *Untuned Feeders*: Two parallel wires are normally used, with the spacing reduced to 4-in. or less in modern types, where the conductors are stranded and moulded in a ribbon of low loss insulation. Alternatively, coaxial cable can be employed, the inner conductor being insulated from but completely surrounded by a flexible cylinder of metallic braid forming the outer conductor. Untuned feeders may be of any length greater than a quarter-wave, and are usually coupled to the transmitter output stage by means of a link coil of 1 or 2 turns. The aerial top, which must be

cut accurately to the required wavelength, will vary in impedance from several thousand ohms near the ends to lower values at intermediate points. At one point the impedance will be equal to the characteristic impedance of the feeder (a figure depending solely on the feeder construction and not on its length), permitting the aerial to be cut and the feeder attached to that point. The characteristic impedance of ribbon feeders ranges normally from 300 to 70 ohms, and for coaxial types from 80 to 50 ohms.

Provided that an untuned feeder is accurately matched to the aerial, power is transferred with little loss at constant current and voltage. Radiation is negligible and no tuning condenser is required. For matching the low impedances of beam aerials such feeders are almost essential.

A disadvantage is that any change of waveband, and often even a change of frequency within a given waveband, will result in a mis-match with poor transfer of power. Also, it is difficult to ascertain whether matching is correct. Finally, the cost tends to be higher than with a tuned system, even though no tuning condenser is required.

While the relative merits and failings of the two types of feeder system are a matter for individual judgment, the beginner is strongly advised to take advantage of the flexibility of operation provided by the tuned system.

Feeder tuning

The standing-wave distribution along a feeder determines whether series or parallel tuning will be required. As an example, consider a 66-ft. aerial (Fig. 1a) coupled at one end by a two-wire feeder 33-ft. long, and operated on 7 Mc/s. Maximum voltage and minimum current will be present at the ends of the aerial (A and B). Moving down the feeder through a quarter-wave to reach X , maximum current and minimum voltage will be present at that point. Assuming the coupling coil is short-circuited for a moment, the same conditions will exist at Y , while a quarter-wave length away. At Z , the voltage will have risen to a maximum of opposite polarity and the current will have fallen to zero. Insertion of the coupling coil will make the length of the system too great, but the effect is counterbalanced by the series capacitances $C1$ and $C2$, which are adjusted until resonance is indicated by the rise of anode current in the output stage, and by r.f. ammeters (or flash lamps for low powers), which may be inserted at X and Y .

Next, consider operation on 14 Mc/s. The 66-ft. top represents a full wavelength, with points of maximum voltage at A , A' and B (Fig. 1b). Each feeder is now a half-wave long, so that the voltage

will be a maximum at X, Y and Z. The coupling coil requires to be operated with maximum voltage across its ends, and is therefore parallel-tuned by C. Since, on both bands, the polarity of the voltage at B is opposite to that at Z, feeder radiation will be minimised.

If the same aerial top were cut at the centre and the feeders attached at that point, the distribution of the voltage and current waves on the system would show that parallel tuning would be required on 7 Mc/s and series tuning on 14 Mc/s. If the feeders were 45 ft. in length, series or parallel tuning could be used.

Thus, the steps for determining whether series or parallel tuning must be used are:

- (i) The aerial top is chosen to be an integral number of half-waves in length.
- (ii) The point of attachment of the feeder is selected, and the required length of feeder to reach the transmitter is noted.
- (iii) The distribution of voltage and current waves on the system is drawn (as in Fig. 1a and 1b).
- (iv) Series tuning is chosen if a point of maximum current is present at the transmitter end of the feeder; parallel tuning if a point of maximum voltage exists there.

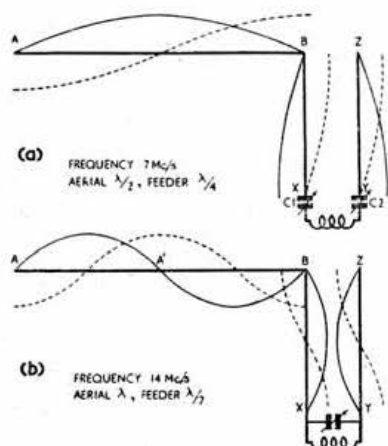


Fig. 1.

Distribution of current (full line) and voltage (dotted line) standing waves on a 66' aerial with 33' feeders operating on frequencies of (a) 7 Mc/s; and (b) 14 Mc/s.

Practical Considerations with Series Tuning

Series tuning should be used wherever possible as it possesses several advantages. The feeder wires enter the station at low voltage, reducing leakage and also minimising instability due to r.f. pick-up in audio-frequency and modulator stages. Tuning is broad and will often hold over an entire waveband without adjustment. The low voltage across the tuning condensers will permit these to be of the receiving type for low inputs. A condenser in each feeder wire is desirable (but not essential) in order to balance the system and bring the point of zero r.f. voltage to the centre of the coupling coil. For multi-band operation the value of each condenser should be about $0.0003 \mu\text{F}$. In tuning it will be found that as these capacitances are increased from their minimum setting, the anode current will rise rapidly at resonance and fall off slowly as this point is passed. The optimum ratio of capacitance to coil turns will depend on the dimensions of the system and should be

found by experiment, the use of as much capacitance as possible being generally preferred on the lower frequency bands. The system will have a low "Q"—as indicated by the broad tuning characteristic—and should be tightly coupled to the transmitter. Where link coupling is used, some 3 or 4 turns may be necessary.

Practical Considerations with Parallel Tuning

As this arrangement has a higher "Q," tuning will be sharper and coupling must therefore be looser. Link coils of one or two turns will normally suffice. Since high r.f. voltage will be present across the tuning condenser, the vanes should be sufficiently spaced to avoid arcing.

Tuning is not so simple as in the case of the series arrangement, for if the system is resonated and the feeder wires are then disconnected from the parallel-tuned circuit, the anode current of the output stage will only partly drop back towards the minimum value indicated before the coupling coil was resonated. Thus, it is possible for the parallel-tuned arrangement to load the transmitter output stage and yet transfer little power to the aerial. This effect is frequently responsible for the poor results obtained by many beginners.

When making initial adjustments with parallel tuning it is essential to check that an r.f. current of appropriate magnitude is actually present in the aerial.

For a transmitter input of 25 watts, some 10-12 watts of r.f. power should be fed to the radiating system. A half-wave aerial erected clear of neighbouring objects will present a resistive load of about 70 ohms at its centre. The power W in a resistive circuit for a current of I amperes is given by

$$W = I^2 R$$

so that for 10 watts and a resistance of 70 ohms, the current will be 0.38A. An ordinary flash-lamp bulb of 0.3A rating should glow brilliantly if inserted as an indicator at the centre of a half-wave aerial for the transmitter power mentioned, and this test should always be made. In the case of a full-wave aerial, maximum current will occur one quarter of the way along the aerial, the value of R being about 95 ohms instead of 70 ohms.

Before the flash-lamp bulb is removed from the aerial, it will be as well to determine how much current is present in the feeder wires at their point of junction with the parallel-tuned circuit. A bulb will again be suitable, but the feeder current for a transmitter input of 25 watts will probably be too low to give any indication on the standard 0.3 and 0.2A types. Bulbs rated at 0.06A (60mA) are however, still available, and these are suitable for feeder current checks. Flash-lamp bulbs make excellent indicators, as a small change in current results in a considerable change of brilliance. Replacement is inexpensive as compared with the much heavier cost of a meter, which must be a thermo-couple or hot-wire type for r.f. use.

Once the operation of the system has been checked, the lamp in the aerial may be removed, that in the feeder being used (in conjunction with the rise of anode current of the output stage) as the sole indicator of aerial tuning. The feeder lamp may be short-circuited during operation to avoid its power consumption and to prevent the possibility of slight chirp arising from variation of its resistance when the transmitter is keyed. The 60 mA bulb will, of course, need to be replaced by one of 0.3A rating, or even two in parallel, when changing to a band on which series-tuning is required.

Conditions

DURING April there was some improvement in conditions on 14 Mc/s and on the other bands they were more nearly what we have come to regard as normal. 3.5 Mc/s provided quite useful propagation over the British Isles and Western Europe during most of the day. 14 Mc/s was quite good from midday to late in the evening but in the early morning was practically useless.

Operating Practice

It would be helpful to those who try to operate their stations considerably, if people calling CQ would indicate in what part of the band they will look for replies. So many seem to reply to a call on their own frequency that it is often useless to reply elsewhere. It would be better if the caller were to specify where he intends to listen and stick to it. Nothing is more galling than to be told "I will not reply to calls on my own frequency," and then find he has gone back to someone zero beat.

Once again, too, we would like to say a word to the senders of long CQ calls. Of recent years it has become the hall mark of a certain type of British station that he shall send CQ about 50 times. This is just senseless, it wastes time and band space and it more often than not results in no reply because the man who might have done so just couldn't be bothered to wait. Keep them short and snappy, chaps!

Lebanon

We are pleased to learn that amateurs in the Lebanon Republic are now officially recognised. 26 licences had been issued up to the time of going to press and the new prefix is OD. Lebanese amateurs are allowed to use the 14, 21, 28, 144 and 420 Mc/s bands. AR8AK is now OD5AJ and AR8AB, who has kept the flag flying so long, is now OD5AB. We hope that a National Society will soon be formed, as licences are being issued fairly rapidly.

Notes and News

Bob Pybus of Manchester reports CR6AJ, CR6BC and ZS3E active on 14 Mc/s, with DU9VL as the best from the Far East. DU's may now work the nationals of "non-American" countries.

Norman Burton, B.E.R.S. 11494, says conditions in Australia seem generally better than in Britain. It is quite an experience to hear the locals, such as ZK2AA, VR2CG, YJ1AA, etc., coming in at S9!

G2ASN, who has been off the air for two years, says his call is being pirated. He hopes to be active again soon. G2DHF has just had cards from DU1AL, HZ1TA, VE8PM and ZK1BC, so feels rather on top of the world. B.R.S. 19052 of Manchester in two hours on March 28 copied HC1FG, OX3BD, VP6MO, VP9AK and numerous

VE and W calls, just to show that the band *does* open-up now and then.

W2GT reports CR5JB, James Pinto Bull, Bolama, Portuguese Guinea, as a new one; he has had cards from both FD8AA and FD8AB.

G5JL gives a few frequencies to watch: VS7NG, 7028 at 1900 G.M.T.; Y12AP, 7028 at 0530 (QSL via A.R.R.L.); HH2FL, 7030 at 0100; HK5CR, 7026, 0230; YS10, 7028 at 0230, and ZC4RS, a new station on 7026, at 0530. He has heard from G3HBR, now in Bahrein, who will soon be on the air as MP4HBR on 7 and 14 Mc/s. Yes, o.m., the SU's QSL but usually wait until they return home before doing so. He has worked KG4AF on 3526 at 0400 G.M.T.

G2VV has worked HZ1MY, Box 167 Jedda, Saudi Arabia who is active on 14050. 4UAI gives his address as Ted Gull, U.N. Radio, Jamma, Kashmir.

G2HKU has worked FF8AF at Abidjan on 14 Mc/s and has heard G stations calling ZK2AA and VS4BJ on 7 Mc/s. He would like information on the latter. Says F7BB is operating in Andorra on 7 and 14 but he has no other details. A1193 has heard W8MM/portable in Europe.

B.R.S. 7594 mentions EA0AD, 14367 at 2240, HH2ME 14230 at 2200, HH2L 14322 at 2215, HI6EC 14180 at 2220, HI8WF 14202 at 2230, HP1LB 14167 at 2200, HR1SO 14178 at 2224, VP3LF 14145, at 2033, and gives the address of ZC6AG as Andre Gielis, Consul General Belgique, Jerusalem. Several stations are active in Paraguay. ZP1BL 14315 at 2212, ZP2AC 14218 at 2206, ZP3NB 14168 at 2155, Ian Williams, c/o Paraguayan Radio Club, Box 512, Asuncion.

On 28 Mc/s South Africans have been heard from 1300 to 1630 and PY's and LU's seem to come through whenever the band opens for DX.

G6BB worked ZE3JO, ZD6DU, VK9XK and ZS3K for new ones during B.E.R.U. and has promised us regular reports.

Len Ensor, ZS6BJ, says ZS9G is active after a



Leeds DX enthusiasts gathered at the home of G2BPJ last month to welcome Stan Crow (VQ4SGC) and his wife on their visit to the United Kingdom. Left to right (rear): G2BPJ, G2FWL, VQ4SGC, G3AAV; (front): G6XT, G4JB, G2XY—all active on the 14 and 28 Mc/s DX bands. The visitors sailed recently for Jamaica, from where Mr. Crow hopes soon to be on the air with a VP5 call.

* 29 Kechill Gardens, Hayes, Bromley, Kent.

holiday in Johannesburg, and that ZS9H is on 7 Mc/s 'phone. VP8AU reckons conditions are permanently bad in South Georgia. He has heard only six G's and worked but one of them. His main difficulty is the 3,000-foot mountain which rises sheer some 150 yards from his shack.

From WSKUC's DXCC Bulletin, we learn that FB8BB has been out of stock of cards and that FB8AX is in Adeline Land in the French Antarctic. FK8AC is returning to France. PX1YR is temporarily off the air but will be active again soon with increased power. FK8AI says FW8AA is a pirate. FB8ZZ's log, covering January 13 to February 8, 1952, has been received by F9RS, who is issuing the QSL's. FF8AB is the only c.w. man in Dakar at present. IIR is now AP7IR. It is hoped that ZD7B will be active on 7, 14 and 21 Mc/s 'phone at the end of September. ZS6BW has the arrangements in hand.

Jack Drudge-Coates, DL2RO, did well in the B.E.R.U. contest but says he had to waste a lot of time explaining that DL2 counted for points. During the month he worked FA8RJ, MD5GO, SU1FX, TI2PZ, VE1BV, VP6AA, VQ4HJP, W5ENE, ZS2HI and 4X4BX on 3.5 Mc/s.

Unfortunately GM2DBX did not quote any frequencies but perhaps the following list of 'phone contacts will help to show what is still available! AP2N, CR5AC, CR9AG, DU6IV, DU7SV, FI8AC, EL2R, EA8AW (with G6WX at the microphone), M1B, LZ1KSR, HS1WR, JA2RM, and MD2BC/SU.

GM3DHD has just received No. 3 certificate from the American Mobile Marine Club. The first one to be awarded to a Scottish amateur. It is All-World No. 46. Please note, once again, that this has absolutely nothing to do with the issue of MM licences in this country.

To finish this section here is a list of DX calls from G8FC, the R.A.F. Amateur Radio Society station at Weston-super-Mare: HZ1MY, 14046 at 1000 G.M.T.; IIBNU/Trieste, 14064, 1900; MI3RR, 14025, 1610; MP4BBD, 14084, 1600; KV4AA, 14006, 1930; CO2OM, 14052, 1920; OX3AP, 14080, 1530; ZB2A, 14080, 1100; ZD2HAH, 14070, 1700; ZC4DT, 14056, 1050, and 4U4J, 14078, 1210.

Who's Who

ZC4MH, who is with the Cyprus Broadcasting Service, says there are now twelve licensed amateurs in Cyprus. Hal Collard, ZE2JO, ex-G2CVA, has been elected Secretary of R.S.S.R. Mal Geddes, ex-G2SO, is the new QSL Manager. He says the outstanding British Isles stations are G2AJ, G2BLT, G2MF, G2WW, G3CRH, G4ZU and GW3FSP between 1800 and 2000 G.M.T.

ZD2HAH, who has taken-over the Gold Coast QSL Bureau whilst ZD2DCP is home on leave, is crystal controlled on 14072 and active daily between 1630 and 1800 G.M.T. He suffers severely from electric fan QRM and also from his pet parrot, who imitates radio signals with a piercing shrillness!

ZB1CH and ZB1AJX have closed down and will soon be home. G3DDK, ex-DL2MK, is now in Malaya and hoping soon to be on the air. Jim MacIntosh, ex-VS2AA—and famous as VS1AA, is settled near Inverness and is now GM3IAA. MP4HBK (G3HBK), who is with the R.A.F. at Sharjah, c/o R.A.F., Bahrain, M.E.A.F., 24, looks for British contacts between 1500 and

1600 on 14 Mc/s. G3FT, late of Chadwell Heath, Essex, and now VE3AML, lives near the shores of Lake Huron. His address may be wanted by some of his old friends in East London, so here it is: R.R.3, Lot 34, Concession 9, Sarnia, Ontario. He speaks highly of the kindness shown to him by Canadian amateurs, especially VE3AUI and 3YS. Whilst talking over the air, shortly after arriving, he mentioned that his furniture had not arrived from England. A listener wrote to his VE friend and said there was a truck on a siding near his home with the name Beardow on it. Inquiries were made of the railway company and the furniture was duly delivered.

From G3EOG we learn that John of MD2AM is now K1FAJ. David Duke, VP8AD, is back home and hoping soon to be active again as G3DDV. G3GPV, John Chown of Holland-on-Sea, Essex, left for VE4 at the end of April. He is ex-VS7LC.

G8IP has left for Cyprus and hopes to be on the air from there soon. G3GUD reports that GM3DXL will be working as VQ4DL on 14 Mc/s from about the end of this month. ZC2MAC (14010 kc/s) worked by G4CP is G3CRY on Cocos Islands. He will be there until August.

New Certificates

L.A.B.R.E. now issues a W.A.B. ("Worked all Brazil") certificate. Contacts have to be confirmed with the Federal District and 20 States of Brazil. Pre-war contacts may count. Details are available about this and the "Worked all America" certificate from L.A.B.R.E., P.O. Box 2353, Rio de Janeiro, Brazil.

The Israel Amateur Radio Club is issuing a certificate to promote contacts with stations in Israel. Confirmation of contact, with at least 16 different Israeli stations, must be submitted to I.A.R.C., P.O. Box 4099, Tel-Aviv, Israel, from whom details can be obtained.

21 Mc/s.

Members may be interested to learn of a contest organised by L.A.B.R.E. to celebrate the release of the 21 Mc/s band. Amateurs in other parts of the world are invited to submit reports of Brazilian stations heard. The contest will be from 0301 G.M.T. on Saturdays, July 5 and 19, to 0300 G.M.T. on Mondays, July 7 and 21, for 'phone and the same times for the weekends, July 12/14 and 26/28, for c.w. The closing date for logs is October 31.

Cards Waiting

Cards are held at the R.S.G.B. QSL Bureau for VS1DC, VS7SE, VS9MA, VU2AJ, MD4TH, ZC1AL and EP3L, whose present whereabouts are unknown.

Capt. Kurt Carlsson

We have received a letter from Capt. Carlsson, W2ZXM, asking us whether we can trace the British amateur who kindly offered to send him some recordings made during the "Flying Enterprise" episode. Unfortunately he has lost the letter he had from this gentleman and wishes to contact him.

* * *

June Issue

Closing date for the June issue will be May 26. Interesting photographs are always welcome.

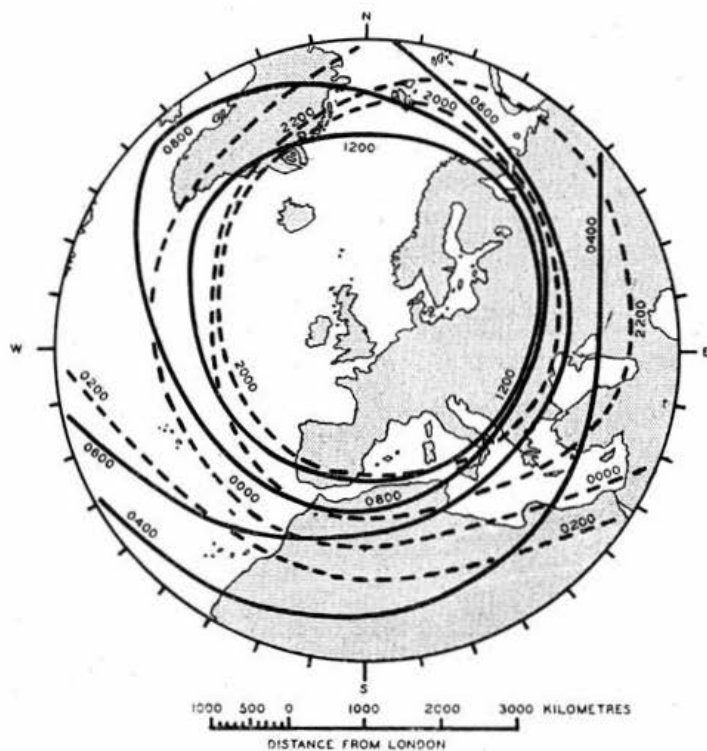
Skip Distance Predictions for the Amateur Bands

by P. H. Sollom B.Sc., A.C.G.I. (G3BGL)*

IF the skip distance for a particular frequency is defined as that distance for which it is the maximum usable frequency, it is then known as the maximum skip distance; the actual skip or region of zero sky-wave signal is always slightly less.

At various times throughout the day the maximum

skip distance for several directions from London has been computed from the m.u.f. predictions supplied to the R.S.G.B. by the Department of Scientific and Industrial Research. Points on a great circle map plotted for the same time are joined together by a curve which shows the fringe of the skip zone at that time.



The curves on the accompanying map, centred on London, show predictions, for June, 1952, of the fringe of the skip zone for transmissions in the 14 Mc/s band from S.E. England via the F₂-layer, at various times throughout the day (expressed in G.M.T.). At any given time signals may be received from points between the appropriate curve and the edge of the map. The solid curves are for the period when the skip is shortening; the broken curves are for the period when the skip is lengthening.

Skip distances from Ireland are similar to those measured from London in corresponding directions, but will occur about 45 minutes later. Skip distances from Scotland are, in general, 200-500 km. longer than those measured from London in corresponding directions.

Used in conjunction with the Skip Distance Map, published last month, the trend in conditions can be followed. Since the hours of sunrise and sunset are continually changing, and as the sunspot cycle proceeds on its way, it is to be expected that the predicted maximum skip distances (which are for an average day) will be too short at the beginning of the month, and too long at the end, or vice versa, depending upon this trend.

* The Rowans, Green Street Green, Farnborough, Kent.

R.S.G.B. FREQUENCY MEASURING TEST

THE first R.S.G.B. Frequency Measuring Test will be held on Saturday, May 24, 1952, beginning at 2230 B.S.T.

Two c.w. transmissions will be made from G6JJ (Coulston, Surrey) in accordance with the following schedule:

First Transmission (3569 ± 10 kc/s)

2230-2240 B.S.T.—CQ de G6JJ RSGB FREQUENCY MEASURING TEST (repeated for 10 minutes).

2240-2245 B.S.T.—QRG IMI de G6JJ followed by a five seconds dash (repeated for five minutes).

Second Transmission (3530 ± 10 kc/s)

2245-2255 B.S.T.—CQ de G6JJ RSGB FREQUENCY MEASURING TEST (repeated for 10 minutes).

2255-2300 B.S.T.—QRG IMI de G6JJ followed by a five seconds dash (repeated for five minutes).

The frequency of the first transmission should preferably be measured between 2240 and 2245 B.S.T. when the five seconds dashes are being sent.

Similarly, the frequency of the second transmission should be measured between 2255 and 2300 B.S.T.

Members are invited to measure the frequencies of both transmissions as accurately as possible and submit their results in the following form:

R.S.G.B. Frequency Measuring Test, 1952

Name..... Call Sign
Address..... or
B.R.S. No.....
The results of my measurements are:—
First transmission..... kc/s
Second transmission..... kc/s
Brief description of equipment used.....
Comments on test.....
Signed.....

Measurements should be submitted to the General Secretary, R.S.G.B., New Ruskin House, Little Russell Street, London, W.C.1, and should be postmarked not later than Tuesday, May 27, 1952.

Certificates will be awarded to members who measure both frequencies with a high order of accuracy.

It is hoped that transmitting members who are not taking part in the test will endeavour to avoid the frequencies being used.

The following is a list of stations for which application has been made at the sites indicated. Entry forms will be issued from the 1st of June, 1952, in the February, 1952, issue of the BULLETIN.

REGION 1

Town or Area	Stn.	Call Sign	Location
Blackpool ..	A	G6LD/P	Field at rear of Highcross Lane, Highcross, Poulton-le-Fylde.
	B	G5ND/P	As A station.
Bury	A	G2GA/P	Scout Camp, Ashworth Valley, Heywood.
Chester ..	A	G3HPM/P	Poulton Hall.
	B	G2YS/P	Duttons Nurseries, Queens Park.
Darwen and Blackburn	A	G2HW/P	Land adjoining Royal Hotel, Tockholes.
Liverpool ..	B	G3EKP/P	As A station.
	A	G6KS/P	Electric Supply Sports Ground, Thingwall Rd.
	B	G8DI/P	As A station.
Manchester (North West)	A	G3HAC/P	Heaton Park Grounds, Manchester.
	B	G3RP/P	As A station.
Southport ..	A	G3EFA/P	150 Liverpool Road, Birkdale.
	B	G2ART/P	As A station.
Warrington ..	A	G3CKR/P	Field at rear of Davey-hulme Cottage, Whitely.
	B	G2BVU/P	As A station.
West Cumberland	A	G3HNI/P	Tarnflatt, Sandwith, Whitehaven.
	B	G3DNI/P	As A station.
Wirral	A	G2AMV/P	Manor Farm, Noctorum (NGR 33/292875).
	B	G8BM/P	As A station.

REGION 2

Barnsley ..	A	G3ELG/P	Keppels Column, Scholes.
	B	G5IV/P	Keresforth Hill Farm, Broadway, Barnsley.
Bradford ..	A	G4GJ/P	Croft Rd., Crossflats, Keighley.
	B	G6KU/P	Poplar Grove, Great Horton.
Cleckheaton ..	B	G3FQH/P	40 Dale Lane, Heckmondwike.
Darlington ..	A	G8IA/P	Maidendale Farm, Yarm Rd., Eastbourne.
	B	G3CDM/P	As A station.
Hexham ..	A	G4LA/P	Burnbridge, near Whitley Chapel.
	B	G5RI/P	As A station.
Hull	A	G6UJ/P	White House Farm, Nafferton.
	B	G5PQ/P	Flagstaffe House, Welwick.
Middlesbrough ..	A	G3CBW/P	Hemlington Grange Farm.
	B	G5YP/P	As A station.
Pontefract ..	A	G3US/P	Hemsworth Grammar School Playing Fields.
	B	G6MF/P	As A station.
Scarborough ..	A	G8KU/P	Boys' Playing Field, Olivers Mount.
	B	G3KS/P	As A station.
Sheffield ..	A	G8NN/P	Field adjacent to 580 Redmires Rd.
	B	G5TO/P	As A station.
Sunderland and South Shields	A	G4WG/P	West Park, South Shields.
	B	G3IV/P	Colley's Farm, Lizard Lane, Whitburn.
West Hartlepool	A	G4OD/P	Tofts Farm, Seaton Carew.
	B	G3TO/P	As A station.
York	A	G3FYP/P	Grounds of R.A.F. Sergeants' Mess, Heslington Rd.
	B	G3DTA/P	Site as A station.

REGION 3

Birmingham (South)	A	G8JI/P	Field at rear of 222 Shenley Fields Rd., Selly Oak.
	B	G8PN/P	As A station.
Coventry ..	A	G2DK/P	Oaken End Farm, Allesley.
	B	G3HLI/P	As A station.
Hereford ..	A	G3NA/P	Perryhill, Belmont.
	B	G3ESY/P	As A station.
Malvern ..	A	G2AO/P	Wynds Point, Malvern Hills.
	B	G2XX/P	As A station.
Rugby	A	G4KK/P	Water Tower Farm.
	B	G3AU/P	As A station.
Stourbridge ..	A	G4MI/P	King Edward VI School Playing Fields.
	B	G8GF/P	Sheepwalks, Envile.

REGION 3—continued

Town or Area	Stn.	Call Sign	Location
Wellington ..	A	G3IFT/P	Priorslee Hall.
	B	G6KR/P	The Wrekin.

REGION 4

Boston	A	G8BQ/P	Glebe Field, Stickney.
	B	G2HFB/P	As A station.
Derby	A	G3ERD/P	Glebe Farm, Blagreaves Lane, Littleover.
	B	G5RW/P	As A station.
Grimsby and Cleethorpes	A	G2FT/P	NGR 105/338047.
	B	G4XC/P	As A station.
Leicester ..	A	G2RI/P	The White House, Scraftoft.
	B	G4BB/P	The Park, Thrusington Lane, Rearsby.
Lincoln	A	G4BU/P	Hill Top Field, Bracebridge Heath.
	B	G5XL/P	As A station.
Loughborough ..	A	G4BI/P	Stanford-on-Soar.
	B	G4MM/P	As A station.
Mansfield ..	A	G8HX/P	Neville's Sports Field at junction of Nottingham Rd. and Derby Rd.
Newark	A	G3FAT/P	Hill Farm, Dry Doddington.
Peterborough ..	A	G2NJ/P	Manor Farm, Alwalton.
	B	G3EEL/P	As A station.
Retford*(1) ..	B	G3BTU/P	Whinley's Farm, off Leverton Rd.
Spalding ..	A	G2DRT/P	Redmile Nurseries, Pinbeck.
Worksop*(1) ..	A	G6MN/P	Mr. Slaney's Field, Blyth Grove.

REGION 5

Cambridge ..	A	G5IG/P	The Water Tower, Rivey Hill, Linton.
	B	G5DQ/P	Meadow Side, Comberton.
Chelmsford ..	A	G5RV/P	"Running Mare", Galleywood.
	B	G4VF/P	As A station.
Great Yarmouth	A	G6ZG/P	Gorleston Cliffs, S. of Royal Observer Post.
	B	G3CKF/P	As A station.
Ipswich ..	A	G4RW/P	Station Hill, near Ordnance Hotel, Felixstowe.
	B	G2AN/P	As A station.
Luton	A	G3ASD/P	Old Brickworks Field, Stopsley.
Shefford and Baldock	A	G4OL/P	Nunn Wood Meadow, Meppershall.
	B	G3CEU/P	Western Hills, Baldock.

REGION 6

Bletchley ..	A	G2DTD/P	Rectory Farm, near Loughton.
	B	G3AZ/P	London Brick Co. Works.
Cheltenham ..	A	G3CGD/P	Wistley Hill, near Charlton Kings.
	B	G5BM/P	St. Mark's Community Centre Playing Field, Brooklyn Rd.
Christchurch ..	A	G4RP/P	Bure Homage, Mudeford.
	B	G8DL/P	As A station.
Gloucester ..	A	G3MA/P	Green Farm, Minsterworth.
	B	G2RT/P	As A station.

FIELD DAY

8. 1952

been made to the G.P.O. for permission to operate portable Headquarters prior to the event. N.F.D. Rules appeared issue of the BULLETIN.

REGION 6—continued

Town or Area	Stn.	Call Sign	Location
High Wycombe	A	G5WW/P	"Oakdene," Amersham Rd.
Newbury	B	G6JK/P	As A station.
	A	G3IG/P	Wash Common Farm, Wash Common.
Oxford	B	G3CJU/P	As A station.
	A	G2DU/P	Watt's Farm, Elsfield.
Petersfield	A	G6DT/P	Community Association Ground, Horndean.
Portsmouth	A	G6NZ/P	Field of V. Gauntlett, Crockhorn, Purbrook.
Reading	B	G8WC/P	As A station.
	A	G3AED/P	Radstock Farm, Earley.
	B	G5DF/P	Scouts' Site, Junction of Kentwood Hill and Armour Hill, Tilehurst.
	A	G5LR/P	Netley Hill Common.
Southampton	B	G3KJ/P	As A station.
Stroud	A	G5HC/P	Saul.
	B	G3CBH/P	As A station.
Swindon	A	G2MM/P	Field adjoining Military College of Science, Shrivenham.
West Wilts	B	G4AP/P	As A station.
	A	G2PS/P	The Chalk Quarry, Long River, Westbury.

REGION 7

Amersham, Beaconsfield and Chalfonts	A	G3BI/P	Near watertower at Coleshill.
Barnet, Boreham Wood and London, N.20	B	G3DAG/P	As A station.
	A	G4BX/P	Woodcock Lodge Farm, Tyler's Causeway, Epping Green (NGR 52/286062).
Bexley, Erith and Dartford	B	G6CY/P	As A station.
	A	G3ENT/P	Baldwyn's Park, Old Bexley.
Brentwood	A	G3LA/P	Sports Field, Bentley Primary School.
Bromley and Beckenham	B	G8RC/P	As A station.
	A	G2MI/P	Buxton Browne Research Farm, Downe.
Coulson	B	G4AU/P	As A station.
	A	G2DN/P	Field above Hall & Co., Lime Works.
Cray Valley	B	G3CIF/P	White Hill, Caterham.
	A	G3ANK/P	Blackheath Golf Course, Court Road, Eltham.
Croydon	B	G6VV/P	As A station.
	A	G2RD/P	Fairchild's Farm, Featherbed Lane, Chelsham.
Dulwich and New Cross	B	G5BZ/P	As A station.
	A	G4DC/P	Goldsmiths' College, S.E.14.
Ealing	B	G2HP/P	As A station.
	A	G2DVD/P	Hanger Hill Estate (between Hanger Lane and Heathercroft, W.5).
East Ham	B	G3CBN/P	As A station.
	A	G2ZZ/P	Lady Trower's Sports Ground, Burgess Rd.
East Molesey	B	G4CM/P	As A station.
	A	G6MB/P	Broadmoor, Dorking.
Edgware and Hendon	B	G8SM/P	As A station.
	A	G5FG/P	Weedon's Farm, Nan Clark's Lane, N.W.7.
Enfield	B	G2IM/P	As A station.
	A	G8SK/P	"The Forge" Grounds, Hertford Rd.
Finsbury Park	A	G2BAB/P	A.A. Gun Site, N.4.
Grays	B	G8CWS/P	As A station.
	A	G3DLC/P	Crane's, Gun Hill, West Tilbury.
Guildford and Woking	A	G3ARM/P	Staple Lane, East Clandon.
	B	G5WP/P	As A station.

REGION 7—continued

Town or Area	Stn.	Call Sign	Location
Harlow	A	G6UT/P	Rye Hill, near Epping.
Hayes	B	G3ERN/P	As A station.
	B	G3HRG/P	Uxbridge Municipal Golf Course.
Hoddesdon	A	G3BUN/P	Roman Road, Hertford Heath.
Ilford	B	G4HJ/P	As A station.
	A	G2RK/P	East London Mission Field, Lambourne End.
Kensington and Shepherd's Bush	A	G3EZM/P	The Royal Borough of Kensington Playing Fields, Northolt.
Kingston	A	G2ACA/P	Claremont, Esher.
	B	G3DHZ/P	As A station.
Norwood	A	G4JH/P	Grounds of Crystal Palace, S.E.19.
Putney, Barnes and Richmond	A	G6RC/P	Playing Fields, Bank of England Sports Ground, Roehampton.
Redhill and Reigate	B	G4GD/P	Playing Fields, Richmond and East Sheen Grammar School.
	A	G5LK/P	Field off Madeira Walk, Reigate.
Romford	B	G2AJ/S/P	Field off Caterham School.
	A	G4KE/P	Bedfords Park, Havering-atte-Bower (NGR 927515).
Slough	A	G3XH/P	Woodlands Rd., Uxbridge Key, Stoke Poges.
Southgate	B	G6CJ/P	Berry Farm, Wexham.
	A	G6QM/P	Field adjoining Hadley Wood Common, Cockfosters.
Sutton and Cheam	B	G5FA/P	As A station.
	A	G6KM/P	Banstead Hall School.
Uxbridge	B	G8DF/P	As A station.
Uxbridge	A	G2FMF/P	Uxbridge Municipal Golf Course.
Watford	A	G2QB/P	Royal Junior Masonic Schools, Playing Fields, Bushey.
Welwyn	B	G2VD/P	As A station.
	A	G5UM/P	Digswell Lane.
Woodford	B	G2JG/P	Epping Forest, Crest of Baldwins Hill.
Woolwich	A	G3HSO/P	Shooter's Hill, S.E.18.
	B	G8LN/P	As A station.

REGION 8

Brighton and Hove	A	G5AO/P	Woodingdean.
Canterbury and Ashford	B	G3YY/P	As A station.
	A	G2JF/P	Wye Hill.
Eastbourne	B	G2JN/P	As A station.
	A	G4FV/P	Windmill Hill, near Hailsham.
Hastings	B	G2KU/P	As A station.
	A	G2AVR/P	Silverhill, Hurst Green.
Isle of Thanet	B	G2AX/P	As A station.
	A	G8QB/P	Foreness Recreation Ground, Margate.
Maidstone	B	G2IC/P	As A station.
	A	G3FMK/P	County Police Sports Ground, Sutton Rd.
Medway Towns	B	G2BMP/P	As A station.
	A	G2CM/P	"Oakhurst," Victoria Rd., Bluebell Hill, Chatham.
Tonbridge and Tunbridge Wells	B	G6NU/P	Batchelor's Field, 1 mile S.E. of Rochester.
	A	G4FB/P	Enfield Farm, Leigh.
Worthing	B	G4IB/P	As A station.
	A	G3BF/P	Barns Farm Hill (NGR EI.121000; N1,232000).
	B	G3HQQ/P	As A station.

REGION 9

Bath	A	G8DX/P	Chapel Farm, Lansdown.
Bristol	B	G6UR/P	Foxhill, Combe Down.
	A	G2IK/P	Hill Farm, Dundry (NGR 31/563667).
Dorchester	B	G6GN/P	As A station.
	A	G2TZ/P	Askerwell.
Exeter	A	G3JW/P	Conway's Meadow, Exminster.
	B	G5QA/P	Huntsland Farm, Cheyne Gate, Pinhoe.

(Continued on Page 498)

REGION 9—continued

Town or Area	Stn.	Call Sign	Location
Falmouth ..	A	G8AW/P	Ponsharden.
	B	G6LV/P	As A station.
North Cornwall	A	G3FCC/P	Truscott Farm, near Launceston.
	B	G2AYQ/P	St. Agnes Beacon.
North Devon ..	A	G3BO/P	The Grammar School Playing Field, Abbotsham Rd., Bideford.
	B	G6GM/P	"Featherlands," near Holsworthy.
Plymouth ..	A	G3TX/P	Dorsmouth Rock, Hardwick Farm, Plympton.
	B	G3HMT/P	As A station.
Torquay ..	A	G2GK/P	Kingskerwell.
	B	G3GDW/P	Milber Down, near Newton Abbott.
West Cornwall (Penzance)	A	G3FVD/P	Old Dingdong Mine, near Penzance.
	B	G2WW/P	Quarry Dump, near Paul.
Weston-super-Mare	A	G5DV/P	Worlebury Golf Course.
	B	G8FC/P	As A station.

REGION 10

Cardiff ..	A	GW5BI/P	Lavernock Point.
	B	GW5FN/P	As A station.

REGION 11

Llandudno ..	A	GW3GWX/P	Great Orme's Head.
	B	GW3ENY/P	As A station.
Wrexham ..	A	GW3HHF/P	Nanty Ffrith, Bwlchgwyn.
	B	GW3GWA/P	As A station.

REGION 12

Aberdeen ..	A	GM3ALZ/P	Peterseat Farm, Tullos Hill.
	B	GM2FHH/P	Tyrebagger Quarry, Bucksburn.
Banff ..	A	GM3DPK/P	Boynsie.
	B	GM3DZB/P	As A station.
Dundee ..	A	GM4NR/P	Birkhill, Angus.
	B	GM4HR/P	Muirlock Farm, near Fowls.
Forfar ..	A	GM6RI/P	Tannadice.
	B	GM3EAK/P	Lour Hill.

REGION 13

Berwick-on-Tweed	A	GM2YY/P	Lamberton Moor.
	B	GM8SG/P	As A station.
Dunfermline ..	A	GM8KR/P	Broomhall.
	B	GM3XO/P	Hillton of Pittfirrane, Cairney Hill.
Edinburgh ..	A	GM8FM/P	Eastfield Farm, Penicuik.
	B	GM3UM/P	Loanhead.

REGION 14

Ayrshire ..	A	GM3FMD/P	Heathfield Aerodrome.
	B	GM3CSO/P	As A station.
Falkirk ..	A	GM4JQ/P	1 mile S. of Carron-bridge Hotel.
	B	GM4MF/P	As A station.
Glasgow ..	A	GM8MJ/P	Lickprivilock Farm, East Kilbride.
	B	GM3CSM/P	As A station.
Renfrewshire ..	A	GM3AR/P	North Kirktonmoor, Eaglesham.
	B	GM3CAR/P	As A station.

REGION 15

Belfast ..	A	GI3ML/P	Mount Pleasant Farm, Ballysillan Rd.
	B	GI5UR/P	As A station.

CHANNEL ISLANDS

Guernsey ..	A	GC2ASO/P	Icart, St. Martins.
	B	GC3HFE/P	As A station.

Wellingborough Hobbies Exhibition

AN Amateur Radio station proved a popular feature at a Hobbies Exhibition held in the New Drill Hall, Wellingborough, from April 16 to 18, 1952. The transmitters in use were a No. 19 set and a B2, both operating on 1.8, 3.5 and 7 Mc/s. An aerial 284 ft. long was used for transmitting.

Although nothing outstanding in the way of DX was achieved a number of excellent phone contacts were established. Replies were amplified and relayed via equipment loaned by Broadcast Relay. A high level of background noise made reception of weak signals very difficult and was responsible for many lost contacts.

Visitors to the Exhibition were invited to make voice recordings on equipment loaned by G3HZF—the subsequent play-backs frequently causing amusement.

More than 800 QSL cards, received during recent years by G4IN and G5LP, were distributed free to visitors.

British Wireless Dinner Club

SIR John D. Cockcroft, C.B.E., F.R.S. (Director of the Atomic Research Establishment, Harwell), was the guest speaker at the 29th Annual Dinner of the British Wireless Dinner Club held at the Junior United Service Club, London, on Friday, April 25, 1952.

At the Annual General Meeting which followed the dinner, Admiral A. J. L. Murray, C.B., D.S.O., O.B.E., was elected President for the current year and Air Vice-Marshal C. W. Nutting, C.B.E., D.S.C., Vice-President.

Among the Company were Mr. H. Faulkner (Deputy Engineer-in-Chief, G.P.O.), Col. J. Reading (Assistant Engineer-in-Chief, G.P.O.), Capt. S. R. Mullard, Capt. H. J. Round, Capt. P. P. Eckersley, Lt.-Col. E. Y. Nepean (G5YN), Wing Commander N. H. Hamilton, D.S.O., Philip Coursey, Douglas Johnson (G6DW), Rowley Scott Farnie (G5FI), Douglas Walters (G5CV), C. M. Benham (G4TZ), and John Clarricoats (G6CL).

Membership of the Club is open to anyone who, whilst holding a Commission in H.M. Forces, is, or has been, engaged on Signals or Wireless duties. The Life Subscription is £1 1s. The present membership is 483, of whom more than 100 attended the Dinner.

Television Society's Silver Jubilee

A dinner-dance at the Waldorf Hotel, London, on April 25, 1952, provided a fitting climax to the Silver Jubilee celebrations of the Television Society.

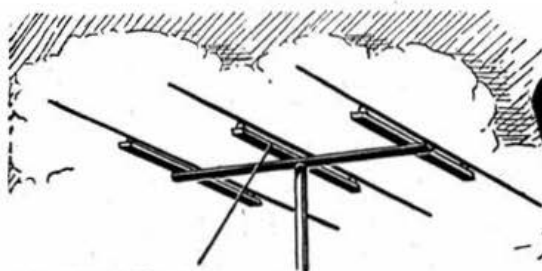
The President (Sir Robert Renwick, Bt., K.B.E.), was in the Chair at the dinner, supported by Sir Edward Appleton, who proposed the toast of the Society. Other speakers included Charles Ian Orr-Ewing, M.P. (Parliamentary Private Secretary to the Minister of Labour and National Service) and Richard Dimbleby.

The Society's Silver Medal for outstanding artistic achievement in television was awarded to Eric Robinson, the B.B.C. Television Conductor. Last year's winner, Miss Joan Gilbert, was also present.

During the after-proceedings a gold wrist watch was presented to Geoffrey Parr (Hon. Secretary) in appreciation of his long and distinguished services to the Society.

Full details of the Society, which now has a membership in excess of 1,000, can be obtained upon application to the Hon. Secretary, 164 Shaftesbury Avenue, W.C.2.

* 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.



AROUND THE V.H.F.'s

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

Two Metre News

EI2W (DUBLIN) made his promised re-appearance on the 2 m band on April 1 but found conditions poor during the early part of the month. Signals were, however, exchanged with G13QB (Newtonards), G16VU (Belfast), G3FMI (Chester), G3EHY (Banwell), G3DA (Liverpool), G5YV (Leeds) and G2HGR (nr. Bolton), the latter putting in a consistent signal despite his indoor 4-element Yagi and 30 watts input.

On April 13 things improved and G5YV came up greatly in strength together with GW5MQ. New stations worked included G2FZU and 5RW of Ilkeston, nr. Derby, and G3GZM (Tenbury, Wells, Worcs.). G6NB (Aylesbury, Bucks.) at 255 miles was the most distant contact. G13AXD and G13BIL, both in Belfast, were heard.

The new 32-element beam at EI2W unhappily succumbed to high winds soon after its erection and all contacts since April 9 have been made with a hastily constructed "5 over 5," fed with coaxial feeder to a matching device, as described in the January, 1952, issue of *QST*. The apparatus was found both efficient and simple to construct. EI2W's new home address is The Chalet, Plunkett Avenue, Foxrock, Co. Dublin, but the site of the 2 m station is unchanged.

G3EHY found conditions towards the end of March poor but they improved during the second week of April. Since Easter weekend 200-mile contacts have been a regular feature of operation. Between 1830 and 2000 G.M.T., an increasing number of stations were active, and from 2230 onwards conditions appeared to settle down after a period of instability. EI2W was worked several times at 59 plus on 'phone, while northern stations were also well received, including G2FZU, IQ, OI, 3BW, DA, FMI, HWC (Preston) and 8SB. New calls in the south-west are G3DLU (Weston-super-Mare), 3EUP (Swindon) and 3IWA (Bath).

Bob Munday, G5MA, who has always shown a keen interest in portable operation, made another of his successful trips during the Easter holiday when, as GW5MA/P, he worked on 2 m from Llanybyther Mountain (1319 ft.) in Carmarthenshire. Conditions were by no means so good as for his 2 m test from Brecknock last year during the R.S.G.B. Two Metre Field Day when 39 stations were contacted; nevertheless, by the time he closed down early in the evening of April 13, 23 stations had been logged, the greatest distance being the 187 miles separating him from G2AJ (Biggin Hill, Kent). The remaining stations worked were: G2AHP, BMZ/A, HDZ, HIF, NH, XC, 3BLP, EHY, FAN, FRY, GHI, GZM, MA, 4CI, HT, 5BM, DS, RP, 6NB, 8ML, OU, VZ.

The transmitter in use had push-pull 6C4s in the final, with an input of 12 watts, driven by three Mullard EL91s from an 8 Mc/s crystal. The receiving side comprised a cascode converter with a 6J6 tuned harmonic oscillator feeding, at 5 Mc/s, into a much modified R. 1481. The aerial was a 4-element wide-spaced Yagi 26 feet above ground.

* 32 Earls Road, Tunbridge Wells, Kent.

G3DIV/A (Eastbourne) heard DL3FM and worked ON4HN and F8NH on April 8.

'Ware Pirates!

G8JC has received a QSL card from PA0FP confirming a 2 m QSO on June 4 last, and giving an RST 578 report. The rightful owner may have the card if he will write to 'JC as the latter does not use this band!

Flash!

Excellent two-way Amateur Television was established on May 1st, 1952, between G5ZT/T and G3BLV/A/T. Both stations were operating in Plymouth on 430 Mc/s. The transmissions were witnessed by representatives of the National and Local Press.

Danish Two Metre Contest

We are informed by E.D.R. that they will be running a 2 m contest on August 16-17 next.

Simple Gear on 70 cm.

The expected storm of protest regarding the use of transmitters of the m.o.p.a. type and other than conventional superhet. receivers on 70 cm, mooted in the March issue, did not materialise. Agreement for the idea comes from G3CGQ, who himself employs crystal control. He suggests that the use of a v.f.o. transmitter offers unique scope to those interested in the design of complicated aerial systems on a band where high-gain beams are not necessarily large in physical size. He recalls some satisfactory fixed and portable operation in 1948/9 when he was using very simple apparatus in conjunction with a 16-element stacked array.

The question of frequency measurement must not be overlooked, but as two correspondents point out, frequencies of this order may be measured to within 500 kc/s by the careful use of Lecher lines, so that those working with less stable gear should have no difficulty in keeping clear of the 432-438 Mc/s section of the band where the majority of c.c. stations operate.

It is suggested by G3FYA that one of the stumbling blocks to those with little constructional ability or lacking in workshop space and facilities, is the metal work required for efficient u.h.f. transmitters and receivers, and wonders whether any manufacturer would be enterprising enough to market such components. With the prevailing shortage of all kinds of metal it would appear unlikely at the present time that a project of this sort could be launched, and even in normal times a good demand would have to be forthcoming for such parts to be reasonably priced. It should be pointed out, however, that sound designs for very simple 70 cm apparatus have appeared from time to time in this journal, notably those by G2WS in October, 1948, and January, 1949, which dealt with the construction of a transmitter, modulator and frequency meter.

The 70 cm. Band

G2WJ (nr. Dunmow, Essex) worked G5RW

(Ilkeston, Derby) on c.w. during the second week of April, signals being S5 in Derby and S4 in Essex over a distance of more than 100 miles.

G3DUP and G3IAI operate from the same address in Northampton, the latter having been an operator of G3DUP in the past. The station is active every evening on both 2 m and 70 cm, the gear on the higher frequency band comprising a converter with a 12AT7 push-pull r.f. stage and c.c. oscillator, a transmitter with 832 tripler output, and a "skeleton slot" aerial with reflector. (Details of this would be welcomed.—Ed.) Those wishing to arrange 70 cm skeds. with G3IAI should write to 58 Derby Road, Northampton.

Commenting upon what he terms the "lack of stamina" of certain stations which appear on the band, experiment for a time and then are heard no more, 'EHY is all in favour of any scheme to promote increased activity, believing that if the amateurs do not see fit to use the band they now have, commercial interests will press for frequencies in this desirable part of the spectrum.

GC2CNC (Jersey) agrees with the Activity Plan, and offers co-operation during the Monday evening skeds. Additionally he can be active any evening between 1900 and 1945 or 2215 and 2300 B.S.T., or at any time on Sundays. His frequency is 435.39 Mc/s with an input of 5 watts, on c.w. only, to a wide spaced 6-element Yagi beam. He intends taking part in the Society's 420 Mc/s Tests on June 22.

Correction

On page 451 of the April issue the last group in Table 1—70 cm Activity Plan should read "Continental" and not as stated.

Amateur T.V.

G5ZT/T (Eggbuckland, nr. Plymouth) had been radiating TV on 432 Mc/s every evening for a



[Photo by courtesy of B.B.C.]

The unattended B.B.C. Third Programme Transmitter at Daventry. The equipment is built in two units, the outputs of which are combined, so that if one half fails, the station can continue operating on reduced power. Each half of the transmitter can be individually operated from the control desk.

fortnight when, on April 3, his telephone rang and he was delighted to receive a report of reception of his signals from a viewer at Plympton, a few miles distant. Thus occurred what is probably the first amateur TV report in this country. It is hoped that an article giving further details of this historic event will appear in the BULLETIN shortly. 5ZT would welcome a test with anyone suitably equipped in an attempt to effect the first two-way amateur TV contact. (See "Flash" on previous page.)

Reports on v.h.f. topics are requested by May 19 for inclusion in the June issue of the BULLETIN.



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AMATEUR TV

By M. BARLOW (G3CVO)*

THE enquiries that have come in as a result of the article published in the March BULLETIN have fallen into well-defined channels; to anticipate further queries some of the more usual questions will be answered first this month.

Q: Is there any suitable literature available covering Amateur TV transmissions?

A: No, not as such. Most of the usual books mention TV in a far too general way, and mainly from a commercial and professional viewpoint. One very useful book is "Practical Television Engineering," by Scott Helt, published by Rinehart Books. This is an American publication, and may be difficult to obtain. A good introductory article can be found in "Radio and Television News" for May, June and July, 1950 under the title "A Complete 420 Mc/s Amateur TV Station." Apart from these two references, there is the quarterly magazine "CQ-TV" published by the British Amateur Television Club. "CQ-TV" is designed to fill this gap in the literature. Full coverage is given to all Amateur TV transmission circuits and systems.

Q: What type of photocell should I use for flying spot work?

A: The only really suitable type is the RCA 931A, available from surplus stores price 5s. and upwards. This tube is a high sensitivity electron-multiplier type, with a maximum response in the blue region of the spectrum.

Q: What type of scanner tube should I use?

A: To obtain high definition, it is necessary to use a scanning tube with as short a persistence as possible; photographic blue tubes are ideal. These are not normally available on the surplus market. New tubes are not too expensive. Surplus tubes—some with double layer screens—that are suitable include the ACRI and 2X, in the electrostatic range, and any American tube with a P2, 4, 7, 11 or 15 phosphor in the magnetic range. The Mullard projection unit is suitable for flying-spot work but not for telestill or teletext working. The 5FP7 makes a good all-round tube suitable for any amateur TV application, and is capable of up to 3 Mc/s definition.

Q: Are any lenses required?

A: Not for simple transparency work. If the transparency is stuck right on to the face of the scanning tube, and the raster is made the same size, lenses need not be used at all. If the transparency is of a different size, e.g. 16mm cine film, the raster must be focused optically on to the film frame, and this will mean the use of a flat-faced scanning tube. For true flying spot work where the raster is focused onto the acting area, a lens system is, of course, essential.

Q: Where can I find the necessary circuit data?

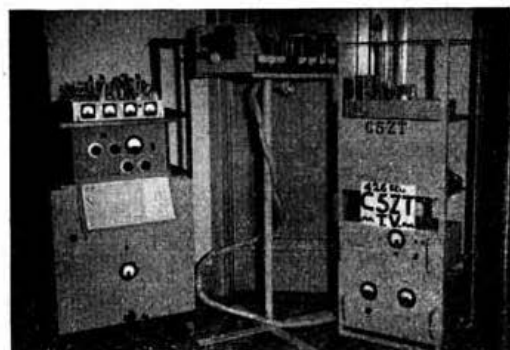
A: The video amplifier circuit follows normal TV receiver practice, but with a rising characteristic to help reduce the afterglow effect from the scanning tube. Suitable circuits will shortly appear in the BULLETIN.

Topical News

Harold Jones, G5ZT/T, of Plymouth, who is radiating regular TV signals on 425 Mc/s, reports good reception up to 3 miles. The 5527 camera

unit modulates an 832 trebler stage, which drives a four element beam *via* 12 in. of 300 ohm feeder, the whole transmitter being mounted at the top of a 30 ft. mast. The receiver is crystal controlled, with an EC52 on 90 Mc/s driving another EC52 on 360 Mc/s, the mixed output at 65 Mc/s being fed into a standard television receiver. Reports and offers of assistance are urgently required by G5ZT.

G13FWF/T, has a pair of 8102s running at 25 watts, and hopes soon to transmit a signal into West Scotland where GM4VO is getting the Glasgow group interested. G3CVO, in collaboration with G3AKJ and G2WJ, plans to have a small rig operating in time for a Trade Fair at Dagenham in August. Present line-up is 6J6-6J6-CV53 driving a CV53 p.a. on 438.4 Mc/s. A right-handed helical aerial is in use at the moment.



AMATEUR TV HISTORY IN THE MAKING

The 426 Mc/s television equipment constructed by Harold Jones (G5ZT/T), and used in the recent two-way Amateur TV experiments. The TV and phone transmitter (left), incorporates power pack and speech amplifier. The r.f. exciter unit delivers 72 Mc/s drive to an 832 doubler, followed by an 832 final. The camera (centre) uses a 5527 iconoscope, and contains a 7-stage EF50 video amplifier, with frame and line oscillators, blanking circuit, and monitor tube. The right-hand rack houses the stabilised power units for camera, monitor and scanning circuits, together with a crystal converter enabling the outgoing signal to be received on a standard domestic television set. Signals from this station have been viewed up to a distance of three miles.

P. Parkin (B.R.S. 14981) is building a 5527 camera unit, and has various projection TV sets for use as monitors. OH2NL obtained a great deal of useful publicity as the result of his first-ever demonstration of Amateur TV in Finland. PA0ZX reports that more than 170 amateurs attended a recent conference in Holland on Amateur TV, including five from Belgium and one from Germany. G2BCB (Colchester) is in a good position to receive cross-channel TV from Holland.

Schedules

Regular 3.5 Mc/s phone skeds to discuss TV will take place on Sundays at 1400 B.S.T. with G3AKJ in charge. G3ETI (Wirral) hopes to organise a "Top Band" sked for the Lancashire-Cheshire-North Wales TV group. G5ZT and G3BLV continue their 7 Mc/s skeds on Sundays at 1130 B.S.T. These stations are always glad to pass on information to those interested in Amateur TV.

THE FOURTH R.S.G.B. 420 Mc/s TESTS

MEMBERS interested in the development of the u.h.f.'s are cordially invited to take part in the fourth R.S.G.B. 420 Mc/s Tests, to be held on June 21-22, 1952. The Tests, which will be conducted along roughly similar lines to the 1951 event, will once again offer an unrivalled opportunity for testing the latest 70 cm gear during a peak activity period and, at the same time, will provide a further chance of gaining one of the Society's most highly-prized awards, the "Arthur Watts" Trophy.

To members who have previously participated in these outstanding Tests little introduction is required; but to newcomers—and it is hoped that there will be many this year—it should be explained that when the Tests were initiated in 1949, the scattered nature of u.h.f. activity precluded the familiar point-scoring contest. The Contests Committee felt that the conditions resembled in many ways those that existed in the very early days of Amateur Radio when the first enterprising pioneers began to probe the then unknown regions of "100 metres and below" and when were organised the famous Trans-Atlantic Tests that contributed so materially to the development of the short waves.

The resounding success of the first three 420 Mc/s Tests has amply justified this belief. Indeed, although today the increasing activity on the band would not entirely preclude a point-scoring contest, the popularity of the less rigid Tests has by now been so firmly established that it is not proposed, this year, to change the general formula. As in previous years, the award of the Trophy will not be directly dependent upon the number of contacts made or the mileage covered. To be taken into account when assessing the relative merit of the entries will be such factors as evidence of original experimental work and thought; efficiency of the equipment and the employment of modern techniques; the compilation of a well-presented, detailed and illustrated report (including at least block diagrams); and the amount of effort put into the Tests. A glance at the report of the 1951 Tests, published in the December, 1951, issue of the BULLETIN, will show the type of information included in the reports submitted last year.

Notify Headquarters

Amateurs who intend to be active on the 420 Mc/s band during the Tests are invited to notify Headquarters, not later than May 26, of

their call sign, home address, proposed location(s), frequencies and whether crystal-controlled. The list will either be published in the June issue of the BULLETIN or circulated to members who signify their intention to participate. It should be noted, however, that members who are unable to notify Headquarters may still enter for the Tests.

As the after-dark operating period has been extended slightly this year it is hoped that as many entrants as possible will make use of this facility. It is permissible for a station to use both fixed and portable locations during the Tests and it is suggested that some entrants may find it convenient to operate from their fixed QTH during the night period and to go portable the following day. Entries from receiving stations will be most welcome and will be eligible for the award.

June 21-22, 1952



The "Arthur Watts" Trophy

Rules

As in previous years the event will have few fixed rules, other than the general time limits of from 2100 B.S.T. June 21 to 0030 B.S.T. June 22 and from 1200 B.S.T. to 2200 B.S.T. June 22, and the provision that all entries must be from fully paid-up Corporate members and accompanied by the Declaration set out below. Any type of operation—fixed or portable—or mode of transmission may be used, providing the entrant adheres to the terms of his (or her) licence.

The entries will be required to include details of stations heard and worked (with distances), and general observations on the band.

A full description of all equipment used should be included and this information and any other evidence submitted of work carried out will be taken into consideration when judging the event. The contestant submitting what, in the opinion of the judges, is the best entry, will be recommended to Council for the award of the "Arthur Watts" Trophy.

Entries headed "R.S.G.B. 420 Mc/s Tests" must be addressed to the Hon. Secretary, R.S.G.B. Contests Committee, New Ruskin House, Little Russell Street, London, W.C.1, postmarked not later than June 30, 1952, and contain the following declaration:

I declare that my station was operated strictly in accordance with the rules and spirit of the Tests, and I agree that the ruling of the Council of the R.S.G.B. shall be final in all cases of dispute.

Date..... Signature.....

HIGHLIGHTS ON 420 . . .

October 1, 1948 Band released.
August 12, 1949 G3APY-G3ENS wins "President's Trophies" (25 miles fixed stations).
August 21, 1949 First R.S.G.B. 420 Mc/s Tests won by G3APY.
G3AHB/A-G3FZL, 63 miles.
CW40S/P-G2JTP, 95 miles.
G2JTP/P-GW6DP/P, 120 miles.
August 27, 1949 G6LK-C5BY, 161 miles.
June 4, 1950

August 20, 1950 Second R.S.G.B. 420 Mc/s Tests won by G3CU/G2FKZ/G3FZL (combined entry).
June 16-17, 1951 Third R.S.G.B. 420 Mc/s Tests won by G4LU and G3APY (award shared).
July 17, 1951 G3APY-C5BY, 227 miles.
Sept./Oct., 1951 First G contacts with F, ON4 and PA0.
May 1, 1952 First 420 Mc/s Amateur TV Contact G5ZT/T-G3BLV/A/T

DIRECTION FINDING FIELD DAYS 1952

A MEETING of representatives of R.S.G.B. Town Groups and Affiliated Societies which had participated in the 1951 D/F Field Day events took place in London on March 30 at the invitation of the Contests Committee.

It was decided at the meeting that the broad outline of last year's programme should be retained although, in the light of experience, some modifications of the rules, as published in the April 1951 Bulletin, were considered necessary. These include a change of title for the observers who will now be known as "R.S.G.B. official umpires." This change of status will enable the umpires to take more effective control of the competitors. For example, at the start the umpire will signal the end of the first five minutes transmission by raising a white flag. There will also be a 15 minutes interval between the end of the first and the beginning of the second transmission. In addition to the ban on the use of more than one receiver, transmitting equipment may no longer be carried in competitors' cars.

The first three competitors in each of the five qualifying events—not previously qualified—will be invited to take part in the National Final, which will be held over neutral territory.

It was decided at the meeting, in order to allow all groups represented to have some part in organising a qualifying event, to pair certain of those which are geographically close together.

The full programme is as follows:

May 25:	Romford
June 15:	Slade and Rugby
July 6:	Peterborough
August 17:	High Wycombe and Oxford
September 7:	Edgware
September 25:	National Final

The events are open to all members of the R.S.G.B. and to all members of Societies affiliated

to the R.S.G.B. The Contest Committee hope that there will be more entrants this year so that the organisers and their helpers may feel that all the hard work put into these D/F Contests is worth while.

The 1950 Council Trophy will be awarded to the winner of the National Final provided he is a paid-up member of the R.S.G.B.

Details of the first two events are listed below. Intending competitors are asked to communicate with the organiser notifying him of the number in their party and whether tea is required.

Romford R.S.G.B. Group—May 25, 1952

Organiser: W. F. Jeffery, 94 Gubbin's Lane, Harold Wood, Romford, Essex.
Call Sign: G4KF/P.
Frequency: 1914 kc/s.
Assembly Point: Havering Green, Havering-atte-Bower, Romford.
Map: Ordnance Survey, New Popular Edition, Sheet 161.
Assembly Time: 1330 B.S.T.

Intending entrants should notify the Organiser by not later than May 21.

* * * B.T.H. (Rugby) and Slade Radio Societies—June 15, 1952

Organiser: T. A. Griffin, 11 Attleboro Lane, Water Orton, near Birmingham.
Assembly Point: Coundon Court, near Coventry (N.G.R. 431,281).
Map: Ordnance Survey, New Popular Edition, Sheet 132.
Assembly Time: 1330 B.S.T.

Intending entrants should notify the Organiser by not later than June 7. The Organiser will advise competitors of the call sign and frequency to be used when acknowledging their entries.

Rules.

1. Events will be open to members of the R.S.G.B. and of Affiliated Societies, and will be held on Sunday afternoons, commencing at 1400 B.S.T. and concluding at 1630 B.S.T.

2. Transmissions will take place in the 1.8 Mc/s band, with not more than 10 watts input, and power will remain constant throughout the test. Identification signals will be given in Morse for the first two minutes of the first transmission, followed by three minutes telephony. Transmissions shall be audible at the start and competitors will be permitted to leave at the end of the five-minute period detailed above. Permission to leave will be indicated by the official umpire raising a white flag.

3. Transmission times:—
 1400 to 1402 Morse
 1402 to 1405 telephony
 1420 to 1424 telephony
 1435 to 1438 telephony
 1450 to 1452 telephony

Subsequent transmissions, which will be speech modulated, will take place at irregular intervals, but with a minimum continuous transmission of two minutes, and a maximum silent period of 15 minutes at the discretion of the organiser.

4. The hidden station will be located at a fixed point within 10 miles of the starting point, at least 50 yards from any inhabited building, and directly accessible to the competitor without entering, crossing, or trespassing upon property in private occupation or passing through a gateway. Organisers will specify an Ordnance Survey Map, New Popular Edition,

scale 1 in. to the mile, covering both the starting point and the transmitter location.

5. Each competitor must sign-on at the starting point on both the starter's sheet and an entry form. This entry form will contain a copy of the rules, and the winner of the event will be the entrant whose entry form is first accepted by the operator of the transmitter. Only the competitor may actually locate the transmitter. Any member of a party arriving at a transmitter prior to the competitor, or found searching the vicinity, will entail disqualification of the party. Competitors arriving at the transmitter shall disperse under the direction of the operator.

6. Only one receiver tuned to the 1.8 Mc/s band shall be carried by any party during the test, and the competitor, at the time of his arrival at the hidden transmitter, must have his receiving apparatus with him and, if required, demonstrate that it is in working order. No transmitting equipment shall be carried during the test. In the event of extra receivers and any transmitter being permanently installed in a competitor's car, they shall be immobilised to the satisfaction of the official umpire.

7. Two independent R.S.G.B. official umpires will be present, one at the start, and the other at the hidden transmitter, for each of the qualifying events, and at the National Final. In the case of dispute, their judgment shall be taken as final.

8. The National Final will be held over neutral territory.

A.R.R.L. Morse Practice Transmissions

MEMBERS interested in the A.R.R.L. Code Proficiency Programme may, by applying to the League Headquarters at 38 La Salle Road, West Hartford, Connecticut, U.S.A., obtain a complete schedule of Morse Practice Transmissions, including details of frequencies, times, sending speeds, etc. Unfortunately most of the transmissions take place too late at night to be of practical value to listeners in the United Kingdom.

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SOCIETY NEWS

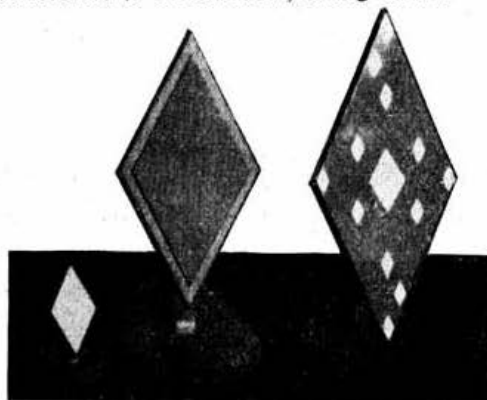
The 21 and 14 Mc/s Bands

FURTHER to discussions which have taken place between representatives of the G.P.O. and the Society, the G.P.O. announce that as from July 1, 1952, U.K. amateurs will be permitted to transmit telegraphy (A1) on frequencies within the band 21,000-21,200 kc/s, subject to non-interference with existing services. It is anticipated that the telegraphy-only restriction will be lifted within a few weeks, when the remainder of the band (21,200-21,450 kc/s) is released.

As from the same date, the frequency band 14,350-14,400 kc/s will be closed to amateur use.

N.F.D. Shield for Scotland

THE Council has been pleased to accept from the Falkirk R.S.G.B. Group—last year's N.F.D. winners—a handsome trophy for annual competition by Scottish participants in National Field Day. The trophy (illustrated below) is similar in design to the national trophy, and will be awarded to the Scottish Town or Area Group of the Society scoring the highest number of points (as recorded in the BULLETIN) during N.F.D.



The new Scottish N.F.D. Trophy (centre), with one of the miniature replicas (left). On the right is the National N.F.D. Trophy, won last year by the Falkirk Group.

This generous gesture on the part of the Falkirk members, which is intended to mark the historic occasion when the national trophy was won for the first time by a Scottish group, will be greatly appreciated by Scottish members, and will do much to stimulate even greater interest in National Field Day throughout that country.

In addition to the main shield, the donors have also presented twenty miniature replicas, for permanent retention by the winning Town or Area Groups.

In the event of National Field Day not taking place at any time, the Council has reserved the right to award the shield for such other purpose as they may from time to time decide, provided always that it is used for annual contest between members or groups of members of the Society resident in Scotland.

Honorary Members Honoured

TWO recently-elected Honorary Members, Stanley Karl Lewer, G6LJ, and Victor Michael Desmond, G5VM, were guests of the Council at a Complimentary Dinner given in their honour at the Kingsley Hotel, London, W.C.1, on April 24. Also present were several ex-members of the Coun-

cil who had served under Mr. Desmond and/or Mr. Lewer.

The President (Mr. F. Charman) in proposing the health of the new Honorary Members spoke of their valued services to the Society, paying especial tribute to the part played by Mr. Lewer during the Atlantic City Conference and to the long service rendered by Mr. Desmond as Midlands District Representative prior to his election as Vice-President in 1947.

The Immediate Past President (Mr. W. A. Scarr, M.A.) and the General Secretary, both recalled outstanding incidents in the Amateur Radio activities of both guests.

Mr. Charman later presented a framed Honorary Member's certificate to Mr. Desmond (Mr. Lewer received his certificate at the last Annual General Meeting). In reply Messrs. Lewer and Desmond thanked the Council for honouring them and for inviting them to the dinner.

R.S.G.B. Amateur Radio Call Book

THE Second Edition of the Call Book is now on sale, and is available from Headquarters, price 3s. 6d. (3s. 9d. post free).

It contains over 800 additions to the first edition, and 500 changes of address notified since last Autumn. By the inclusion of a Stop Press, it has been possible to print all new call signs notified up to the middle of April.

Transmitting amateurs in Great Britain and Eire whose call signs do not appear are asked to send a post-card immediately to the Call Book Editor at the undermentioned address. Please do not leave it until an announcement is made about the next Edition.

This edition also contains a list of International Amateur prefixes arranged for easy reference both in Prefix and Country order. All correspondence (other than orders) in connection with the Call Book should be sent to Mr. J. P. P. Tyndall, G2QI, 174 The Drive, Ilford, Essex.

Veterans

APROPOS the announcement published in the April issue the following members have notified Headquarters of the callsign they held prior to the 1914-18 war:

J. E. Catt, G5PS, of Kings Langley	(CXD)
F. Crocker, G2NN, of Twickenham	(XCP)
A. T. Headley, BRS.19390, of Birmingham	(IXJ)
Cdr. R. J. B. Hippisley, G2CW, of Bath	(HLX)
H. Kemp, G4OT, of Maldon	(KHX)
Leslie Lomas, GM2HB, of Isle of Harris	(LXG)
H. W. Pope, G3HT, of Edware	(PZX)
W. Stanworth, G4WS, of Pinner	(BQX)
W. D. M. Tomkins, BRS.12824, of Bournemouth	(TXW)

Surely there must be a few more Veterans of Amateur Radio?

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COUNCIL PROCEEDINGS

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

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

Membership.

Resolved:—

- to elect 83 Corporate Members and 23 Associates;
- to grant Corporate Membership to 7 Associates who had applied for transfer;
- to grant Life Membership to Mr. D. Scott, GM3GUS.

Representation.

The Secretary submitted the report of a meeting of Region 3 Representatives prepared by the R.R.—Mr. J. N. Walker, G5JU. It was reported that a memorandum dealing with matters discussed at the meeting had been sent to the various representatives.

Resolved to receive the report.

The Secretary was instructed to write a suitable letter of thanks to Mr. Walker.

R.S.G.B. Amateur Radio Call Book.

It was reported that the 2nd Edition of the Call Book would be published during the last week in April, 1952, and that to date 114 pages of advertising had been secured compared with 10 pages for the 1st Edition.

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

Resolved to reconstitute the Amateur Constructors' Section Committee: to appoint Messrs. C. H. L. Edwards and P. W. Winsford to serve thereon and to give the Committee power to co-opt.

Maritime Mobile Licences.

The Secretary submitted the draft of a statement which would appear in the March issue of the BULLETIN.

Members of the Council congratulated the G.P.O. Liaison Committee on the success it had achieved in connection with Maritime Mobile Licences, particularly in view of the fact that when the matter was originally discussed with the G.P.O. there appeared to be little hope of any form of Maritime Mobile operation being permitted.

I.A.R.U. Calendar No. 43.

Consideration was given to the December, 1951, issue of the I.A.R.U. Calendar.

Resolved to cast "aye" votes in favour of Proposals 79, 80, 81 and 82. The Proposals relate to applications for I.A.R.U. Membership received from the Radio Society of Bermuda, D.A.R.C. (Germany), Guayaquil Radio Club (Ecuador) and V.E.R.O.N.A. (Netherlands Antilles).

"The Short Wave Magazine"

Appropos the article "The Structure of a National Society" published in a recent issue of "The Short Wave Magazine," the Secretary submitted a number of letters in support of the Society received from representatives of Town Groups and Affiliated Societies, and from individual members. Copies of letters addressed to the Editor of "The Short Wave Magazine" were also read.

Resolved to receive the letters and to thank the groups and individuals concerned for their loyal support.

British Standards Institution.

Resolved to nominate Mr. H. A. M. Clark as the Society's representative to serve on the B.S.I. Sub-Committee which is engaged in revising BS 905 (Anti-interference Characteristics and Performance of Radio Receiving Equipment for Aural and Visual Reproduction).

London Region Resolutions.

The following Resolutions were submitted:—

"(i) That the Society be requested to obtain a supply of suitable 'Local Group' certificates which could be purchased by Groups winning returnable trophies or cups in respect of which no other confirmation is obtainable.

"(ii) It was further resolved to ask the R.S.G.B. whether there was any warranty implied or written that wartime membership certificates would be replaced. It was pointed out that members who joined during wartime who have been issued with only an inferior wartime membership certificate should receive one of the current type certificates in replacement."

The Secretary was instructed to write for further information in regard to Resolution (i) and to advise the London R.R. in regard to Resolution (ii) that the Society will, on application, exchange any small type-set certificate for a full-size engraved certificate.

Scottish QSL Bureau.

Mr. McConnell reported that he had been asked by Mr. D. Lamb, GM2UU, to suggest to the Council that there should be an independent and direct Scottish QSL Bureau for incoming cards only and to state that Mr. Lamb is willing to undertake the duties involved.

Resolved to advise Mr. Lamb that the Council has no evidence to show that (a) an independent Scottish QSL Bureau for incoming cards is required; (b) the present arrangements, whereby Mr. Milne handles outgoing cards and Mr. Macadie acts as Scottish Sub-Manager, call for any change.

Local Meetings.

A letter was submitted from Mr. N. Anslow, G4GD (T.R. for Barnes, Putney and Richmond), in which he made a plea for the subsidisation of local meetings by the Society.

Resolved to advise Mr. Anslow, through his Regional Representative, that as an analysis of the Questionnaire issued last year showed that 2,923 members were against, and only 403 in favour of, increasing subscription rates in order to subsidise local meetings and, as at the last Regional Representatives' Conference it was generally agreed local meetings should be self-supporting, the Council is unable to accept his plea.

Frequency Measuring Test.

Resolved:—

- that Mr. W. N. Craig be authorised to organise a Frequency Measuring Test along the lines of proposals submitted to the Council;
- to advise Mr. Craig that Certificates of Merit will be awarded to those members whose measurements reach a very high standard of accuracy.

Cash Account.

Resolved to accept and adopt the Cash Account for February, 1952, as submitted by the Honorary Treasurer.

Technical Committee.

Resolved to accept, as a Report, the Minutes of a Meeting of the Technical Committee held on February 22, 1952.

The Report dealt, *inter alia*, with Technical Booklets, Television Interference, BULLETIN Matters, Narrow Band F.M. and P.M., and Headquarters Station.

The Council accepted a recommendation of the Committee to make no award in connection with the Bevan Swift Memorial Fund for the year 1951.

Membership and Representation Committee.

The Council accepted a draft programme of dates and venues for Official Meetings which had been drawn-up by the Membership and Representation Committee and appointed representatives to attend the respective meetings.

It was agreed to hold no Official Meetings in Regions 5, 8, 12, 13 and 15 during 1952 and to postpone, for the current year, the proposal to hold a Scottish Convention.

Region I Bureau Committee.

Resolved:—

- to confirm that the Committee may continue in operation for the year 1952;
- to authorise the Committee to incur an expenditure of up to £100 from R.S.G.B. funds during the current year;
- that the Society shall complain to I.A.R.U. Headquarters of the continued operation of commercial stations in the 7 and 14 Mc/s exclusive amateur bands and request I.A.R.U. Headquarters to take such action as may be deemed expedient.

It was reported that Region I Bureau Committee expenditure during the year 1951 amounted to only £8. The Meeting terminated at 10.10 p.m.

Résumé of the Minutes of the Proceedings at a Special Meeting of the Council held at New Ruskin House, Little Russell Street, London, W.C.1, on Wednesday, March 20, 1952, at 6 p.m.

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

Apologies for absence were submitted on behalf of Messrs. J. H. Hum and A. O. Milne.

Purpose of Meeting.

It was explained that the purpose of the Meeting was to give further consideration to the revision of the Articles of Association. Articles 29 to 44, which had previously been examined, were reconsidered.

The Meeting terminated at 9.15 p.m.

REGIONAL AND CLUB NEWS

Baldock & District Radio Club

The following officers were elected at the recent A.G.M.: Chairman, V. Buckland (G3DIR); Treasurer, R. Smith; and Hon. Secretary, A. Fussell (G3HBH), 6 Clare Crescent, Baldock, Herts.

Brighton & District Radio Club

A full and varied programme has been organised for the coming months with talks and demonstrations by manufacturers and members on their own products and gear. Informal evenings are frequently arranged to enable members to "ragchew." Hon. Secretary: R. T. Parsons, 14 Carlyle Avenue, Brighton, 7.

Bristol

Three C.O.I. films, entitled "In all Weathers," "The Cathode Ray Tube," and "On the Beam" were shown at the April meeting, when SM4ASZ was a welcomed guest. Local members are asked to note that the new N.F.D. site is approximately 500 yards east of Dundry Church.

Coventry

At the March meeting N.F.D. was discussed and preliminary arrangements made; final details will be settled at the May meeting.

Coventry Amateur Radio Society

Highlight of recent meetings was a talk entitled "Twenty-five Years of Amateur Radio" by the Chairman (L. W. Gardner, G5GR). "Antennas" was the subject of a lecture by F. A. Bowman (G3FAB) in which he described a novel method of illustrating the action of a twin dipole. Meetings are held in the Y.W.C.A., Queen's Road, at 7.30 p.m.

East London

At the meeting held on April 26 in Ilford Town Hall, the G5AR trophy and a cheque for three guineas were presented to R. T. Jago, G2JG, of Ilford, by E. Dawson Ostermeyer, G5AR, Past President and donor of the Trophy. The winning entry was a well-designed and well-constructed 14 Mc/s Reversible Beam. The second prize valued two guineas was awarded to J. R. E. Driscoll, G8RC, of Brentwood for a single side-band exciter with self-contained power pack. The third prize for one guinea was awarded to Dr. A. H. Koster, G3ECA—last year's trophy winner—for a low power modulator. All contestants are thanked for their participation and the D.R. (J. E. Hunter, G6HU), on behalf of the membership in the District, thanks those who made the awards possible. At the same meeting a lecture and demonstration of Tape Recording was given by A. La. Riviere.

District meetings have now closed down until September 28, 1952.

East Surrey Radio Club

At a recent meeting N. Maddock (G2AJS) of Caterham School demonstrated some uses of a double-beam oscilloscope.

Lewisham

Members of the Lewisham and Downham Men's Evening Institutes, under instruction from Messrs. G. Haylock and W. Scott, took part in an exhibition of work at Holbeach Road School, S.E.6, last month. Group meetings are held every Wednesday at 8 p.m.



Left to right: G3HZF, 5LP, 2AUA and 3IP at the Amateur Radio station (call G5LP/A) which was a feature of the Wellingborough Hobbies Exhibition organised by the Rotary Club.

Ravensbourne Amateur Radio Club

An Amateur Radio station—call G3HEV—will be operated during an exhibition of home-constructed equipment, organised by members of the club, to be held on Saturday, May 17, at the Durham Hill School, Downham, Bromley, Kent. Visitors, contacts, and reports will be welcomed. Hon. Secretary: J. Wilschaw, 4 Station Road, Bromley, Kent.

Reading Radio Society

The following officers were elected at the A.G.M.: President—I. G. Benbough, B.Sc., A.M.I.E.E., Assoc. Brit. I.R.E.; Chairman—H. S. Woodhouse (G2AHY); Treasurer—E. R. Tufnail; Secretary—L. A. Hensford, B.E.M. (G2BHS). The President recently gave a lecture and demonstration on "Duplex Telephony."

Rotherham & District Radio Club

Officers elected for 1952 are: President—E. E. Davies (G2LG); Chairman—J. H. Johnson (G3GCV); Secretary—R. A. Watson (G3AYS); and Treasurer—S. Biggin (G3HFD). The President, who is well known among the circle of blind amateurs, is now the proud father of a son. Meetings are held at 7.30 p.m. on Wednesdays at the Cutlers Arms, Westgate, Rotherham.

Slade Radio Society

Recent activities have included a film show, and a visit to a local power station. Lectures have been arranged for May 23 ("Frequency Modulation") and June 6 ("Nuclear Physics, Pt. II"). The club meets on alternate Fridays at the Parochial Hall, Broomfield Road, Erdington, Birmingham.

South Manchester Radio Club

G3DQU recently lectured on "Antenna Matching." Future events include talks by G3HZM, May 23 ("Top Band Topics") and G3DDO, June 6 ("Wire Recorder Demonstration"). Hon. Secretary: F. H. Hudson, 21 Ashbourne Road, Stretford, Manchester.



Retford and Workshop members of the R.S.G.B. combined to operate an Amateur Radio station at the Rotary Club Hobbies' Exhibition, held from March 27 to 29 in the Town Hall, East Retford. Here is a view of the station.

Stockport Radio Society

Recent lectures have included "V.H.F." by J. K. Birch (G2FJS) or Pye Ltd., "Transformers and Chokes" by N. Ashton (G3DDQ), of Metropolitan Vickers Ltd., and "Aerials and Feeders" by C. M. Denny (G6DN). Highlights of the future programme are a talk on "Old-Time Ham Radio" by B. L. Stephenson (G2ZF) and "High Fidelity"—a lecture by F. A. Boyes (ex-G2HDV). Meetings are held at the Blossoms Hotel, Buxton Road, Stockport. Hon. Secretary: G. R. P. Phillips (G3FYE), 7 German Buildings, Buxton Road, Stockport.

Stourbridge & District Amateur Radio Society

The following officers were elected at the A.G.M.: President—J. Timbrell (G6OI); Chairman—W. A. Higgins (G8GF); Vice-Chairman—C. D. Barlow (G3HGI); Treasurer—J. M. Hogg (G2OG); Secretary—F. Meredith (26 Gilbanks Road, Wollaston, near Stourbridge). J. Hogg (G2OG) recently described the 2-metre conversion of the BC624A and Rr26 units.

Sutton & Cheam Radio Society

Members recently staged an Amateur Radio lecture-demonstration for the benefit of the boys of an Approved School. A "Top Band" transmitter was operated under the call G3CDK/A and contacts established with local stations. A demonstration of tape-recording followed during which the voices of the school choir were recorded and then played-back. G3CDK was the lecturer.

Before leaving the school, the President (Mr. S. E. Vanstone, G2AYC) supplied the handicrafts master with constructional details of a simple short wave receiver and promised the assistance of the Sutton and Cheam Society.

After thanking Mr. Vanstone and his colleagues for their interest, the Headmaster reminded the boys that trouble usually starts when there is unoccupied leisure. He hoped that some of them, at least, would take an interest in Amateur Radio.

Thames Valley Amateur Radio Transmitting Society

G. Barrett (G8IP) until recently the Society's Treasurer, has departed for Cyprus, where he hopes soon to be active as a ZC4. Other T.V.A.R.T.S. members now overseas are: Major A. Eden (G3HAE) who has a VSI call in Singapore; C. B. Phillips (G4JF) operating as ZE3JE at Umtali, Southern Rhodesia; and A. J. Bale (G2DGO) who will soon be active in Australia. E. Filby (G4AQ) has returned from that country, where he held the call VK2ACO.

"Constant-Carrier Controlled Modulation Systems" by Lt. Cdr. J. Pegler (G3ENI), and "Oscilloscope Circuits for Amateur Use" by F. Hicks-Arnold (G6MB) were subjects of recent lectures.

Torbay Amateur Radio Society

At the A.G.M. under the Chairmanship of F. J. Wadman (G2GK) the officers were re-elected, with the exception of the Secretary, who relinquished the post due to the pressure of other business. The new Secretary is: L. D. Webber (G3DW), 43 Lime Tree Walk, Newton Abbott. The President (W. B. Sydenham, B.Sc., G5SY) and W. A. Launder, B.Sc. (Eng.), G3HFH, have offered to present a small component annually to the winner and runner-up in the constructional contest (in addition to the Society's award of a cup). A. E. Jeffery (G3AWD, ex-ZE2KN, Southern Rhodesia) was a recent visitor.

Meetings are held on the third Saturday each month at the Y.M.C.A., Castle Road, Torquay, commencing 7.30 p.m.

Warrington & District Radio Society

"Radar Principles," by A. Rainous, and "Two Metres," by G. Leigh (G2FCV) were discussed at recent meetings. The Society meets at the King's Head Hotel, Warrington, on the first and third Tuesday each month. Hon. Secretary: S. Woods (G3EZK), 12 Thelwall Lane, Latchford, Warrington.

Weston-super-Mare

At the April meeting it was agreed to hold a Hamfest in the town on or about July 20. Enquiries to the T.R.: A. H. E. Williams, "Bradley," The Ridge, Yatton, Somerset.

Wirral Amateur Radio Society

The club took part in a Model Engineering Exhibition held recently at Wallasey. Main feature of the stand was an amateur station (call G8BM/A), active on "Top Band," which aroused considerable interest among the many visitors.

"Propagation on 1.7 Mc/s" (a lecture by L. N. Goldsbrough, G3ERB), and "The Ideal Communications Receiver" (a general discussion) were highlights of past meetings. The Society's first Hamfest will be held in Birkenhead on May 16. Hon. Secretary: A. H. Watts (G3FXC), 9 Coronation Drive, Bromborough, Cheshire.

British Two-Call Club

The club has awarded a Diploma of Service to G2MI, G2DHV and G8PG. Membership is open to British Empire amateurs who have held fixed-station call signs in two or more countries. Hon. Secretary: G. V. Haylock, 63 Lewisham Hill, London, S.E.13.

QRP Research Society

The QRP Research Society is anxious to contact other clubs in which an element of low power interest would provide further team entries for their Inter-Society QRP Contest. The Hon. Secretary: J. Whitehead, "The Retreat," Ryden's Avenue, Walton-on-Thames, Surrey (Tel.: Walton 1619) will be glad to provide detailed information.

Bulletin Offer

Urgently needing the space occupied by a complete set of BULLETINS from November 1937 to December 1950, G. P. Watts, B.R.S.3129, 62 Belmore Road, Thorpe, Norwich, wishes to dispose of them to a Radio Club or Society anxious to complete its library, and would accept any reasonable offer.

Around the Trade

Mr. Ian Baxter, previously General Manager of J. Bull and Sons, the Mail Order house, has recently been appointed a Director of that concern.

New Books

THE NYMPH AND THE LAMP. By Thomas H. Raddall. Published by Hutchinson & Co. (Publishers), Ltd., London, 1951. 12/6.

It is not usual to review works of fiction in the BULLETIN, but when one finds a really well-written novel by an ex-wireless operator, in which the principal character is a wireless operator, and which is "shot-through" with the language and affairs of such people, then it is surely worth bringing to the notice of readers. The setting of the story is on remote Sable Island off the Nova Scotia coast.

This reviewer, having been born and brought up in what could well be the home town of the novel's heroine—and having himself been a member of the Canadian East Coast Radio Service only a few years after the events of the story—can vouch for the fact that all the atmosphere and detail of the book is vividly real and true to life.

To those who knew the age of spark transmitters the story will bring back nostalgic memories; to those who are only familiar with high frequencies it will afford an insight into what goes on on 600 metres; while anyone who pounds brass will find that by recommending the book to his uninitiated friends, he can convey to them something of the atmosphere of his craft.

C.H.S.

Representation

The following are additions or amendments to the list published in the February 1952 issue.

County Representatives

Region 4—Lincolnshire.

G. E. Wegg (G3ANM), Cobgate, Moulton, Near Spalding.

Region 13—East, West and Mid Lothians.

D. A. E. Samson (GM3EQY), 35 Quality Street, Davidson's Mains, Edinburgh, 4.

Result of Ballot: Samson 24
Senior 16

Vacancies

Messrs. G. F. Barrett, G8IP, and G. Allen, G3HST, have resigned as Representatives for the towns of East Molesey and Woking-Guildford.

Nominations for their successors should be made in the prescribed form and sent to reach the General Secretary by June 15, 1952.

FORTHCOMING EVENTS—(Continued from Page 478)

Bristol.—May 16, 7 p.m., Carwardine's Restaurant, Baldwin Street, Bristol 1.

Exeter.—June 6, 7 p.m., Y.M.C.A., St. David's Hill.

North Devon.—June 5, 7.30 p.m., Rose of Torrridge Cafe, The Quay, Bideford.

Penzance.—June 5, Railway Hotel.

Plymouth.—May 17, 7 p.m., Tothill Community Centre, Tothill Park, Knighton Road, St. Jude's.

Torquay.—May 17, 7.30 p.m., Y.M.C.A., Cretle Road.

West Cornwall (W.C.R.C.).—June 5, 19, "Fifteen Balls," Penryn.

Weston-super-Mare.—June 5, 7.30 p.m., Y.M.C.A.

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

REGION 10

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

REGION 11

Llandudno.—June 4, 7.30 p.m., Station Restaurant.

REGION 13

Edinburgh (L.R.S.).—May 29, June 12, 7.30 p.m., thence fortnightly, Edinburgh Chamber of Commerce, 25 Charlotte Square.

REGION 14

Falkirk.—May 30, June 13, 7.30 p.m., The Temperance Cafe.

WEST MIDLANDS REGIONAL MEETING SATURDAY, MAY 24, 1952

VITTORIA RESTAURANT,
FREDERICK STREET, BIRMINGHAM, 1
(Near Town Hall).

Programme:

Assemble	-	-	-	12.30	p.m.
Lunch	-	-	-	1.15	p.m.
Business Meeting	-	-	-	2.15	p.m.
Tea	-	-	-	4.30	p.m.
Lecture Demonstration on "Aerials" by Mr. Sims (Senior Lecturer, B.C.C.)	-	-	-	5.15	p.m.
Station Visits	-	-	-	7.00	p.m.

Tickets (Lunch and Tea 10/6; High Tea only 7/-) from the R.R. and C.R.s not later than May 21, 1952.

YORKSHIRE COUNTY MEETING SUNDAY, JUNE 15, 1952.

WINDMILL HOTEL, BLOSSOM STREET,
YORK.

Programme:

Assemble	-	-	-	1.15	p.m.
Meeting	-	-	-	2.00	p.m.
Sightseeing Trips	-	-	-	4.00	p.m.
High Tea	-	-	-	5.30	p.m.

Motor launch trip on river, walk round city wall, visits to Minster and Castle Museum for ladies and visitors in place of afternoon meeting. Tickets (7/6 each) from the R.R., Mr. C. A. Sharp, 56 Moore Avenue, Wibsey, Bradford, not later than June 7. Please state whether you wish to attend meeting or go on visits.

LEICESTERSHIRE & RUTLAND COUNTY MEETING SUNDAY, JUNE 29, 1952.

EMPIRE HOTEL, FOSSE ROAD,
NORTH LEICESTER.

Programme:

Assemble	-	-	-	12 noon	
Luncheon	-	-	-	1.00	p.m.
Business Meeting	-	-	-	2.15	p.m.
Tea	-	-	-	4.30	p.m.
Film Show, Lecture & Raffle	-	-	-	5.30	p.m.

Tickets (10/6 each) from the C.R., Mr. V. H. Thomas (G2CUR), 3 West Avenue, Wigston, Leicester, and the Leicester T.R., Mr. L. Milnthorpe (G2FMO), 3 Winstor Drive, Thurmaston, Leicester, not later than June 20.

Representation—Corrections

Due to a printer's error Bedfordshire, Cambridgeshire and Suffolk were shown in the list published last month (Page 461) as being in Region 4. These counties are of course in Region 5.

In the same list the call-sign and address of the Luton T.R. were given incorrectly. Mr. Plowman has been licensed as G3AST since 1945 and has resided at 317 Park Street, Luton, since 1949.

HELP US...

• When writing to Headquarters do not include BULLETIN items, queries, changes of address and publication orders, etc., on the same sheet of paper. Only one envelope is necessary, but a separate sheet for each subject, please.

• Always print, or write clearly, your full name and address. Christian names, call-signs and illegible signatures cause much unnecessary checking.

• Notify Headquarters of impending changes of address several weeks before you move. Alterations to subscription reminders, etc., are not sufficient unless definite instructions are given. Include your B.R.S. numbers and/or call sign, your present address and, if possible, the date your subscription falls due. Remember that BULLETIN wrappers are prepared up to a fortnight before the publication date.

• Please pay your subscriptions promptly when due. Failure to do so may result in the loss of valuable issues of the BULLETIN: high costs of production make it necessary to limit the number of extra copies printed each month.

• When forwarding your subscription renewal always return the reminder card sent to you from Headquarters, or, if this has been lost, indicate the month your subscription fell due.

• Please send all QSL cards to Mr. A. O. Milne, G2MI, 29 Kechill Gardens, Hayes, Bromley, Kent, and not to Headquarters.

• The Society is seldom able to supply information on ex-Government equipment except in the form of BULLETIN articles.

... TO HELP YOU!

Silent Keys

With deep regret we record the death of Mr. Laurence ("Laurie") Alfred Vaughan, G2VH, at his home in Southsea, on March 12, 1952. He was 74 years of age.

Laurie first became interested in wireless in 1896 and whilst serving in the Royal Navy he acquired a knowledge of early transmitting and receiving equipment. Thus he could speak with equal familiarity of Poldhu, Cape Cod and Sutton Coldfield, of De Forest, Round and Lodge, of coherers, magnetic detectors and pentodes, and of H.R.O.s and beam aerials. He could read needle, tape, sander, buzzer, flags, semaphore, lamp and c.w. telegraphy with equal ease.

He obtained his first licence in 1912 and remained active until the end, as his well-kept log shows. Experimenter, constructor, keen DX man and v.h.f. enthusiast his passing not only severs a link with the past but it leaves a gap in the ranks of the Old Timers of Amateur Radio.

Greatly mourned by all who knew him he is survived by an invalid wife and grown up family, to whom our deep sympathy is extended. G6NZ

The news of the death of Mr. C. W. ("Jerry") Jennings, G6JG, at the early age of 47, came as a great shock to his many Amateur Radio friends and especially those who live in his home town—Bristol.

Jerry was a tower of strength at pre-war field days and during the recent war he gave of his best to the R.O.C. An enthusiast in all that he undertook—he it DX, local rag chewing, v.h.f. work or television—he will, perhaps, be best remembered for the many cheerful and enjoyable contacts he gave us on the "Top Band."

In his passing, Amateur Radio has lost yet another staunch friend. We extend our deepest sympathy to his widow, daughter and son. G6RB

LETTERS TO THE EDITOR

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

B.C.I. and T.V.I.

DEAR SIR,—I think Mr. Hayden is labouring under a misapprehension regarding the reduction of mixer voltage to improve receiver spurious responses. His argument as set out in the March issue is quite correct, however, if one assumes that square law mixing is employed in the receiver's frequency changer stage. But almost all receivers employ hexodes where electronic mixing occurs and rectification is neither desirable nor necessary. With this method the anode current is proportional to the product of the two component frequencies. Two distinct frequencies are produced, one equal to the sum and the other to the difference, of the input frequencies.

Hence assuming inputs of $V_a \sin(\omega t)$ and $V_b \sin(\omega + f)t$, the anode current is proportional to:—

$$\begin{aligned} & V_a \sin(\omega t) \cdot V_b \sin(\omega + f)t \\ &= V_a V_b \sin(\omega t) \sin(\omega + f)t \\ &= \frac{1}{2} V_a V_b [\cos(f)t - \cos(2\omega + f)t] \end{aligned}$$

The difference frequency term $\frac{1}{2} V_a V_b \cos(f)t$ does not need rectification.

Whereas it is desirable to achieve optimum conversion conductance by swinging the anode current to just zero and just maximum, there is little point in overloading the valve such that severe distortion results with consequent increase in local oscillator harmonics and thus B.C.I. Whilst it is agreed that the local oscillator voltage should be greater than the signal voltage (the latter normally in micro-volts), reduction of the "het" volts to reasonable levels has not so far brought any complaints about reduced performance.

Yours faithfully,
N. G. ANSLOW.

East Sheen, London, S.W.14.

Foreign Commercial and Military Transmissions in Amateur Bands

DEAR SIR,—The number of foreign commercial and military c.w. stations operating to the detriment of amateur transmissions is increasing enormously.

I object very strongly in particular to two types of transmission which are becoming more persistent (to the extent that it is sometimes very difficult to hear amateurs because of the QRM caused):—

(1) Nets of stations in Cominform countries using amateur call signs but military procedure. Text of messages in code or cypher. These stations are apparently engaged in military training.

(2) Foreign high-speed telegraphy and frequency-shift stations sending normal types of commercial traffic. They are mainly of Russian origin and I have counted as many as seven of these stations operating simultaneously in the 20-metre band.

That band is often full of such transmissions.

Since our authorities are powerless to prevent this misuse of bands allocated to us by international agreement, it seems to me that it is up to the amateur to take what action he can to show his disapproval.

Many amateurs are under the impression that it is useless to transmit on frequencies used by these stations, on the assumption that the offending transmitter is of high power, and therefore his own signal will be swamped. In practice I find that these intruders are just as susceptible to interference as is the long-suffering amateur station.

In one case recently a foreign "net" was working in the 20-metre band using "BK" operation. I found that I could break-in on this net, and having established this I asked for "repeats" and got them! After a short time I found that I was virtually controlling the net, and it occurred to me that I might add further to their embarrassment. Accordingly I came up with "QRT" repeated several times. Very much to my amusement the whole gang promptly closed down!

I suggest that we may help to clear the "rubbish" off our bands by:—

- Seeking out frequencies occupied by the unwanted transmissions and using these frequencies for our transmissions from time to time; not being discouraged by unanswered CQ calls.
- Making any tests or local contacts upon a frequency occupied by one of these "pirates."
- Bringing this line of attack to the attention of overseas amateurs.

Our bands are crowded, even in the absence of commercial transmissions. Our present practice of moving into the gaps between the "pirate" transmissions is aggravating this trouble.

I feel that concerted action along the above lines will at least discourage the spread of this menace to our hobby.

Yours faithfully,
D. P. L. MAY (G2BB).

Yateley, Hants.

N.F.D. & Contests

DEAR SIR,—I agree with Mr. Whalley's view on N.F.D. (April issue) that five watts is entirely inadequate for consistent communication in the crowded bands of today. The availability of the necessary power supplies for a communications receiver—being an N.F.D. requirement—there is no justification whatsoever in the continued enforcement of the five watt input limitation which, to my mind, is just a mockery, considering the all too frequent use of 807 p.a.'s in N.F.D. transmitters. If the five watt restriction is to be continued, the p.a. valve dissipation in anode power should be limited to 10 watts or less in fairness to everybody. Incidentally, the introduction of the five watt limit for N.F.D. was, I believe, made when petrol restrictions made this expedient necessary. This certainly does not apply today.

Regarding the use of the first three letters of the operator's surname as part of the contest exchange I trust the G's will not feel confused should they copy, say, "MCC" or, in my own case, "HAM"!

Mr. Hunt hit the nail squarely on the head in the April issue when he wrote on DX contests. Casual listening to 3.5 or 7 Mc/s phone will confirm his point about the use of high power. Need I go further?

Yours faithfully,

IAN HAMILTON (GM3CSM).

Glasgow.

Further Thoughts on N.F.D.

DEAR SIR,—I read with considerable interest the letter by H. Whalley, G2HW (April issue) on the subject of N.F.D.

It is high time that our annual invasion of the countryside was brought into perspective. Can anyone really deny that N.F.D. has degenerated into just another contest? And what earthly use—except as an excuse for a novel outing for the family—can we claim for it? Admittedly we enjoy ourselves immensely—though whether there is any fun in running an emergency station in a real one is open to grave doubt. We have only to take a close look at page 310 of the January 1952 Bulletin to find one answer to that question. It will be noticed that it took exactly 21 hours, from the time the hurricane arrived, to radiate the first signal from Jamaica. Most of our N.F.D. portables would have knocked up quite useful scores in the same time! We are tempted to wonder what would happen if, on the eve of our emergency exercise, a real calamity (comparable in magnitude to the Jamaican disaster), struck these Islands?

Of what use then, the carefully prepared transmitters, and all the other incidental paraphernalia, scattered to the four winds, or buried beneath piles of rubble? Or the transport arrangements, worked out to the last detail so as to whisk all and sundry to the chosen site with the minimum of delay, when those cars which haven't been wrecked can't move, anyway, through streets choked with debris?

It must be apparent, that our effort has nothing in common with the real thing, so why don't we stop fooling ourselves and devise some sort of exercise more in keeping with the idea behind N.F.D.? Make the entrants scrape up the bits and pieces first—they would have to do this, anyway, in a real emergency—and award the prize to the group making the first QSO from a given zero-hour? Such an exercise might have its funny side, too, but it would, at least, compel us to use our wits; and, in a dire situation, the ability to do just this is the difference between survival and extinction.

Yours faithfully,

G. E. ALLEN (BRS.250),

Thornton Heath, Surrey.

N.F.D.—Support for Low Power

DEAR SIR,—One of the main points in Mr. Whalley's letter on N.F.D. (April issue) would appear to be—"Why use QRP when the same results can be obtained with more power?"—a view held by too many amateurs these days. I do not pretend to understand why anyone should wish to increase QRM on the bands in such a way, while the leading stations can apparently work almost everything with 5 watts. And if we are to consider N.F.D. as a dummy-run for real emergency, as he suggests, then let us at least be realistic.

Apart from any natural cataclysm of a type visualised by writers of futuristic novels, I can see no other circumstance which would warrant our intervention other than the arrival of atomic bombs, or some other super weapon as yet unvisualised by the layman. In cases of this type, I fancy we would be in no position to pick or choose our power supplies, or form of transport, and I personally would prefer to place my trust in the smallest possible equipment, needing the minimum of power supply.

In addition, I cannot see the connection between G2M1's 3-mile marathon (possibly with an inferior aerial) and reliable communication. If we wished to work over short distances, surely 160 metres would be used!

As for "genemotors screaming away lightly loaded," and the provision of petrol electric sets, I am sure this applies

in very few cases; for, with the lower voltage motor-generators so readily and cheaply obtainable, many groups have equipped their stations with these. In any case, assuming that, in general, only the larger groups would be in a position to purchase p.e. sets, the remainder would be left with the task of providing many more car batteries for the 25 watts. And these are the people who have most difficulty in obtaining batteries.

However, I wholeheartedly support the writer's condemnation of the new allocation of frequencies for N.F.D., in view of the major re-builds necessitated; but also on other grounds which I believe will have an equal bearing on the certain falling-off in enthusiasm for future Field Days.

In every town there exists a small group of amateurs who are either utterly opposed to DX-working, or at best have little interest in it. On Field Day, this group usually forms the core of "A" Station. In Cheltenham, for example, those who will put "A" Station on the air this year were also doing so in 1948, '49, '50 and '51—almost to a man! Now, by the substitution of 40 metres for 80, DX will be forced down the throats of the unwilling, and those two "heavenly twins" of the L.F. man (80 and 160) will have been separated.

Speaking now for myself, but in the sure knowledge that I am not alone, I say that N.F.D. will be of the sort of the gift of fascination that has always made it a memorable day in my calendar.

Finally, of those on the Contests Committee who derive infinite pleasure from working the higher frequencies, I implore—"Live, and let live!"

Yours faithfully,

JOHN J. YEEND (G3CGD),

Cheltenham, Glos.

Happy—Once More!

DEAR O.M.—Have just got rid of my QRO gear; my biggest p.a. now is an 807. I am a happy man again.

73,

AN OLD TIMER.

Birmingham, 31.

Why Use 250THs?

DEAR SIR,—I would like to express my agreement with W. H. Mathews, G2CD, on the question of "high power."

During my travels over the past year I have seen a number of amateur stations employing 100THs and even 250THs in push-pull finals. I fail to see how the operators of such stations could imagine I was being beguiled when told "Of course, they are very much under-run, O.M.!"

It is time it was made a punishable offence to be capable of running a transmitter at, say, 1 kW with a 150-W permit.

Yours faithfully,

S. A. HOWELL (GW5FN),

T.R. Cardiff.

Rhiwbina, Cardiff.

"Radio World Digest"

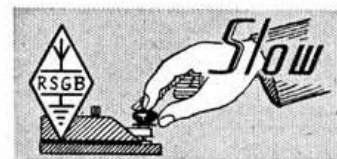
Intended "for the thinking listener," "Radio World Digest"—a 12-page monthly publication—lists frequencies (and wave-lengths) of a large number of overseas broadcast stations. The March issue included details of short-wave programmes radiated from Holland and by the American Armed Forces Radio network. The leading article in that issue dealt with the subject of V.H.F./F.M. in practice.

"Radio World Digest" is published by Eurap Publishing Co., 137 Blackstock Road, London, N.4, price 4jd.

Around the Trade

The Edison Swan Electric Co. Ltd. has acquired The General Accessories Co. and British Mechanical Productions Ltd., and both of these companies are now operating as subsidiaries of Ediswan.

Electrical and radio products formerly marketed by these companies are now being sold through the Ediswan sales organisation under the name Ediswan Co. All future inquiries for these products should be addressed to the head office or any Branch office of The Edison Swan Electric Co. Ltd.



Slow Morse Practice Transmissions

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

* Each station will operate in turn.

B.S.T.	Call	kc/s	Town	B.S.T.	Call	kc/s	Town
Sundays				Wednesdays			
10.00	G6MH	1990	Southend-on-Sea	14.00	G3ADZ	1910	Southsea
	G3AAZ	1780	Welwyn	19.00	G3ADZ	1900	Southsea
10.30	G3EPK			19.30	G3HBX	1870	Warwick
	G5UM				G6XA		
10.30	G3GIO	1915	Guildford	21.30	G3HRC	1770	Birmingham
11.00	G2FXA	1900	Stockton-on-Tees	22.00	G3DLC	1800	Grays, Essex
14.00	G5AM	1900	Witnesham, Ipswich	22.00	G3GIO	1915	Guildford
21.00	G2FIX	1812	Nr. Salisbury	Thursdays			
22.15	G3AEZ	1847	Dorking	19.00	G3NC	1825	Swindon
Mondays				19.30	G3GRM	1815	Derby
19.00	G3NC	1825	Swindon		G2DOF	1830	S. Birmingham
20.30	G6LX	1875	Croydon		G3DTG		
	G3BLP			19.30	G3ENH		
21.00	G3BHS	1720	Eastleigh, Hants		G6KI		
21.00	G3BLN	1900	Bournemouth		G8JI		
	G3EJF	1810	Bury, Lancs	20.00	G3FVH	1920	Hull, Yorks
22.00	G3DZU			21.30	G6DL	1760	Birmingham
	G2AYG			22.00	G2NK	1730	St. Mary Crav
22.00	G3AEZ	1847	Dorking	22.00	G3AEZ	1847	Dorking
22.00	G3GIO	1915	Guildford	22.00	G2FXA	1900	Stockton-on-Tees
22.15	G2BRH	1900	Ilford	22.00	G3GIO	1915	Guildford
22.30	G8TL	1896	Ilford	22.30	G3OB	1803	Manchester
Tuesdays				Fridays			
19.00	G3IBL	1883	Derby	19.00	G3BLN	1900	Bournemouth
	G3HGY	1830	Coventry	20.00	G3CSG	1870	Wirral
19.30	G5PP			21.00	G3BHS	1720	Eastleigh, Hants
	G5SK				G3AUT	1785	Rugby
21.00	G3EFA	1855	Southport	22.00	G3AUF		
22.00	G3ELG	1772	Rotherham		G3CBV		
22.00	G2BND	1890	Dalston, E.		G3GTG		
22.00	G2FXA	1900	Stockton-on-Tees	22.00	G3GIO	1915	Guildford
22.00	G3GIO	1915	Guildford	Saturdays			
23.00	G2XG	1735	Chingford	14.00	G3ADZ	1910	Southsea
				22.00	G3GIO	1915	Guildford
				23.00	G2FXA	1900	Stockton-on-Tees

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

NEW MEMBERS

The following have been elected to Membership:—

Corporate Members (Licensed)

- G2RO W. A. ROBERTS, 17 Homestead Park, London, N.W.2.
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 G3HVD P. ANTWIS, 9 Brymore Avenue, Prestbury, Cheltenham, Gloucestershire.
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 G3HWU *D. LITTLEWOOD, 200 Quarmby Road, Lindley, Huddersfield, Yorks.
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 G3IAG *R. F. PILKINGTON, Graizelound, 65a Ely Road, Littleport, Cambs.
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 G3IBR J. D. E. LAW, 19 Osborne Road, Farnborough, Hants.
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 G3ICX E. O. WRIGHT, 345 Walmley Road, Sutton Coldfield, Warwickshire.
 G3IDW R. REYNOLDS, 29 The Mead, Ashton Keynes, Swindon, Wilts.
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 G3IGA G. A. EVANS, 160 Greenleach Lane, Worsley, Manchester, Lancs.
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 19556 A. B. DAVIES, 12 Leamington Place, Hayes, Middx.
 19557 G. H. HARDWICK, 24 Victoria Terrace, Tofts Road, Cleckheaton, Yorkshire.
 19558 A. E. JEFFRIES, Hilly-Close, Rodborough, Stroud, Gloucestershire.

- 19559 D. G. KEAY, 112 Cavalry Crescent, Eastbourne, Sussex.
- 19560 A. MOLLAN, 6 Edenberry Gardens, Crumlin Road, Belfast.
- 19561 F. H. LINSEY, 254 Grange Road, Middlesbrough, Yorkshire.
- 19562 T. LOTHIAN, The Bungalow, Manor Farm, Farnham, Knarborough, Yorkshire.
- 19563 R. R. WILLET, Fairview, Little Baddow Road, Danbury, Essex.
- 19564 E. GOULDING, 4 Mode Wheel Road, Salford 5, Lancs.
- 19565 G. S. LOVEDAY, 16 Stanbury Road, Victoria Park, Bristol 3.
- 19566 J. W. BLACK, c/o 41 Clelland Avenue, Auchinairn, Bishopbriggs, Glasgow.
- 19567 C. J. THEW, 205 Hook Lane, Welling, Kent.
- 19568 J. E. HARRISON, Scacafel, Lezayre Road, Ramsey, Isle of Man.
- 19569 4073755 A.C.I. GLOVER, T.I.S., R.E.U., R.A.F. Henlow, Bedfordshire.
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- 19572 W. HAWKBRIDGE, 7 Langdale Gardens, Leeds 6, Yorkshire.
- 19573 L. W. FRANKHAM, 19 Thomas Street, Trowbridge, Wiltshire.
- 19574 N. SHEDDEN, 73 Mayfield Road, Saltcoats, Ayrshire.
- 19575 S/SGT. H. WARBURTON (present address), 3rd Regt., R.H.A., B.A.O.R.
- 19576 R. A. BELL, The Cottage, Glenboig, Lanarkshire, Scotland.
- 19577 T. SEARLE, 11 Sefton Drive, Thornton, Liverpool 23, Lancashire.
- 19578 N. GREEN, 2 Aire Bank, Ireland Bridge, Bingley, Yorkshire.
- 19579 A. SCOTT, Chestnut Villa, Grindleton, Nr. Clitheroe, Lancs.
- 19580 MISS M. W. RHODES, 156 Cardowan Road, South Carnytne, Glasgow, E.2, Scotland.
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- 19587 W. F. WALLACE, Holly Lodge, Banchory, Kincardineshire, Scotland.
- 19588 J. F. WEBSTER, 13 Boroughbridge Road, York.
- 19589 R. HEWISON, 6 Gore Road, Ashton Gate, Bristol 3, Gloucestershire.
- 19590 R. F. LLOYD, Rose Cottage, Downend, Nr. Nailsworth, Stroud, Gloucestershire.
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- 19597 W. R. COOPER, 36 Irwin Avenue, Belfast, N. Ireland.
- 19598 E. L. E. BERRY, 13 Summit Close, Kingsbury, London, N.W.9.
- 19599 P. A. CHARLTON, 61 Russell Close, Bexleyheath, Kent.
- 19600 G. T. BOUENIZER, 12 Cathcart Road, London, S.W.10.
- 19601 F. W. H. MELOY, 19 Gladeswood Road, Belvedere, Kent.
- 19602 4013095 JNR./TECH. F. PAUL, 2nd T.A.F. Transmitters, c/o Buckeburg Airfield, 2nd T.A.F., B.A.O.R. 29.
- 19603 TEL. R. SHARPE, C/JX 90073, Mess 5, H.M.S. Diamond, c/o G.P.O., London.
- 19604 A. E. KNIGHT, 616 Church Road, Yardley, Birmingham.
- 19605 *C. H. CORFIELD, 174 Cromwell Road, Whitstable, Kent.
- P. A. BRAMHAM, c/o 36 Byron Square, Trumpington, Cambridge.
- F. C. BREWER, 156a High Street, Sutton, Surrey.
- G. F. C. BUTCHER, 159 Winchester Road, Highams Park, London, E.4.
- T. G. CHUA, 227-11 Tampenis Road, Singapore 19, Malaya.
- D. C. CLARK, 116 Randolph Drive, Clarkson, Renfrewshire.
- M. W. COLLOPY, 4 Greenfield Road, Gillingham, Kent.
- A. L. S. HARMAN, 4 Tottenhall Road, Wolverhampton, Staffs.
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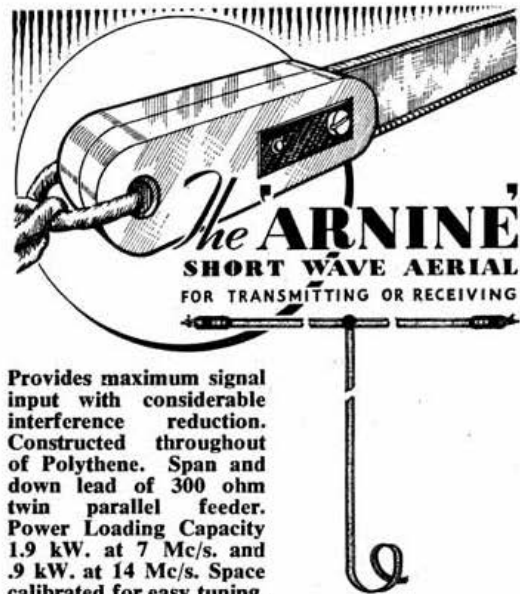
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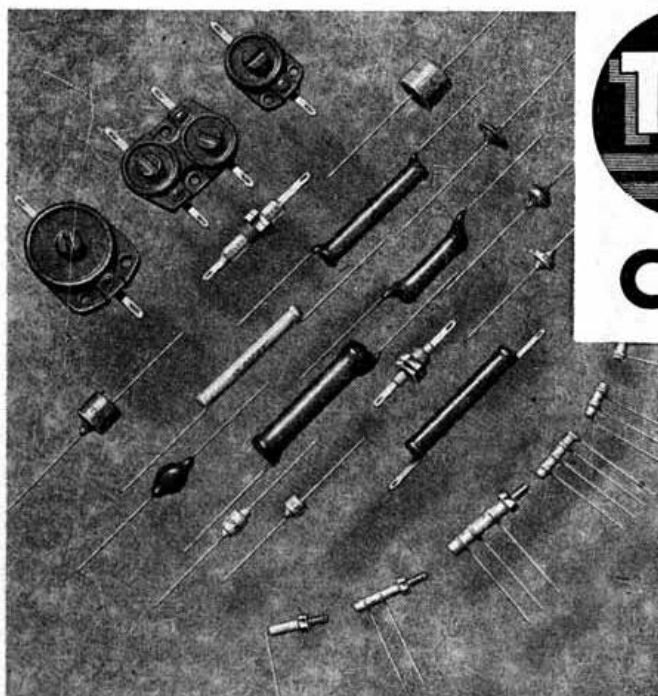
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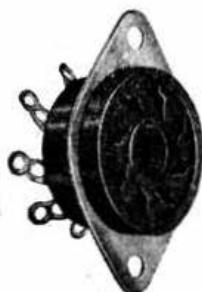
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(Continued on Page 520)

EXCHANGE and MART SECTION

(Continued from Page 519)

FOR SALE.—B.2 transmitter/receiver, complete, as new, unmodified in any way; view and aerial test; £17 10s.; buyer collects or pays carriage.—FIELD, 103 Claybrook Road, London, W.6. (G3IPM). (357)

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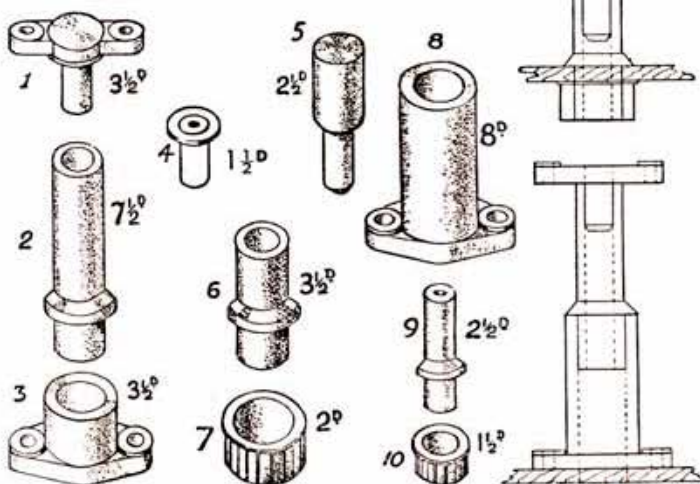
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