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EDITOR:
John Clarricoats, O.B.E., G6CL

DEPUTY EDITOR:
John A. Rouse, G2AHL

EDITORIAL OFFICE:
R.S.G.B. Headquarters, New Ruskin House, Little Russell Street, London, W.C.1
Telephone: HOLborn 7373

ADVERTISEMENT MANAGER:
Horace Freeman, The National Publicity Co. Ltd., 20-21 Red Lion Court, Fleet Street, London, E.C.4
Telephone: FLEet Street 0473-6

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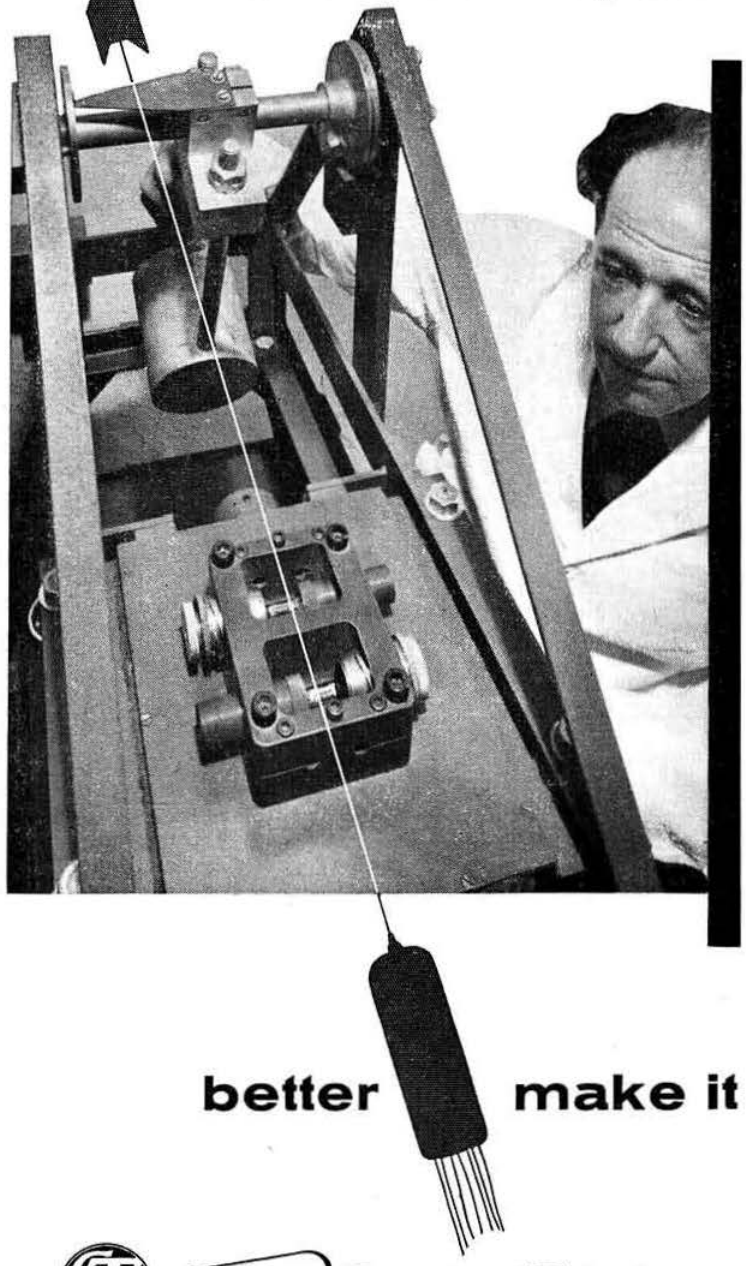

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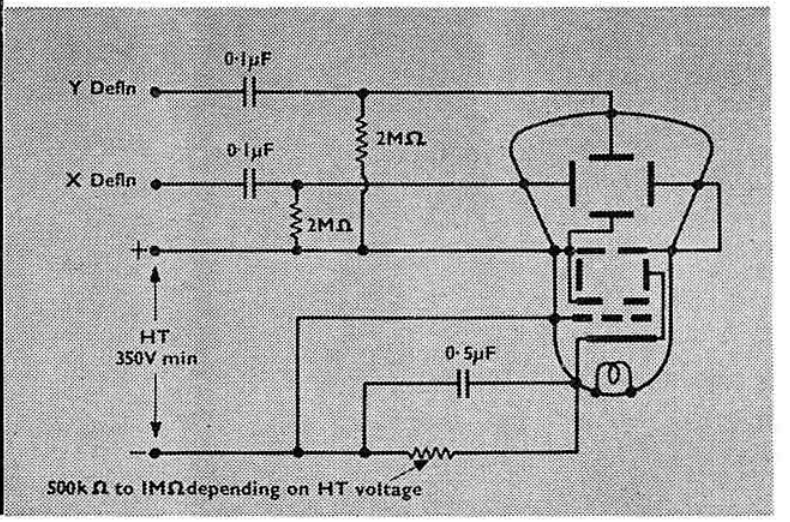

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Current Comment

discusses topics of the day

Geneva Radio Conference

THE Geneva Radio Conference has continued its efforts to find solutions to the many complex problems confronting it. As anticipated, the all-important Frequency Allocations Committee (No. 4) has been divided into various Sub-Committees and Working Groups to study specific parts of the Frequency Allocations Table.

The following Sub-Committees and Working Groups have been set up to examine those parts of the radio spectrum in which we, as radio amateurs, are specially interested:

Committee 4
Frequency Allocations
10 kc/s—40,000 Mc/s

Sub-Committee 4B	*10 kc/s—4 Mc/s*
Working Group 4B5	Top Band (1·8 Mc/s)
Working Group 4B6	3·5 Mc/s
Sub-Committee 4C	*4 Mc/s—27·5 Mc/s*
Working Group 4C2	7, 14 and 21 Mc/s
Sub-Committee 4D	*27·5—960 Mc/s*
Working Group 4D1	28 Mc/s
Sub-Committee 4E	*960-10,500 Mc/s*
Sub-Committee 4G	*10,500-40,000 Mc/s*

The Society is not permitted at the present time to publish an account of what has been taking place in the various Sub-Committees and Working Groups but it can be stated that the case for Amateur Radio has been put with great effect by many delegations including, of course, the delegation of the United Kingdom.

During the various debates many references were made to the work of radio amateurs in times of emergency and to the value of the contributions made by amateurs in scientific fields.

A fuller report on the work of Committee 4 will be published as soon as the new Frequency Allocation Table has been accepted by the Plenary Assembly. The Radio Conference is due to finish on December 16, 1959.

In the meantime, members are urged to ignore all rumours.

J.C.

A Good Name

WHEN we are born we are given a name and throughout our responsible lives that name is something which we cherish and which we do our utmost to uphold. Whatever may be said to the contrary there is no doubt that we are all most serious and intent on maintaining our " good name."

When we receive our call-signs from the Post Office we are receiving another tag or name, by which we are known and judged over the air. In the same way as we endeavour to maintain our " good name " in life we should also conduct ourselves over the air in such a way that our call-sign does not get a " bad name." Some people appear quite normal until they get behind the steering wheel of a car and, sad to say, some amateurs also appear to lose all sense of perspective when operating their stations.

Answer these questions yourself; if there is a " Yes " to one or more think carefully about whether or not your hobby is getting out of perspective:

(i) Have I ever flouted the rules, written or unwritten, when operating my station?

(ii) Have I ever promised to acknowledge a QSL card or QSO and not done so?

(iii) Have I ever deliberately tried to break into a QSO, knowing full well that in so doing I am causing annoyance to either station?

(iv) Have I ever denied my family the help and companionship, which is their right, because of over-emphasis on the importance of my hobby?

(v) Have I ever refused a helping hand to a beginner?

(vi) Have I ever submitted a contest log in which some of the entries were in doubt?

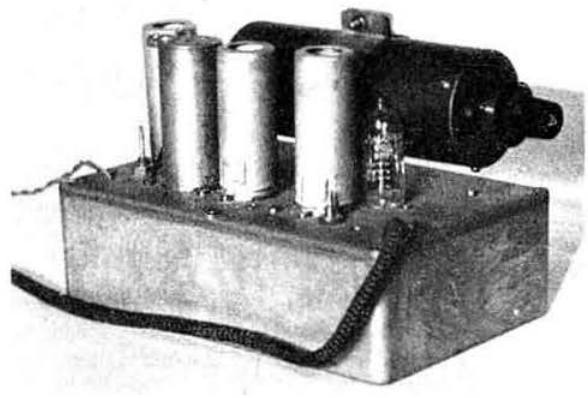
(vii) Have I ever said anything over the air to the detriment of my fellow amateurs, or anything which might bring discredit to my hobby?

We have a wonderful and absorbing hobby, which is held in high esteem by governments and learned bodies in addition to the great mass of our fellow human beings. We have a position of trust and responsibility to ensure that, by our conduct, we do nothing to lessen this esteem, but rather to enhance it and raise it still higher. This we can do only by preserving a sense of balance and acting in such a manner that our call-signs have as good a " name " as those we acquired at birth.

J. D. K.

A Simple Crystal Controlled Converter for 420 Mc/s

By G. R. JESSOP, A.M.Brit.I.R.E., Assoc. I.E.E. (G6JP) *



THE main problems encountered in the construction of a converter for 420 Mc/s are associated with: (*a*) the provision of a stable oscillator chain, which usually requires three or four stages of frequency multiplication following the crystal oscillator; (*b*) an input circuit which should be of good performance and yet capable of simple tuning, and (*c*) the provision of a low noise head amplifier operating at the converter intermediate frequency—in this case 30 Mc/s.

The converter to be described was constructed with these requirements in mind, and in basic design it is a companion to the converter for 144 Mc/s described in the R.S.G.B. BULLETIN for May 1958.

Circuit

The complete circuit of the converter is shown in Fig. 1 from which it will be seen that the local oscillator chain comprises four stages using two type B.719 double triodes (V1 and V2) which provide a total frequency multiplication factor of 20. The first triode section of V1 operates as a straightforward crystal oscillator with the anode circuit tuned to the crystal frequency of 20·25 Mc/s. The second triode section of V1 operates as a frequency multiplier having its output on 101·25 Mc/s. Each triode section of the second double triode (V2) operates as a frequency doubler with outputs on 202·5 Mc/s and 405 Mc/s respectively. The tuned circuits for the first three of these stages use slug tuned inductances whilst the final stage comprises a shunt fed coaxial circuit.

The mixer tuning circuit is a relatively large coaxial line similar to that described by G3BKQ in the *Short Wave Magazine* for July 1954. The aerial is coupled into the cavity by a hairpin loop and the mixer crystal (a GEX66 or equivalent) is tapped on to the centre line of the cavity. The tuning of this cavity is arranged in the conventional manner by a variable capacity at the "open" end of the line. The local oscillator injection is between the mixer crystal and the i.f. input coil, which is usual practice for post mixer injection.

The i.f. head amplifier consists of a double triode (V3) operated as a cascode amplifier so that a reasonably low noise performance is obtained. It should be noted that at the relatively low frequency of 30 Mc/s it is not necessary to neutralize the amplifier and a direct connection is made between the two sections of the B.719. It is, however, essential to separate the associated circuits by a screen across the valve socket as shown in Fig. 2.

The B.719/ECC85 valves specified are medium impedance, high slope double triodes, and type 12AT7 can therefore be substituted in so far as V1 and V2 are concerned, but some adjustment to inductance values may be necessary. In the case of V3 a 6BQ7A may be used, but the B.719 is regarded as the most suitable and it is convenient to use the same valve type for all three stages.

The power requirements for the converter are 6·3 volts at 1·3 amps. and approximately 150 volts at 35 mA.

* *32, North View, Eastcote, Pinner, Middx.*

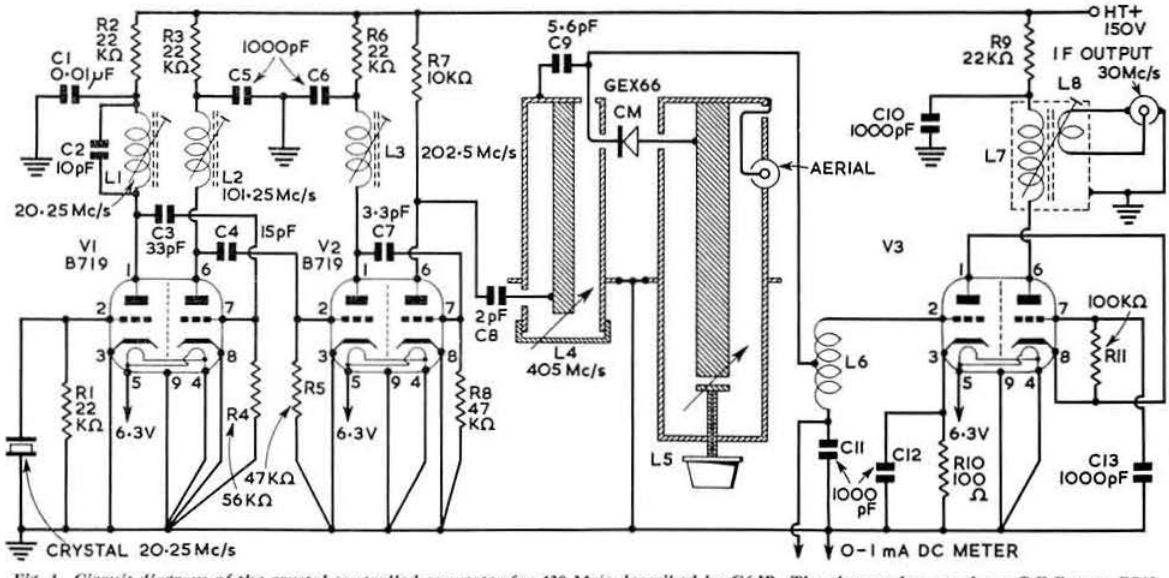


Fig. 1. Circuit diagram of the crystal controlled converter for 420 Mc/s described by G6JP. The three valves used are G.E.C. type B719.

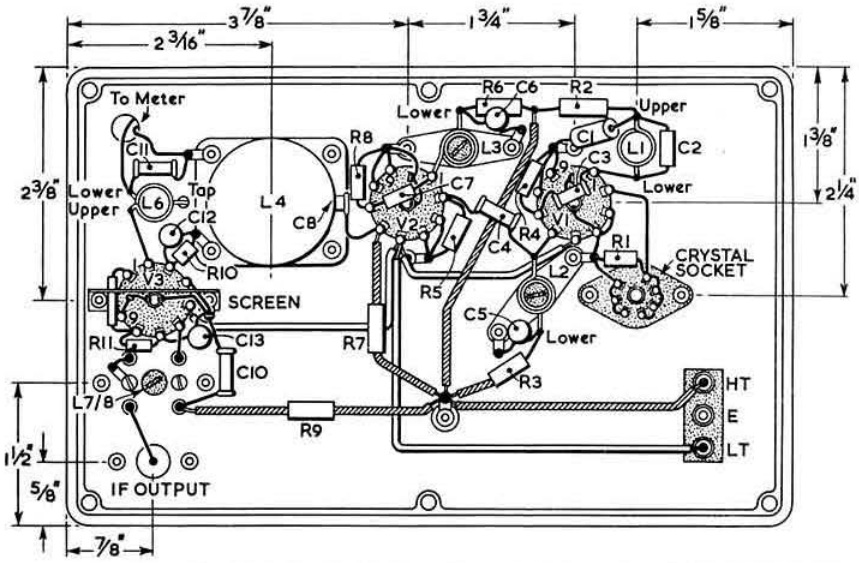


Fig. 2. Layout of the principal components on the inner side of the top plate of the die cast box into which the converter is built.

Construction

The complete assembly is built on to the top of a die cast box measuring 7¼ in. by 4½ in. by 2¼ in. (Eddystone type 845), all the components being mounted on the top plate.

The layout is important and attention should be given to the positioning of the various parts, which is shown in Figs. 2 and 4. These diagrams are drawn approximately to scale and show the underside and the plan view (outside) respectively, giving a good guide to the lead lengths of the various tuned circuits.

The inductances L1, L2 and L3, which are slug tuned, are wound on standard formers of the moulded type with the winding a tight fit on the former; no other fixing has been found necessary.

Details of a suitable final frequency multiplier circuit L4 (which in the present case was the shorter of the pair of coaxial circuits taken from a "glide path" receiver) are given in Fig. 3(*a*). This circuit is shunt fed by a 2 pF capacitor tapped on to the centre line near the "open" end while tuning is accomplished by means of a threaded end cap. It is mounted through the chassis so that the closed end is adjacent to the closed end of the mixer cavity. If a suitable circuit is not available it will probably be easier to arrange the tuning in a similar manner to that shown for the mixer cavity.

The mixer cavity (Fig. 3(*b*)) is mounted horizontally, and occupies most of the right hand top half of the box plate. It is fixed to the chassis plate by a horizontal mounting type electrolytic condenser clip of 2 in. diameter. Tuning is carried out by adjustment of the variable end plate, to which is attached a short length of 0 BA studding; in order to ensure a reasonably smooth action a spring (made of piano wire) is fitted across the screw thread. It is important to see that the fixing clip is the only connection to the chassis and that the rear end is not in contact with the can of the i.f. transformer or the screen for V3.

The mixer crystal (a GEX66 or equivalent type) is con-

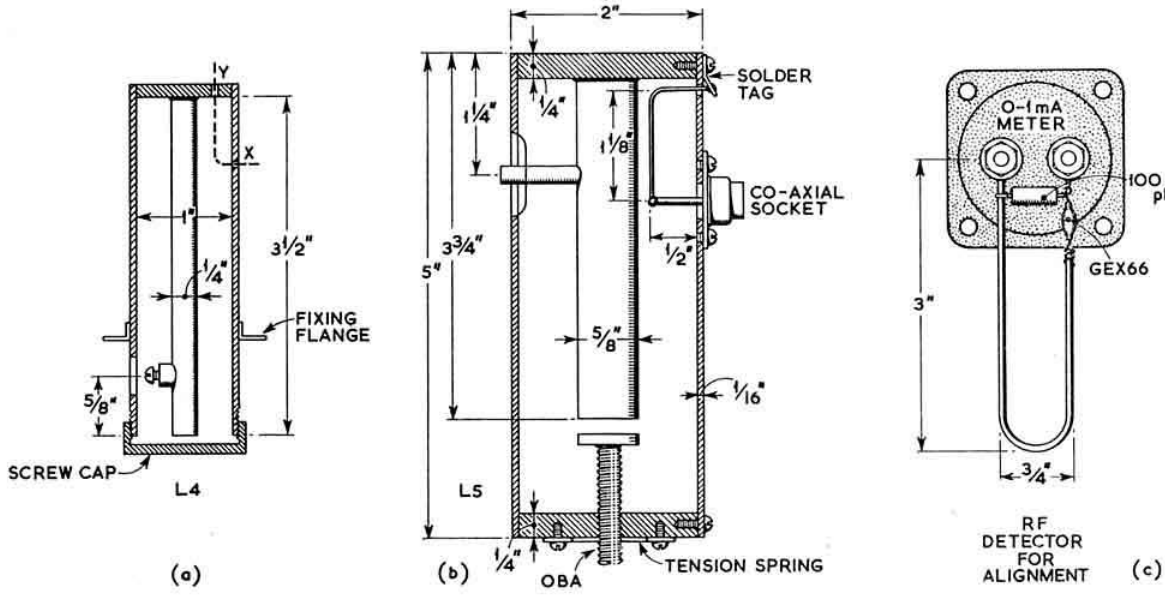


Fig. 3 (a) Details of the final frequency multiplier circuit (L4 in Fig. 1). (b) The mixer cavity (L5 in Fig. 1). (c) Simple r.f. pick-up device for use when tuning the crystal oscillator frequency multiplier stages.

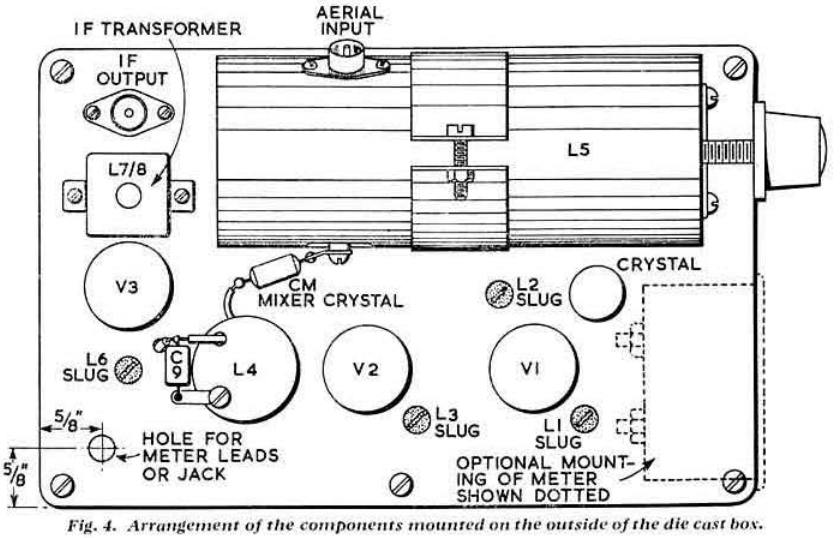


Fig. 4. Arrangement of the components mounted on the outside of the die cast box.

nected to the centre line of the mixer cavity at the point near the closed end by a long screw and sleeve as shown in Fig. 3(*b*). The other mixer crystal connection is threaded through the final frequency doubler cavity to form the oscillator injection coupling at point X (as indicated in Fig. 3(*a*)) and out to the by-pass capacitor C9 at point Y, where it is connected to the top of the cavity and provides an anchor for the oscillator coupling loop.

The resistors are all of the ½ watt insulated type, while the capacitors should be of ceramic in either the disc or tubular form. In order to obtain optimum performance it is recommended that only new components should be used.

Testing and Adjustments

If the data given in Table 1 is adhered to, the possibility of resonating the coils to any other than the desired frequency will be slight. The most critical adjustment will be to L2, but provided there is a similar amount of stray capacity to the original it is not likely that this coil will resonate on the wrong frequency.

A grid dip oscillator is desirable for circuit adjustment and a simple r.f. pick-up device such as that shown in Fig. 3(*c*) will be found to be of considerable assistance. With this it is necessary only to couple the pick-up loop to the coil under adjustment and then tune for maximum reading on the meter. In the original converter L1 was adjusted with a g.d.o., and L2 and L3 with the pick-up loop. The correct setting of L4 was indicated by maximum crystal current.

After all connections have been checked, h.t. and l.t. voltages may be applied.

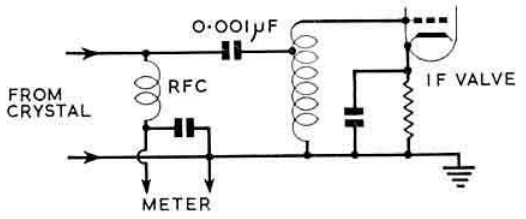


Fig. 5. Modified circuit arrangement for shunt feeding the crystal mixer output to the i.f. input coil (L6). The capacitor across the meter should be a 0·001 μF disc ceramic.

The crystal oscillator valve (V1) should be inserted and adjustment made to L1. The output from the first half of this valve may be checked on a receiver covering 20·25 Mc/s. L2 should then be adjusted to 101·25 Mc/s. The second frequency doubler valve (V2) should now be inserted, and the coil L3 in the anode circuit of the first half of the B.719 adjusted to 202·5 Mc/s; L4 can then be tuned to 405 Mc/s as mentioned earlier.

After the oscillator chain has been satisfactorily adjusted the i.f. amplifier should be tuned to 30 Mc/s.

When this procedure has been completed it will be found that some alteration to the oscillator injection coupling loop will be required in order to obtain a suitable crystal current. In the original converter this was 0·6 mA and an amount between this figure and 0·25 mA will be found to be suitable. When the converter is on standby, i.e., with the h.t. removed, the meter will show a small flow of crystal current. This is due to the grid contact potential of the i.f. valve, and can be removed by shunt feeding the crystal output into the i.f. input coil as shown in Fig. 5. The crystal current meter has not been built into the converter because, apart from the initial setting up and an occasional check, it is not required.

The mixer cavity should be tuned by (i) screwing the trimmer plate in until it is in contact with the centre line, and then (ii) unscrewing the trimmer until the crystal current falls steeply. At this point the cavity is tuned to the oscillator frequency of 405 Mc/s; the trimmer should then be unscrewed a further half or one turn for the point of maximum noise or signal. Some slight adjustment will be required at the band edges.

No measurement of noise factor has been made because this is likely to be unreliable unless a noise source such as a coaxial type of noise diode, e.g., CV2341, is employed. In use the performance of the converter has proved to be very satisfactory, and the noise level compares favourably with the majority of converters designed for 144 Mc/s.

It is hoped that the simple design presented here will encourage more occupancy of the 420 Mc/s band, which, at the present time, offers many opportunities for development.

TABLE I—COIL DATA

Coil	Turns	Wire	Pitch	Core	Coil former diam.	Frequency Mc/s
L1	17	24 s.w.g. enam.	Close wound	Dust iron	$\frac{5}{16}$ in.	20·25
L2	4½	20 s.w.g. enam.	2 diam.	Dust iron	$\frac{7}{16}$ in.	101·25
L3	2¼	20 s.w.g. enam.	3 diam.	Copper	$\frac{7}{16}$ in.	202·5
L4, 5	See Fig. 4	—	—	—	—	—
L6	21	26 s.w.g. enam. centre tapped	Close wound	Brass	$\frac{5}{16}$ in.	30
L7	27	26 s.w.g. enam.	Close wound	Dust iron	$\frac{5}{16}$ in.	30
L8	3	22 s.w.g. p.v.c. covered	Close wound on the 'earthy' end of L7	—		

A Foolproof " S " Meter

By H. O. LORENZEN (W3BLC)*

OVER the years the writer has tried many " S " meter circuits without any very gratifying results. Most of these circuits used a 1 mA meter in some form of a bridge circuit in the anode of a pentode valve: some resulted in the meter reading backwards, while others compressed the scale to one small part of the meter's range.

The " S " meter to be described uses the circuit shown in Fig. 1 and is the essence of simplicity, yet it is applicable to almost any receiver. By using a 0-200 micro-ammeter better sensitivity is achieved compared with circuits using 0-1 mA meters. The 500 ohm potentiometer R1 is the zero adjustment to compensate for different levels of receiver noise. The a.v.c. input voltage may be controlled by means of R2. When a converter or an extra r.f. stage is used ahead of a receiver with any of the conventional " S " meter circuits, the scale no longer reads correctly but this is not so with the present arrangement. All that is required is a simple readjustment of the a.v.c. level control R2. Resistors R3 and R4 in the cathode circuit of the two halves of the valve are not critical but should be 10 per cent tolerance type so that R1 will enable balance to be obtained near the centre of its range.

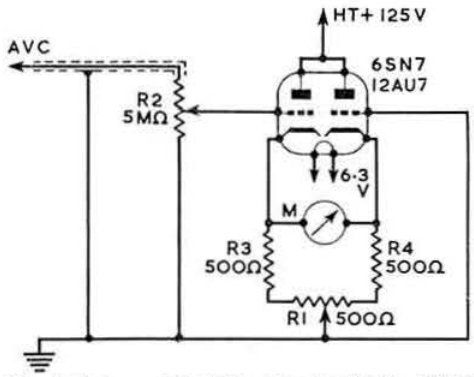


Fig. 1. Circuit diagram of the "S" meter described by W3BLC. The meter M should be 0-200 μA full-scale deflection. R3 and R4 should be 10 per cent tolerance type.

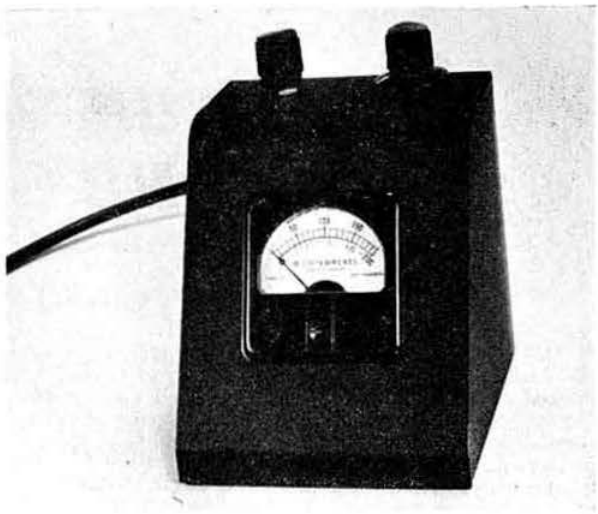
The calibration scale on the meter provides adequate spread for the lower " S " units but also accommodates readings up to about 20db over S9. Beyond this it is considered readings are unimportant. Mid-scale represents about S8½ when used with the writer's BC348 but it would be advisable to calibrate the scale for the receiver with which meter is to be used rather than rely on copying the scale shown in the photograph.

Construction

The unit is constructed in a conventional sloping front cabinet, all the components being mounted on a $\frac{1}{16}$ in. aluminium bracket used as the back plate to the cabinet. This bracket is held in position by two extra nuts on the potentiometers. The valveholder is mounted on two stand off bushings. R2 has a pointer knob on it so that it can be set to the correct value for the various converter or receiver combinations with which the unit is employed. A shielded lead is used for the a.v.c. connection in order to prevent any feedback in the i.f. stages.

The cable connecting the " S " meter to the receiver was made up with a four-prong Jones plug on the end, the various wires being covered with black vinyl tubing to give it a neat finished look. By using a plug and socket arrangement, the " S " meter can be used with more than one receiver.

* 3713 Bangor Street, S.E., Washington 20, D.C., U.S.A.



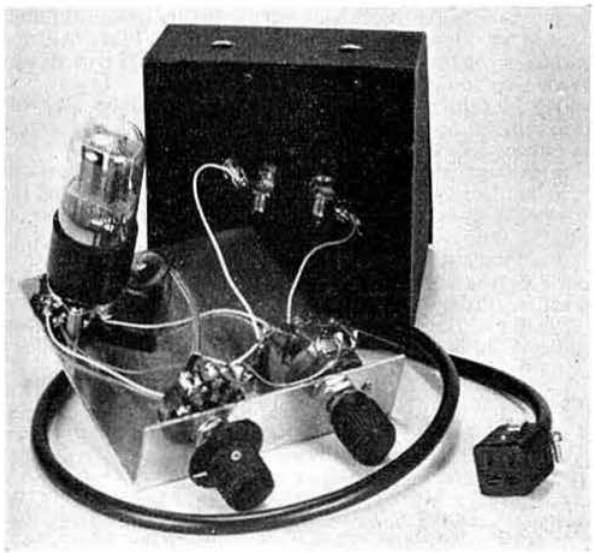
A front view showing the calibration of the meter.

The h.t. of 125 volts is obtained from the screen supply in the writer's BC348 but the voltage could be obtained from a simple voltage divider with the valve anodes connected to the centre point of the two resistors.

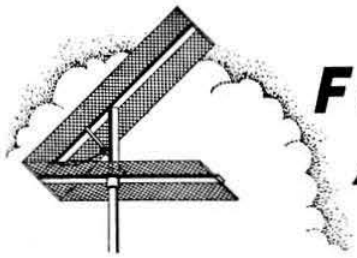
Calibration was arrived at by using the comparison method with two commercial receivers fitted with " S " meters. The readings on the two receivers did not match each other but by adjusting R2 (a.v.c. level control) the scale of either one could be closely matched.

Operation has been extremely gratifying. After trying lots of circuits that required " cut and try " to get them to work suitably it was a pleasure to find this unit worked the first time.

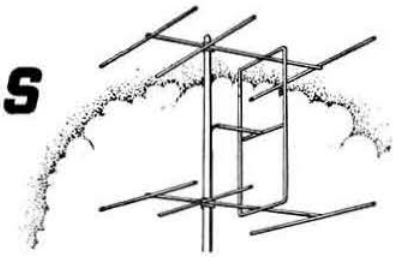
Members who require a practically foolproof " S " meter arrangement will find the device described very satisfactory.



The arrangement of the components on the aluminium bracket used as the back to the sloping meter case.



FOUR METRES AND DOWN



By F. G. LAMBETH (G2AIW)*

THIS year's meeting of the Region I V.H.F. Committee took place on October 2/3 at The Hague. G2AIW was present as R.S.G.B. V.H.F. Manager and also as Hon. Secretary (and, on this occasion, Acting Chairman) of the Committee. V.H.F. Managers attended from France, Switzerland, Italy, Belgium, Holland and Poland, and a telegram of good wishes was received from OK1VR on behalf of Czechoslovak amateurs. Karl Lickfeld, DL3FM (Chairman) was unfortunately unable to be present as he was in hospital.

Arising out of the Minutes of the Bad Godesberg Conference, it was regretted that no co-operation had been so far achieved in v.h.f. matters with Russian amateurs although they are kept fully informed of events in the rest of Region I. Poland reported that an RB5 in Lwow had been worked, but that was all.

The following is a summary of the more important decisions taken at the meeting and the matters discussed.

(i) It was decided to recommend that the lower sideband should be transmitted when using s.s.b. on 2m.

(ii) The QRA Locator (also called QRA Kenner) should be used for locating stations in contests. This is a system something like the National Grid reference, but somewhat simpler. A grid is superimposed on a map of the country so that locations can be fixed within the squares which are lettered and numbered. When SP6CT recently gave G6OX the reference " HK29 " he was using this method to locate Snezka. More on this later.

(iii) The new Region I I.A.R.U. V.H.F. Certificate has been generally approved, and will eventually be issued for all v.h.f./u.h.f. records set up since January 1, 1958. Anyone wishing to claim such certificates should send QSL cards and particulars to G2AIW.

(iv) In future, separate record files are to be kept for tropospheric, auroral, meteor scatter and Sporadic *E* contacts of outstanding importance.

(v) It was agreed that specially licensed high-power stations must not be used by contest entrants, who should rely on the normal limit of power permitted on the ordinary licences valid in their own countries.

(vi) Many stations (especially abroad) rely on mains at portable sites for their power. In order to regularize the position it was decided to use two classifications in future: (*a*) Home Fixed Stations and truly alternative address stations, (*b*) fixed portables (using the mains) and ordinary portables and mobiles.

(vii) Some operators have complained that 24 hours is too long for the European V.H.F. Contest. After a long discussion it was agreed to recommend to the next Conference (Folkestone 1960) that this contest should have a duration of 18 hours (18.00 Saturday to 12.00 Sunday).

(viii) There will be one official Region I I.A.R.U. C.W. Contest in 1960 (March 5-6). If societies want others they will of course fix the date and conditions themselves.

(ix) A2 (m.c.w.) has been deleted from the types of emission permitted in Region I v.h.f. contests. The band letter ("A" for 144 Mc/s, etc.) was adversely commented on. There also appeared to be a disinclination to exchange QTHs in contests! This will of course be simplified when the " QRA Locator " system comes into general use, but the matter will be discussed again at Folkestone, by which time the position should be clearer.

The Dutch national society, V.E.R.O.N., are thanked for their hospitality and assistance in arranging the meeting.

* *V.H.F. Manager, 21 Bridge Way, Whitton, Twickenham, Middlesex.*

European V.H.F. Contest 1959

Entries were received for the European V.H.F. Contest on September 5-6, 1959, from the following U.K. amateurs:

Section 1 (Fixed Stations — 2m).—G5YV, G3MED, G3HBW, G3LTF, G3FAN, G6LI, G3BDQ, GM3KYI, G5MR, G3LTN.

Section 2 (Portable Stations—2m).—G2DTO/P, GW3KMT/P.

Section 3 (Fixed Station—70 cm).—G5MR.

These stations are listed according to claimed scores, but the official results will be declared in due course by the Italian society.

Check logs were received from B.R.S.20133 and G4LX who are thanked for their co-operation.

Two Metre News

Conditions recently have been very fair with some occasional bright spots of the type experienced all through this exceptional summer. **G3HBW** noted a limited but nevertheless striking Scandinavian opening on October 5 when he worked the three " old faithfuls," SM6ANR, SM6BTT and SM6PU as well as LA4VC. LA9T was heard but not raised. So conditions have shown no real deterioration yet!

G5CP (Chesterfield) had a little /M experience in North Wales during late August and early September. Conditions were bad, but GW2HIY was worked regularly. Only one G was worked, however—G4LU while on Holyhead Mountain! On October 5, G5CP worked SM6BTT and SM6ANR for his first Swedish contacts on 2m. His country score is now up to 12.

G3AS/M (Dorchester, Dorset) wants skeds with anyone. The transmitter runs 10-12 watts to a stacked halo aerial. His frequency is 144·169 Mc/s. Mobile operation is possible, and a suitable location in the area is Bulbarrow Hill (920 ft. a.s.l.). The site is open to the north, east and south-east. Provided a sked has been made beforehand, G3AS/M can be available most Saturdays and Sundays.

G3EGK (Timperley), who has been on 2m for 10 months, is now using a QQV06/40 (75 watts input) and a four-over-four slot with the top at 40 ft. The report for early September was naturally improved by the European Contest and the good continental opening of September 12. The best DX contacts during the month were with F8MX, F3LP and GM3HLH/A, all worked during the Contest at civilized hours! GM2FXN, GM3EGW, PA0LQ and PA0EZ have been worked since the Contest.

A.1491 (Palmers Green) has heard GW3ATM (near

Chepstow) for his first GW and G2NY for the first Lancashire station. Conditions were good to the north on August 18 whilst on August 31 G2IJ (Portsmouth) was heard. G3BNC (Gosport) was logged on October 3 over a poor path through a 300 ft. " mountain." In the first two weeks of October, Yorkshire stations, not usually heard, such as G3DLV and G3DVK, were getting through. The September 12 opening found the better placed stations working PA at midday. At 18.00 they started coming in to Palmers Green and eight ONs, 17 PAs, DL1LB and DL3FM were logged. Early on the 13th G3IRA (Wilts.) and G3ABH (Dorset) were roaring through, together with F9LD. The evening of the 14th produced the first Birmingham station, G3LAY and other Midlanders at exceptional strengths. GW3ATM was heard again on September 29, and more early tropospherics were in evidence on October 4 with G3DFL (Smethwick) outstanding. Activity during the day was high, due to a local contest (M.A.R.S./C.A.R.S.). G3LHA and G3KEF/A were good signals. Incidentally, G3KMP (Hastings) is very consistent and has been heard every day lately. A.1491 spent a few days with G3JGJ recently and found the rig working off batteries, with c.w. only. G6OX and G3HBW were worked by this means in the Contest with F3LP and F8MX heard at S9+. G3FZL was 589 off the side of his beam when calling GM3HLH/A! Another good signal heard in South Devon is G6TA on n.b.f.m. **G3JGJ** (Moretonhampstead) says the sked with GC2FZC (five years old last June) is still going strong. There have been some fair DX stations in the list lately.

G3HAZ (Birmingham 21) was in on the September 12/13 opening, when the band was a seething mass of near and new Europeans, mainly PA, DL and ON. New PA three-letter calls were running very low power, but nevertheless getting across to G in fine style. However, the hoped for tasty morsel (OK or SP) did not materialize. On the Sunday morning a welcome QSO with GW2HIY gave Anglesey for a new county. GM3EGW was heard one night and was worked by G3KPT among others. The local M.A.R.S./C.A.R.S. Contest livened up the band considerably on October 4. The band sounded like a " real big contest " instead of a friendly local scrap. The possible leading 2m scorer in this annual event made over 50 QSOs in 20 counties during three 2 hour (morning, afternoon and evening) operating periods.

G6OX (Englefield Green) says the highlight of the past month was a personal QSO with PA0LQ, who visited him on September 24. During the course of the evening five PA stations, two ONs and many Gs were worked. PA0LQ hopes to meet many more Gs when he comes over for the 1960 Convention and in the meantime sends 73 to all of them. He hopes to be at the R.S.G.B. Radio Hobbies Exhibition on November 26. PA0LQ has a regular daily sked with ON4DY (Ghent) who is on 144·62 Mc/s. So far contacts have been 100 per cent signals with S5/8 on an average. G6OX had two unusual contacts during the month, G3EQS in Norfolk and G3CFK in Suffolk, S9 phone over a fairly difficult path.

An analysis of the G6OX log from May 1, 1959, to October 8, shows 591 QSOs on 2m: 231 Gs, 22 GWs, 1 GC, 164 PAs, 102 ONs, DJ/DL 41, SM 3, OZ 5, F 21, and SP1. Quite an effort! Arrangements are in hand for a regular sked with DL6WUA; when the details are settled, they will be submitted so that anyone interested may follow them.

G2XV (Cambridge) says that September 12 was " useful " on 2m in that SM6PU, SM6ANR and OZ4KO and other stations were worked.

G5DW (Ashcott, Som.) has become very blasé—he thinks that with conditions as they have been for the last few months there doesn't seem much point in reporting DX as it has become too commonplace—well of course he has a point there! G5DW says a return to " normal " was foreshadowed on October 6 when the signal from G2NY was down to S8 for the first time in many weeks. The West Country is very pleased to have G5QA back on 2m with a very potent signal from Exeter. Apparently only a few locals operate the revised Band Plan; this is a matter which should be taken seriously.

G3DIV (Polegate) has had the most hectic month of his life, with a spell of portable activity which took place on the evening of September 12. G2FTS's old car, as usual, carted the gear, but as the decision was only made on the Saturday evening, the batteries were not fully charged. The site chosen was a car park on top of the downs above Eastbourne. Conditions were fantastic with PA, ON, DL and OZ signals rolling in, and the band practically full from one end to the other. One DL station worked was S9++; they were half way through a QSO with DL9LT when the batteries ran out. And that was that! Very frustrating! G3DIV was married on September 15, and we extend both to his wife and himself our heartiest congratulations, but commiserations also for the appendicitis which laid him low and cancelled his honeymoon. We are glad to know he is now better, although still weak.

G3MED (Northwich) worked PE1PL on phone most mornings for the fortnight after the contest. Signals were between S5 and S9+. PA0FB was also worked during this period. On September 12 conditions improved during the day and PE1PL, PA0CML and PA0FB were worked in the morning. PA0EZ, DJ1EY and ON4PE were all extremely strong. PA0EZ was S9 + 15db to S9 + 20db on the same frequency as G3MED, who was not getting very far against this competition, so a QSY took place and then things were much better. Finally, that evening G3MED had his first two-way s.s.b. QSO with the continent. It was actually a three-way with G3CCH and PA0OTC. The PA's signal was very weak, his best transmission being about 4db above noise; however the name, QTH, and report were received and no repetition was necessary. It was quite remarkable to copy such a weak signal so easily. The power used is about 20 watts peak as against 300 watts peak at G3MED. For the next few days, apart from PE1PL, no EDX was worked, but several new London area stations have been raised. G3ABH puts through a good signal from Poole (Dorset). Early on October 4 conditions were very good: G3EVV was RS59 while GC2CZS (Chelmsford), who had never been heard before, was RS57. On October 5 whilst tuning what appeared to be a practically dead band, G3HBW was heard calling LA9T; a turn of the beam to the north-east found SM7BE 58 on phone. He was then worked, SM7BAE (569), SM6BTT (569) and SM6ANR (589) following in quick succession. Another SM was heard as well as a weak OZ calling CQ on c.w. During this time G activity appeared to have hit a low level. The only ones heard or worked were G5ML, G2DFL, G8JG, G3HBW, G3BA and G5YV. On October 8 conditions were quite good to the south-east and G3LAR, G3HIX, G6SC and G3BGL were worked, but after 21.00 they all disappeared.

PA0FB is using s.s.b. on the l.f. bands and will soon be on 2m with the system.

G2UJ (Tunbridge Wells, Kent) hopes soon to have his 2m transmitter in operation from his new QTH. Receiving tests indicate that although the new site is considerably higher than the old, screening from high buildings in the vicinity is severe to the north and north-west but results to the south should be better if the very strong signals received from G3KMP (Hastings) on the latter's 10 ft. high aerial are anything to go by. G3KMP is S9 off the back of the twin slot beam and a saturation signal off the front. The beam is now fed with coax instead of twin-lead, with a balun at the receiver end of the feeder. Severe break-through on the main receiver at 8.25 Mc/s was experienced at first due to the beam and mast acting as a reasonably efficient aerial at this frequency. Earthing the mast did little to improve the situation but the addition of a shorted quarter-wave coaxial stub to the feeder at the point of connection with the con-

verter has eliminated the break-through. Two metre signals are only slightly attenuated in strength but a considerable improvement in signal-to-noise ratio has resulted due to the suppression of noise picked up at the i.f. The length of the stub is 13½ in. overall.

G3ABZ (Maidstone) feels that readers of this column who have not yet taken the v.h.f. plunge because of stories of noise, no signal, and constructional difficulties in receiving equipment should take fresh heart on hearing of his initial success. Having decided that a simple converter would not take long to build, a mixer-oscillator (described in an old A.R.R.L. *Handbook*) was produced, using a 12AT7 instead of the valve specified. The band was found in under 10 minutes using no test gear of any kind. G3ABZ says he was amazed at the low noise and clarity of signals using only a 10m folded dipole. The first French station (F3LP) was heard within half an hour and many Home Counties stations have been logged. No special parts were used and in fact the valveholder was one of the so-called highly inefficient types. G3ABZ's experience and success should spur on quite a few of those who are hovering on the brink of v.h.f.!

Two Metre News from Wales

GW3KYT (ex-G3KYT) writes from Rhos-on-Sea, Denbighshire, to say he hopes to be back on 2m soon with a pair of 4X150As.

GW3MFY (Bridgend) reports the September 13/14 opening as reaching South Wales—but only just! DL3FM was worked on phone at 02.40 on September 14 after nearly five hours on the band! During that time PAs, ONs and DLs were heard at an average strength of S5, but the competition from stations nearer the DX was too great. GW3MFY heard no c.w. at all and wonders how many continentals missed a QSO with Wales as a result. As from September 23 the power at GW3MFY has been 100 watts c.w. only to a QQV06/40A with better reports in consequence. **GW3LJP** is a new station on from Cross Gates, nr. Llandrindod Wells, Radnorshire, with an SCR522 running 10 watts. There have been several QSOs " through the rocks " —GW3LJP saw an aurora on October 3 at 23.50 G.M.T., but a QSO afterwards with G3JZG confirmed that no reflections were being heard. GW3LJP being probably the first fixed station in Radnor (certainly the first *we* know about) there will probably be a great turning of beams in that direction!

GW3MFY's best QSOs for the period were with G3MED, G6OX, G3KFD, G8GP, G3HBW, and GC2FZC. G3HYH (Manchester) was RS55 in South Wales on October 3, calling CQ but was not raised. GW3MFY's question of the month. How many people tune *slowly* with the b.f.o. on? Judging by replies to c.w. CQ calls, not many.

On September 23 GW3MFY called the following in vain: G3DVV (S9), G3LTN (S5), G3MPS (S9), G5LK (549), G3AYC (44), G3GHI (54), G3HXJ (55).

Two Metre News from Scotland

GM2FHH (Aberdeen) has had plenty of interest during the last few weeks, including several good openings during September. There was an aurora on the 20th with signals from G, GI and GM. Skeds with G2NY at 22.30 have proved 100 per cent successful while that with G3HBW (22.45) has shown a fair degree of success, although site noise proves at times to be a limiting factor. There was a good opening to the London area on September 30 when G3HBW, G3LTF (using an indoor Yagi), G3FZL and G3CO were all good signals. GI5AJ has been good also, with a QSO on October 4 on phone. **GM3GUI** (Friockheim) is very active now, with a 5-over-5 slot beam with 35 watts and a better converter. The really outstanding event has been the opening to SM and OZ on October 5/8 when **GM2FHH** worked SM6ANR, SM6BTT, SM6PU, SM6YH, SM7BCK, SM7ZN, SM7BAE, SM7AWN, OZ3NH, OZ5AB, OZ7DK, OZ7BR. SM6BTT and SM6ANR were outstanding and were heard or worked every day of the opening. The last QSO was on the 8th at 14.00 G.M.T. when both were down to RST549. There must have been a duct between Sweden and Aberdeen, as both were only hearing signals from Aberdeen on the 7th and 8th. The only other GM heard working SM was GM3GUI on the 5th. It is unlikely there were any other GM/SM QSOs after the evening of the 5th except at GM2FHH who says it must have been a " temporary " wave-guide."

Seventy Centimetre News

G2XV (Cambridge) reports low activity and only a few local contacts up to 50 miles. G2ADZ (Devon) and GW2-FVZ (Flint) are being sought. Consideration is being given to some experimentation with parametric amplifiers in collaboration with G2DUS.

G3HAZ (Birmingham) says 70 cm stations were a little harder to work than 2m in the M.A.R.S./C.A.R.S. Contest, as so many were too busy on 2m, but a few remembered to treble, so that 70 cm produced as many QSOs as have been known during some 70 cm test weekends. There's still life on the band from G2CIW, G2FNW, G3KPT, G2BVW, G3LAY and G3JZG. G2ADZ is on again from Devon and has been worked by G2CIW and G3KPT. His frequency is approximately 433 Mc/s. G3HAZ had a 70 cm QSO with PA0WAR on September 12/13. They were hoping for more, but at least broke the ice again!

G5MR (Hythe, Kent), having recently built a 2m p.a./70 cm tripler using a QQV06/40 on the lines of the Swedish design published in *Four Metres and Down* last November, has worked F3LP, F8MX and G8AL, using only a six element stack without reflectors. G3AYC has also heard the transmission. F8GH has been heard by G5MR, but no success the other way. G5MR's frequency is 435·480 Mc/s. The outfit also works very well on 2m and is a great improvement on the former 3E29. G5MR says he hasn't forgotten 4m but the beam is down for its periodical overhaul.

Meteor Scatter

G3HBW's sustained efforts during the Giacobinids period had rather disappointing results; the shower was by no means as intense as had been forecast. OK2VCG was heard and identified but no QSO is claimed. OH1NL and I1ACT produced " pings." The reception of OH1NL is subject to confirmation although the frequency and other characteristics of the signals correspond with the pre-arranged sked. **G3JZG** reports hearing SM3AKW with two dots.

OE1WJ, in a letter to DL3FM, makes some interesting suggestions in respect of meteor scatter reporting. He considers the A.R.R.L. code well proved, but with a weakness in the ending of QSOs. He suggests the following solutions:

A has everything OK and gives a clearance RRR.
B has everything OK together with the clearance RRR from A and also gives RRR.
A receives RRR from B and ceases his transmission, since he now knows that B is complete.
B transmits for a further half-hour after the last audible ping from A and then also ceases.

For the following reason one should not crowd the meteor scatter stations too closely together: it could happen that a closely neighbouring station could slip on to the frequency of the sked partner through Doppler effect and could lead to confusion, being mistaken for the sked partner.

G3HBW informs us that he has heard from SM4CTF that SM4BIU has moved, and is now SM5BIU.

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Reports for the December issue by November 18 please.

The MONTH ON THE AIR

A CHRONICLE OF EVENTS ON THE HF AMATEUR BANDS

By J. DOUGLAS KAY (G3AAE) *

TO coin a phrase " we have hardly ever had it so good " and most of us are really making hay while the sun shines on the ionosphere. First though, let us see what is going on in the world of DX.

DX Gossip

Antarctica. Some insight into the hardships endured by the VP8 gang is provided by Art Trigell G3JAF (Lymington). Art has a daily sked with Dennis, **VP8EP,** at Halley Bay which they are keeping with almost 100 per cent success. VP8EP normally uses a rhombic aerial for both reception and transmission, but on occasions the wind down there has been as high as 60 knots and local static has made reception on the rhombic quite impossible. When this occurs Dennis switches to a Vee beam for reception and he can then copy Art's signals. The explanation for the difference is that the rhombic is exposed to the elements while the Vee beam is 6 ft. *under* the surface of the snow! VP8EP is very anxious to work G stations on 7 Mc/s and when conditions permit he listens on 7,030 kc/s at 21.00 G.M.T. Art offers to arrange 7 Mc/s skeds with VP8EP if those interested would contact him. VP8EP will continue to be most active until January next year when he will be returning to the U.K. His replacement will be none other than Colin Johnson **VP8CC,** who has been keeping in contact with Dennis via G8KS.

Incidentally, with **VP8BK** active from South Georgia, **VP8EG** from South Orkneys and numerous stations from the Falkland Islands, South Shetlands and Antarctica the only **VP8** country not at present available on the bands is South Sandwich, which has but rarely seen any amateur activity.

Sultanate of Oman. Until recently there was absolutely no activity from the Sultanate of Oman, then last year **VS9O** appeared on the bands for a short while. After he had left Brian Smith, VS9AS was posted to Misirah Island and started up as **VS9OM,** giving a new country to thousands of the DX gang with his flea-power rig. He is still extremely active on all bands, phone and c.w., with higher power, and has recently been joined by **VS9OC,** the call-sign of the R.A.F. club station on the island.

Christmas Island. Writing on September 27 from Christmas Island G3MKG says that he is licensed as VR3V and is active on 21 and 14 Mc/s 'phone and c.w. between about 19.00 and 07.00 G.M.T. using a PR120V transmitter and an AR88 receiver, but that he expects to be leaving the island within a month. However, he goes on to say " So far VR3V is the only call operating from Christmas Island, but at least two more calls are expected in the near future, probably within the next week or so. An R.A.F club station will be started here and each member of the club will have his own personal call. So in future VR3 will not be so rare." VR3V concludes by saying that he has not so far had any contacts with " G " stations but he is always on the look-out for them.

Iceland. From the QSL Manager of the TF bureau comes information that **TF3AK** and **TF3TP** are both pirates. On the other hand **TF5TP** is very active and quite genuine.

Togoland. The remarks made in this column in July have certainly had the desired effect for, in a QSO with G2FHM, **ZD2AMS** states that he plans to go on DXpedition to Togoland for a two week period next January. All the equipment is ready and the application for a licence has already been made. Operation will be on 14, 21 and 28 Mc/s a.m. and c.w. ZD2AMS is certainly to be congratulated on his enterprise: let us keep our fingers crossed that the French authorities will give him the necessary authorization.

Kermadec Island. Jock White ZL2GX says that, at present, there is no activity from Kermadec Island, and that the lack of suitable anchorage makes it a tough proposition for a DXpedition. Incidentally, Jock now has 296 DXCC countries verified, and looks like giving W1FH and W6AM some stiff competition in the race for 300.

Goa. During the past decade the only activity from Goa has come from **CR8AC,** who started operating on 14 Mc/s c.w. about 18 months ago and was initially very active with a rock crushing signal, but who has latterly been heard on very rare occasions. However, Goa is now on the s.s.b. map and **HB9QP/CR8** has been reported between 14,300 and 14,310 kc/s around 18.00-19.00 G.M.T.

West Gulf DX Club. This prolific source of up-to-the-minute DX information continues to provide some most welcome additions to this column. VQ8AP operated as **VQ8APB** from Carajos Island for a few days and some W stations have already received QSL confirmation which they are submitting to A.R.R.L. for a new country. The latest information is that VQ8BBB started up from the same spot on October 1, and has been heard on 14,102 kc/s around 15.00 G.M.T. Danny Weil started up from Bahamas as **VP7VB** and told W5BUK that there was no truth in rumours that he was in difficulties with the licensing authorities. W0DVN reports that he received **VQ9AIW's** logs on August 14, and within one week had completed and mailed all the QSL cards. The logs are being returned to W0AIW who will deal with any queries himself. Stations who have worked **ZS3T** will have to wait a little while for QSL

DXotic Showcase

Call-sign	kc/s		G.M.T.	
ZD7SA	7,008	c.w	00.10	St. Helena
XW8AL	28,445	a.m.	14.00	Laos
FB8CD	21,160	a.m.	15.52	Comoro Is.
OR4RW	14,045	c.w.	20.00	Antarctica
HV1CN	14,300	s.s.b.	18.25	Vatican City
YS1O	14,315	s.s.b.	23.50	Salvador
ZL3VB	14,100	c.w.	07.45	Chatham Is.
VP8EG	21,100	c.w.	19.05	South Orkney Is.
VS5GS	21,190	a.m.	17.10	Brunei
FB8XX	21,150	a.m.	16.40	Kerguelen
K6QPG/KW6	21,280	a.m.	11.03	Wake Is.
ZS8O	21,195	a.m.	18.00	Basutoland
VR2DK	7,008	c.w.	08.00	Fiji Is.
FE8AH	28,440	a.m.	13.30	Fr. Cameroons
ZD1AW	14,042	c.w.	19.05	Sierra Leone
ZS9G	28,450	a.m.	20.00	Bechuanaland
ZC5AF	21,160	a.m.	15.45	North Borneo
VP2DA	21,230	a.m.	23.00	Dominica
HK0AI	21,240	a.m.	03.00	San Andreas
FR7ZD	14,085	c.w.	17.10	Reunion Is.
KC6GJ	21,280	a.m.	11.20	E. Caroline Is.
KC6JA	21,230	a.m.	14.00	W. Caroline Is.
FU8AC	21,145	a.m.	10.20	N. Hebrides

* *40 Fryston Avenue, Coulsdon, Surrey.*

Lambert Ledoux (ZS6IF) of Johannesburg, who last year operated as ZS6IF/7 from Swaziland, and will next December operate as ZS6IF/8 from Basutoland.

confirmation as he is several hundred cards in arrears: however he will confirm all contacts in due course. If anyone worked **TA3AA** around 1949/50 and has not received QSL confirmation they might get a pleasant surprise by contacting KP4AIO, who was the operator at that time.

Vermont. Jack Maling G5JL worked **VE2AWI/W1** who asked him to QSP the fact that he will be operative from Vermont for a considerable time. Jack worked him on 7,007 kc/s at 06.30 G.M.T., but he is probably also active on the higher frequency bands also.

Andaman and Nicobar Islands

From **G3MVV** comes news that VU2NR, VU2AK and VU2RM will make a DXpedition to Port Blair in the Andaman Islands from mid-December for a period of four weeks.

Equipment will consist of a KWM-1 and separate c.w. and a.m. transmitters while the aerials will be either two or three element beams and a tri-band quad. As there will be three operators and three sets of equipment they may operate simultaneously on 14, 21 and 28 Mc/s.

The Indian authorities do not recognize VU4 and VU5 as prefixes and the call-sign issued for this DXpedition is **VU2ANI** (presumably they will get two additional call-signs if simultaneous operation on three bands is contemplated).

Most of the equipment is being supplied by U.S. amateurs who have also subscribed $300 towards the cost of the trip. W8PQQ will be the QSL Manager.

U.S.S.R.

It is common knowledge that all the U.S.S.R. countries operating on the DX bands use prefixes with the first letter " U." It is, perhaps, not quite so widely known that on the v.h.f. bands the first letter of U.S.S.R. call-signs is " R." Reported in the 28 Mc/s section of the band activity section this month come such call-signs as RH8ABC, RA1HP, etc., instead of the usual UH8, UA1, etc. This would seem to indicate that Russia now recognises 27·5 Mc/s and not 30 Mc/s as the frequency where h.f. becomes v.h.f. As far as this column is concerned the most significant result is that some 20 to 30 new prefixes become available for WPX seekers!

DX Television Reception

November is the month when the maximum usable frequencies reach their highest peak of the year, and with the decline in sunspot activity this may well be the last year, for another decade, when the B.B.C.'s Channel 1 television sound (41·5 Mc/s) and vision (45 Mc/s) signals are audible overseas.

Unfortunately space does not allow a lengthy treatise on this very interesting subject, but here briefly are the times between which these transmissions may be audible overseas during the month of November.

North America (East Coast)	13.00–16.00 G.M.T.
Caribbean	12.00–14.30 G.M.T.
South America (North West)	12.00–14.00 G.M.T.
Near East	09.00–13.00 G.M.T.
Middle East	09.00–14.00 G.M.T.
North Africa	09.00–13.00 G.M.T.
West Africa	10.00–13.00 G.M.T.

From the above it will be seen that there is little chance of these transmissions being heard in East or South Africa, the Far East, Australasia or the greater part of North and South America by normal " F " layer propagation.

28 Mc/s

Ten metres is really opening wide to all parts of the world and activity on the band is on the upswing as the following reports testify.

George Haylock **G2DHV** (London) found VQ8AV (16.30, '460), FM7WQ (21.30, '065), EL4A (15.00, '020), F2CB/FC (13.00, '095), VP7CA (23.30, '650), VS9AZ (18.30, '223), ET2US (16.00, '380), ZD2AMS (17.30, '350), ZD6RM (16.00, '315), HH2Z (18.00, '450), FQ8HA (20.00, '060), VP3ER (16.00, '150) and VQ3HD (19.30, '074). George does not state which were c.w. and which 'phone, but it seems a safe bet that those on 28,100 kc/s and lower were on c.w. Or else!

George Sassoon **G3JZK** (Cambridge) used a.m. to work RG5DHR (16.00, '350), VS9AZ (17.15, '330), RD6AGU (14.00, '450), and VQ3GX/A an exhibition station at Dar es Salaam (17.20, '330). George's rig runs an 813 modulated by a pair of 805s, and the aerial system includes a two-band G4ZU, a 20m ground plane and 40m dipole. On the receiving side there is an Eddystone 740 with a crystal controlled converter in front, and an i.f. strip behind; the 740 being, in effect, used only as a tuner unit.

Alec Gilding **G3KSH** (Kenton) used c.w. to contact FB8CJ (16.00), UA9OM (10.55), and 'phone for 9G1BM (14.30) and various ZS and PY stations. Frank Bliss **G3IFB** (Harrow) used c.w. for XE1AX (16.20, '150), TI2CMF (16.30, '150) and FQ8HA (16.55). Tom Higginson **GW3AHN** (Cardiff) found a rare one on c.w. in ZS7M (17.00, '125) and a rare one on 'phone—RH8ABC (16.35, '390), while Norman Miller **G3MVV** (Romford) got two uncommon Russian prefixes on 'phone: RH8AAD (13.20, '400), and RD6ADR (11.20, '450). He also worked HH2Z (19.00, '400) and OA4ED (18.30, '350).

Charles Harrington **B.R.S.2292** (Hounslow) heard HC1VA (21.00), HH2FB (21.00), HZ1AB (12.00), and OQ5VH (17.00) on 'phone and FQ8HA (17.00) on c.w. Bill Wilkinson **B.R.S.20317** (Bromley) logged 'phone signals from MP4QAO (11.15, '360), UL7FA (11.30, '340) and c.w. from ZD7SA (12.45, '060) and KV4CG (18.00, '020). Colin

QTH Corner

FG7XC. via W3GJY (for contacts between January 1 and July 16, 1959.)
JZ0DA. via V.E.R.O.N.
KG1AQ. via W6UED, D. P. Dinga, 4221 Wawona Street, Los Angeles 65, California, U.S.A.
KL7DGB. via W1AHQ.
KW6CL. Box 26, Wake Island.
VP7VB. via KV4AA.
VP8EG. via G8KS, " Rivenhall," Holwood Park Avenue, Farnborough, Kent.
VQ8BBB. via VQ8AD, Box 467, Port Louis, Mauritius.
VR3V. via R.S.G.B.
VS9OC. R.A.F. Detachment, Masira Island, B.F.P.O. 69.
ZD1AW. Alf Wilson, Signal Officer, Lungi Airport, Freetown, Sierra Leone.

R.S.G.B. QSL Bureau: G2MI, Bromley, Kent.

Thomas **B.R.S.22249** (R.A.F. Gaydon) heard FQ8AC (09.05, '200), CR7IW (16.40, '550), RA1HP (10.50, '520), VQ6GL (14.50, '520) and ZD2CKH (17.00, '580) on 'phone and RI8AAZ (10.40, '300) and VQ3HD (19.20, '000) on c.w

The band really opened up on October 17 when **G3AAE** worked UL7HB (09.25, '304), VK9SB (10.50, '185), VK6MU (11.25, '240), YN1WW (13.35, '346), KZ5GK (15.40, '480), VP9EH (15.48, '480), ZS8I (16.20, '264) and sundry JA, RA9, VQ2, ZC4 and ZS stations on 'phone. But really the queer noises some of those " R " stations try to pass off as 'phone!

21 Mc/s

Soon to share its load with 28 Mc/s this band has again carried the heaviest volume of 'phone, and some really excellent DX has been reported.

GW3AHN flourished his 25 watts before BV1USB (12.40, '060), JZ0HA (14.42, '055), ST2AR (18.15, '025), VK9RO (12.00, '050), VK9XK (10.20, '075), VP7VB Danny (19.55, '025), VP8ET (19.27, '050), VQ3HD (18.40, '050), ZC5AF (15.30, '100) and 4S7FJ (17.45, '030) on c.w. and HV1CN (13.00, '200), MP4QAO (17.55, '230), VK9DB (14.35, '135), VK9NT (13.40, '150), VK9RO (13.05, '160), VP4MM (20.45, '210) and VS5GS (16.00, '180). **G3FPQ** (Elstead) used 'phone for DU1AP (13.07), FB8XX (16.40, '150), FB8ZZ (17.00, '200), FK8AU (12.50, '150), FU8AC (10.10, '145), KC6JA (14.00, '230), K5EDM/KG6 (12.30, '290), K6QPG/KW6 (11.03, '280), VS5GS (15.17, '190), VP8CX (21.50, '150) and ZS8O (17.57, '195). David now has his VK6GU beam 42 ft. high and finds that the extra height makes all the difference.

Jim Kirk **G6ZO** (Edgware) as usual stuck to c.w. on which mode he worked CE9AF Antarctica (20.00, '085), PZ1AU (21.30, '050), JZ0HA (13.00-15.00, '035), DU1FM (13.00, '075), VK9RO (12.15, '030), WG6AIL (13.00, '115), and DU7SV (13.45, '110). Art Trigell **G3JAF** (Lymington) talked to VP8EP (19.30, '160), VP8DW (20.05, '140), VQ3HD (18.52, '089), VS9OM (14.50, '150), FB8CO (18.16, '190), OH0NC (15.15, '120) and UA9AA (07.16, '185).

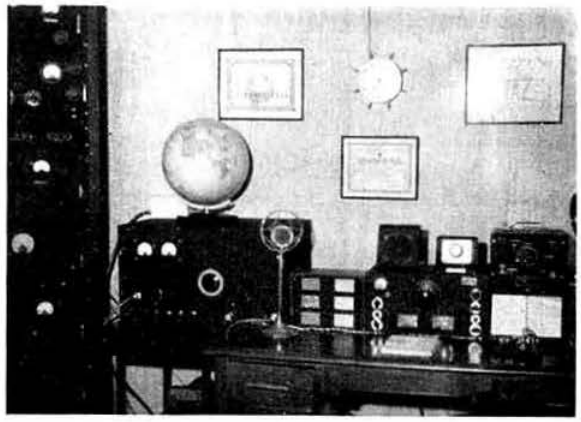
Frank Hooson **G3YF** (Chingford) also concentrated on 'phone on this band reporting XW8AL (15.20, '225), VS5GS (15.30, '160), ZC5AF (15.45, '160), DU6MK (14.15, '155), KR6HS (14.00, '160), DU6IV (14.30, '165), 9M2GA (14.35, '160), VK9AA (14.30, '150), FB8CD (15.45, '190), KC6JA (13.45, '100) and 9M2FX (14.20, '198). **G3MVV** used 'phone for VS9OM (17.47, '105), VU2RG (17.10, '107), VP5EM (18.28, '200), DU6IV (15.00, '155) and 9M2GA (14.15, '100).

Leslie Hill **G8KS** (Farnborough) reports 'phone signals from FM7WN (20.45, '190), DU1SA (15.35, '210), 9M2FX (15.40, '220), UL7HB (17.45, '140), MP4DAA (17.30, '240), VS5GS (15.55, '225), FB8CM (16.10, '120), KC6JA (14.10, '270), VP8DH (19.00, '115), VP8EG (19.15, '110), ZC5AS (16.20, '155) and CR5SP (17.25, '170) while on c.w. he found LA3SG/P (19.15, '060), VP8EP (19.00, '100), VP8EG (20.00, '110), VK9BS (12.37, '090) and VK9RO (12.53, '105).

Les Hamilton **GM3ITN** (Clydebank), a most welcome newcomer to the column but an old hand with the DX, reports 'phone from VS5GS (17.20, '200), XE3AX (17.20, '200), VS9AZA (20.05, '200), VS9OM (20.10, '200) and 4X4LH Jerusalem (18.20, '200). **G3JZK** used the key to contact XZ2TH (15.30, '050) and the 'mike for DU1SA (14.50, '200), FB8ZZ (15.45, '150), VS9OM (13.23, '040) and FB8XX (15.40, '160). **G3AAE** (Coulsdon) used c.w. for VK9RO (11.10, '038), VS9OM (15.45, '022), VP8EG (20.00, '105), CE9AF (20.25, '042) and UG6AW (14.42, '058) with FB8CD (15.52, '160) on 'phone.

14 Mc/s

Old faithful, happily relieved of the unwelcome summer short skip, continues to yield rare DX from all corners of the world—sometimes simultaneously.



This is the rig at G3AAE. From right to left on the table are the BC221 frequency meter, HRO receiver and transmitter running 150 watts input to parallel 807s. On the extreme left, part of the rack containing the modulator and power supplies can just be seen. The small box next to the speaker on top of the HRO is the beam indicator for the Mosley TA33JR three element tri-band beam, which is mounted on a 40 ft. tower at the bottom of the garden.
(Photo by G3LXP)

G6ZO worked FP8JC (22.00, '050), LA4CG/P (18.00, '030), YA1AO (21.30, '095), CR9AH (13.45, '030), ZS3AC (18.30, '060), FB8CE (18.15, '325), XW8AI (20.00, '080), FB8ZZ (17.30, '040), FR7ZD (17.30, '090), LU9ZV (22.15, '080), LU1ZC (06.15, '100), FK8AW (06.30, '325), VP8BK (21.15, '005), HH2AR (21.15, '090), VR1B (06.15, '005), FO8AB (07.15, '330), PJ2MC (22.00, '085), VP3ER (22.15, '050), ZD1AW (07.30, '050), DU1DR (19.30, '070). LA1VC/G (20.00, '065), VP8EP (20.30, '055), KG1DT (07.00, '325), FB8XX (17.15, '035), VR2DA (07.00, '080), MP4TAE (07.00, '090). FK8AI (07.15, '020), XW8AJ (20.00, '010), VS9OC (20.45, '060), JZ0DA (20.45, '060), FO8BB (07.00, '040), VK9NT (20.00, '050) and VK0CC (08.15, '005). Marvellous!

Ron Lindsay **GM3KTZ** (Glasgow) reporting for the first time used c.w. to work FP8BG (18.55, '010), LA5AD/P (00.10, '040), VP8DL (21.40, '065), VP7BT (20.30, '065), UJ8AC (17.20, '090) and VQ3CF (19.47, '040). **G3JZK** also on c.w. worked CR4AX (23.50, '080), HH2LD (01.00, '070), VP3ER (01.30, '070) and VS9OM (15.45, '080).

G3YF reports FR7ZD (17.10, '085), FB8ZZ (18.30, '040), FY7YG (00.15, '030), ZD7SA (23.30, '052), BV1US (14.30, '058), XW8AI (14.20, '045), YA1AO (17.20, '095), 3A2BT (09.50, '040), VK0RT (09.30, '080), CP3CA (00.45, '060), CR9AH (23.10, '035), UM8KAA (15.10, '065), ZL3VB (07.15, '100), KM6BI (07.40, '045), VP2LO (23.00, '025), bogus PK4LB (15.00, '045) and FB8XX (16.45, '040). **G8KS** logged s.s.b. signals from OY7ML (18.26, '300), HV1CN (18.24, '300), 9K2AM (18.09) and YS1O (23.50, '315), and c.w. from ZL3VB (06.59, '100) and FB8XX (16.18, '040).

GM3ITN found KG6AAY (16.15, '005), UI8KAA (17.45, '005), JZ0DA (09.00, '050), OY8RJ (23.10, '032) and UM8KAB (22.30, '050) on c.w. **G3KSH** keyed with OR4RW Antarctica (21.00, '025), LU9ZV (22.55, '070), VS9OC (19.50, '010), ZS3AC (22.40), VP8DL (22.50, '025), ZS7RT (10.40, '030) and PI1VKL (22.40).

G3IFB reports FO8BB (07.25, '050), OX3P (17.04, '060), KC4USV (23.54, '090), LA3SG/P (18.40), CR7IZ (18.05), KG6LF (19.15), VS9OM (23.05, '050), UA1KAE Antarctica (09.00, '080), VK9XK (20.43, '005), KV4BQ (23.30, '030), VP8BK (19.37, '010) and VK0CC (08.10, '010). **G3AAE** worked ZL3VB Chatham Island (07.44, '100), KR6GY (21.05, '060), VP8DL (21.12, '024), OR4RW (21.35, '022),

Continued on page 165)

National Field Day 1959

N.F.D. Shield	**Gravesend Amateur Radio Society (G6VC/P and G3IEW/P)**	**1530 points**
Runners-up	**Stourbridge and District Group (G3BMY/P and G8GF/P)**	**1527 points**
Scottish N.F.D. Trophy ...	**Aberdeen Town Group (GM6IZ/P and GM3OEJ/P)**	**896 points**
Bristol Trophy	**Brentwood Group (G3FKH/P)**	**719 points**
Best 1·8 Mc/s Score	**Stourbridge and District Group (G3BMY/P)**	**278 points**
Best 3·5 Mc/s Score	**Chelmsford Group (G4VF/P)**	**401 points**
Best 7 Mc/s Score	**Gravesend Amateur Radio Society (G3IEW/P)**	**566 points**
Best 14 Mc/s Score	**Wirral Radio Society (G8BM/P)**	**528 points**
Best 21 Mc/s Score	**Stamford and District Group (G3FUR/P)**	**348 points**
Best 28 Mc/s Score	**Croydon Group (G4QK/P)**	**47 points**

British Isles station contributing most points to competitors GM3OM/P

Overseas station contributing most points to competitors ZC4JA/P

THE Summer of 1959 will be remembered as the best for many years but it did not produce fine weather for all N.F.D. stations. High winds and plenty of rain on the Saturday added to the problems of getting the aerials up and the gear operating by starting time. However, all reports were of an enjoyable weekend and reasonably good conditions.

Gravesend Amateur Radio Society again are to be congratulated on their top-scoring efforts—good team work and equipment and a lot of contest " know-how " put them just in front of Stourbridge and District Group. With such close scoring the slightest lapse by an operator can make all the difference in the final placings. Whilst both Gravesend and Stourbridge suffered slightly, a number of entrants further down the table lost many points due to logging errors but generally the standard was on the same level as previous years. Operating seems to have been good but several entrants commented on the incorrect and misleading use of " break-in " procedure.

The scoring system, whilst acceptable on the higher frequency bands, came in for some criticism on the three lower frequency bands. In particular the more remote stations find they are at a serious disadvantage on 1·8 and 3·5 Mc/s while they do not find 7 Mc/s too productive of contacts.

Equipment

Equipment in use on the receiving side shows the HRO still top favourite with the AR88 in second place. A number of stations used home-built receivers and found them very satisfactory. Power supplies and aerial masts seem to have caused more trouble this year than any other piece of equipment. Several entrants reported generator trouble and considerable ingenuity appears to have been used overcoming the resulting difficulties. South Manchester Radio Club carried out an almost complete overhaul of a petrol engine charging set on the site and had it working up to the end of the contest! Cambridge, Stroud, Slough, Stamford and District and Scunthorpe groups all suffered during the contest from power failures while Mitcham group could not use their generator because of noise.

Comments

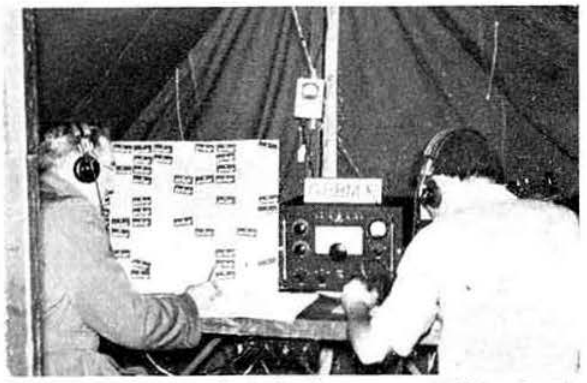
Once again, entrants made many valuable comments and suggestions, amongst them the following:

" A real pleasure to hear and QSO so many British Empire stations "—**Stourbridge.** " Would like the same weather for next year "—**Norwich.** " It rained more or less steadily and blew half a gale until we had the tents up "—**Bristol.** " Outlying stations are at a severe disadvantage until scoring is on a mileage basis "—**Plymouth.** " With one exception, our nearest contact was 250 miles south "—**Banff, Moray and Nairn.** " . . . aerial mast broke on erection in a high wind but an extending loader was quickly erected in its place "—**Slough.** " As a trial next year 1·8 Mc/s should be omitted "—**Lothians.**

In conclusion, the Contests Committee found the numerous check logs of very great assistance in checking the entries. Thanks are therefore due to DL1YA, EI9F/P, G2DC, G2VV, G2HDU, G3WP, G3LJC, G3LLM, G3LTN, G6ZT, GI5TK, GM3OM, OK1AEH, OK1WR, OK1KTI, OK1NL, OK2QR, OK3UH, PY1BDU, SP8UU, SP9EU, UA3FH, VK2HV, VQ2CZ, VQ4KPB, YU1SF, ZB1AQ/P, ZC4GF, ZC4BN/ZC4JA, ZC4LL/P and 5A2CV.

Barry Souter (G3NAP), right, and Alan Whitmore of Coventry Group refuelling the " genny " during National Field Day 1959.

GM3EZO at the key with GM3KHH logging at GM3KHH/P during National Field Day, 1959. On the left is the Wireless Set No. 62 used for 3·5 and 7 Mc/s. A Minimitter converter which was not in fact used sits on top of the CR100 receiver used for Top Band only. The 1·8 Mc/s transmitter is in the foreground to the right of the picture on top of an el-bug.



Wirral Radio Society made the leading score on 14 Mc/s using the call-sign G8BM/P.

Coulsdon and Purley Group's G3DVQ/P. On the left, B.R.S.21452 with G3DVQ on his right.

(Photo by G3IIE).

FB8XX (17.33, '032), ZD1AW (19.04, '042), ZS3T (21.07, '050) and VS9OC (20.20, '058) on the key.

B.R.S.2292 heard MP4DAA (19.00), DU1OR (19.30), HH2AR (20.00), HH2Y (21.00), VQ6LQ (20.00), 4S7FJ (21.00), VS9OC (20.00) and ZS3AC (21.00). **B.R.S.22249** reports CE9AH Antarctica (20.22, '070), DU1OR (20.06, '070), HH2HB (21.01, '020), OY7ML (20.30, '100), OR4RW (20.07, '045) and VS9OC (20.55, '120) all on c.w. **B.R.S. 20317** logged LA5AD/P (19.56, '062), CE9AF (20.30, '065), DU1OR (20.30, '080), KG6AAY (13.40, '015), VP8EP (20.23, '050), HH2LD (22.18, '005), HH2AR (22.27, '010), CR7IZ (20.07, '070) on c.w. and KR6AF (13.30, '342) and PY7SC (20.27, '308) on s.s.b. Bill rejoices in having received confirmation of his report to JT1AA which means that he has proved his reception of signals from all zones.

7 Mc/s and Below

The 40 and 80m bands are again awakening from their summer slumbers, while the 160m DX gang are licking their lips in anticipation of the good things just round the corner—in time, not distance!

G3IMV has really gone to town on 7 Mc/s and on c.w. worked VS9OM (22.17), VQ3HD (18.42), OH2XK/0 (20.44), LU6DBQ (22.07), 3A2BT (20.48), VQ4GQ (21.09), UL7LE (21.40), UB5WF/UL7 (18.26), KR6VA (21.30), VK3YD (19.57) and sundry UA9, 4X4, ZC4, etc.

G3FPQ also found VS9OM (00.00, '010), while **G8KS** logged KH6NKA (05.50, '050), CO2WC (05.55, '002) and LA2JE/P (16.35, '005).

B.R.S.22249 reports LU1FBX (23.25, '020) and UD6UI (23.35, '030), **B.R.S.20317** heard TF5TP (23.00, '004) and VS9OM (22.45, '010) and **B.R.S.2292** heard LU5HC (22.00), KP4ANJ (06.00), ZB2A (21.00), UF6AA (20.00) and most districts pf the U.S.A.

Reports on 3·5 Mc/s DX worked are again few but include VQ4HT (18.34), OH2YV/0 (22.16), VS9OM (23.50, '502), and ZC4IP (23.24) reported by **G3IMV, G8KS,** and **B.R.S. 20317. G8DI** (Liverpool) worked ZL4IE (06.40, '530).

There is still a wide gap where the Top Band reports should be, but it is hoped that once the band really opens to DX members will report their activities and results.

Transatlantic Top Band Tests

From **W3RGQ**, via **B.R.S.18461** (Scarborough), comes news of the transatlantic Top Band tests which commenced on October 23. A group of W, K and VE stations are looking for contacts with amateurs in Western Europe, Africa and Central and South America from 05.00 to 06.30 G.M.T. on Sundays. North American stations operate between 1805 and 1822 kc/s and listen for replies between 1827 and 1835 kc/s and from 1800 to 1803 kc/s.

W, K and VE stations are operating a similar schedule on Saturdays from 04.30 to 05.30 G.M.T. with the intention of working stations in the Near East, Russia and surrounding countries.

Illustrations

During these past few months it has been possible to brighten these pages with some very interesting photographs, but this can only be done if a regular flow of photographs is forthcoming from members. The fact that the shack of G3AAE is illustrated this month indicates that the photographic cupboard is pretty bare! If you have any photographs which are suitable for reproduction in print please submit them: if required they will be returned immediately after the blocks have been made. Photographs of both home and overseas stations and personalities are welcomed, being of equal interest to readers.

And now all that remains is to say farewell for another three weeks with the wish that all the best DX comes back first call. Cheerio for now.

C Q C Q C Q

R.S.G.B. INTERNATIONAL

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Radio Society of Great Britain

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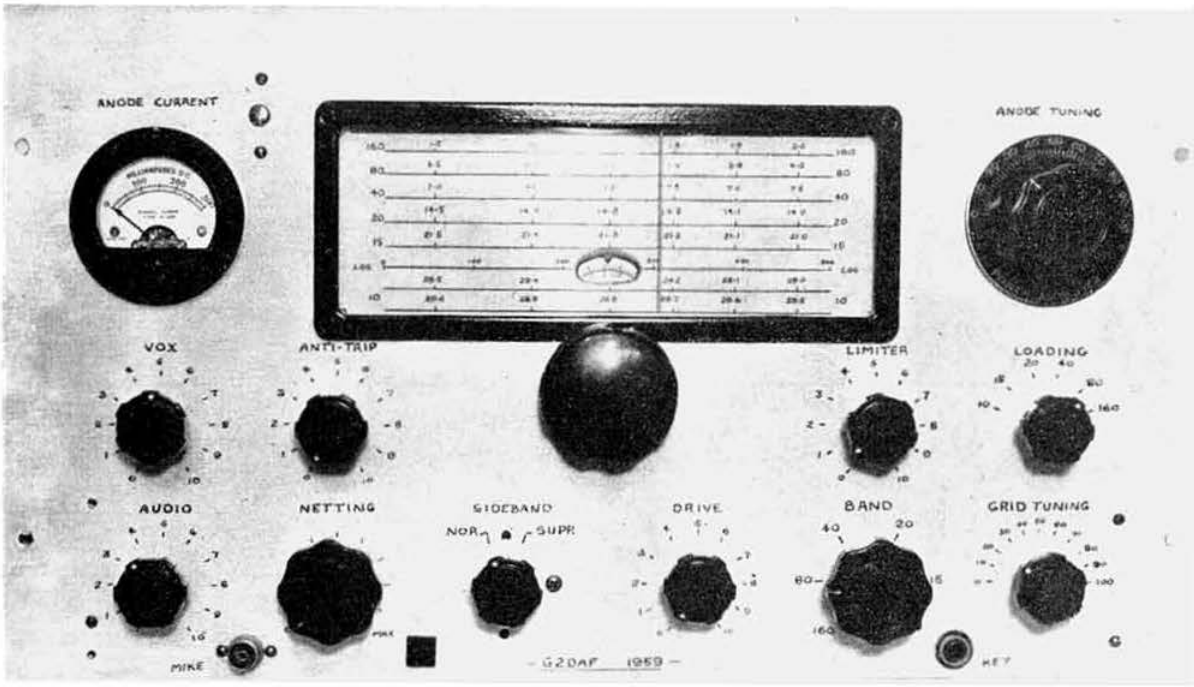
Further details from P. A. Thorogood (G4KD),
35 Gibbs Green, Edgware, Middlesex.



The G2DAF S.S.B. Transmitter

Full Coverage on Six Bands with 50 watts Peak Output
Part 2.–Construction

By G. R. B. THORNLEY (G2DAF) *

ALTHOUGH it is now more than ten years since the single sideband suppressed carrier method of transmission was first used for amateur communication, there is still very little information and few designs dealing with the construction of " all band " s.s.b. transmitters.

Last month it was shown that the most satisfactory solution to the problem of converting a single sideband signal—initially generated at a low level and at a fixed frequency—up to the required output throughout six amateur bands is to use a tunable output on a neutral frequency, and feed this into the final conversion mixer.

Throughout the transmitter—from the carrier frequency to the h.f. end of the 10m band—the multiplying ratio of each mixing process has been kept within the safety factor of 6 : 1. By the correct choice of mixing frequencies, and by the use of two multiplying processes before the final conversion mixer it is possible to obtain a 500 kc/s coverage on six bands with a greater degree of unwanted mixer product suppression than is normally provided. This has been achieved—not by a multiplicity of tuning controls, or by the use of ganged tuned circuits—but in fact with a simplification of the number of circuits requiring to be tuned to three in number including that of the v.f.o.

* *5 Janice Drive, Fulwood, Preston, Lancashire.*

The limiter control on the front panel is for use with some future experiments with peak limiting.

Circuit Description

As may be seen from Fig. 1, a crystal oscillator V3A is used to feed a cathode follower V3B for netting and carrier insertion. The anode of V3A has a resonant circuit with a low impedance winding feeding the diode balanced modulators. Audio input from the crystal microphone is amplified by the V1 and V2.

Muting voltage is fed to the grid of V4 when the transmitter is in the " off " position to prevent audio feed back which would be caused by the microphone picking up the receiver output and feeding a sideband signal through the transmitter. The VOX (voice control) input is taken off the audio amplifier at the anode of V2A.

The double sideband suppressed carrier output from the balanced modulator is fed into a two section half lattice crystal bandpass filter. This filter will not be discussed in detail: it can be made as shown or it can be modified to suit personal requirements. Recommendations for crystal spacing and the amount of suppression to be obtained with one or two sections have already been given and there is plenty of literature available on the subject. The final choice is purely a personal one.

The low level filter output is amplified by V4 (a 6AM6 operating in class A) and fed into an r.f. transformer feeding the grids of the balanced mixer (V5) in push-pull, which also

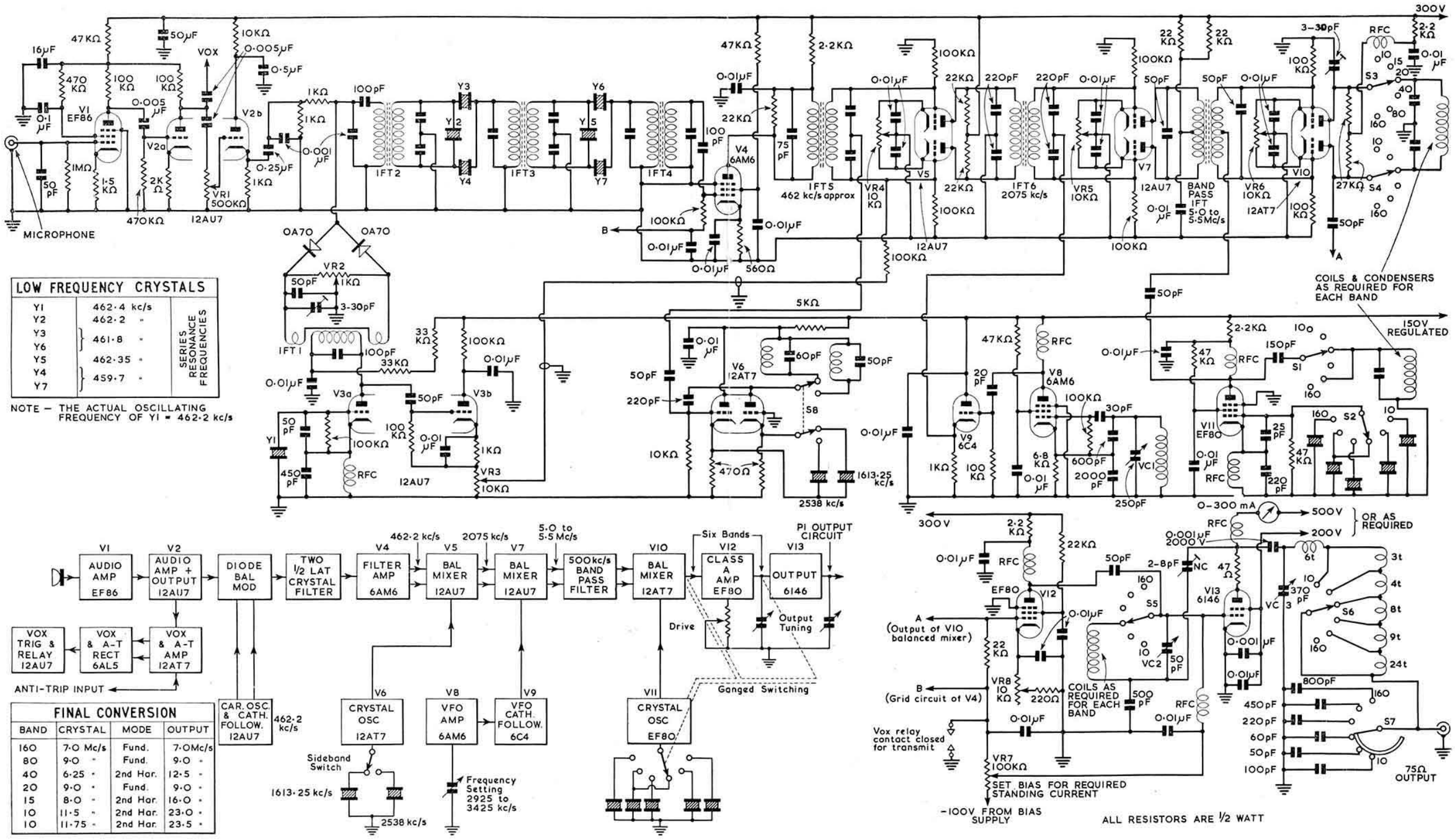


Fig. 1. Block and circuit diagrams of the G2DAF single sideband transmitter. Details of the voice control unit are given in Fig. 2 on page 170.

receives the parallel heterodyning input from the crystal oscillator (V6).

If a different carrier frequency to the one specified is used it will be appreciated that the sideband switching crystals will have to be selected accordingly, with a spacing between them of twice the carrier frequency. This need not be exactly right and will be satisfactory if within half a kilocycle.

V6 is arranged in a Butler oscillator circuit and this allows the two crystals to be " pulled " to the exact frequency to maintain zero beat when switching sidebands by adjustment of the dust cores in each of the two anode tuned circuits. The design limitation is a first intermediate output frequency of 2075 kc/s $\pm$ 25 kc/s; any combination of crystals can be used so long as this limitation is met. If the filter gives *low* sideband output the *highest* frequency sideband switching crystal will give the required final sideband output in each band. If the filter gives *high* sideband output the *low* frequency crystal will give the correct final output in each band. If required, the switching can be eliminated and one crystal only used. The transmitter automatically gives the correct sideband—low for 160, 80 and 40m and high for 20, 15 and 10m. Switching is included only as a useful operating convenience.

After the first mixing process the output at the first intermediate frequency of 2075 kc/s is combined with the input from the v.f.o.—tunable over the range 2925 to 3425 kc/s—in the mixer V7 to give an output into the wideband coupler at the second i.f. of 5·0 to 5·5 Mc/s. This tunable sideband output feeds into the conversion mixer V10 which receives the heterodyning input from V11, an EF80 fundamental or second harmonic crystal oscillator, two banks of the band change switch (S2 and S1) selecting the required crystal and anode coil. The third and fourth banks of this switch, S3 and S4, connect the mixer anodes to the required pre-tuned coil for each band. The sideband voltage developed across this circuit is amplified by the EF80 class A amplifier V12, the gain of which is controlled by the drive control potentiometer VR8, and fed to the grid of the 6146 output valve. This circuit is switched by the remaining bank of the band change switch to the required coil for each band and peaked for maximum drive by the panel control GRID TUNING. Correct matching of the p.a. valve anode to the 75 ohm output is obtained by means of a pi-network tank circuit. The anode tuning condenser is brought out to a panel control while the fixed output loading capacities are selected by the pi tank selector switch (S7). The values have been calculated to present the correct load to the 6146 on each band.

Netting

Sideband contacts frequently take place in the form of " nets " where a number of stations using automatic voice operated break-in (VOX) or " press to talk " operation remain in contact on the same spot frequency. The ability to be able to " net " accurately (tune the transmitter to zero beat the incoming signal) is therefore a prime requirement of sideband operation. This has to be possible while the receiver is operating and the transmitter is muted (i.e. not feeding into the aerial).

In the interests of stability all oscillators in the transmitter are fed from a 150 volt stabilized supply and left running continuously; muting is applied as a negative voltage to the grids of the EF80 class A amplifier (V12) and the 6146 p.a. valve (V13). When the netting control (VR3) is advanced the carrier oscillator output is fed into the first mixer grid and a voltage output at the final operating frequency is developed in the anode circuit of the conversion mixer. This is of sufficient amplitude to feed through the self capacity of the following valves and through the aerial changeover relay into the receiver input in the form of an S5 to S9 signal.

Automatic Voice Control

The final operating convenience of VOX with receiver muting and loudspeaker anti-trip facilities is also included. This is optional and if not required can be replaced by a " press to talk " switch (hand or foot operated). The circuit is shown in Fig. 2.

Part of the amplified audio input from the microphone is tapped off the anode of V2A, fed into the VOX GAIN potentiometer VR9, and thence into a voltage amplifier (V14A). It is then

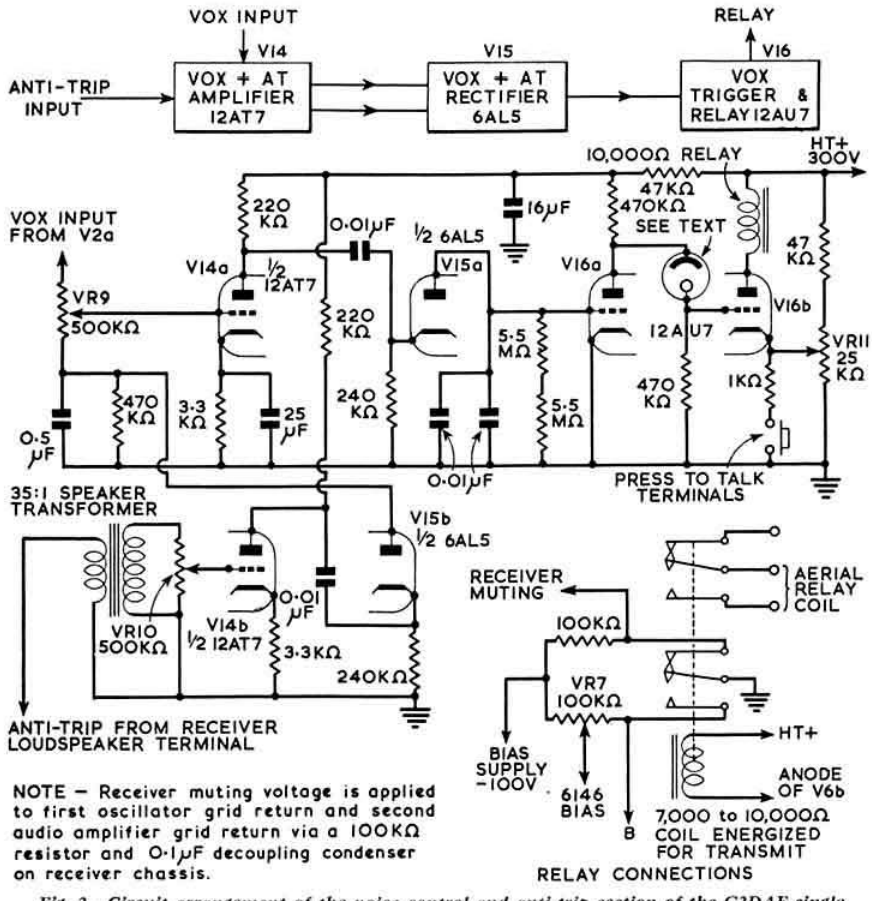


Fig. 2. Circuit arrangement of the voice control and anti-trip section of the G2DAF single sideband transmitter.

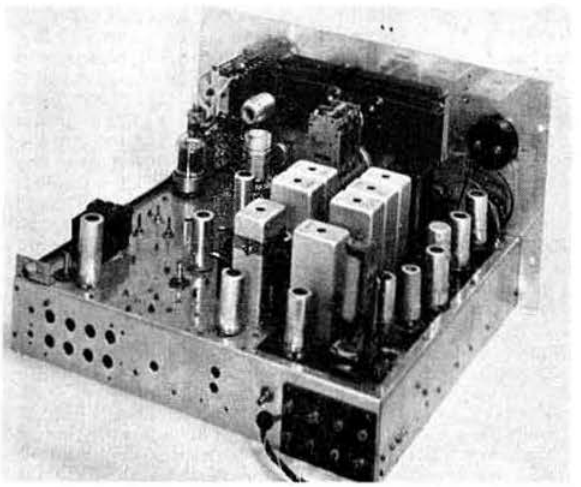
rectified by one half of V15A, a 6AL5. Speech into the microphone developes a negative going voltage at the diode anode of sufficient amplitude to carry the grid of the "trigger" valve V16A to cut-off. The anode rises in potential to that of the h.t. supply line, strikes the neon and takes the grid of V16B positive causing the valve to conduct and close the relay.

Because the microphone cannot differentiate between the operator's voice and the sound from the loudspeaker the receiver output could trip the VOX control and switch on the transmitter. To prevent this happening an anti-trip section is included in the voice control system. The audio output voltage from the receiver loudspeaker terminals is fed through an impedance step-up transformer and a potentiometer control VR10 (AT GAIN) into the anti-trip voltage amplifier V14B and thence to the rectifier V15B, the output of which is applied as a negative going potential to the grid of the second VOX voltage amplifier V14A. This holds down the gain of the VOX amplifier to a level (pre-set by the AT GAIN control) which cannot be overcome by sound from the loudspeaker. This method provides a smooth, non-critical setting.

With the VOX GAIN and the AT GAIN controls set at suitable values the relay should close instantly with speech into the microphone, but hold over for an amount determined by the amplitude of the VOX voltage charging the 0·02μF capacitor in the grid circuit of the trigger valve (V16A) and the RC time constant of the discharge through the two 5·5 Megohm resistors in series. The anti-trip potential is applied to a point in the amplifier chain remote from this charging voltage; therefore the VOX hold over between words is not affected by adjustments to the AT GAIN control. The neon may be any small indicating type. The one used across the output transformer in Command receivers or any similar miniature type with a striking voltage of between 50 and 100 volts is suitable.

COIL WINDING DETAILS

Function	Freq. or Band	Winding	Tuning Capacity	Former
Sideband Oscillator	kc/s 1613·25 2538·0	100 T 36 s.w.g. enam. 85 T 36 s.w.g. enam.	60 pF. 50 pF.	Aladdin ½ in. dia. with dust core.
Conversion Oscillator V11	Mc/s 7·0 9·0 12·5 16·0 23·0	30 T 28 s.w.g. enam. 16 T 24 s.w.g. enam. 16 T 24 s.w.g. enam. 10 T 24 s.w.g. enam. 9 T 24 s.w.g. enam. spaced one turn	20 pF. 60 pF. 25 pF. 25 pF. 15 pF.	Aladdin ½ in. dia. with dust core.
VFO (V8)	2925 to 3425 kc/s	16 T 24 s.w.g. enam. spaced to ¾ in. long.		Ceramic former ¾ in. dia., 1½ in. long.
Conversion Mixer Anode (V10)	160m 80m 40m 20m 15m 10m	110 T 36 s.w.g. enam. 70 T 28 s.w.g. enam. 25 T 28 s.w.g. enam. 16 T 24 s.w.g. enam. 14 T 20 s.w.g. enam. spaced one turn. 12 T 20 s.w.g. enam. spaced one turn.	200-200 pF. 75-75 pF. 75-75 pF. 50-50 pF. 60-60 pF. 30-30 pF.	"AR88" polystyrene, ½ in. dia., with dust core.
Output Valve Grid (V13)	160m 80m 40m 20m 15m 10m	62 T 32 s.w.g. enam. 66 T 28 s.w.g. enam. 30 T 24 s.w.g. enam. 14 T 22 s.w.g. enam. 9 T 20 s.w.g. enam. spaced one turn. 8·5 T 20 s.w.g. enam. spaced one turn.	150 pF. padder across coil.	"AR88" polystyrene ½ in. dia., with dust core.
Output Valve Pi-network coil (V13)	160m 80m 40m 20m 15m 10m	24 T 22 s.w.g. enam. close wound. 9 T, 8 T, 4 T, 3 T } 20 s.w.g. spaced one turn; continuous winding tapped as indicated. 6 T 16 s.w.g. spaced to 1 in. long.		Ceramic former, ¾ in. dia. 2¼ in. long. Ceramic former, 1⅜ in. dia., 2¼ in. long. Ceramic former, 1⅛ in. dia., 2 in. long.



Three-quarter view showing the pi-network output components and two bank ceramic switch positioned underneath the anode tuning capacitor and between the main coils. The potentiometer on the rear apron is VR4. The right-hand channel contains the audio and VOX stages with the carrier oscillator, IFT1, carrier balance control and the three filter i.f. transformers. IFT5 and IFT6 are in the adjacent section. IFT6 can be seen in the centre foreground with the sideband switching crystals on either side, held firmly in place by a clip round the screening can.

Component Considerations

The only components that require special attention are the i.f. transformers which can be any standard type with permeability tuning covering the range selected for the filter. IFT1 in the anode circuit of the crystal oscillator is required to have an impedance step down to the diode modulator. The secondary winding is removed by cutting through with a sharp knife and replacing with a 50 turn winding of 32 s.w.g. enamelled wire tightly coupled by scramble winding 25 turns each side of the primary coil. This new winding is connected to the original leading out wires but the original fixed tuning capacitors are removed.

IFT2, IFT3 and IFT5 are modified by removing the original capacitors tuning the secondary winding and replacing them with two capacitors of double the value in series to provide the centre tap.

The i.f. transformers recommended for use as IFT6 and IFT7 are the type with one central former and dust core adjusting rods at each end of the screening can. In both cases the original windings and shunt capacitors are removed. For the 2075 kc/s transformer (IFT6), the primary and secondary each comprise 60 turns of 36 s.w.g. enamelled wire close wound with ¾ in. spacing between the adjacent ends of the two windings. The required capacitors are two 220 pF across each winding.

In order to obtain the required coupling with balanced push-pull windings and a satisfactory double humped response curve the 500 kc/s wide bandpass transformer IFT7 is bifilar wound. The primary and secondary coils are each 30 turns centre tapped. The spacing between the two coils is critical and must be ¼ in. Mark two lines on the former ⅛ in. either side of centre. Draw off about 6 ft. of 28 s.w.g. enamelled wire from the reel and fold this on itself to give one double length of 3 ft. The winding is then commenced against the line previously marked, and 15 double turns are close wound side-by-side on the former,

and temporarily held in position with a small piece of Cellophane tape. Cement the winding in position with low loss coil dope and allow to dry. Snip off the surplus wire to leave the ends some convenient length (about 3 in.) and remove the enamel insulation. With a continuity meter identify the ends of each winding and connect the *beginning* of one winding to the *end* of the other winding to form the centre tap. Repeat for the second coil, starting from the second mark on the former and winding from this towards the end. High stability silver mica (not ceramic) capacitors of 50 pF each are required to resonate the coils and can be fitted inside the transformer and soldered to the appropriate connecting tags. (Both primary and secondary windings are in the same direction.)

A good quality variable capacitor (VC1) should be used to tune the v.f.o. The type selected should preferably have ceramic insulation and a two bearing rotor. The capacitor used in the original exciter is a two gang type of 125 pF capacity each section, strapped in parallel.

The 10 K ohm balancing potentiometers VR4, VR5 and VR6 in the mixer cathodes carry d.c. only and may be wire wound, but the 1 K ohm carrier balancing potentiometer (VR2), across the diode modulator, must be non-inductive with a carbon track. A standard 2 K or 3 K ohm control can be brought down to the correct value by " pencilling " the track with a soft lead writing pencil. In order to get a smooth control of carrier insertion (which would be required when operating A3) the netting control VR3 should also be non-inductive with a carbon track.

The germanium diodes used in the balanced modulator should be a matched pair.

Construction

The chassis, made of 16 s.w.g. aluminium, is standard rack and panel size; 17 × 16 × 3 in. deep with a 19 × 10½ in. panel. Elaborate screening is not necessary, but it is advisable to keep the audio section away from the r.f. and to screen the filter to prevent the capacity of adjacent components and wiring by-passing the filter crystals and degrading the effective suppression. A central screen running from front to back helps to stiffen the chassis and affords anchorage for the cross screen between the conversion mixer anode coils and those in the grid circuit of the 6146 output valve. Chassis layout is given in Fig. 3. Dimensions are not given because individual layout will vary, depending on the size of the available components.

The filter crystal holders are soldered directly across the lead out wires of the associated i.f. transformers.

The Yaxley two pole changeover switch bank, S8, must be mounted reasonably close to the anode coils of the oscillator valve (V6) and the two crystals. This switch is supported by a small L-shaped bracket bolted to the side screening so that the switch is immediately underneath the 2075 kc/s i.f.t. (IFT7), between the core adjusting screw and the valveholder for the second mixer (V6). A clear space should be kept down the centre of this section to clear the switch control rod which has to be brought out to the front panel. The crystal holders are mounted through the chassis on either side of IFT7. Any mechanical movement of these crystals would cause the output frequency to change. They are held firmly in position by small sponge rubber pads and a clip passing round the screening can of IFT7.

The v.f.o. coil, wound on a ceramic former, is underneath the chassis where it is protected from rising heat from the valves.

A small aluminium bracket 2½ × 3 in. with a ½ in. lip supports the end of the main band switch assembly and the two banks, S1 and S2. The switch rods supporting the three banks S3, S4 and S5 pass through the 8½ in. cross screen: it will be found easier to make up this assembly before the screen is bolted in position. The five banks used are standard Yaxley ceramic, each single pole six way.

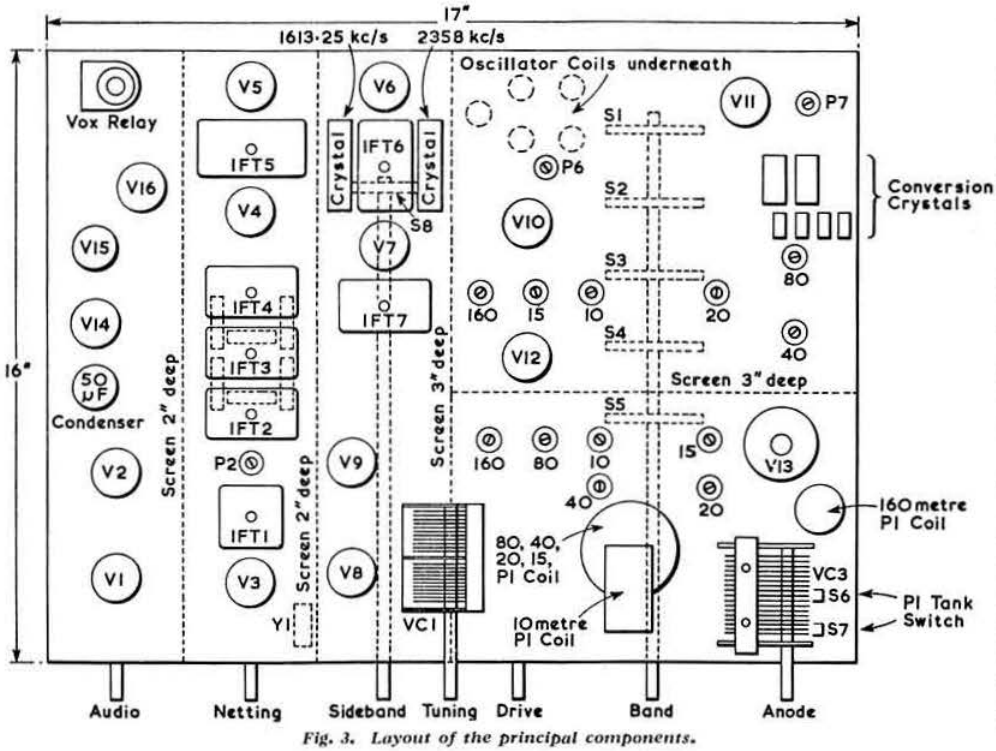


Fig. 3. Layout of the principal components.

The ½ in. diameter polystyrene coil formers used for each band in the conversion mixer anode (V10) and the driver grid (V12) sections are " surplus " AR88 spares. These may not now be available but similar formers with dust cores can be obtained from Denco (Clacton) Ltd.

A balanced bridge circuit is used for neutralization of the 6146 and this requires that the cold ends of the six coils and the rotor plates of the 50 pF tuning capacitor be taken to a common bus-bar which is insulated from earth and by-passed with a 500 pF capacitor. The supporting bracket for the tuning capacitor (VC2) is an L-shaped piece of aluminium measuring 2½ × 3 in. with a ½ in. lip. A 1⅛ in. diameter hole is cut through this bracket with a chassis punch and covered with

(*continued on page 176*)

Annual Report of the Council

THE Report which follows deals with the work of the Society during the year ended June 30, 1959, and covers major items only. A Supplementary Report covering the period from July 1, 1958, to the early part of December 1958, was submitted to the Annual General Meeting of the Society held on December 12, 1958.

Membership

For the third year in succession an increase in membership can be recorded. The net gain amounted to 445 compared with a net gain of 600 last year and 393 in the previous year. Losses were recorded for the years between 1949 and 1956.

As at June 30, 1959, the total membership was 9,540, compared with 9,095 a year earlier.

The following table compares the number of members in each grade over the past three years:

Grade	June 30 1957	June 30 1958	June 30 1959	Gain or Loss over previous year
Corporate Members:				
Licensed	5490	5898	6349	+ 451
Not Licensed ..	2710	2768	2592	— 176
Associates	295	429	599	+ 170
	8495	9095	9540	+ 445

As in former years an analysis has been made to ascertain the number of members who were licensed as at June 30, 1959, to operate an Amateur Radio station. This shows that at that date 71 per cent of all Corporate members held a transmitting licence against 60 per cent a year earlier.

Details of the analysis, compared with the two previous years, follow:

Grade	June 30 1957	June 30 1958	June 30 1959
Corporate Members, Licensed			
Country	3429	3575	3840
London	1149	1224	1266
Overseas	912	1099	1243
	5490	5898	6349
Corporate Members, Not Licensed			
Country	1764	1788	1645
London	764	792	747
Overseas	182	188	200
	2710	2768	2592
Associates	295	429	599
	8495	9095	9540

London members are those who reside within a radius of 25 miles of Charing Cross. For convenience the whole of Surrey is also included in the London Region.

As at June 30, 1959, 8,463 United Kingdom Amateur (Sound) Licences were in force compared with 8,190 at the same date last year and with 7,546 a year earlier. As at June 30, 1959, 745 Mobile and 93 Television licences were in force compared with 577 and 67 respectively a year earlier.

At the same date 66 per cent of United Kingdom licence holders were members of the R.S.G.B. which is approximately the same figure as last year.

The Council notes with some concern that the total number of non-transmitting members in London and the Provinces has fallen by an appreciable amount. It is known that many of those who held B.R.S. numbers a year ago are now licensed, but the number of newcomers to the Society has not been sufficient to make good the number who have obtained a licence. The number of licensed members has increased by about 450 since last year, while the number of Associates has increased by more than 25 per cent (from 429 to 599), an indication of the appeal which Amateur Radio has for technically-minded young people.

Mr. J. D. Kay continued his personal membership drive with great success. During the three years to June 30, 1959, he enrolled 268 new members.

Affiliated Societies

As at June 30, 1959, 142 Societies were in affiliation with the R.S.G.B., an increase of 12 over the previous year.

R.S.G.B. Bulletin

If a dispute in the printing industry had not occurred during June 1959 the number of pages in Volume 34 of the Society's Journal would have reached the substantial total of 608. In point of fact Volume 34 equalled the previous volume insofar as the number of pages were concerned, namely 592.

The technical standard remained consistently high throughout the year with many contributors making their debut. The Bevan Swift Memorial prize for the most meritious contribution was awarded to Messrs. R. C. Hills (G3HRH) and P. M. Elton (G3GOZ) for their description of a Cubical Quad Array for 144 Mc/s. The Ostermeyer Trophy was awarded to Messrs. P. J. H. Matthews (G3BPM) and H. T. Rogers (G3NHR) for their description of a Versatile V.F.O./Transmitter which was considered to be the best piece of home-constructed equipment described in Volume 34 of the R.S.G.B. BULLETIN. The Norman Keith Adams Prize was awarded to Mr. C. H. F. Hubbard (G5OX) whose article " A 72 Mc/s V.F.O. for 144 Mc/s Drive " was judged to be the most original contributed to that Volume.

Monthly commentaries were contributed by Mr. F. G. Lambeth, G2AIW (*Four Metres and Down*) and by Mr. S. A. Herbert, G3ATU, and, from March 1959, by Mr. J. D. Kay, G3AAE (*The Month on the Air*).

Technical Topics contributed at intervals by Mr. J. P. Hawker (G3VA) again attracted much attention and a good deal of interest.

Revenue from advertisements showed an increase over the previous year, a further indication of the prestige value of BULLETIN advertising. National Publicity Co. Ltd. are thanked for their continued efforts to attract new business.

International Matters

The Supplementary Report recorded that the Society was represented at the International Amateur Radio Union Region I Conference held in Bad Godesberg, Germany, during July 1958. Since that time Headquarters has maintained close liaison with European Societies on a variety of matters of common interest and in particular on the question of frequency proposals for the Geneva Radio Conference. The Council were pleased to learn that the General Secretary had been unanimously nominated to lead the I.A.R.U. team of observers to the Conference.

During the year the Society was invited to nominate a member to serve on the U.K. Government delegation to the Conference. The Council nominated Mr. L. E. Newnham,

B.Sc. (G6NZ), and his nomination was subsequently accepted by the Postmaster General.

Further information regarding the Conference will be given in the Supplementary Report which the Council plan to issue later in the year.

Subscription Rates

After considering the accounts for 1957/8 the Council decided that the subscription rate payable by overseas members (21/-) was insufficient to meet present day expenses. The new subscription rate of 28/- came into effect on April 1, 1959. It will be noted, from an earlier section of the Report, that the number of overseas members increased substantially during the year.

Finance Act 1958

During the year the Society was approved for the purposes of Section 16, Finance Act 1958. The circumstances and manner in which members may make claims to income tax relief in accordance with Section 16 were set out in the June 1959 issue of the Society's Journal.

Mullard Award

The first recipient of the Mullard Award (the terms and conditions of which were reported upon in the Supplementary Report) was Mr. Peter Odell (G3MUM) of Redcar, Yorkshire. In the view of the Mullard Award Committee, Mr. Odell had rendered outstanding personal service to the community by his own example of fortitude and courage.

Society Publications

During the year new editions of *A Guide to Amateur Radio* and the *R.S.G.B. Amateur Radio Call Book* appeared. Sales of both publications were very satisfactory.

Mr. J. P. Hawker (G3VA) was responsible for the preparation of material for the former whilst Mr. W. J. H. Kempton (G8LN) and Headquarters staff prepared and checked the information published in the *Call Book*.

The Council regrets that for a variety of reasons work in connection with the new edition of *The Amateur Radio Handbook* had not advanced sufficiently far to permit publication during the year under review.

The Publications Committee, under the Chairmanship of Mr. D. A. Findlay, D.F.C. (G3BZG), invited Mr. B. W. F. Mainprise, B.Sc. (G5MP), to prepare the manuscript of *A Guide to the Radio Amateurs' Examination*. It is hoped to publish this new title prior to the May 1960 examinations.

Technical Committee

During the year the Technical Committee, under the Chairmanship of Mr. H. A. M. Clark, B.Sc.(Eng.), M.I.E.E. (G6OT), prepared a general specification for amateur transmitters, the purpose of which was to provide members with a guide to the selection and design of transmitting equipment. Mr. David Deacon (G3BCM) was primarily responsible for drafting the specification which was subsequently published in the Society's Journal.

The decision of the Committee to draw up a Technical Development Programme will enable the Society to offer to the membership, through the medium of the R.S.G.B. BULLETIN, descriptions of advanced designs in many new fields. Work on parametric amplifiers has already commenced. Mr. G. M. C. Stone (G3FZL) is the leader of the Technical Development Sub-Committee.

The Council records its thanks to the Committee for the valuable assistance it rendered to the Society in general and to the editorial staff in particular.

TVI/BCI Committee

The TVI/BCI Committee under the Chairmanship of Mr. Deacon (G3BCM) continued to give advice to members on television and broadcast interference problems.

Members of the Committee met representatives of the Post Office in January 1959 when matters relating to the administrative and technical aspects of interference investigation were fully discussed. A statement, setting out the current practices of the Administration on various points concerning policy, the interpretation of rules and regulations, licence claims, etc., was subsequently published in the Society's Journal. The Council places on record its thanks to the members of the Committee for the energetic manner in which they have pursued their difficult tasks.

V.H.F. Committee

The V.H.F. Committee under the Chairmanship of Mr. W. H. Allen, M.B.E. (G2UJ) has continued to correlate the activities of members interested in the v.h.f., u.h.f. and s.h.f. bands.

The Society's 2m Beacon Station GB3IGY was operated successfully until the end of the International Geophysical Year (December 31, 1958) by Mr. K. E. S. Ellis (G5KW) who continued to operate the station until March 31, 1959.

Realizing the value of a permanent 2m beacon station operating from a particularly favourable site, the Committee, through the President, made an approach to the B.B.C. with a view to obtaining permission to install equipment on the site of a B.B.C. station. The Corporation very kindly acceded to the request of the Society.

The Council records its thanks to the B.B.C. for its assistance and to the V.H.F. Committee for the many valuable contributions made by members during the year. Especial thanks are recorded to Mr. Ellis for his work in connection with GB3IGY.

The V.H.F. Committee, in association with the London U.H.F. Group, organized the Fifth International V.H.F. Convention in London on May 30, 1959. Representatives of the Committee were present at the Scottish V.H.F. Convention held in Paisley on March 14, 1959.

Contests Committee

The Council records its warm appreciation to the Contests Committee (Chairman, Mr. D. A. Findlay, D.F.C., G3BZG) for again organizing, judging and reporting upon a wide range of contests. The volume of the work undertaken by this Committee can be judged from the fact that it met some 20 times during the year.

The Council is particularly pleased to report that the 21/28 Mc/s Telephony Contest attracted good support from abroad as did the annual B.E.R.U. Contest. National Field Day loses none of its appeal with the passing of the years, in fact in many parts of the United Kingdom interest is on the up-grade due to the support given to the event by many newly-licensed amateurs. The 1959 event was won by the Gravesend Amateur Radio Society for the second year running with Stourbridge close behind. The Bristol Trophy was won by Brentwood and the Scottish N.F.D. Shield by Aberdeen.

Mr. D. A. G. Edwards (G3DO) won the 21/28 Mc/s Contest for the third year in succession while Mr. J. T. Hepburn (VE7KX) recorded his first win in the High Power B.E.R.U. Contest. The Low Power event was won once again by Mr. J. C. van Wyk (ZS6R). Mr. F. Johnstone (G3IDC/4S7) won the Receiving Contest.

Exhibition Committee

The Committee under the Chairmanship of Mr. C. H. L. Edwards (G8TL) were responsible for organizing the Society's stand at the 1958 Radio Show, Earls Court, London, and at the Second Annual R.S.G.B. Radio Hobbies Exhibition held in the Old Hall of the Radio Horticultural Society, London. The latter exhibition, organized by Mr. P. A. Thorogood (G4KD), opened on November 26, 1958, by Air Marshal Sir

Raymund Hart, K.B.E., attracted an attendance of about 10,000 during the four days it was open.

The Council records its thanks to the Exhibition Committee and to all others who helped to ensure that the Society's participation in the Exhibition was successful.

R.A.E.N.

The Network is now authorized to work in conjunction with the Police, as well as with the British Red Cross Society and the St. John Ambulance Brigade. Numerous exercises were carried out during the year and on one or two occasions members were called upon to assist in an emergency.

The R.A.E.N. Committee has again been responsible for the organisation of the Network. The thanks of the Council are recorded to Lt.-Col. A. C. Dunn (G2ACD) who was Chairman of the Committee up to January 1959, and to Dr. A. C. Gee (G2UK) who succeeded him in that office. Especial thanks are also recorded to Mr. E. A. Matthews (G3FZW) who has carried out his duties as Honorary Secretary with great diligence and enthusiasm.

The Network now has more than 1,000 members on its books.

QSL Bureau

During the year the Society's QSL Bureau handled a very large number of cards. The QSL Manager (Mr. Arthur Milne, G2MI) was greatly assisted by a team of sub-managers who are warmly thanked for their services.

The Council found it necessary during the year to draw the attention of certain I.A.R.U. Societies to the fact that QSL cards for United Kingdom amateurs should, in accordance with an agreement between Member-Societies, be sent only to the R.S.G.B.

Certificates and Awards

The Council records its thanks to Mr. George Verrill (G3IEC) who has continued to perform a most valuable service to the Society in his capacity as Honorary Certificates Manager. Mr. Verrill checked and dealt with a very large number of certificate claims during the year.

Intruder Watch

The Council records its thanks to the R.S.G.B. Intruder Watch under the direction of Major Dennis Haylock (G3ADZ). The Watch has continued to monitor the exclusive amateur bands and to report to Headquarters on the presence of persistent intruders in those bands. Regular reports have been sent to the G.P.O. and it is known that appropriate action has been taken on a number of occasions.

Films and Tapes

During the year Mr. C. W. Austin (B.R.S.22019) assumed responsibility for the Society's library of films, succeeding Mr. L. S. Gillham who had undertaken the duties of Film Curator for the previous five years. Mr. F. H. Lawrence (G2LW) continued his very valuable service as Curator of the Society's Library of Recorded Lectures. The Council records its thanks to Messrs. Gillham, Austin and Lawrence.

Several new recorded lectures were added to the library during the year but high production costs prevented additions being made to the film library.

British Isles Two Metre Band Plan

Ever since the 2m band was allocated to U.K. amateurs, frequencies between 144 and 145·5 Mc/s had been shared with the aeronautical services on a non-interference basis. Unfortunately from time to time cases of interference between amateurs and aircraft had been reported to the Post Office by the Air Ministry and at the suggestion of the Council a meeting of interested parties was held at R.S.G.B. Headquarters in November 1958 to discuss the situation which had arisen. As a result of that meeting the G.P.O. offered to make the allocation from 145 to 146 Mc/s exclusively amateur, provided changes were made to the 2m Band Plan to discourage the use of the lower half of the band in those parts of the country where it was considered interference between amateurs and aircraft would be most likely to occur.

In order to preserve the original intention of the Band Plan (which was introduced in 1949), while incorporating the changes necessary to meet the wishes of the authorities, a comprehensive reorganisation of the frequency allocations between zones was found to be necessary. The new Plan was approved by the Post Office and the Air Ministry and became operative from March 1959.

The Council expresses its thanks to those who assisted in the negotiations and to all who have implemented the new Plan.

Four Metre Band

As the result of a request from the Society, the Post Office agreed that U.K. amateurs should continue to use, subject to annual review, the band 70·2-70·4 Mc/s (except within 50 miles radius of Jodrell Bank). Tests were conducted with a view to eliminating or reducing the radius of the restricted area but no conclusive results had been achieved prior to June 30, 1959.

R.S.G.B. News Bulletins

Without fail R.S.G.B. News Bulletins were transmitted every Sunday throughout the year on frequencies in the 3·6 Mc/s and 145 Mc/s bands. The Council records its thanks to those members who maintained the service with such regularity. Mr. Milne (G2MI) and Mr. Beaumont (G5YV) were the most regular news-readers.

Official Regional Meetings

O.R.M.s were held in Bridlington (September 21, 1958), Aberdeen (October 25, 1958), Edinburgh (October 26, 1958), Blackpool (April 12, 1959) and Bangor, Northern Ireland (May 2, 1959). There was an attendance of nearly 200 (including ladies) at Bridlington, 60 at Aberdeen, 40 at Glasgow, 100 at Blackpool, and 60 at Bangor.

Mobile Rallies

Mobile Rallies were held at Woburn Abbey, Longleat House, Trentham Gardens, Harewood House, and other places. Attendances in excess of 500 were recorded at several rallies.

Lecture Programme

The following lectures were delivered at meetings of the Society held at the Institution of Electrical Engineers:

September 26, 1958	" Broadcasting Aerials." By H. V. Sims, A.M.Brit.I.R.E. (B.B.C.).
October 24, 1958	" Radio Signals from Earth Satellites." By A. W. Nichol, B.A. (Cavendish Laboratory, Cambridge).
November 14, 1958	" Radio Conditions in Antarctica." By Major G. Watson (VP8BP).
January 23, 1959	Presidential Address by Dr. R. L. Smith-Rose, C.B.E.
February 27, 1959	" Recent Developments in the Microwave Field." By K. W. Drummond (Mullard Ltd.).
March 20, 1959	" Single Sideband Techniques." By B. J. Rogers, G3ILI (Bush Radio Ltd.).

Aerial Mast Appeals

During the year the Minister of Housing and Local Government allowed appeals by three members who had

been refused permission by their local authority to erect an aerial mast or tower in their respective gardens. In each case Headquarters offered advice and in one case the Council made an *ex-gratia* payment of £15/15/- towards the costs of the appeal.

Radio Amateurs' Examinations and Slow Morse Transmissions

Two examinations were conducted during the year. The first, by the G.P.O. in October 1958, resulted in 107 (63·5 per cent) passes and 62 failures. The second, by the City and Guilds of London Institute in May 1959, resulted in 657 passes (59 per cent) and 445 failures. The high number of entries for this examination (1,102) was attributed to the fact that the exemption scheme no longer operates.

The thanks of the Council is extended to all members who assisted in the organization of classes of instruction in preparation for the various examinations.

The Council also records its thanks to the many members who transmitted regular slow Morse practices for the benefit of those aspiring to qualify for an Amateur (Sound) Licence. Mr. C. H. L. Edwards (G8TL) was again responsible for the overall organization of the slow Morse practices.

Vice-President

In January 1959, the Council was pleased to confer the dignity of Vice-President on Mr. W. H. Allen, M.B.E. (G2UJ), in recognition of his services to the Society over a period of many years.

Lord Fraser

The Council was pleased to offer congratulations to one of the Society's Past Presidents (Col. Sir Ian Fraser, P.C., C.B.E., M.P.) on becoming a Life Peer.

Silent Keys

The Council records with deep regret the passing of a number of members including A. W. Knight (G2LP), H. A. Savage (G2SA), A. B. Boswell (G3DA), A. M. J. Ley (G5DM), B. Whitehouse (G6WI), J. Hanson (G6YU), W. H. Winchcombe (G6ZH), H. M. Tee (G8DC), D. A. MacQueen (GM4PW) and J. W. Kyle, D.F.M., A.F.M., B.E.M. (GM6WL).

Council and Committee Meeting Attendances

Name	Council Meeting Attendances		Committee Meeting Attendances	
	Actual	Possible	Actual	Possible
Allen, W. H.* ..	5	6	10	14
Bartlett, H. A. ..	8	13	5	8
Caws, N.	12	13	8	9
Edwards, C. H. L.	13	13	23	24
Ellis, K. E. S.† ..	7	7	7	9
Findlay, D. A. ..	10	13	14	18
Green, W. J. ..	13	13	1	1
Hammans, R. H.*	0	6	–	–
Hicks-Arnold, F.*	3	6	0	2
Hum, J. H. ..	10	13	7	9
Ingram, E. G. ..	8	13	1	1
Kay, J. D.† ..	7	7	–	–
Metcalfe, W. R.	11	13	–	–
Milne, A. O. ..	13	13	–	–
Mitchell, H. W. ..	0	13	–	–
Newnham, L. E.	12	13	16	18
Scarr, W. A. ..	12	13	4	7
Smith-Rose, R. L.†	3	7	–	–
Wade, P. H.‡ ..	3	4	–	–
Williams, A. C. ..	11	13	1	1
Yeomanson, E. W.	13	13	23	23

* Retired from the Council, December 31, 1958.
† Elected to the Council, January 1, 1959.
‡ Elected to the Council, March 1959.

During the year 13 Council and 48 Committee Meetings were held, all but two at R.S.G.B. Headquarters.

The G2DAF S.S.B. Transmitter (continued from page 172)

a piece of sheet paxolin, through which the capacitor supporting bush is mounted.

The pi-network output inductance is made up of three separate units, each on its own ceramic former. The 160m section on a $\frac{3}{4}$ in. diameter former is mounted near the edge of the chassis, with a $1\frac{3}{8}$ in. diameter former (ex-Command transmitter) containing the tapped 24 turn winding for 80, 40, 20 and 15m on the other side of the 370 pF anode tuning capacitor and almost immediately over the line of the band-change switch. For the 10m band a six turn $1\frac{1}{8}$ in diameter self-supporting coil is positioned at right angles above the tapped inductance.

The two bank ceramic switch (S6 and S7) selects the required tapping on the p.a. coil and the correct value of output loading capacitor. It is mounted immediately below the anode tuning capacitor (VC3) on the front panel. Alternatively this switch could have been positioned immediately above the main band change shaft and ganged to it with two sprocket pulleys and a chain drive. It was not, however, considered worth going to this trouble just for the sake of one knob control. S6 is a standard Yaxley type SP six way switch but S7 must be the continuously shorting type. (The switch bank used by G2DAF was a standard wave-change type with a back plate to short out the coils not in use. It was taken from a surplus Bendix receiver and modified.) Should this requirement present any difficulty a standard non-shorting switch can be used, provided that the values of loading capacitors are modified as follows: 10m—100 pF; 15m—150 pF; 20m—200 pF; 40m—450 pF; 80m—900 pF; 160m—1,700 pF. The pi-network values have been calculated for a 75 ohm output impedance and a load impedance of 2,500 ohms.

The heterodyning crystals in the final conversion section are adjacent to the oscillator valve V11. The 11,501 and the 11,750 kc/s crystals are the 10X type and are used to cover the two 500 kc/s sections of the 10m band. Only one holder is wired to the switch—the other is used as stowage. When it is required to use the other section of the band the crystals are pulled out of the holders and changed over.

The VOX relay is mounted on a flexible rubber shock mount. This makes for very quiet operation and ensures that the mechanical noise cannot be fed back through the chassis into the audio valves.

* * *

The alignment of the transmitter will be described in Part 3.

A tense moment at Ilford Group's 80 and 160m station, G3LRE/P during N.F.D. 1959. G3HDZ is the operator.
(Photo by G3NMR).

Society News

London Lecture Meeting

THERE was an attendance of nearly 100 at the Institution of Electrical Engineers on Friday, October 16, 1959, when Mr. T. D. Towers, M.B.E., M.A., B.Sc., Grad.Brit. I.R.E., Chief Development Engineer of Newmarket Transistors Ltd., lectured to the Society on "Practical Applications of Transistors for the Radio Amateur."

The chair was taken by Mr. L. E. Newnham, B.Sc., G6NZ (Immediate Past President) who had the support of Messrs. Norman Caws, G3BVG (Honorary Treasurer), J. Douglas Kay, G3AAE (Member of Council), and J. W. Mathews, G6LL (Vice-President).

A vote of thanks to the lecturer was proposed by Mr. A. D. Gay, G6NF (Past President).

R.S.G.B. Recorded Lecture Library

THE latest addition to the Society's library of recorded lectures is "Some Aspects of Space Travel," by Council Member W. A. Scarr, M.A. (G2WS).

A complete list of lectures available on loan to R.S.G.B. Groups and Affiliated Societies may be obtained from Headquarters on request. Applications to borrow recordings should be made to the Hon. Librarian, Mr. F. H. Lawrence (G2LW), 78 Venner Road, Sydenham, London, S.E.26, as far in advance as possible.

Radio Teletype

THE Council has informed the Post Office that the Society will raise no objection to the use by U.K. amateurs of radio teletype (RTTY) but has recommended that the system should not be permitted in the band 1·8–2 Mc/s.

It is understood that the Post Office is prepared to authorize individual amateurs to use radio teletype and that the position will be reviewed in the light of experience in 12 months' time.

Facsimile

THE Council has also informed the Post Office that the Society will raise no objection to the use by U.K. amateurs of the system of transmission known as facsimile provided it is restricted to the bands 420 Mc/s and higher.

Mr. W. J. Green

THE address of Mr. W. J. Green (G3FBA), who is the QSL Bureau Sub-Manager for call-signs in the series G3EAA-HZZ, is 8 Lee Road, Blackheath, London, S.E.3.

Receipts

RECEIPTS for subscriptions paid by cheque, bankers' order or postal order are not now issued unless specially requested. Receipts are drawn, however, and kept on file at Headquarters for six months.

Enquiries Regarding Bulletin Articles

MEMBERS who write to the authors of BULLETIN articles are asked to enclose stamped addressed envelopes if they require replies.

R.S.G.B. Bulletin

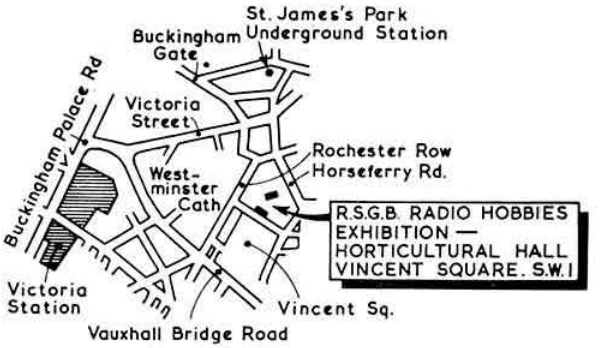
THE November issue of R.S.G.B. BULLETIN is due to be published on or about November 26. The closing date for copy for the December issue, to be published on or about December 18, will be November 22.

Held Over

DUE to pressure on space, a number of technical and topical items have been unavoidably held over.

R.S.G.B. International Radio Hobbies Exhibition

THE R.S.G.B. International Radio Hobbies Exhibition will be held at the Royal Horticultural Society's Old Hall, Vincent Square, London, S.W.1 from Wednesday,



November 25 to Saturday, November 28, 1959. The Exhibition will be open from 11 a.m. to 9 p.m. each day. The accompanying sketch map shows the position of the Royal Horticultural Society's Old Hall.

In the Home Constructors' section the accent will be on practical demonstrations. The Exhibition station will again operate under the call-sign GB3RS.

An outstanding attraction will be a working display of world famous communications receivers, while exhibitors will be showing many new products for the first time.

T. E. Goldup, C.B.E., M.I.E.E.

IT is with great regret that we record the death of Mr. T. E. Goldup on October 6, 1959. Mr. Goldup was a member of the board of Mullard Ltd. and a very good friend of the Society for many years. It was under his sponsorship that the Mullard Award came into being a few months ago.

Mr. Goldup joined the Mullard Company in 1923 from the Signal School, Portsmouth, where he had been engaged on thermionic valve research for the Admiralty. Later he assisted in organizing the Mullard valve development laboratories.

In addition to a distinguished career in the Mullard organization, Mr. Goldup was chairman of the Ministry of Supply College of Electronics at Malvern and served on committees of the Radio Industry Council and other bodies. He was awarded the C.B.E. in 1954 and was President of the Institution of Electrical Engineers from 1957-58.

A Memorial Service was held at the Queen's Chapel of the Savoy in London on October 28, 1959.

Silent Key

W. TITTERINGTON (G5MU)

Mr. W. Titterington (G5MU) of Dorchester, Dorset, whose death occurred on September 22, 1959, will be especially remembered by Old Timers for several interesting articles which he contributed to the *T. & R. Bulletin* during the middle 1920s. Mr. Titterington was one of the first to suggest grinding crystals from "pebble" lenses. Publication of his article sparked off a run on optician's all over the country.

For several years Mr. Titterington held the office of County Representative for Dorset but recently, following serious illness, he had been unable to take an active interest in Society affairs.

Sympathies are extended to his relatives and close friends.

Representation 1960-61

A COMPLETE list of Corporate Members who have been nominated without opposition to serve as Regional or Town Representatives will appear in the December issue.

Ballot

It will be necessary to conduct a Ballot for the election of a Regional Representative in Region 4.

The names of the nominees for the office are set out below:

Dr. E. S. G. K. Vance (G8SA)*
Mr. F. C. Ward (G2CVV)

* *Present R.R.*

Voting

Corporate Members resident in Region 4 are invited to record their vote in favour of one of the above candidates and to forward same on a *postcard* addressed and posted individually to the General Secretary, Radio Society of Great Britain, New Ruskin House, Little Russell Street, London, W.C.1, to arrive not later than November 25, 1959.

Prescribed Form of Voting Card.

Election of Representatives 1960-61

I..... being a fully paid-up Corporate Member of the R.S.G.B. wish to record my vote in favour of ..... as Region 4 Representative.

Signed .....

Call-sign or B.R.S. No.....

Address .....

.....

Glasgow Regional Meeting

THE business session of the Glasgow Regional Meeting held on September 12, 1959, was held at the Christian Institute, Bothwell Street. The Council representatives, Messrs. D. A. Findlay, D.F.C., G3BZG (Penultimate Past President), E. G. Ingram, GM6IZ (Zonal Representative) and J. Douglas Kay, G3AAE (Member of Council) were welcomed and introduced by the Regional Representative, Mr. D. W. R. Macadie, GM6MD.

Questions on many Society matters of topical interest were discussed.

The official dinner was held at the Ivy Restaurant, St. Vincent Street, Glasgow, where guests were welcomed by Mr. Macadie.

A toast to the operators of GB2AC, proposed by the Area Representative, Mr. Tommy Hughes (GM3EDZ), was replied to by Mr. L. Hamilton (GM3ITN).

During the evening the Wyllie Trophy was presented to Messrs. Hardie (GM2FHH) and Shepherd (GM3EGW) and the Maitland Trophy to Mr. W. C. Cecil (GM3KHH).

Entertainment was provided by Alister Fraser (GM3AXX), Mrs. Fraser, Farquhar Fraser, Jack Stewart (GM3AHQ) and Dick Craig (GM3NIF).

Southern Regional Meeting

NEARLY 60 members attended the Southern Regional Meeting at the Royal Hotel, Southampton, on September 20, 1959. The Council was represented by Messrs. L. E. Newnham, G6NZ (Immediate Past President), Norman Caws, G3BVG (Honorary Treasurer) and C. H. L. Edwards, G8TL (Member of Council).

At the business session during the afternoon, at which the chair was taken by the Regional Representative, Mr. M. P. Nicholson (G2MN), the Council representatives answered questions on a wide variety of Society matters.

After tea, there was a film show including *Atlantic Link*, *Atomic Achievement* and a film of the activities of the Southampton Group made by B.R.S. 16075 with a recorded sound-track by G3ION.

The arrangements for the meeting were in the capable hands of the Town Representative for Southampton, G. A. Allcock (G3ION).

South Wales Regional Meeting

THE Region 10 O.R.M. held at the Park Hotel, Cardiff, on September 26, 1959, attracted an attendance of 140 members and friends and was generally considered to be the best yet held in the Region. Strong Council representation was provided by Messrs. W. R. Metcalfe, G3DQ (Executive Vice-President), C. H. L. Edwards G8TL (Member of Council), A. C. Williams, GW5VX (Zonal Representative) and E. W. Yeomanson, G3IIR (Zone C Representative).

Opening the business meeting, the Regional Representative, Mr. C. A. Parsons (GW8NP), welcomed members and particularly those from Region 9. Mr. Parsons conveyed the regret of the General Secretary, Mr. John Clarricoats, O.B.E., G6CL, that his duties at the Geneva Conference prevented him attending the meeting. The R.R. also read a telegram of good wishes received from Mr. Austin Forsyth, O.B.E., G6FO, Editor of the *Shortwave Magazine* and one-time D.R. for the Region.

During the business session, many questions on a wide range of topics were asked, some dealing with Amateur Radio matters in general and others on the administration of the Society itself.

A lecture on "Some Aspects of Forward Scatter" was given by Mr. R. W. White, B.Sc., F.Inst.P., M.I.E.E., of the Microwave Division of the Post Office Radio Research Laboratories.

A vote of thanks to the R.R. for arranging the meeting was proposed by Mr. Bernard Randell (GW3ALE). In his reply, Mr. Parsons acknowledged the great help he had received from Mr. D. Green (GW3MRI), Mr. V. Bartlett (GW5BI) and all those who had worked so hard to arrange the hotel rooms for the meeting.

Displays of equipment for the radio amateur were arranged by K.W. Electronics Ltd., Mr. J. N. Walker (G5JU) of Stratton & Co. Ltd. (Eddystone) and Daystrom Ltd. (Heathkits).

The donors of gifts in the raffle, and to whom most sincere thanks are offered, were as follows:

Jackson Bros. (London) Ltd., Daystrom Ltd., Stratton & Co. Ltd., Mullard Ltd., E.M.I. Sales & Service Ltd., Dubilier Condenser Co. Ltd., Standard Telephones & Cables Ltd., Enthoven Solders Ltd., McMurdo Instrument Co. Ltd., Cosmocord Ltd., Oliver & Randall Ltd., Multicore Solders Ltd., Egen Electric Ltd., Amphenol (G.B.) Ltd. and Siemens-Edison-Swan Ltd.

CONTESTS DIARY

November 7-8 Second 1.8 Mc/s Contest
(See page 119, September, 1959)

November 21-22 R.S.G.B. 21/28 Mc/s Telephony Contest
(See page 120, September, 1959)

November 21-22 R.S.G.B. 21/28 Mc/s Telephony Receiving Contest
(See page 120, September, 1959)

November 28-30 CQ World-wide DX Contest—C.W. Section
(See page 70, August, 1959)

December 6 OK C.W. DX Contest

Single Sideband

By G. R. B. THORNLEY (G2DAF)*

A CORDIAL welcome to those newcomers to single sideband who have been heard on the 80m band during the summer months. There are too many calls to list individually and it must be very gratifying to the early users of the system to feel that their lead and pioneer work is now steadily gaining more and more new recruits.

Amateur Band Receivers

The writer has for long been of the opinion that with the ever increasing congestion on the amateur bands the limiting factor is now the receiver. TVI and its problems forced attention on to the transmitter and in the majority of cases entailed a complete rebuild utilizing current knowledge and techniques. On the other hand most operators are using a pre-war or a " service surplus " receiver that must have been designed more than 20 years ago. These remarks are general and are not confined to s.s.b. operation only. Put in plain language—for present day amateur band operation *it is becoming more than ever necessary to have a receiver with the maximum possible amount of selectivity.* In practice the limit is set by the operators' requirements and if this is phone working a bandwidth of 2·5 kc/s is about as far as it is possible to go without impairing intelligibility.

This order of selectivity means a new approach in terms of stability and tuning dial coverage. The general coverage receiver is out and the answer is amateur band only.† To see just why, it is interesting to examine what this order of selectivity would mean in terms of pointer movement and tuning knob rotation in relation to two well-known communication receivers—the AR88 and the CR100. These are in common use and are taken as a fair representation of the average. On the CR100, 14,000 to 14,500 kc/s is covered by a ¼ in. movement of the pointer and by 2½ turns of the lowest ratio tuning knob. 2·5 kc/s is therefore covered by 1/80 of one turn. The pointer thickness is equivalent to about 50 kc/s or (at a 3 kc/s spacing) 17 stations. The same pointer movement of ¼ in. covers 28,000 to 29,000 kc/s so that on 10m the tuning difficulties are twice as great as on 20. The AR88D has a 1·5:1 coverage on the three higher ranges so the available bandspread is a little better. With this receiver 14,000 to 14,500 kc/s is covered by a 1 in. movement of the frequency scale and by just short of four turns of the tuning knob. 2·5 kc/s is therefore covered by 1/50 of one turn and by 1/200 in. scale movement. On 10m 2·5 kc/s is covered by 1/100 of one turn of the tuning knob.

A high degree of selectivity cannot be satisfactorily used without a high degree of bandspread; in fact—if possible—not more than 500 kc/s coverage for the full traverse of the dial pointer and the 180° rotation of the tuning capacitor is desirable. If the intention is to improve an existing receiver by putting two or more half lattice filter sections in the i.f. strip to obtain a bandwidth of 2·5 kc/s it can only be used satisfactorily on the lower frequencies where the bandspread and the degree of rotation of the tuning knob are more favourable. The main receiver should then be used as a tunable i.f. and the h.f. bands covered by using crystal controlled front-end converters.

For any amateur with constructional experience and in possession of—or able to borrow—a signal generator the ideal solution is " to have a go " and construct a receiver. Anyone wondering whether the final result will be worth the effort involved is invited to visit the writer's QTH and spend an hour or so at the controls of a home-built receiver with a bandwidth of 2·5 kc/s at the 6db points and 3·7 kc/s 60db down, and to judge for himself. Certainly constructing an amateur band receiver from scratch will entail at least six months' spare time work, but there is no doubt that the reward in the satisfaction, pride of ownership and pleasure of use is likely to be greater than anything ever experienced in any other sphere of amateur activity.

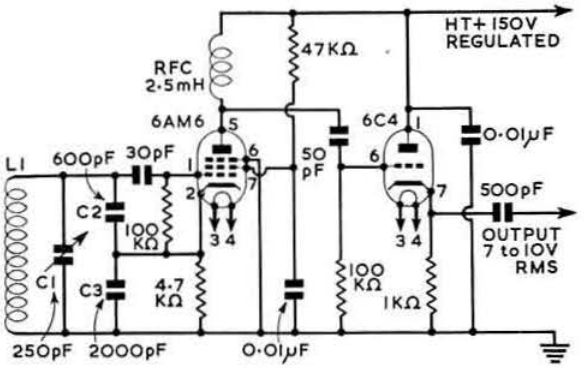


Fig. 1. Circuit diagram of the v.f.o. described by G2DAF. The inductance (L1), tuning capacitor (C1), the 600 pF (C2) and 2000 pF (C3) capacitors may be mounted in a remote screened box and connected to the exciter by two lengths of coaxial cable if remote tuning is required. L1 comprises 16 turns of 24 s.w.g. wire spaced to ¾ in. long and wound on a ⅝ in. diameter ceramic former.

V.F.O. Stability

Perhaps one of the most controversial subjects leading to much discussion by the s.s.b. operators is that of v.f.o. stability. Netting accuracy and the ability to remain on channel without appreciable drift is a prime requirement where a number of stations are in a quick fire QSO. The newcomer to s.s.b. is willing enough to play his part but is often puzzled as to which is the most stable and satisfactory type of v.f.o., and often bewildered by conflicting advice. Remember that " every Mother's baby is the finest that has ever been born." The operator with his own pet version of a v.f.o. is only human if he thinks he has the best possible method and everyone else is plain stupid for not immediately adopting it. So long as there are wide differences of opinion it is not possible to find a common denominator. The writer therefore can only be guided by his own experience and puts forward the following views in the hope that they will be useful.

The so-called Clapp oscillator (series tuned) is not inherently more stable than other types and has the considerable disadvantage of wide variation of output amplitude unless the frequency coverage is restricted to a 100 kc/s or so. As the series tuning capacity is reduced in value the amplitude of oscillation falls, and at low values the oscillation ceases altogether. This can be overcome by shunting the tuning capacitor with some fixed value, generally equal to, or slightly larger than the maximum value of the tuning capacitor used. This results in a more even output but seriously increases the non-linearity of the tuning scale. The Colpitts oscillator does not have these disadvantages and with correct construction and component values can have a very high degree of frequency stability. It lends itself particularly to remote tuning control where the inductance and the tuning capacity are mounted in a screened box at the operating position and connected to

(*Continued on page 180*)

* *5 Janice Drive, Fulwood, Preston, Lancs.*

† The Racal RA.17 receiver is an exception. The design is such that a continuous coverage of 1 Mc/s to 30 Mc/s can be split into 1 Mc/s sections locked to the required harmonic from a 1 Mc/s crystal. The tunable i.f. covers a range of 2 to 3 Mc/s and the dial (film strip scale 60 in. long) is divided into 1 kc/s divisions from 0 to 1000 kc/s.

R.A.E.N. Notes and News

By E. ARNOLD MATTHEWS (G3FZW)*

A NUMBER of W.S. No. 62 have recently been advertised at a slightly reduced price, and members wishing to acquire a compact l.f. band mobile or portable station might care to investigate their possibilities. Smaller and lighter than either the 19 set or the ZC1, the 62 set uses a QV04-7 in the p.a. and should give a better output than the ZC1. The pi-network tank circuit will match any length of wire longer than 4 ft. Power consumption is 5 amp. (maximum) and a 22 a.h. 12 volt accumulator will therefore provide 4 hours' continuous operation. **GM3KHH,** the Northern Scottish Counties Controller, has used one of these sets for some time and has reported that they give good service in mobile use. He has also tested one as a portable and obtained ranges of 15 miles on 160m whilst using it as a (perhaps rather heavy) walkie-talkie. Several reports of good performance as fixed stations have also been received, and whilst the advertised prices seem rather high for this type of surplus equipment a few were offered (and quickly snapped up) in good condition in the Midlands at £3.

Around the Groups

Several exercises are due to take place shortly, and one arranged by No. 4 Region of the B.R.C.S. to cover Essex, Suffolk, Norfolk, Cambridgeshire, Bedfordshire, Hertfordshire and Huntingdon sounds most interesting. Although it covers a large area only two stations have been called for in each county: one fixed station (at each County Headquarters) and one mobile or portable. Control station will be at Chelmsford. Outstations, in the words of the written orders, are to be sent " to, or near to, a suitable house of refreshment about ten miles from County Headquarters in order to facilitate the supply of lunch."

Owing to a scarcity of activity in Bedfordshire and Huntingdon it will be necessary for R.A.E.N. groups from other counties to step into the breach, and **Buckingham** Group has been asked to send stations to Bedford. The object of the scheme is to discover the requirements for providing the area with inter-communication between the County Headquarters mentioned.

The Hon. Secretary will be pleased to hear from amateurs in **Huntingdon** or **Bedfordshire** who are interested in R.A.E.N. and particularly those who would be prepared to undertake a little group organization.

Suffolk Group held a joint exercise with the B.R.C.S. on October 11 with half a dozen mobile and portable stations in the field. This was a short duration scheme, but thirty minutes was allowed for the net to become established, as, although the mobile stations had been previously assigned to locations, fixed stations in the county had in effect merely been asked to report in to the net and be on hand for action as required. This was not as casual an arrangement as it seems, for in actual emergency it is most likely that the mobiles and portables would be required to establish the initial links with chosen fixed stations. Other fixed stations would be required for relay purposes, and it cannot be expected that all members of a group would be instantaneously available for R.A.E.N. activity. On coming on the air —perhaps to find the net organized—operators would report in and stand by to form an immediate reserve. As no controller can have anything like complete foreknowledge of the resources he will have immediately available upon call-out in emergency it is just as well to introduce the factor into exercises when a group is sufficiently organized to be able to overcome difficulties deliberately introduced into training schemes.

However, it is essential that groups undertaking such exercises are in fact capable of taking proper action to overcome various problem situations. If they are not, the exercise will quickly lose momentum and will become a failure. More than one group has disintegrated because the exercises planned went beyond their abilities. It is essential that an exercise be planned in advance to be successful. The degree of success will be gauged by a comparison of the results with the objects of the exercise. Every exercise must have an object, and the object must be clearly and simply stated to all taking part. This, unfortunately, does not always happen, and otherwise admirable exercise orders are sometimes issued giving the complete details of the activity planned, yet completely omitting that vital information—" What we hope to achieve."

A map recently received from G2TG, C.C., **Co. Durham,** shows the locations of nine stations in the county net and these appear to be well spread out. The **Middlesbrough** A.C., G3LXG, plans to liaise with G2TG and is interested in activity on 10m. Other officers or members similarly interested are asked to write to him.

Cheshire Group C.C., G3ERB, has been contacted by the S.J.A.B. County Commissioner and preliminary exchanges of information are taking place.

* *1 Shortbutts Lane, Lichfield, Staffs.*

Single Sideband (Continued from page 179)

the exciter by coaxial cable. The output voltage remains almost constant over a tuning range of 500 kc/s. It is obviously impossible to get a linear change of frequency with tuning capacitor rotation where relatively large values of fixed capacity are used to swamp the tuned circuit, but the linearity of the scale will be within 1·5:1 over a range of 500 kc/s and this is perfectly satisfactory in practice.

Mechanical considerations are just as important as electrical ones, and high stability will only be obtained with careful and rugged construction and the use of top quality components. As a help to the newcomer the following recommendations are given:

(i) The tuning capacitor should have rugged construction and be of the two bearing type with ceramic insulation. (ii) A ceramic coil former with the winding put on under tension should be used. (iii) Associated capacitors must be high stability silver mica. (iv) The tuning coil must be either remote from the main exciter or alternatively under the chassis where it is least affected by rising heat. (v) H.t. and bias feed resistors must be of first class quality, preferably of the ceramic tube type. (vi) The complete assembly and wiring must be mechanically stable. (vii) The dial drive mechanism must be connected to the tuning capacitor with a *flexible* shaft coupler. (viii) The h.t. supply should be from a regulated source of not more than 150 volts. (ix) The oscillator valve should be run at low level and not be required to provide power to the following valve. (It should not be coupled directly into a mixer.) (x) Capacitors and resistors of unknown origin from the junk box should not be used.

The writer's v.f.o. circuit with component values for a tuning range from 3 to 3·5 Mc/s approximately is shown in Fig. 1 on page 179.

G2BVN, who is a member of the Society's Technical Development Sub-Committee, is already using a pair of the new G.E.C. TT21 valves in his linear amplifier and reports highly satisfactory results.

* * *

Reports, news and ideas for inclusion in this feature should reach the author not later than November 18 for inclusion in the December issue.

Regional and Club News

Amateur Radio Club of Nottingham.—Recent events have included a Mullard film show, one of the films screened being *The Conquest of the Atom.* On November 17 a representative of Rolls-Royce Ltd. will give a lecture on "The Application of Electronics to Physical Measurements." Morse practice is held on Tuesdays, and R.A.E. classes on Thursdays at Woodthorpe House, Mansfield Road, Nottingham, commencing at 7.15 p.m. *Hon. Secretary:* E. C. Weatherall, 16 Avebury Close, Clifton, Nottingham.

Amateur Radio Mobile Society.—Since its formation early this year, the society has made steady progress and membership continues to increase each month. The call-sign G3NMS has been obtained for use at mobile rallies and similar functions. The first issue of the society's journal, *Mobile News*, has been published. An A.R.M.S. net is held on 28 Mc/s on Tuesday evenings, commencing at 9 p.m. Details of membership may be obtained from the *Hon. Secretary:* George Storey (G3HTC), 10 Avon Road, Sunbury-on-Thames, Middlesex, or from any member of the Committee: Rowley Shears, G8KW (Chairman), Fred Barns (G3AGP), G. A. Bird (G4ZU), Norman Fitch (G3FPK), Vic Frisbee (G3KVF), John A. Rouse (G2AHL) and Eric Yeomanson (G3IIR).

Bradford Amateur Radio Society.—Three junior members are to give talks entitled "How we started" at the meeting on November 10, while a visit to the Mains Radio Gramophones Ltd. factory is arranged for November 18. A lecture on disc and tape recording will be given by G3KLZ on December 1. A copy of the programme to September 1960 may be obtained from the *Hon. Secretary:* David M. Pratt (G3KEP), "Glenluce," Lyndale Road, Eldwick, Bingley, Yorks. Prospective members are cordially invited to attend meetings which are held at Cambridge House, 66 Little Horton Lane, Bradford, 5.

Bristol.—Nearly 60 members attended the October meeting when John A. Rouse, G2AHL (Deputy Editor, R.S.G.B. BULLETIN) gave a talk on "Mobile Operation," illustrated with colour slides. At the meeting on November 20, E. H. Page (G3HKV) of R.E.E. Telecommunications Ltd. will give a lecture on "Communications and Electronics in Business."

Cheltenham.—In co-operation with Cheltenham Amateur Radio Society the Group manned a stand at the Cheltenham Hobbies Exhibition in September. The h.f. band station was housed in a mock-up attic shack while, close by, N.F.D./R.A.E.N. equipment was operational in a tent. The transmitting aerials, 90 ft. high on the Town Hall roof, consisted of a ZL Special and a 132 ft. centre-fed. A series of three D/F hunts held recently was won by G8ML. *Town Representative:* John J. Yeend (G3CGD), 30 St. Luke's Road, Cheltenham.

Clifton Amateur Radio Society.—At the A.G.M. the following were re-elected: *Chairman*—W. Martin (G3FVG); *Hon. Secretary:* C. Bullivant (G3DIC), 25 St. Fillans Road, Catford, London, S.E.6; *Hon. Treasurer:* N. Moore; *Committee Members:* E. Godsmark (G3IWL), R. Poppi and R. Schilling. An Audio Section to cater for those interested in hi-fi and tape recording has been formed under the guidance of Mr. D. Reed. Arrangements are being made to include v.h.f. and s.w.l. operating positions in the club station. The recent field day was won by G3HZI. A junk sale is to be held on November 13. Meetings are held on Friday evenings at 225 New Cross Road, S.E.14. The clubroom is also open on Sunday mornings and Wednesday evenings.

Cornish Radio and Television Club.—At the October meeting in Redruth a miniature cup was presented to the club in connection with the annual contests for shortwave listeners. G3MYQ answered questions on series gate modulation and a sale of equipment to raise funds for the Cheshire Homes Radio Group, Penzance, was held. Other recent activities have included a visit to Bodmin Beam Radio Station. *Hon. Secretary:* G. Hubber, 9 Cardrew Terrace, Redruth.

Crystal Palace and District Radio Club.—A visit to the Tatsfield Monitoring Station of the B.B.C. proved a great success and members spent a considerable time inspecting receiving equipment for m.f., h.f., v.h.f., and u.h.f. At the meeting at Windemere House, Westow Street, Crystal Palace, on November 14 there will be a lecture on "Civil Defence Radio Communications." Further details of activities may be obtained from the *Hon. Secretary:* G. M. C. Stone (G3FZL), 10 Liphook Crescent, London, S.E.23.

Mitcham and District Radio Society.—The second planning meeting for N.F.D. 1960 will be held at "The Cannons," Madeira Road, Mitcham, on November 11. Recent activities have been a visit to a G.P.O. Telephone Exchange and talks on aerials by G4LS and on the I.G.Y. by G3FZL. On November 6, K. Frankcom will be giving a talk entitled "Round and About with a Camera" while "An Advanced Transmitter Design" is the subject for G. F. Gearing (G3JJG) on November 20. *Hon. Secretary:* D. Johnston (G3NFA), 59 Acre Lane, Carshalton.

North Kent Radio Society.—The society's excellent *Newsletter* reports that two junior members, David Bradshaw and Colin Potter, are trying to interest their schoolfriends in Amateur Radio, and that G3ISX and G3FZL have both given talks—the former on "Aerials and the Amateur" and the latter on "Amateur Radio and the International Geophysical Year." *Hon. Secretary:* D. W. Wooderson (G3HKX), 75 Mount Road, Bexleyheath.

Norwich and District Radio Club.—On November 20, Dr. A. C. Gee (G2UK) is to present a film show, while a demonstration/lecture on S.W.R. will be given by O. J. Russell (G3BHJ), on December 4. The Annual Home Constructors' Contest will be held on December 18. Meetings are held at "The Golden Lion," St. John Maddermarket, Norwich.

Scarborough Amateur Radio Society.—There was a record attendance for a recent talk on the Racal RA17 receiver. The annual on-the-air contest with the York society took place on October 11. Prospective members and visitors are invited to attend meetings on Thursday evenings at Chapman's Yard, Waterhouse Lane, North Street, Scarborough, commencing at 7 p.m. A Junk Sale is held on the first Thursday in each month.

Shipley.—Local members operated GB3SSW during Shipley Shopping Week, working 250 different stations on Top Band, 3·5, 7 and 14 Mc/s. Members interested in the formation of a Shipley Group are invited to contact Denis Hudson (G3BOR), 37 Marlborough Road, Shipley, Yorks.

Stoke-on-Trent Amateur Radio Society.—Meetings are held on Mondays and Thursdays at 8 p.m. at the rear of The Cottage Inn, Oakhill. Participation in the *Short Wave Magazine* Top Band contest will be from the country QTH where a mast and aerial were recently installed. Members took part in the Jamboree-on-the-Air in co-operation with local scouts. G3EHM is giving a series of lectures in preparation for the R.A.E. at the North Staffs. Technical College. *Hon. Secretary:* V. J. Reynolds (G3COY), 90 Princes Road, Hartshill, Stoke-on-Trent.

Tees-side Amateur Radio Club.—At the A.G.M., the following were confirmed in office: *Chairman*—J. B. Harding (G3JYH); *Hon. Secretary*—A. L. Taylor (G3JMO), 12 Endsleigh Drive, Acklam, Middlesbrough; *Hon. Treasurer*— A. E. Moon (G3KBM). Members recently visited the B.B.C's Pontop Pike Television Station. Forthcoming arrangements include a lecture on the panadaptor by G3JMO on November 13 and a tape recorded lecture on November 27 at Settlement House, Newport Road, Middlesbrough, commencing at 8 p.m. The Annual Dinner is provisionally fixed for December 12.

Representation

THE following is an addition to the list of County Representatives published in the December 1958 issue.

Region 2.—North Riding of Yorkshire and that part of the County of Durham to the south of the River Wear from the boundary of the County to Bishop Auckland and Durham and thence south of a line joining Durham, Hetton-le-Hole, and Seaham Harbour:

L. M. Arrowsmith (B.R.S. 19480), 51 Alverstone Avenue, West Hartlepool, Co. Durham.

Vacancies

Vacancies exist for the position of County Representatives for the whole of Northumberland and that part of Durham north of the boundary covered by Mr. Arrowsmith; and Yorkshire East.

A vacancy exists for a Town Representative for West Hartlepool.

Nominations should be made in the prescribed form and sent to reach the General Secretary, Radio Society of Great Britain, New Ruskin House, Little Russell Street, London, W.C.1, by November 22, 1959.

Forthcoming Events

Details for inclusion in this feature should be sent to the appropriate Regional Representatives. T.R.s and club secretaries are reminded that the information submitted must include the date, time and venue of the meeting and, whenever possible, details of the lecture or other event being arranged. Regional Representatives are requested to set out copy in the style used below.

DATES FOR YOUR DIARY

November 25-28.—R.S.G.B. International Radio Hobbies Exhibition, London.

December 11.—Annual General Meeting at Over-Seas House, London, S.W.1.

January 22, 1960.—Presidential Address.

March 11.—London Lecture Meeting at the I.E.E.

April 24.—North Midlands Mobile Rally.

REGION 1

Blackburn.—Fridays, 8 p.m., The Corporation Park Hotel, Revidge Road.

Blackpool (B. & F.A.R.S.).—November 3 ("Technical Topics," John Wells, G3IZG); December 1 ("F.M. Receivers," J. C. Kirkham). Ordinary meetings, Tuesdays, 8 p.m., Squires Gate Holiday Camp.

Bury (B.R.S.).—November 10 (Debate: "QRO v. QRP,") George Hotel, Kay Gardens.

Chester.—Tuesdays, 8 p.m., Y.M.C.A.

Crosby (C.A.R.S.).—Tuesdays, 8.30 p.m., "Colonsay," Crosby Road South, Waterloo, Liverpool, 22.

Liverpool (L. & D.A.R.S.).—Tuesdays, 8 p.m., Gladstone Mission Hall, Queens Drive, Stoneycroft.

Macclesfield (M. & D.R.S.).—November 3, 17, The Bruce Arms, Crompton Road.

Manchester (M. & D.R.S.).—November 9, 7.30 p.m., The Wellington Hotel, Nicholas Croft, High Street, off Market Street.

Manchester (S.M.R.C.).—Fridays, 7.30 p.m., Ladybarn House, 17 Mauldeth Road, Fallowfield.

Preston (P.A.R.S.).—Wednesdays, 7.30 p.m., 145 Hammond Street.

Stockport (S.R.S.).—November 11, 25, 8 p.m., The Blossoms Hotel, Buxton Road.

Wirral (W.A.R.S.).—November 6, 20, 7.45 p.m., No. 4 Hamilton Square, Birkenhead.

REGION 2

Barnsley (B. & D.A.R.C.).—November 27 (Display of members' new equipment), December 11 ("Multiband Beams," by E. H. Eyre, G5KM), 7.30 p.m., King George Hotel, Peel Street, Barnsley.

Cleckheaton (S.V.A.R.S.).—November 11 ("Z Match and the coupling of transmitters to aerials," by a B.B.C. Engineer), November 25 ("Printed Circuits," by Mains Radiograms Ltd.), 7.30 p.m., George Hotel, Cleckheaton.

Leeds (L.A.R.S.).—November 4 (Stereo Demonstration), November 18 (Demonstration of Simple S.W. Superhet), December 2 ("Snag Night,") Swarthmore Education Centre, 4 Woodhouse Square, Leeds 3. November 11, Visit to Spen Valley Amateur Radio Society, George Hotel, Cleckheaton; November 25, Visit to Electron Microscope, Dept. of Biomolecular Structure.

Scarborough (S.A.R.S.).—Thursdays, 7.30 p.m., Chapman's Yard, North Street, Scarborough.

Sheffield.—November 11, 8 p.m., Albreda Works, Lydgate Lane (Exhibition of home-built equipment); December 2, 7.30 p.m. (Annual Dinner), S. and E. Co-operative Stores (Tickets 10/- each).

REGION 3

Birmingham (Slade).—November 6 ("The Real Thing," Lecture/Gram. Recital); November 20 (A.G.M.), 7.45 p.m., The Church House, High Street, Erdington.

Coventry.—November 20, 7.30 p.m., Vine Street Schools.

Sutton Coldfield.—November 12 ("Loudspeakers,") November 26 (A.G.M.) 7.30 p.m., Club Room, Sutton Coldfield.

Stourbridge & District.—November 3, 8 p.m., Brotherhood Hall, Scotts Road. November 20, 8 p.m., "White Horse," Amblecote.

REGION 4

Derby (D. & D.A.R.S.).—November 18 (Film Show); November 25 (Open Evening); November 28 (Annual Trip to London); December 2 (Auction Sale of Surplus Items); December 9 (Open Evening); December 11, (Christmas Party), 7.30 p.m., Room No 4, 119, Green Lane, Derby.

Derby (D.S.W. EXP. S.).—Sundays, 10.30 a.m.; November 19, 26, December 3, 10, 7.30 p.m., Club Room, Mansfield House, Boulton Lane, Alvaston, Derby.

Leicester (L.R.S.).—November 16, 23, 30; December 7, 14, 7.30 p.m., Old Hall Farm, Braunstone Lane, Leicester.

Lincoln (L.S.W.C.).—November 18, December 2, 16, 7.30 p.m., Technical College, Cathedral Street.

REGION 6

Cheltenham.—First Thursday in each month, 8 p.m., Great Western Hotel, Clarence Street.

LONDON MEMBERS' LUNCHEON CLUB

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

at 12.30 p.m. on Fridays, November 20 and December 18, 1959

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

REGION 7

Acton, Brentford and Chiswick.—November 17 ("Transmitting 50 years ago" by G3GZ), 7.30 p.m., A.E.U. Rooms, 66 High Road, Chiswick.

Barnett (B. & D.R.C.).—November 24, 7.30 p.m. ("Practical Aerials for the Radio Amateur" by Ray Hills, G3HRH), Red Lion Hotel, Barnet.

Bexleyheath (N.K.R.S.).—November 12 ("The History, Development and Manufacturing Techniques of the Avometer," by J. A. Thomas of Avo Ltd.), November 26 ("International Amateur Radio," by A. O. Milne, G2MI), 8 p.m., Congregational Hall, Bexleyheath, Kent (near the Clock Tower.)

Croydon (S.R.C.C.).—November 10, 7.30 p.m., "Blacksmith's Arms," South End, Croydon.

Dorking (D. & D.R.S.).—Second and fourth Tuesdays in each month, 8 p.m., Star and Garter Hotel, Dorking.

Ealing.—Sundays, 11 a.m., ABC Restaurant, Ealing Broadway, London, W.5.

East Molesey (T.V.A.R.T.S.).—November 4 ("Technical Films") Carnarvon Castle Hotel, Hampton Court.

Enfield and District.—November 26, 7.30 p.m., George Spicer School, Southbury Road, Enfield.

Harlow and District.—Thursdays, 7.30 p.m., rear of G3ERN (G. E. Read), High Street, Harlow.

Holloway (G.R.S.).—Mondays, Tuesdays and Wednesdays, 7 p.m. (R.A.E. and Morse); Fridays (Club), 7 p.m., Montem School, Hornsey Road, N.7; November 6, Visit to London Fire Brigade H.Q. Radio System.

Ilford.—Thursdays, 8 p.m., G2BRH, 579 High Road, Ilford.

Kingston.—Lectures alternate Thursdays, Theory and Morse Classes weekly, 7.45 p.m., Y.M.C.A., Eden Street, Kingston-on-Thames.

New Cross (C.A.R.S.).—Fridays, 7.30 p.m., 225 New Cross Road, London S.E.13.

Romford (R. & D.A.R.S.).—Tuesdays, 8.15 p.m., R.A.F.A. House, 18 Carlton Road, Romford.

Slough.—December 7, 8 p.m., "Stag Hotel," Wexham Street, Wexham.

South Kensington (C.S.R.S.).—November 3 ("Radio Valves" by Siemens-Edison-Swan); November 17 (Informal Meeting); December 1 (Film Show), 6 p.m., Science Museum, South Kensington.

Sutton & Cheam (S. & C.R.S.).—November 17, 8 p.m. ("The GR 400 S.S.B." by Mr. Aspinall and Mr. P. Pennell of Redifon Ltd.), "The Harrow," Cheam Village, Surrey.

Welwyn Garden City.—November 12, 8 p.m., I.C.I. Restaurant, Blackfan Road (Annual open meeting for visiting groups and clubs. Programme includes talk on R.A.E.N. by C. H. L. Edwards, G8TL, and a film show).

REGION 9

Bristol.—November 20, 7.15 p.m., ("Communications and Electronics in Business" by E. H. Page, G3HKV), Carwardine's Restaurant, Bladwin Street, Bristol 1.

Weston-super-Mare.—November 11, 7.30 p.m., Albert Hotel, Sea Front.

Yeovil (Y.A.R.C.).—Wednesdays, 7.30 p.m., Grove House, Preston Road, Yeovil.

REGION 10

Cardiff.—November 9, December 14, 7.30 p.m., British Volunteer Hotel, The Hayes, Cardiff.

Penarth.—November 30 ("Simple Crystal Grinding" by John Douglas, GW2CAS), December 28 (Debate), Y.M.C.A., Penarth.

REGION 11

Prestatyn (F.R.S.).—December 7, 7.30 p.m. (Social Evening), Railway Hotel, Prestatyn.

REGION 13

Edinburgh (L.R.S.).—November 5 (Surplus Sale), November 19 ("Electronics in Hospitals"), 7.30 p.m., Y.M.C.A., 14 St. Andrew Street, Edinburgh 2.

REGION 14

Prestwick.—Third Sunday in each month, 7.15 p.m., Royal Hotel, Prestwick.

REGION 17

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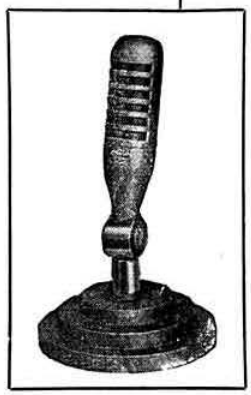

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H. Freeman, *Advertisement Manager*, R.S.G.B. Bulletin

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