R·S·G·B AMATEUR RADIO BULLETIN

July 1951

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REPRESENTATION

IN two months' time Home Corporate Members will be invited, once again, to nominate persons to serve as Regional and County Representatives. Those who are ultimately elected will take office on January 1, 1952, for a period of two years.

The method of electing representatives was fully discussed at a recent Conference between the Council and the Regional Representatives and a recommendation, passed on that occasion, to the effect that future elections of representatives should be staggered, was subsequently adopted by the Council.

Members who are at present serving as County Representatives will continue in office until the end of 1952, thus a greater degree of continuity will be preserved than was possible under the earlier system which required all representatives to go out of office simultaneously.

Since the last elections took place two years ago many new members have joined the Society, and it is right that they should understand something about the Society's scheme of representation.

The present scheme is of a three-tiered nature. First there are the Regional Representatives—15 in number. Second the County Representatives, and third the Town and Area Representatives.

A Regional Representative acts as the Council's representative in the Region he represents, and in furtherance of that aim he is invited to meet the Council whenever urgent matters of policy or of wide general interest are under discussion. He is expected to bring to the notice of the Council resolutions, recommendations and suggestions put forward at meetings of members in his Region and to discuss the affairs of the Region from time to time with his County Representatives.

Clearly then, a Regional Representative should possess a wide knowledge of Society affairs and be willing to devote a considerable amount of his spare time to the furtherance of the Society's aims and objects. Needless to say he should be a good mixer.

A County Representative is expected to co-ordinate the work of his Town and Area Representatives and to arrange meetings with them from time to time to discuss matters of mutual interest. He is also expected to visit each properly constituted town or area group in his County at least once during his term of office and to keep his Regional Representative informed on any matter which he considers should be brought to the notice of the Council. He is required to forward to his R.R. a quarterly report dealing with the activities of the groups in his County.

The duties of a County Representative, like those of a Regional Representative, cannot be treated lightly. He who accepts the office must be prepared to give of his best in the interests of the Society.

The third person in the line of progression is the all-important Town or Area Representative—the key-man in the scheme of representation. No matter how zealously a Regional and his County Representatives may work, their efforts will prove of little avail if the Town Representatives fall down on their job.

The T.R. is the man who should know what the members in his town are doing and saying. He should be able to feel the pulse of the local membership and be ready to give warning to his C.R. if any difficulty appears to be looming ahead. It is his duty to arrange meetings and social functions. He also accepts responsibility for local N.F.D. arrangements and for providing the link with other organisations in his town.

The enthusiastic T.R. will find many ways and means of maintaining interest among the membership. In the summer he will organise outings and field days, whilst in the winter he will see that a comprehensive and varied programme is arranged. He will endeavour to provide tuition for the newcomers and satisfy the old-timers by inviting qualified persons to give lectures.

When autumn comes round once again members in the South of England and the Midlands and in West and North-East Scotland will be given a chance to see the scheme of representation in full swing, for Official Regional Meetings are due to take place during September and October in Tunbridge Wells, Derby, Glasgow and Aberdeen. At these meetings members will meet representatives from Headquarters as well as their own Regional and County Representatives. They will be able to ask questions about the work of the Society and learn a little about the problems which face the Amateur Radio movement at the present time.

The scheme of representation, however, can only succeed if the membership as a whole is prepared to co-operate. Co-operation can be achieved by a lively interest in the forthcoming elections. Be ready, then, when the time comes to put forward the name of the best possible man in your Region or Town for the job in hand.

J.C.

By D. N. CORFIELD, D.L.C. (Hons.), A.M.I.E.E. (G5CD)*

COMPACT 70 cm. RECEIVER

A sensitive 70 cm. receiver which does not depend upon "plumbing," disc-seal triodes or crystal mixers is still a rarity. Yet modern valves and components make such a design not only possible, but highly attractive to the amateur who does not feel at home among the specialised techniques of microwave circuitry. Here is a full description of the compact, "no plumbing," 70 cm. receiver which attracted so much attention at the 1950 Amateur Radio Exhibition.

THE receiver described here employs miniature receiving valves throughout; with no expensive disc seal or "lighthouse" types; and with tuning circuits which do not involve pipes or plumbing. Yet the sensitivity is of the order of 1 μV. absolute, which compares favourably with communication receivers for the lower frequency bands.

Whilst it is appreciated that a more elaborate and expensive design would give improved performance as regards signal-to-noise ratio, it would be beyond the constructional facilities of the average amateur. Such is not the case with this receiver although it is not recommended that those totally unfamiliar with V.H.F. technique—at least on 144 Mc/s.—should attempt the construction.

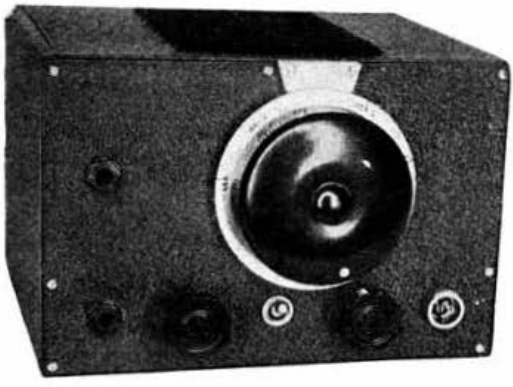

Fig. 1.

Front view of the receiver. The controls are: *Middle centre* main tuning dial; *bottom (from left to right)* A.F. gain control, B.F.O. switch and I.F. gain control. The S-meter socket (J1) is above the output socket (J2). The twin feeder socket is at the right-hand bottom corner.

The tuning is arranged to spread 10 Mc/s. of the 40 Mc/s. wide band over 180 degrees of a 3½ in. dial, the portion so spread being selected as required. All components are mounted on an 8 in. x 6½ in. chassis which fits into a metal cabinet 5 in. high. The entire unit weighs approximately 10 lb. Power supplies are not incorporated on the receiver chassis partly because of the envisaged probability of portable operation from, say, a vibrator pack and partly in order to minimise heat dissipation inside the cabinet.

The circuit, Fig. 2, employs a 12AT7 double triode as a neutralised push-pull grounded grid amplifier; a second 12AT7 as a push-pull mixer; a third 12AT7 with one triode as a local oscillator on 200 Mc/s., and the other triode as a frequency doubler; three I.F. stages at 10.7 Mc/s.; a 6T8 triple diode triode as second detector, A.V.C., noise limiter, and first A.F. amplifier; a 6C4 triode output stage; and a second 6C4 as a B.F.O. for C.W. reception.

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R.F. Amplifier and Feeder Input

The input to the receiver is designed for use with a 300-ohm balanced feeder such as the *Telcon* K25 for indoor or the K35 for outdoor work. It was felt that standing wave losses were likely to be less serious with these feeders than with the concentric type; the lower effective capacities of balanced R.F. and mixer stages were also considered advantageous. The input feeder is connected *via* a small twin socket, which, although not designed for 300 ohms, nevertheless seems to work very well. The aluminium cord grip on the male plug, however, appeared to be too large a mass of metal and was replaced with a tufnol cord grip made to fit the feeder.

Across the input socket, see Fig. 2, is connected a ¼ wave stub, L1, consisting of two 16 S.W.G. silver-plated copper wires 5 in. long. This stub provides a D.C. return path for the cathode current of V1 and, at the same time, acts as a short circuit from the feeders to ground at the intermediate frequency in order to reduce breakthrough of signals on this frequency. The input is applied to the cathodes of V1, the bias resistors R1 and R2 being by-passed by C1 and C2. The grids of this valve are grounded. The operating conditions for each half of the 12AT7 are determined by R1, R5 and R2, R6 and these values are chosen so that the mutual conductance is 6.6 mA/V. (V_a 180, V_g −1). The input impedance of each half is 150 ohms, the pair in push-pull thus matching the 300-ohm impedance of the feeder. The anode circuit of V1 comprises two parallel wires, L2, about ⅜ in. apart, series tuned by C7, with H.T. applied *via* R5 and R6. This circuit, though fairly sharply tuned, is sufficiently broad to ensure that when tuned to the centre of the band (about 435 Mc/s.) it gives a good response up to 5 Mc/s. on either side.

Although during preliminary measurements the R.F. stage was quite stable, it was found that when the receiver was connected to a five-element beam aerial standing waves on the feeder tended to cause instability at certain frequencies. The valve was therefore neutralised by means of cross connected wires covered with sleeving placed parallel to L2 for about ½ in. These wires were adjusted, with the feeders connected, until the stage remained stable over the band. Such neutralisation, however, may not be needed if the feeder impedance lies close to 300 ohms at the frequencies covered. The gain of the R.F. stage alone is difficult to measure but is of the order of 10 db.

Mixer

The mixer valve (V2) is another double triode, type 12AT7, with the signal input in push-pull and the oscillator input in push-push. The anodes,

In paralled, are connected to the I.F. transformer primary. The parallel wires (L3), series tuned by C3, form the signal input tuned circuit. These wires, however, are shorter than those required for the R.F. stage owing to the greater effect of the inter-electrode capacities of V2; amounting to the total capacity of grid to all other electrodes. The tuned circuit, L3-C3, is mounted parallel to and about ¼ in. away from L2; see Fig. 6. D.C. return paths for the grids are provided by R3 and R4. The cathode bias on each section is about 3 volts, so that the valve mixes in the "anode bend" condition. Separate bias resistors, R8 and R9, are used because such high slope valves tend to vary appreciably in each section; with one common resistor one section might thus be over or under biased compared with the other. C8 is a two-unit condenser used to decouple the cathodes to signal frequency while C10 and C11 provide decoupling at the intermediate frequency. C13 serves the dual purpose of tuning the primary of the I.F. transformer and also bypassing the anodes to earth at the signal frequency; it is therefore mounted directly on the valveholder and not included in the I.F. coil assembly. The damping across the input of V2 is fairly heavy, with the result that the circuit L3-C3 is not so sharp as L2-C7.

Experiments made using one section of V2 as a mixer instead of both sections in push-pull resulted in a lower conversion gain. No tests have been made, in this receiver, to determine the performance, as a mixer, of a 12AT7 operated in the "leaky grid detector" condition. Such a stage would require less H.T. voltage and no bias but would, it is believed, be noisier.

Oscillator-Doubler

This part of the design proved by far the most troublesome. At first, attempts were made to use a third 12AT7 as a push-pull oscillator directly on 400 Mc/s. This method gave plenty of heterodyne voltage for the mixer and good conversion gain, but the frequency stability was such that no note ever appeared better than T1. Different circuit arrangements and the use of the two sections of the valve in parallel, instead of push-pull, merely made matters worse. The oscillator was then tried on half the frequency, *viz.* 200 Mc/s.; the stability was now good but no amount of heterodyne voltage to the mixer would produce a conversion gain better than 10 db. below that obtained with fundamental injection. Ultimately it was decided to use one section of

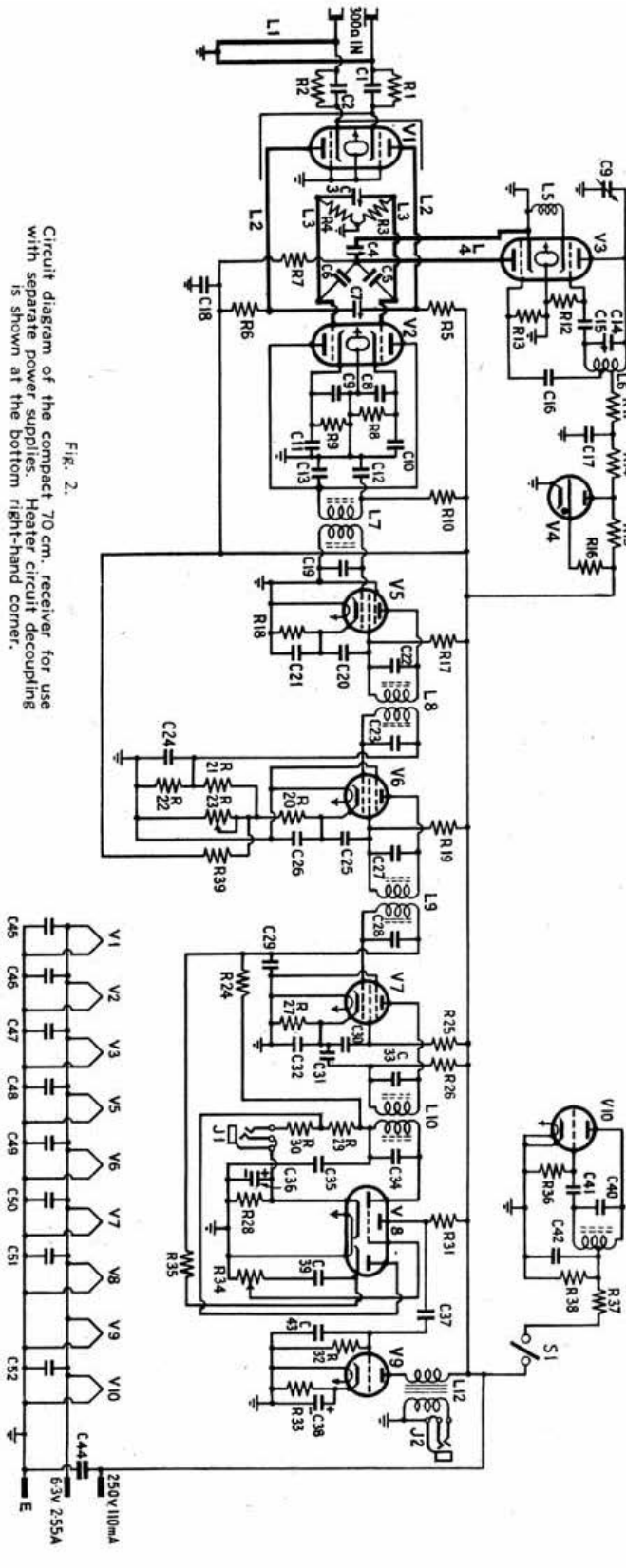


Fig. 2. Circuit diagram of the compact 70 cm. receiver for use with separate power supplies. Heater circuit decoupling is shown at the bottom right-hand corner.

the 12AT7 as an oscillator on 200 Mc/s., with the second section operating as a frequency doubler; this arrangement seemed to overcome all the difficulties.

In Fig. 2 the top section of V3, with L6 and C14, form a Hartley oscillator. H.T. is connected to the centre of L6 *via* a 1,000-ohm resistor R11. A low value grid leak, R12, prevents squegging. An R.F. choke, L5, is connected in the cathode lead; a common arrangement on V.H.F. The band spread condenser, C9, is made from an old 15 $\mu\mu$F. *Webbs* Apex type; leaving one fixed and one moving vane. This gives a capacity swing of about 1 $\mu\mu$F. Final adjustment of the band-spread coverage on the original model was made by wiring a small 12.5 $\mu\mu$F. silvered mica condenser in series with C9; this is not shown in Fig. 1 as its use will depend on the exact swing of C9. The band is set by C14; the range covered being about 200-250 Mc/s. The oscillator is tuned so that its harmonic is on the L.F. side of the signal. The R.F. power output is sufficient to light a 1 watt lamp—held near L6—quite

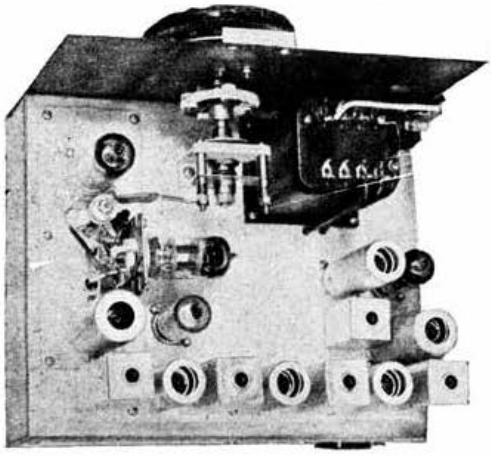


Fig. 3.

Top view of chassis showing general layout. The valve positions are: *Top left-hand corner* R.F. amplifier (V1); *mounted horizontally* oscillator doubler (V3); *immediately below oscillator section*, in can, mixer (V2); *beside this towards centre*, no can, voltage stabiliser (V4); *along the lower edge of the chassis*, the three I.F. valves (V5, V6 and V7); *lower right-hand side of chassis*, in can, second detector, etc. (V8); *middle right-hand side of chassis*, no can, output valve (V9); and *beside this towards centre*, in can, B.F.O. (V10). The output transformer can be seen at the top right-hand corner.

brightly. The drive to the lower section of V3 is taken from L6 *via* a tapping adjusted to give maximum current (about 0.25 mA.) in R13 (47,000 ohms). Details of L6 are shown in Fig. 7.

The anode circuit of the doubler section consists of L4 series tuned by C4, H.T. being supplied to the anode *via* R7 which improves the efficiency of the stage. The output is applied to the grids of the mixer stage *via* C5 and C6 in push-push from the anode side of C4.

As shown in Fig. 6, V3 is mounted on a bracket above the chassis. This arrangement ensures that the oscillator is less affected by heat and also enables L4 to be at right angles to L2 and L3, thus reducing stray coupling. The tuning of C4 is fairly sharp, and final adjustment should be made while receiving a signal towards the centre of the band. The output of the doubler should be sufficient to cause a slight increase in the cathode current of V2; this can be checked by a voltmeter across R8 or R9.

I.F. Amplifier

The three I.F. stages at 10.7 Mc/s. have a bandwidth of about 200 kc/s.: this particular frequency is the international I.F. for commercial F.M. receivers; other frequencies could, however, be used equally well. The first two I.F. stages consist of 6AM6 (8D3) high slope R.F. pentodes followed by a 6BA6 variable-mu R.F. pentode with A.V.C. to prevent overloading on local signals. The I.F. gain control, R23, in the second I.F. stage, is arranged so that the control grid is biased 3 per cent. of the suppressor grid voltage; this ensures that L8 is not detuned by changes in the input capacity and resistance when the gain is adjusted.

Second Detector. Noise Limiter and 1st A.F. Amplifier

A triple diode triode, type 6T8, is utilised as second detector, noise limiter and first A.F. amplifier. With this valve it should be noted that the signal diode anode is that connected to pin 6; the corresponding cathode connection being pin 7. A meter jack, J1, can be included in the detector circuit to facilitate alignment and the comparison of signal strengths. The junction between R29 and R30 (which together form the signal diode load) is connected to the separate diode anode (pin 2) with the A.F. output taken from the cathode (pin 3) of this section, which thus operates as a series noise limiter; the D.C. level being held by R24, C29 and R35. The limiter may be omitted if considered unnecessary; enabling a double diode triode, such as the 6AT6, to be employed.

Output Stage and B.F.O.

The output stage (V9) employs a small triode, type 6C4, which gives sufficient output for headphones or a sensitive loudspeaker. The .001 μF. condenser C43 across the grid leak slightly reduces high frequency response and thereby improves the signal to noise ratio. A valve giving more power

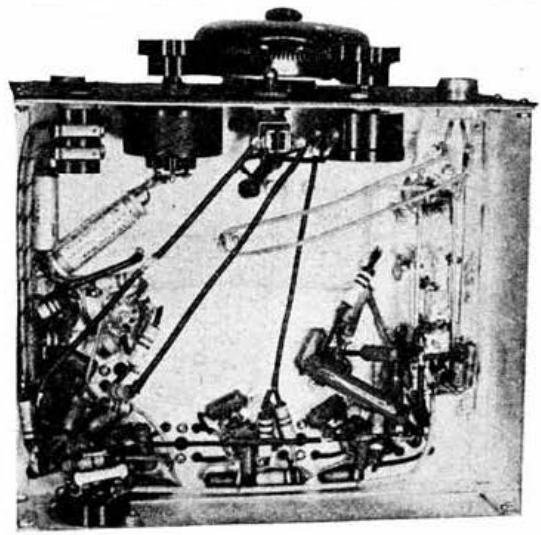


Fig. 4.

Under view of chassis showing positioning of components and tuned lines. The feeder input connections with the $\frac{1}{4}$-wave stub (L1) are at the top right-hand corner; below these are the tuned lines (L2 and L3) with trimmers C3, C4 and C7. The octal base at the bottom left-hand corner is for the connection of power supplies.

output, such as the type 6AQ5, could be used if desired.

A second 6C4 triode, in a Hartley circuit, acts as a B.F.O.; the pitch being set by adjusting the dust core of L11. A low H.T. voltage increases the stability. Since this stage is mounted next to V8, sufficient injection is obtained from stray coupling.

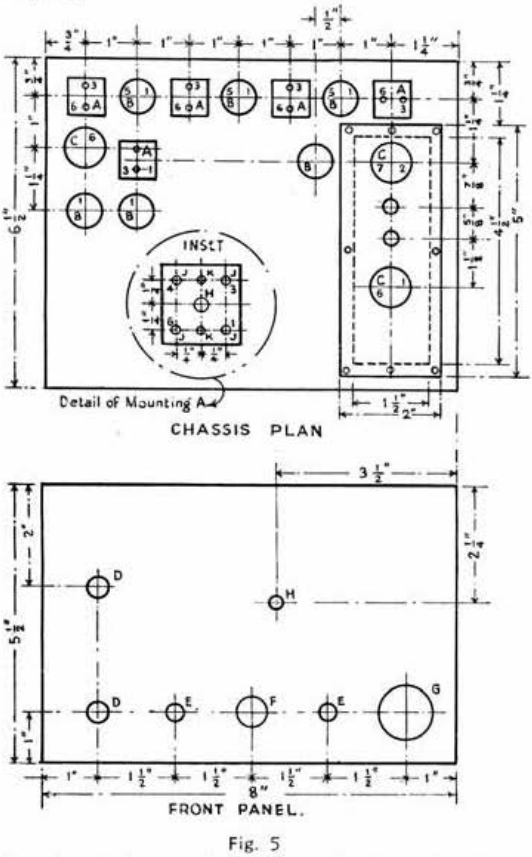


Fig. 5

Plan view of chassis and elevation of front panel showing designation of important fixing holes as viewed from the top or front. Inset is a detail of the I.F. and B.F.O. coil mounting.

Chassis and Panel 5 mountings "A" see inset detail.
" " " 6 mountings "B" for B7G valve holder.
" " " 3 mountings "C" for B9A valve holder.
" " " 2 holes "D" 7/16in. diameter.
" " " 2 holes "E" ⅜in. diameter.
" " " 1 hole "F" ½in. diameter.
" " " 1 hole "G" 19/32in. diameter.
" " " 3 holes "H" ¼in. diameter.
Detail "A" holes H ¼in. diameter.
" "A" holes J 3/16in. diameter.
" "A" holes K 6 B.A. clearance.

Note: The numbers shown on mountings "A," "B" and "C" are the tag positions of the coils or valve holders, and these components should be so mounted.

Construction

In the original model, the chassis was constructed from 18 S.W.G. silver-plated brass sheet, but copper or silver-plated steel could be used. If aluminium is employed, however, particular care must be taken to ensure good contact at all earthing points. The hinged lid of the cabinet provides access to the valves and to the band set condenser C14. Holes are drilled underneath the cabinet to enable the trimmers C3, C4 and C7 to be adjusted. Good ventilation is of considerable importance in minimising drift and two sets of louvres are used; one in the lid and a second at the back of the cabinet. The lowest louvre is placed at chassis level to carry the heat away from the line of valves along the back of the chassis.

With the exception of the depth, which is 2 in., Fig. 5 shows all the essential dimensions of the chassis. The separate R.F. sub-chassis, 5 in. x 2 in., is mounted by screws above the main chassis, in which the cut-out 4½ in. x 1½ in. is shown dotted. This method of construction makes for convenience in assembly and also enables experiments to be carried out with different types of R.F. unit if desired. The drilling for the I.F. and B.F.O. assemblies is shown as an insert on the chassis plan.

The assembly of the R.F. unit and the oscillator/doubler stage is shown in Fig. 6. V3 is mounted on an "L" bracket with its centre line 1 1/16 in. above the chassis: in the original model an adjustable bracket was used so that the length of L4 could be varied, but this is not necessary unless experimental work is contemplated. To keep the wiring short and direct, the valveholders and I.F. coils should be mounted with their tags in the positions indicated in Fig. 5. It is recommended that the I.F. valveholders should have 6B.A. tags under each fixing screw and a wire carried across the holder from one side to the other connecting the centre shield; all earth returns are then made to this wire.

Details of the I.F. transformers are given in Fig. 7 together with the winding data. The B.F.O. coil uses a former half the length of those for the I.F. coils, but is otherwise similar. After winding, all coils should be well coated with polystyrene varnish; this will fix them firmly and exclude moisture. The "spills" from the coils can be left underneath for direct wiring.

All heater wiring should be kept close to the chassis, with the by-pass condensers, as shown in Fig. 2 connected directly to the valveholder tags. Where, as in the original model, power supply leads are taken to a socket at the rear of the chassis, it is convenient to run one heater lead along the rear of the chassis to supply V2, V5, V6 and V7 and to run a second lead to V8, V9 and V10

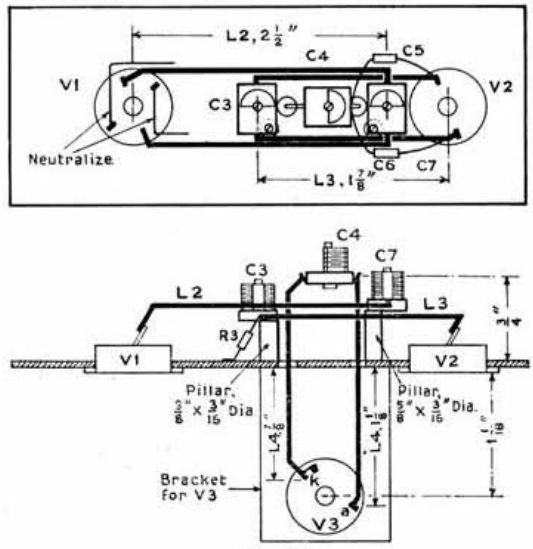


Fig. 6.

Details of R.F. stage, mixer and doubler oscillator. Upper sketch is the plan view underneath the chassis and the lower sketch is a section with the underneath of chassis uppermost.

and then across the chassis to V1 and V3. This method tends to avoid stray coupling between the R.F. and oscillator sections and the mixer stage and I.F. amplifier.

It is essential to use the specified types of by-pass condensers since many other types are inductive or otherwise unsuitable at the frequencies concerned; care should also be taken to keep the leads to the condensers as short as possible. The resistance specifications are less important although resistances larger than $\frac{1}{2}$-watt would almost certainly prove unwieldly when wiring the R.F. unit and might also result in their having too high a capacity to earth in some cases.

Other points to note in the wiring are that the leads to the volume control, R34, should be screened; the trimmers C3 and C7 are mounted on small perspex pillars with 10 B.A. screws (as shown in Fig. 6); the "Pearl" type condensers C5 and C6 are connected directly between one tag of C4 and the grids of V2, beneath the ends of L3; C13 must be wired directly from the anodes of V2 to earth; and C8 (the two-unit condenser) should have very short leads, with the common lead earthed.

The wiring to L6 is shown in Fig. 8, the sketch shows the lower connection of C14 *(Philips* trimmer), the other tag being wired directly to the grid of V3. The $\frac{1}{4}$-wave stub L1 with spacing about $\frac{5}{8}$ in. is bent round so that it lies almost at right angles to L2 and L3, to minimise the possible coupling; this can be seen in Fig. 4.

Operation and Performance

Lining up the receiver should be straightforward. The I.F. amplifier and B.F.O. are aligned to 10.7 Mc/s. and the R.F. unit to the centre of the band (435 Mc/s.); final alignment of the unit being carried out with the receiver in its cabinet. The set should be quite stable even when operated at maximum gain. Should the

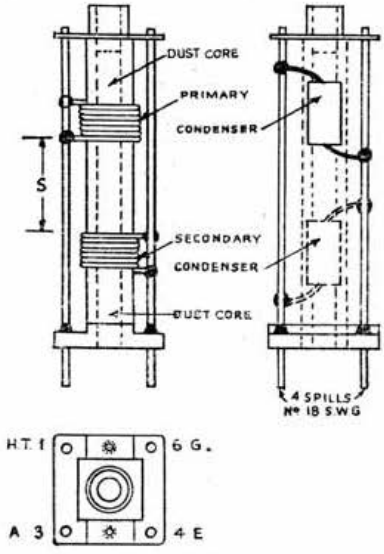


Fig. 7.
View of I.F. transformer assembly and oscillator coil assembly.

Transformer	*Primary*	*Secondary*	*Spacing*	*Q*
L7	30 turns	24 turns	$\frac{1}{4}$in.	51
L8	24 turns	24 turns	$\frac{1}{4}$in.	47.5
L9	24 turns	24 turns	$\frac{1}{4}$in.	47.5
L10	24 turns	24 turns	$\frac{3}{8}$in.	47.5

Both windings of 34 S.W.G. S.S.C. copper wire inner ends to tags 1 and 4. Condenser C13 across primary of L7 is mounted externally (see text).

I.F. stages prove unstable, first check the wiring, and then—if no faults are found—reduce the gain control until the I.F. stages are just stable and touch with a metal screwdriver all the "by-passed points," *i.e.*, valve screen-grid pins, heaters, cathodes, H.T. connections to coils, etc. If, when this is done, there is any change in the receiver gain, it indicates inadequate by-passing possibly on account of a poor earth connection, long leads or a faulty component.

Where a signal generator is not available a small oscillator should be used to line up the R.F. stages. It is then necessary to check this oscillator most carefully to make certain that it is on 435 Mc/s. Similarly it is not recommended that harmonics from some lower frequency oscillator be used, as it is very easy to set the oscillator section to the incorrect frequency or beat note,

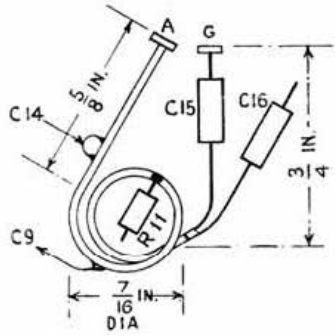


Fig. 8.
Dimensions of the oscillator coil, L6, and details of relevant component connections.

causing endless time to be wasted. Once the receiver has been aligned to the correct band, harmonics from 144 Mc/s. can be used to re-adjust it when required.

The original receiver was aligned with the aid of a GR805 generator for the I.F. section and an *R.G.D.* type 101 generator for the R.F. section: in the latter case a 70-ohm. to 300-ohm 10 db. pad was used for matching.

The following comments arise from a consideration of the performance figures as shown in Table 1.

The degree of R.F. selectivity, while giving a good signal-to-image ratio, is slightly too sharp for the 10 Mc/s. coverage, as it produces some loss of gain at the edges of the tuning range; whilst this handicap could be overcome by damping L2 this would result in general loss of gain. Ganged tuning of an R.F. section with an oscillator is possible on 70 cm. but usually involves formidable mechanical and electrical difficulties and has therefore not been incorporated in this design. Provided, however, that the R.F. section is aligned for the centre of the tuning range, loss of gain at the band edges is not serious.

It is evident from the frequency drift figures that considerable drift occurs during the first half hour; it is therefore advised that the receiver be switched on some time before use, particularly when calibration of the dial or re-alignment is to be carried out. If the drift is plotted graphically, a normal curve is obtained; hence it would be possible to correct the long-term drift of about 800 kc/s. (0.18 per cent.) by means of fixed condensers of the correct temperature co-efficient or by a special condenser made of bi-metal strip connected across the oscillator coil. In fact, this latter arrangement may be incorporated in the original receiver at some future date.

In practice the receiver has been found to

COMPONENTS LIST—COMPACT 70 cm. RECEIVER

CONDENSERS

C1, 2, 45, 46, 47. 1,000 $\mu\mu$F. *T.C.C.* type CTH 310.
C3, 4, 7. 4.5$\mu\mu$F. air trimmer. *Wingrove & Rogers*, type C3201.
C5, 6. 3$\mu\mu$F. *T.C.C.* type SCP5.
C8. 2 × 1,000$\mu\mu$F. *T.C.C.* type 20TH310/W.
C9. 1$\mu\mu$F. variable (see text).
C10, 11, 12, 17, 18, 20, 21, 24, 25, 26, 29, 30, 31, 32, 37, 39, 48, 49, 50, 51, 52. 0.01μF. paper *T.C.C.* type 543.
C13. 15$\mu\mu$F. silvered mica *T.C.C.* type SMB101.
C14. 3-30$\mu\mu$F. air trimmer *Philips* type 7864/01.
C15, 16, 41. 47$\mu\mu$F. *T.C.C.* type SCT1.
C19, 22, 23, 27, 28, 33, 34. 35$\mu\mu$F. silvered mica *T.C.C.* type SMB101.
C35. 100$\mu\mu$F. silvered mica *T.C.C.* type SMB101.
C36. 10μF. electrolytic *T.C.C.* type CE30C.
C38. 30μF. electrolytic *T.C.C.* type CE70B.
C40. 60$\mu\mu$F. silvered mica *T.C.C.* type SMB101.
C42, 44. 10,000$\mu\mu$F. *T.C.C.* type CTH422.
C43. 1,000$\mu\mu$F. paper *T.C.C.* type 543.

COILS

L1. ¼ wave stub 18 S.W.G. silver plated copper wire (see text).
L2. Amplifier anode tuned circuit. 18 S.W.G. silver plated copper wire (see text).
L3. Mixer grid tuned circuit. 18 S.W.G. silver plated copper wire (see text).
L4. Doubler anode tuned circuit. 18 S.W.G. silver plated copper wire (see text).
L5. R.F. choke wound 24 S.W.G. enamel copper wire on ¼ in. former 1 in. long.
L6. 2 turns 7/16 in. mean dia. 18 S.W.G. copper wire spaced ¼ in. (see text and Fig. 8).
L7. 1st I.F. transformer (see Fig. 7).
L8, 9. 2nd and 3rd I.F. transformer (see Fig 7).
L10. 4th I.F. transformer (see Fig. 7).
L11. B.F.O. coil 16 turns tapped at 5 turns, close wound with 34 S.W.G. S.S.C. (see text).
L12. Output transformer 15,000 ohms primary. Secondary to suit output load.

RESISTANCES

R1, 2. 120 ohms *Erie* ½-watt insulated.
R3, 4, 5, 6. 4,700 ohms *Erie* ½-watt insulated.
R7. 10,000 ohms *Erie* ½-watt insulated.
R8, 9. 680 ohms *Erie* ½-watt insulated.
R10, 11, 14, 17, 19, 25, 33. 1,000 ohms *Erie* ½-watt insulated.
R12. 2,200 ohms *Erie* ½-watt insulated.
R13, 36. 47,000 ohms *Erie* ½-watt insulated.
R15. 5,000 ohms *Dubilier* 5-watt type A2/1.
R16, 24. 470,000 *Erie* ½-watt insulated.
R18, 20. 150 ohms *Erie* ½-watt insulated.
R21. 3,300 ohms *Erie* ½-watt insulated.
R22. 100,000 ohms *Erie* ½-watt insulated.
R23. 50,000 ohms *Colvern* potentiometer type CLR 3001/15.
R26. 33,000 ohms *Erie* ½-watt insulated.
R27. 68 ohms *Erie* ½-watt insulated.
R28. 2,200 ohms *Erie* ½-watt insulated.
R29, 30, 31, 37. 100,000 ohms *Erie* ½-watt insulated.
R32, 35. 1.0 megohms *Erie* ½-watt insulated.
R34. 0.5 megohms *Morgan* potentiometer type H50410.
R38. 4,700 ohms *Erie* ½-watt insulated.
R39. 100,000 ohms *Erie* 1-watt insulated.

MISCELLANEOUS

J1, 2. *Igranic* midget jack.
S1. On-off switch *Bulgin* type S259.
V1, 3. B9A valve holder *McMurdo* type FM9/U (without can).
V2, 8. B9A valve holder *McMurdo* type FM9/UB (with can).
V4, 9. B7G valve holder *McMurdo* type BM7/U (without can).
V5, 6, 7, 10. B7G valve holder *McMurdo* type FM7/UA (with can).
Input Plug. *Belling Lee* type L625/S.
Dial. *Muirhead* type D118C (dial dia. 3½ in.).

VALVES

V1, 2, 3. *Brimar* 12AT7.
V4. *English Electric* QS150/45.
V5, 6. *Brimar* 6AM6 (8D3).
V7. *Brimar* 6BA6.
V8. *Brimar* 6T8.
V9, 10. *Brimar* 6C4.

I.F. TRANSFORMERS

Formers. *Cosmocord Ltd.* type D1742. *Aladdin R.I. Ltd.* type PP5937.
Top spacers. *Aladdin R.I. Ltd.* type PP5939.
Dust cores (2 per transformer). *Aladdin R.I. Ltd.* type PP5940.
Cans. *John Dale Ltd.* type D/TV1.

B.F.O. COIL

Former. *Cosmocord Ltd.* type D1745. *Aladdin R.I. Ltd.* type PP5938.
Top spacer. *Aladdin R.I. Ltd.* type PP5939.
Dust core. *Aladdin R.I. Ltd.* type PP5940.
Can. *John Dale Ltd.* type D/TV2.

operate very well; C.W. and 'phone signals can be tuned in without difficulty and the drift is not objectionable. There have been a few occasions when propagation on 10.7 Mc/s. has been extremely good, resulting in slight I.F. breakthrough. This has now been avoided by placing a small filter in the 300-ohm feeder; the filter comprises two coils wound on a former of an I.F. transformer parallel tuned with a 47 $\mu\mu$F. condenser to 10.7 Mc/s. One coil is connected in each feeder and can be plugged in or out as required.

TABLE I.
Measured performance figures of the original model.

I.F. Sensitivity: (measured on V5 grid for 50 mW. output) ..... 3 μV.

I.F. Selectivity:

Attenuation (*db.*)	*Bandwidth* (*kc/s.*)	*Attenuation* (*db.*)	*Bandwidth* (*kc/s.*)
−6	50	−40	460
−10	175	−60	650
−20	300		

R.F. Selectivity: (compared with unit gain at 435 Mc/s.)
432.5 Mc/s. ..... −7 db.
437.5 Mc/s. ..... −5 db.

2nd Channel: ..... −23 db.

R.F. Sensitivity:
Signal input (435 Mc/s.) required to give output equal to noise ..... 2μV.
Signal input required to overcome A.V.C. delay ..... 7μV.
Minimum signal readable through noise:
(A1) ..... 0.35μV.
(A2) ..... 1μV.

Frequency Drift: (measured at a room temperature of 65 degrees F.)
Drift of receiver from time of first switching on:

Time (*mins.*)	5	10	20	30	60	90	120
Drift (*kc/s.*)	+150	+300	+450	+500	+670	+730	+760

Drift of warm receiver when V3 is changed for a cold valve without re-trimming ..... 750 kc/s.
Drift of warm receiver when either V1 or V2 is changed is negligible.

Cabinets and Chassis

Cabinets and chassis to the dimensions specified can be supplied by E. J. Philpotts (Metalworks), Ltd., Loughborough, Leics.

Amateur Radio Exhibition

The Fifth Annual R.S.G.B. Amateur Radio Exhibition will be held at the Royal Hotel, London, W.C.1, from November 28th to December 1st, 1951.

AMATEUR RADIO FESTIVAL PROGRAMME

The Land Travel Exhibition — **Call Sign GB3FB**
Aug. 4–Aug. 25: Birmingham (Bingley Hall, King Alfred's Place).
Sept. 15–Oct. 6: Nottingham (Broad Marsh).

Bristol — **Call Sign G6YA/A**
July 7–21: Memorial Ground.

Cardiff — **Call Sign GW3WIF**
July 4–18: Welsh Industries Fair.

Camberwell — **Call Sign G3ACC/A**
Aug. 26–Sept. 15: South London Art Gallery, Peckham Road, Camberwell, London, S.E.5.

Portsmouth — **Call Sign G3DIT/A**
July 7–21: Portsmouth and Southsea Trades Fair and Exposition.

THIS WAS CONVENTION !

The first day of summer, appropriately enough, marked the beginning of the R.S.G.B. Festival of Britain Year National Convention. Hundreds of members and their friends, including a number of amateurs from abroad, converged on London for the outstanding Society function of 1951. Here, in a series of flashbacks, are the highlights of the four days, June 21-24, when C.U.A.C. became a reality for those who took part in the event.

Prelude

RUSSELL SQUARE at 9 o'clock on the Thursday morning. That was when the Convention programme really began. Many curious eyes scanned the new green London Transport observation coaches as departure time for the first of the organised visits drew near. Welcomed by the General Secretary and members of the Convention Committee, and recorded on the first reel of cine-film in the camera of the official photographer (Mr. F. Wise—who was to become a well-known figure during the ensuing days), the visitors were efficiently installed in their appropriate coaches. Even before the first vehicle began to move off on the road to the E.M.I. factory at Hayes, it was apparent that preliminary ragchews were well under way.

From that moment until mid-day on Saturday, a varied programme of technical and social entertainment, comprising a series of organised visits to factories and other places of scientific interest, was smoothly carried out. There was something to suit all tastes—from the impressive installation of the B.B.C. station at Brookman's Park to the robot efficiency of the miniature Post Office Tube Railway; from the complexity of the Trunk and Toll Exchange at Faraday Building to the relaxing comfort of Philip's Television Projection Showroom at Century House.

Many members favoured the river trip from Westminster to Greenwich, while others took the opportunity to visit the South Bank Exhibition, or the Exhibition of Science at South Kensington. During the two days, Thursday and Friday, the

FINAL DETAILS

The Convention Committee in session just before the great event opened. From right to left: Jimmy Hunter, G6HU (Accommodation), Bill Matthews, G2CD (Chairman), Clem Jardine, G5DJ (Hon. Treasurer), and Fred Lambeth, G2AIW (Organising Secretary), with the General Secretary. Other members of the Committee were Leslie Cooper, G5LC (Ticket Secretary), C. H. L. Edwards, G8TL (Raffles and Films), and Phil Thorogood, G4KD (Publicity). Miss Cadsden helped to organise the Free Draw and acted as General Factotum.

ON THE STEPS OF ST. PAUL'S

Favourite meeting place for Convention visits was the steps of St. Paul's Cathedral. Here we see G2MI (i/c party) with a number of well-known amateurs including G5GR, GM6UK, G5DJ and DL1KV, about to visit Faraday Building.

DOWN THE RIVER

Many Convention visitors took the opportunity of getting to know Old Father Thames a little better. This party, which includes Herb Bartlett (G5QA), Peter Bradley (G8KZ), and Peter Bond (G3BEG), is off to Greenwich.

prelude to the Convention proper, most visitors found themselves engaged in a whirl of activity. They were not alone in this. Behind the scenes, members of the Convention Committee and Headquarters staff were busy carrying out last minute preparations, and putting the finishing touches to many months of careful organisation. Finally the stage was set, and at 7 p.m. on Friday, June 22, the first of the official Convention functions commenced.

Thirsty Highbrows

Someone at the Coventry Street Corner House defined "Conversazione" as a highbrow word for "ragchew." If there's one thing radio amateurs like best (next to filling the ether with QRM!) it is circulating among other amateurs (the more the merrier), exchanging news, views and gossip. And if there's a bar handy—well, so much the better. Talking can be thirsty work!

The Conversazione was a great success. For one thing, the Convention Hall itself was ideally situated—midway between Piccadilly Circus and Leicester Square, in the heart of London. From the balcony windows could be seen the sweep of London's skyline, from the Skylon to the Houses of Parliament. The room was spacious and not overcrowded, and credit must be given to *Messrs. J. Lyons, Ltd.*, for efficient service.

INTERNATIONAL GROUP

Members of the Council, the Convention Committee and Headquarters staff welcome visitors from abroad. From left to right: G5LC, EA4CV, F8NH, G5QA (Region 9 Representative), G6CL, W4EFG, G5DJ and G2AIW. Mrs. 5LC, Miss Gadsden, and Mrs. 6CL are in the centre. The photograph was taken on the roof of Headquarters building.

that for them it was the brightest spot of the Convention.

After refreshments had been served, four short films were screened—two of technical interest (*Marine Radar*, and *The Sutton Coldfield Aerial Mast*), and two of American origin showing Holly-

CONVENTION DINNER

From left to right: G5LC, G2CD, W4EFG, Mrs. Matthews, Mrs. Cooper, Mr. G. Parr, G6CL, F8NH, Mrs. Clarricoats, G5VM, the President (Mr. W. A. Scarr, G2WS), Mrs. Scarr, Air Vice-Marshal E. B. Addison, G6CR, Mr. A. H. Mumford, G6CJ. Members of the Convention Committee and Headquarters staff in the foreground.

Overseas visitors who attended this function came from France, Holland, Germany, Spain, S. Africa, Sweden, U.S.A., Malaya and Barbados. Members of the Council, Convention Committee, Headquarters staff, and R.R.'s, C.R.'s, and T.R.'s were present. It was a great informal occasion, when anybody could meet anybody else, and hold a verbal QSO. In fact, several visitors confessed

wood dramatisations of certain aspects of Amateur Radio — a characteristic sequence being a nocturnal hunt by R.I.D. men using a portable receiver to locate an enemy transmitter hidden in a graveyard. This was vaguely reminiscent of a D/F Contest—by night! The films were well received, and provided a talking point for the resumption of the Conversazione. The evening

REUNION

Members of the Edgware Group and their ladies entertain friends from the North. In the group can be seen G2IM, 6ZO, 5FC, 3ERO, 3HT, 2AMV, 2YS, 3MZ and the "Ad. Man" (Mr. H. Freeman).

ended as it had begun, in a general conversational free-for-all, and visitors gradually drifted away in the pleasing realisation that the Convention had only just begun, and that there was a whole week-end of functions ahead.

Convention Dinner

Highlight of Convention was the Dinner held at the Coventry Street Corner House on Saturday, June 23. Attended by more than 300 members and friends, the event was one of the most successful of its kind ever staged by the Society.

Among the distinguished guests were Air Vice-Marshal E. B. Addison, C.B., C.B.E., Assistant Chief of Air Staff (Signals); Mr. A. H. Mumford,

AT THE RECEPTION

The President and Mrs. Scarr, with Air Vice-Marshal Addison, C.B., C.B.E. (Assistant Chief of Air Staff, Signals), and Lt.-Col. J. D. Andrew, W4EFG, Air Chaplain, U.S. Army Air Force.

O.B.E., Assistant Engineer-in-Chief, G.P.O.; Mr. S. Horrox, O.T.D., G.P.O.; Mr. H. F. Smith, Editor *Wireless World*; Mr. G. Parr, Hon. Secretary *Television Society*; Lt.-Col. J. D. Andrew, W4EFG, Air Chaplain U.S.A.A.F.; M. Marcel Compagnon de Marcheville, F8NH, President R.E.F.; Herr Ottfried Luhers, DL1KV, Vice-President D.A.R.C.; Herr H. de Waard, PA0ZX, representing V.E.R.O.N.; Senor Santiago Carvajal, EA4CV, representing U.R.E.; and Mr. H. Freeman *National Publicity Co., Ltd.*

The guests were received by the President and Mrs. Scarr, who had the support of Members of Council and their ladies.

During dinner, the President informally toasted the Members of the Council and their ladies, the Past Presidents, the Representatives of Overseas Societies, the Members of the Convention Committee and their ladies, the Vice-Presidents and their ladies, the Society's Representatives and their ladies, the General Secretary and Mrs. Clarricoats, Miss Gadsden and other Members of the Staff, the Old Timers (vintage 1926 and earlier), and the Newcomers (vintage 1951).

Immediately after the Loyal Toast the President

" IT'S YOUR MONEY WE WANT ! "

Says G8TL as he persuades a " customer " that the more tickets he buys for the draw the better chance will he have of winning a big prize. G8KZ, 5LC, 4DC, 4KD, GM6US, G6CL, G5DV, G4FN, G2DP, G3BGN, G3SI are also in the group.

presented special lapel badges to Messrs. D. N. Corfield, D.L.C. (Hons.), A.M.I.E.E. (G5CD), and J. W. Mathews (G6LL), who were recently elected Vice-Presidents of the Society.

The Toast List

After the Dinner (which, it was generally agreed, left nothing to be desired) the ceremonies came under the formal control of the official Toastmaster, Mr. John Mills, resplendent in his scarlet uniform. The Loyal Toast was followed by a witty and amusing address by Mr. Geoffrey Parr who, toasting the Society, touched upon the price of radio components at the present day, and the attitude of the press towards the radio amateur. The President, replying to Mr. Parr, enumerated some of the factors that make people become amateurs. A toast to the Overseas Societies was proposed by the Executive Vice-President, Mr. F. Charman, B.E.M., G6CJ, who conveyed the greetings of the R.S.G.B. to the members of the overseas societies who were present, and the response was made by Herr H. de Waard, representing V.E.R.O.N. Mr. John Clarricoats, in the course of his speech of welcome to the Guests of the Society, spoke of the great help he and Mr. Lewer received from Mr. Mumford and Mr. Horrox during the Atlantic City Conference, and congratulated Mr. Mumford on his recent well-deserved promotion to the office of Assistant Engineer-in-Chief. M. Marcel Compagnon de Marcheville responded. Mr. W. N. Craig, G6JJ, cordially wel-

TALKING POINTS FROM THE TOASTS

Aren't we profoundly thankful that we are non-political!

(Mr. Geoffrey Parr.)

The reasons why we take up Amateur Radio are just about as numerous as the licences issued by the Post Office!

(The President, Mr. W. A. Scarr.)

The usable frequency spectrum is limited, but the demands are unlimited.

(The Executive Vice-President, Mr. F. Charman.)

We have learned how seriously amateur matters are taken by the R.S.G.B.

(Harry de Waard, PA0ZX.)

I regard it as a cardinal error of judgment on the part of the War Office that they do not have an Army (Radio) Reserve.

(The General Secretary, Mr. John Clarricoats.)

The memory of the reception I found in London certainly will stay for a long time present in my mind. I thank the R.S.G.B. for its hearty hospitality.

(The President of R.E.F., M. Marcel Compagnon de Marcheville.)

I think it is most regrettable that the Society does not organise more functions at which the ladies are present.

(Mr. W. N. Craig.)

To the ladies here who are new to " ham " radio I say—have patience. You'll certainly need it!

(Mrs. Iris Cooper.)

comed the ladies, the response being made in neat fashion by Mrs. Iris Cooper.

" Clarry's Swindle "

The completion of the Toast List was the signal for the commencement of the event traditionally known as " Clarry's Swindle." In the years before the war, the General Secretary and Miss Gadsden organised a draw for prizes donated by manufacturers and others interested in the Amateur Radio movement. Once again the " old firm " went into action. Two long tables at one side of the Dining Hall were piled high with gifts, and these were distributed by Miss Gadsden and Miss Lightfoot as the General Secretary announced the winners from the tickets drawn from the drum by Mrs. Scarr and Mrs. de Waard.

The thanks of the Society to those concerns who had co-operated by providing gifts were voiced by the General Secretary during a preliminary announcement made before the draw commenced. A full list of the donors appears on page 28.

One of the most coveted of the prizes (among the XYL's, at least) was the electric clock, which, appropriately enough, was won by Mrs. E. Riley, the wife of EI2G. (Incidently, Jun. Op. P. Riley also won a prize.) Mr. Horrox' ticket was drawn with an enrolment form for a Postal Tuition Course in Amateur Radio! For the unfortunates who did not win one of the major gifts, there were consolation prizes consisting of solder kits. In all, some 250 gifts were distributed—either during the actual draw or as consolation prizes later.

For the ladies only, a special free raffle was organised for perfumes and other *Goya* products. In addition there was a liberal distribution of plastic bowls supplied by the same company. As the evening drew to a close, about two out of every three of the members and guests had received a prize as a permanent souvenir of an outstanding occasion.

The Corner House Orchestra provided pleasant background music until 11 o'clock, when "Auld Lang Syne " and " The King " brought to a close a most successful and happy evening.

Sunday Miscellany

The final day of Convention brought a large attendance of members and friends for the afternoon session, beginning with lunch, and ending with tea. Whether the main attraction on the programme was the Business Meeting—with the prospect of some two hours of discussion and controversy on important topics—or the raffle, with the chance of winning a proportion of the £100-worth of prizes purchased for the occasion by the Convention Committee, it is difficult to decide. The fact remains, both functions aroused considerable interest.

The Business Meeting—a traditional item in every Convention programme since the first in 1926—was held in the Corner House Brasserie on the lower ground floor. Owing to the difficulties of space and seating accommodation, it was not possible to obtain a complete picture of all members who attended the Convention, so that the official photographs comprised a number of composite groups.

BUSINESS MEETING

A section of the general membership at the Business Meeting. Held in the Corner House Brasserie. Many well-known personages can be seen in this photograph.

LUCKY GEORGE

George Webster, G5GK (Region 1 Representative), winner of the Eddystone 740 Receiver, receives his gift from Miss May Gadsden.

After an introductory talk by the President (Mr. W. A. Scarr, M.A.), Mr. W. N. Craig was called upon to open a discussion on " The Government of the Society." Various conflicting points of view were put forward by members on this subject. The second topic for discussion was " The Regional Scheme of Representation," introduced by Mr. Peter Amos, after which the General Secretary spoke on " The Society's Finances," referring in particular to recent proposals to increase membership and affiliation fees. Finally, as time was getting short, a brief discussion on " The Region I (I.A.R.U.) Bureau " was opened by Mr. F. Charman. Generally speaking, there was no reluctance on the part of any of the members present to air their views, and contributions to the discussions were delivered with much good humour and an all round sincerity.

Radio Raffle

For some the main event of the day was the raffle for many valuable prizes which took place before tea.

In charge of proceedings was Mr. C. H. L. Edwards, G8TL, who, as a member of the Convention Committee, had been responsible for the selection and purchase of suitable gifts. Miss

CONVENTION (Continued on Page 28)

A MOBILE TRANSCEIVER for 1·8 Mc/s. Telephony

A compact 1.8 Mc/s. transceiver which can be easily installed in a car, or indeed almost anywhere, is an attractive idea—particularly when capable of giving effective two-way telephony operation over a radius of about 10 miles with a simple whip aerial. Here is a description of the ingenious circuit adopted by G8TL to meet such requirements: the design, whether or not copied exactly, presents many useful ideas for mobile and portable operation.

THE development and operation of amateur low-frequency mobile equipment has for many years proved a source of considerable interest and enjoyment at G8TL. Some of the early experiments, using a transmitter, built in 1937, were described in the August, 1940, issue of the *T. & R. Bulletin*. More recently, however, it was felt that less bulky equipment of higher efficiency was desirable, provided that standard components, as available from a typical "junk-box," could be utilised. This urge eventually resulted in a five-valve transceiver in which each valve plays some part in both transmission and reception, an arrangement calculated to reduce not only the space required, but also the heater consumption.

By

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

The Circuit

The complete circuit is shown in Fig. 1 with the five-bank two-way change-over switch in the "receive" position, when the apparatus takes the form of a five-valve superheterodyne receiver: VT501 (R.F. stage); ECH35 (mixer); EF39 (I.F.); 6J5 (second detector); and VT501 (A.F. output) with A.V.C. applied to the mixer stage. On changing to "transmit," the triode section of the ECH35 becomes the master oscillator, driving the first VT501 as a power amplifier to an input of about 3 watts, while the EF39, 6J5 and remaining VT501 function as pre-amplifier, A.F. amplifier and modulator respectively. Components which play a dual role include the loudspeaker transformer which is also the modulation choke, the P.A. tank circuit which serves as the anode load of the R.F. amplifier during reception (with the condenser used to increase gain if necessary), and, of course, the entire audio-cum-modulator section.

As the .5 megohm gain control in the VT501 audio amplifier affects both receiver gain and depth of modulation, an additional .25 megohm potentiometer is used to control the input to the grid of the EF39 in the "transmit" position, partly to prevent overloading when a carbon microphone is used and partly to permit separate adjustment on "transmit" and "receive." A 4½-volt torch battery is incorporated in the unit for energising the carbon microphone. A 6-volt car battery supplies all the heater and relay circuits and 230-volt high tension, obtained from a rotary converter, is sufficient for an input of about 3 watts. Automatic bias is provided for all valves. The unit can also be used with a standard 230 V. power pack under "alternative address" conditions.

Fig. 1 should be found largely self-explanatory with the possible exception of the aerial switching. In order to cure a tendency for the R.F. stage to oscillate, two six-volt relays are arranged to

Photograph of the mobile "Top Band" transceiver.

"break" (in the "receive" position) the lead to the transmitter aerial loading coil and also one side of the link coupling between this coil and the P.A. tank circuit. A separate receiver aerial loading coil with slider adjustment is incorporated. It should be noted that the two ECH35's shown in the circuit diagram (one drawn dotted) are in fact the same valve, and the switches in the anode and grid circuits of the triode sections are the same switches, being shown duplicated to simplify the diagram.

Construction

Although the construction of such a unit can be adopted to utilise the particular components on hand, a few notes on the original model may be of interest as a supplement to the information available from the photographs. The valves and most of the components are mounted on an aluminium chassis 7in. x 7in. x 2½in. which, in turn, is bolted to a 7in. x 6½in. front panel. The *Yaxley* 5-bank two-way change-over switch is mounted roughly in the centre of this front panel which also carries the milliammeter, gain controls and tuning controls for the oscillator and receiver. Screwed to the top of the panel and supported

* *10 Chepstow Crescent, Newbury Park, Ilford.*

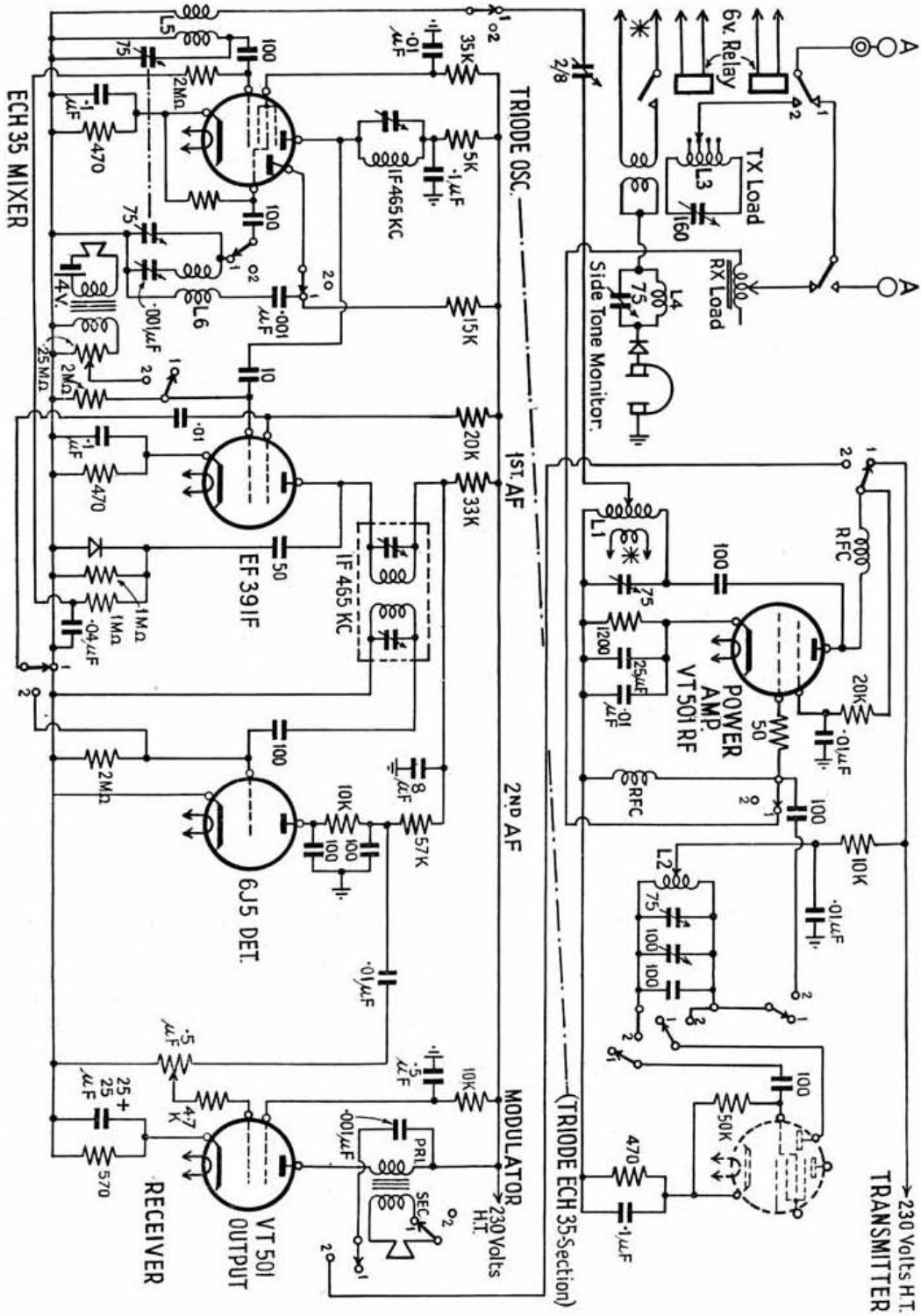


Fig. 1
Circuit diagram of the 1.8 Mc/s. mobile transceiver

also by the two pillars clearly visible in one of the illustrations is the aerial tuning unit 7in. x 7in. x 3in. high. On this is mounted the tapped aerial loading coil which is coupled by a 4-turn link to the tank coil mounted at the rear of the lower chassis. The aerial switching relays, the aerial loading condenser, two aerial binding posts, the monitor coil and detector and the microphone

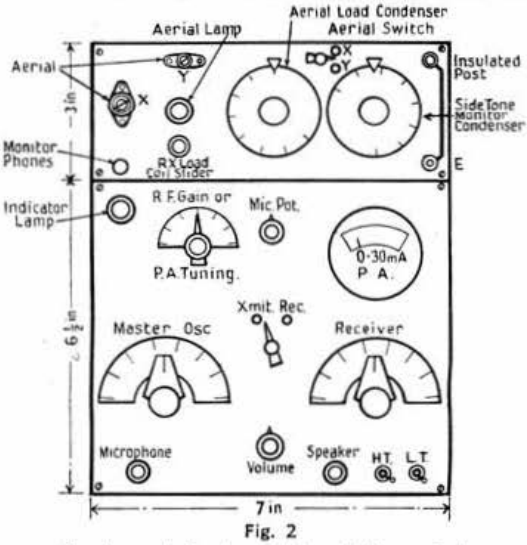


Fig. 2

Front panel showing position of the controls.

battery are all placed on the top section. Wing nuts are used on the supporting pillars and all leads between the two sections are fitted with plugs and sockets to facilitate the complete removal of the aerial tuning unit when carrying out adjustments to the main assembly.

Mobile Aerials

As described and illustrated in the 1940 article, the original aerial consisted of 26 feet of wire

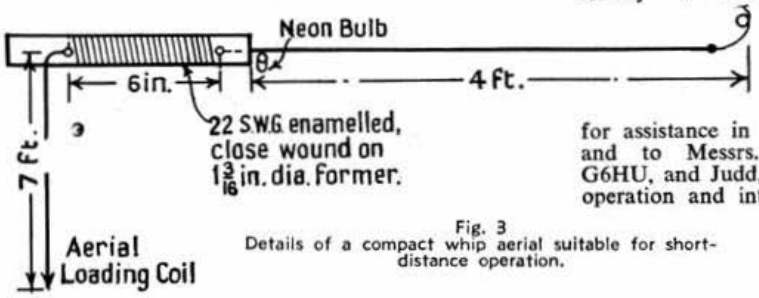
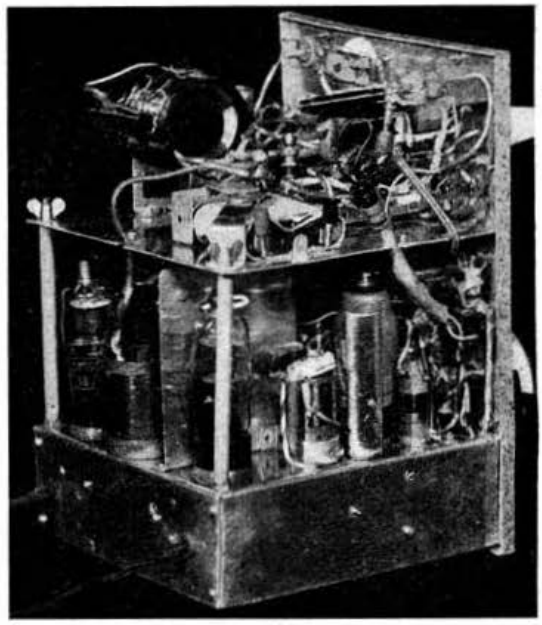


Fig. 3

Details of a compact whip aerial suitable for short-distance operation.

supported on three 7 ft. masts of 1in. x 1in. oak clamped to the car bumpers. Two of these masts were normally mounted at the front of the car and the third, centrally, on the rear bumper; the wire forming a "V" over the roof. Although this aerial functioned satisfactorily it possessed pronounced directional characteristics, and signals varied considerably in strength in relation to the position of the car and the receiving station. It was also, as can be imagined, somewhat unsightly and took some little time to erect: it also, incidentally, once led to G8TL being given place of honour in an evening paper as a suspected I.R.A. terrorist!

Alternative systems were therefore investigated. One of these, shown in Fig. 3, consisted of a loaded whip aerial some 4 ft. long fastened to



Rear view of transceiver

the top of a loading coil which in turn plugged into a socket on the front bumper. This gave uniform results in all directions and provided satisfactory signals up to about 10 miles distant. Signal strengths, however, averaged some 2 db. down on those with the "V" aerial. An increase in the length of the whip aerial to 100 in. resulted in comparatively little improvement.

A more elaborate array, consisting of two 100 in. whip aerials, one on the front and one on the rear bumper, joined with a wire across the roof of the car, gave a decided increase in signal strength, and was in fact equal in performance to the more clumsy "V" aerial; transmissions have, in fact, been reported from up to 150 miles away.

Acknowledgements

The writer is indebted to Mr. J. Erskine, B.R.S.12381, for assistance in the development of this design, and to Messrs. Hollington, G4GA, Hunter, G6HU, and Judd, G2BCX, for their patience, co-operation and interest during many test-runs.

Coil Data

L1	60 turns 1¼in. dia. 26 gauge S.S.E.
L2	42 turns ¾in. dia. 26 gauge E. (tapped at 16 turns from anode end).
L3	52 turns 1¼in. dia. 24 gauge E. (tapped every 6 turns).
L4	¾in. closewound. ⅛in. dia. 36 gauge E.
L5	*Wearite* PH6 or equivalent *Denco*.
L6	*Wearite* PO6 or equivalent *Denco*.

Power Consumption

Transmit:	L.T. 2.7 A.	H.T. 68 mA.
Receive:	L.T. 2.4 A.	H.T. 60 mA.

L.T. 6 volts. H.T. 220 volts.

Transmitter input 3 watts.

THE MONTH ON THE AIR

THE month of June, 1951, will long be remembered for the quite phenomenal conditions on 14 Mc/s., and probably Sunday the 10th will be voted as the most remarkable day. Signals from all over the British Isles were S9+ as were those from Western Europe. One "round-table" contact which took place between F9HE, G2MI, G3FYI/A, G6CL, GM3BN, GM3DHD, ON4RU and PA0UN, all at S9, is typical of the "short skip" which remained throughout the day and, to a lesser extent, during much of the rest of the month. The "Notes and News" section of this feature will tell its own story of these unusual conditions.

Tristan da Cunha

Red Fenton, ZD9AA, now back on the Island, states in a recent letter that he QSL'd direct to all his contacts other than those handled by G2MI. It appears, however, that possibly one or two packets of cards, have been lost in transit, so if anyone who worked ZD9AA and who has no card, will send details of his log entry, together with an addressed but unstamped envelope, to Mr. W. A. Fenton, Tristan de Cunha Island, via Cape Town, he will receive a QSL. Envelopes are scarce on Tristan so please do as requested. In addition to the card, you automatically receive an interesting philatelic item for your stamp collection.

The VP8's

Cards have been distributed through the Bureau from VP8AP and VP8AT. VP8AO is now in King George Island, although his base is still Admiralty Island. VP8AJ is at Port Lockroy, off the coast of Grahamland, but is closing down soon. VP8AK is on Deception Island. VP8AP is operated by GM3EYP, G3DDV having now left the station. VP8AP operates on 7019 and 7050 and has made several G contacts on this band. Input 350 watts C.W., 250 watts 'phone.

QRM

Members who use the "shared bands" should take care to see that they do not cause interference to other services. This is most important on the "Top Band" where the greatest caution is essential and where the use of excessive power is a crime against one's fellow amateurs. Both 1.7 and 3.5 Mc/s. will be under discussion at the forthcoming Geneva Conference, and it behoves us all to see that no justification is provided for any attack on our privileges by other users of the band.

Notes and News

G3ATU suggests a new T suffix T8G—G standing for gargle! His special "friends" are those who come on the air, whistle and puff into the microphone—just to make sure the mod. is still 200 per cent.—and then go off without signing. One Italian did this so many times recently that a DL4 was moved to come on the same frequency and say "For Pete's sake say something! The suspense is killing me!" G3ATU recommends YS1ZG, YS1MS, HI6EC and HI8WF between 2200-2300 B.S.T. on 14 Mc/s. 'phone. Recent contacts were with KG4AU, TI2TG, OX3BD and OA4AO.

BRS 10971 of Croydon seems to do well with his receiver on 3.9 Mc/s. Recently at midnight he heard KP4FAA, EE, DU, DV and ID, all at S7-9 working a net. On 7 Mc/s. 'phone his best have been HP1WM, HP1AP, HC2EW, YV6AO and XE3AH.

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

F.E.A.R.L., Box 500 Tokio, the Society of the U.S. Forces in Japan, offers two certificates; the WAJAD—Worked all Japanese Amateur Districts awarded on receipt of proof of contact with any seven out of the nine Japan call-sign areas and a smaller certificate for any five. Both are tastefully designed in the Japanese style.

VQ4CM, active on 3.5 Mc/s. C.W. (1930-2100 G.M.T.), was heard by G2MI at G6HD/P during N.F.D. at 559. Unfortunately no contact resulted. VQ4CM heard many of the British portables but did not work any of them. Contacts have, however, been made on that band with G2BJY, G3FXB, G5VB and G6ZO. He expects to be on 1.7 Mc/s. next winter.

From GM3DHD we learn that MD9AB should be active for a short time soon. QSL *via* R.S.G.B.

GM3DHD and G2MI were two of the lucky ones to raise ZK1BC during his recent S9 appearances on 14025 kc/s. at 0700 G.M.T. The former also got FG7XA and FO8AB on 'phone and now has DX C.C. No. 10 issued to Scotland. G6XS of Ashton-under-Lyne offers the following: FI8TP Haiphong, 14060, 1950 G.M.T. UA0KKB, Zone 19. FN8AD, 14110. I5ZU, 14090, 1910 G.M.T.—name Humbert. QTH Kismayu. His gem is 5S5EE, QTH unknown!

MT2EX says Tripoli amateurs may now use 21 Mc/s.! Even amateurs licensed by the British military authorities are now "jumping the gun." ST and ZE amateurs were, of course, licensed to use this band months ago.

W2GT says VK9GB—who can be heard in England at 5 p.m. over the north-east route—QSL's 100 per cent. He is ex-ZL1OH/ZL1GS. Ron Garrett of VR3A is with him at Rabaul and will soon be active as VK9RG. Signals from VR4AB have been pounding into the U.S.A. 'GT says 9B3AA gives an address in Bulgaria.

The A.R.R.L. has officially notified R.S.G.B. that ZA2AA, CZ2AC and PX1A have been definitely established as "pirates" and all DX C.C. claims for these contacts have now been disallowed. 3A1A is also "washed out" as this call was used only in Seckenheim, Germany, and never in Monaco.

GW3DOF has worked I5M, supposed to be in Somalia and has added UA9OB to his score. He has also worked FI8TP and PK4Y, Sumatra. He uses three half waves on 14 Mc/s.

G2AUC reports a freak opening of 28 Mc/s. at 0130 B.S.T. on Sunday, May 20, when PY3CR and an OA were S9+20. PY3CR could not maintain the QSO but was heard to say that W8 and 9 signals were very loud. G2AUC worked him for nearly 40 minutes at R5 all the time. The PY used 80 watts and the G 35 watts to a beam. G2AUC says "short skip" contacts on this band with DL, F, I, OE, ON, OZ and SM have been commonplace. A comic one heard was XX1AA, who gave his QTH as Tokelau in the Union Islands. BRS18017 says FB8ZZ on 14060 is a good signal at 1550 G.M.T. Others from his log are FF8MM, 14060, 2200 G.M.T. PJ5RE, 14070, 2200. VQ8CB, 14040, 1530, and YS1RR on 'phone, 14270, 2245.

G2FAY of Oldham, who has just received his card from FO8AC for a QSO in 1949, tips VE8AJ, 14075 at 0800, and VS6BZ on 14040 at 1800.

The Darlington Festival of Britain station, G3FYI/A, had worked 63 countries up to June 25

—52 in the first three and a half days. Nice contacts were with VP5BI, VP3LU, EA8BB, EL9A, VQ4BU, VQ2JD, VS7MP, mostly on 'phone. Listener reports to this station will be answered if accompanied by a stamped and addressed envelope. Please be patient.

BRS9829 heard ZD1SS working a PY at 2200 G.M.T. on June 17. Bob Pybus comments on the peculiar conditions on 28 Mc/s. on June 10. Between 1500 and 1545 G.M.T. he heard both sides of a contact between W3MS and OZ6AA, both at good strength. Signals from EA, F, D, GI, etc., were mixed up with those from CE, LU and PY, but no Africans. In Manchester, the London and Bristol stations peaked at S9 but with considerable QSB.

G6RH is shortly leaving Slough for Bexley, Kent. Together with G6XS and G3DO he has commented on the excellent signal from FN8AD. Other news from this source includes details of FI8RO, 14095. ZM6AA, phone on 14320. ZP2AE, 'phone, 14120. VU2ARCI (Amateur Radio Club, India), 14115. FQ8AG, 14080, and FB8ZZ on 14050 for which G6XS gives the time 1815-1830 G.M.T. at 569.

BRS7594 of Yeovil has cards from FM7WE, VT1AF, YJ1AA, ZD6JL, VP5BP and ZS3M, so is feeling right on top of the world. He gives KR6FA, 14150, at 1750; operator W9ERN; MT2BA and MD1VK, both in M.E.L.F.6, QSL *via* R.S.G.B.; and OY3FP, 14125 at 1920, name of Fleming at Skuvane. TA3XOX (Ankara) was genuine—he has now left. ZD6HJ has been heard on 28365 kc/s. at 1630 G.M.T.

G3FHL thinks things are not going too well with the fellows in Indonesia. Apart from some recent appearances of PK4DA in 14 Mc/s., they seem to be off the air. Any up-to-date news, please?

Because G3BHQ of Chesterfield did not desert 7 Mc/s. the following has been his reward: EK1DS, 0230 G.M.T.; KZ5BE, 0415; KV4AA, 0420; TI2PZ, 0530; TI8JR, 0548; VP9AK, 0630; EA8NR, 0700, and 9S4AX, 1010. He remarks that conditions are not good!

A1193 of Cambridge spotlights the terrific signal from HC1FG in the early mornings on 14 Mc/s., 'phone, and also reports hearing ZD9AA, S8/9, at 0720. Rather an unusual time for this station to come through. Here are a few more frequencies *via* G6XS: ST2GL, 14022 at 1725 G.M.T.; ZS3K, 14105 at 1730; VU2GU, 14050 at 1720; YI2AG, 14103 at 1800, gives his name as Mick and QTH Kerbela. CT2AA, 14115 at 1730, may fill a gap for someone.

G6BB, who has some complimentary remarks to make about this column, adds FQ8AE, 14076 at 0605; UA0AC, 14026 at 1704 in Zone 18; 9S4AR, 14020 at 0955. Others heard but not worked were KG4AO, 14040 at 2212, T7; ZD2TBS, 14012 at 1742; HK4DP, 14073 at 0534; ZK1BC, 14014 at 0612; YS1O, 14005 at 0551, and PJ5ZO, 14073 at 0530. He has a card from MD7RCS for a QSO on 28 Mc/s. marked 14 Mc/s. and wants to know if this should catch the sender's eye if he will be good enough to send another, the present whereabouts of the operator of the now defunct MD7RCS being unknown.

G2DGG passes along a comment from DL4CR to the effect that a number of G signals appear to have a strong "back-wave." This used to be known before the war as a "bell like T9X note"!

G6QB and G2HKU have both informed us of the recent decision to allow New Zealand amateurs to use telephony between 7051 and 7200 kc/s. They have also been allocated a band of frequencies between 1900 and 1925 kc/s., so keep an ear open for ZL's on the "Top Band" next winter.

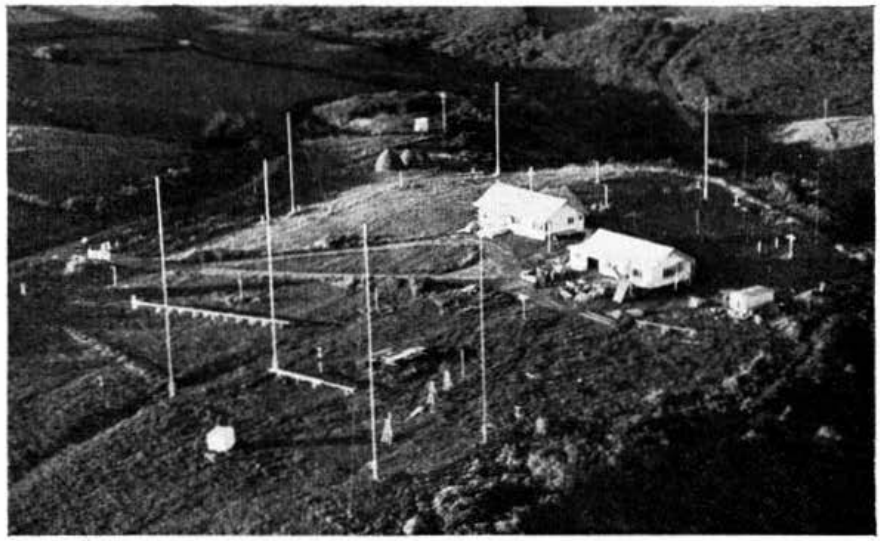
G6QX thinks that 28 Mc/s. is becoming a "Sundays only" band. On June 17 he worked ten countries in ten consecutive contacts: OK, HA, I, FA8, SM, DL, HB9, 9S4, EA and OE, all at terrific strength. His pick on 14 Mc/s. includes FY7YB, VP9DDD, HR1DF, HP1BR, OA4BR and FP8BX. He has been using a 135-ft. Windom and now has a 28-14 Mc/s. rotary dipole, but has not yet made up his mind whether it is worth while!

VS7DB struggles with climatic conditions and QRN. Several times his aerials have been blown away but he manages to carry on. He is usually on between 1330 and 2350 G.M.T. on 14 and 7 Mc/s. He is also active on 144 Mc/s. and is trying to work VU2DH. He uses an 807 as P.A. on 14 with 20 watts to a 100-ft. long wire. He also has dipoles for both 14 and 7.

ZE3JJ states that ZE4GY has not been issued. The J in all ZE calls is the initial letter of a prominent post office official! ZE5's should be coming off the line in about six months' time. He says he is glad to see ST have the 21 Mc/s. band

DX A CERT.

Dave Mitchell — one time GW6AA of Colwyn Bay, North Wales, now ZL1MP of Bay of Plenty, New Zealand—sends this photograph of his aerial systems, taken at sunrise from a Tiger Moth flying at 150 feet. A fixed 16 element (8 over 8) Yagi is in the foreground, the masts for which are 80 feet high.



as the ZE's are getting rather lonely there! He takes to task our colleague of the "Ten Minute Quiz" for calling it the "projected" 15-metre band! As the entire 21 Mc/s. band falls above 14 metres and below 15 metres, it should be called the 14-metre band. (We agree.—Ed.).

Andorra

At last this tiny country—plaything of all the pirate calls imaginable—has been put on the air. As a result of much hard work, persuasion and enterprise, 7B4QF made its bow on 14 Mc/s. over the weekend of June 24. A continuous watch was maintained by the four amateurs concerned, F7AR, ON4QF, SM5UM and W6SAI, and despite very poor conditions, a number of G and other stations were worked. Cards will be coming *via* the R.S.G.B. Bureau. The expedition left on June 26.

Solar Noise

Several examples of this phenomenon have occurred recently. On Saturday, June 16, between 0730 and 0800 B.S.T., the 3.7 Mc/s. 'phone band was punctuated by sudden bursts of noise at approximately half-minute intervals. Signals faded out with the start of each burst and slowly recovered up to the start of the next. On the same day, at sundown, it was possible to D/F the sun with a 28 Mc/s. beam by peaking the noise on the S meter.

Who's Who

G3CND, now in New Zealand, is on 3.5 Mc/s. as ZL2AMZ. He hopes soon to be on 14 Mc/s. G3GSD, now ZE4JG, is the brother of Bob Honey, G3FKE, ex-ST2CH. G3AET passes along a note from VQ5CB to the effect that 5CB, 5CK and 5AU are in Kampala, 5DES is now QRT, 5WCP was at Entabli but is now QRT. All other VQ5 calls are pirates. VS1BJ is now G3HFP in St. Helens, Lancs. BRS7594 says F7AR is W8PQQ, SV0AB is W2SUC, and that OE13CC uses S.S.B. and is on the look-out for others similarly equipped. KR6FA is also operated by W0NRN.

ZC4XP would like to see a Worked-all Counties certificate. This has been considered several times but we have always been loth to see our L.F. bands go the way of the DX and V.H.F. bands where competition is so great. We have also spared a thought for the plight of the poor man in Rutland or Flint who would never be able to ragchew with anyone! 'XP says there are a number of W's in ZC4; W2OHN, W0RAJ, W4GGK, W1LXE and W4JAE are regular visitors to the shack.

HB9DS says HD9JJ will be operating with 150 watts in Liechtenstein again this year from July 20 to August 20. HE9LAA is genuine—low power, 'phone only.

Morse Improvement Transmissions

MORSE Improvement transmissions are now being radiated from G5XB (Reading) as follows:—

09.30-10.00 B.S.T. Sundays 1950 kc/s.
23.00-23.30 B.S.T. Fridays 1742 kc/s.

The transmissions start at 15 w.p.m. with the call, "CQ CQ CQ RSGB MORSE IMPROVEMENT TRANSMISSION DE G5XB G5XB G5XB" repeated three times and followed by "FIFTEEN WORDS PER MINUTE FOLLOWS." The text, taken from recent issues of the BULLETIN, occupies seven to 10 minutes. The procedure is repeated at speeds of 20 and 25 words per minute. Transmissions end with the identification and call sign sent at 15 w.p.m.

It is hoped that these transmissions, which are to be continued experimentally for three months, will provide useful practice for members who wish to improve their copying speed.

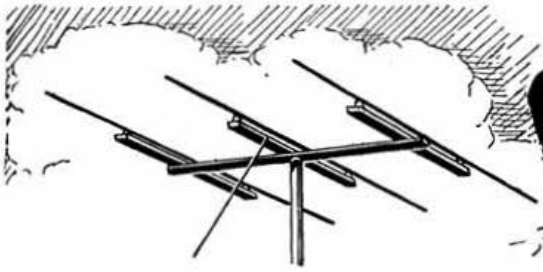
Reports will be welcomed by the originator Mr. S. Cook, G5XB, at "Burghfield," Wood Lane, Sonning Common, near Reading, Berks.

Slow Morse Transmissions

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

B.S.T.	*Call*	*kc/s.*	*Town*
Sundays			
10.00	G6MH	1990	Southend-on-Sea
10.00	G5XB	1950	Reading
10.00	G3AEZ	1847	Dorking
10.30	G3GIO	1915	Guildford
11.00	G2FXA	1900	Stockton-on-Tees
21.00	G2FIX	1812	Nr. Salisbury
Mondays			
13.00	G3AXN	1870	Southend-on-Sea
14.00	G3ADZ	1910	Southsea
19.00	G3NC	1825	Swindon
19.30	G3AIX	1760	Birmingham
19.30	G3GYW	1922	Westcliff-on-Sea
20.00	G2AJU	1900	Stutton, Ipswich
20.00	G3DSR	1750	Derby
21.00	G3ESP	1850	Wakefield, Yorks
21.00	G3BLN	1900	Bournemouth
21.00	G3BHS	1820	Eastleigh, Hants
22.00	G3AEZ	1847	Dorking
22.00	G3GIO	1915	Guildford
22.15	G8TL	1896	Ilford
Tuesdays			
13.00	G3AXN	1870	Southend-on-Sea
18.00	G2FXA	1900	Stockton-on-Tees
19.00	G5XB	1905	Reading
21.00	G3DMP	1850	Wakefield, Yorks
21.00	G3EFA	1855	Southport
22.00	G3ELG	1772	Rotherham
22.00	G3GIO	1915	Guildford
22.00	G2BND	1890	Dalston, E.
22.30	G6JB	1820	Salcombe, Devon
Wednesdays			
14.00	G3ADZ	1910	Southsea
18.45	G3CQL	1990	Leigh-on-Sea
19.00	G3ADZ	1900	Southsea
20.00	G2NY	1850	Preston
22.00	G3DLC	1800	Grays, Essex
22.00	G3GIO	1915	Guildford
Thursdays			
18.00	G3AXN	1870	Southend-on-Sea
18.00	G2FXA	1900	Stockton-on-Tees
19.00	G3NC	1825	Swindon
19.30	G3BUJ	1990	Southend-on-Sea
20.00	G3FVH	1920	Hull, Yorks
21.00	G2AQN	1850	Ossett, Yorks
21.30	G6DL	1760	Birmingham
22.00	G3AEZ	1847	Dorking
22.00	G3GIO	1915	Guildford
22.30	G3OB	1803	Manchester
Fridays			
13.00	G3AXN	1870	Southend-on-Sea
14.00	G3ADZ	1900	Southsea
19.00	G3BLN	1900	Bournemouth
20.00	G5AM	1900	Witnesham, Ipswich.
20.00	G2AMV	1870	Wirral
21.00	G3RB	1850	Ossett, Yorks
21.00	G3BHS	1820	Eastleigh, Hants
22.00	G3GIO	1915	Guildford
22.30	G6JB	1820	Salcombe, Devon
Saturdays			
22.00	G3GIO	1915	Guildford
23.00	G2FXA	1900	Stockton-on-Tees

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



AROUND THE V.H.F.'s

Continental Contacts on Two Metres

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

ANY doubts as to whether the two-metre band would really open up this year for Continental DX have been dispelled by the many spectacular contacts made during the past month or so. Even more striking results may come the way of the V.H.F. fraternity before the close of the present DX season.

On June 1, as reported briefly last month, the long-awaited first QSO's with Scandinavia took place when G3WW (Wimblington, Cambs.) contacted OZ2FR (Baekke) and G5YV (Leeds) exchanged signals with SM7BE situated at Lund, near Malmo, in Southern Sweden. G5YV and SM7BE thus hold the new European 2-metre record with a distance of approximately 600 miles.

To G6LI (Grimsby) fell the distinction of being the first G to be heard in both Denmark and Sweden on two metres. He was called by OZ2FR before the latter contacted G3WW, and was audible to SM7BE fully two hours before that station worked G5YV at 2244 B.S.T. on June 1.

Taking advantage of the good conditions, EI2W (Rathgar, nr. Dublin) has been instrumental in providing a new country on 2 M. for a number of stations in the United Kingdom. Following EI8G's QSO's with G8SB and GW2ADZ in April last, EI2W, operating on 'phone only on 145.3 Mc/s., contacted G3EHY (Banwell, Som.) at 2230 B.S.T. on June 10 and G2OI (Eccles), G3FMI (Chester) and G8SB shortly afterwards. GM3BDA (nr. Glasgow) provided the Scottish end for the first GM/EI QSO at 2324 B.S.T. on June 12 with EI2W, and the latter worked GI3GQB (Ballywater, Co. Down) at 2319 B.S.T. on the following day for yet another "first." The Eire station was heard at that time by GI2FHN (Bangor) who was unfortunately unable to get his signals through to Dublin.

Subsequently, on June 18, EI2W worked G3EHY, 5BM, 6NB and GW3ENY/P between 2230 and 2350 B.S.T. The contact with G6NB, at a distance of 255 miles, was his best DX to date. EI2W was using 20 watts input to an 829B, a four-element beam and a 10-valve receiver. He will shortly be active for about a month from a temporary site 1,250 feet a.s.l. in the Dublin area and will welcome and acknowledge all reports on his signals. Times of operation will be 2215 to 2315 B.S.T. daily.

As an example of supreme optimism the action of W4CLY (Cape Henry Lighthouse) in arranging skeds. on 2 M. with EI2W is hard to beat, yet when the band was first allocated to amateurs who would have believed that our present harvest of DX was even remotely possible ?

Continental Opening

Exceptionally good conditions for Holland, Belgium, and some areas of France and Germany were experienced during the evening of June 4 and the early hours of the following day. The majority of signals were completely free from fading, and had that "solid" quality associated with ranges of not more than 30/40 miles. At G2UJ the first heard was PA0FC (Maassluis) at 2040 B.S.T., who continued to put in an RS 57 signal for at least four hours. He was using 40 watts to a "5 over 5" beam and a modified BC 624 receiver. Other outstanding stations were PA0AD, AJA, BAL and LDG, all on 'phone and all S7/8. A remarkable signal was that from PA0JU (Rotterdam) who, with only five watts to a CV6 and a 5-element *Yagi*, was RS 55. PA0EO, IK, NG, NO and TF were also heard.

From Belgium, ON4AP, BZ, HC, HN and YD—all on 'phone—were heard at various times from 2100 B.S.T. onwards, all without exception sounding like local stations. ON4BZ and 4HC were heard by GW2ADZ. DL3MH (N.E. of Hanover), on both 'phone and C.W. (145.6 Mc/s.) provided contacts with a number of G stations including G2XC (Portsmouth) at 486 miles. He was a steady S6 with G2UJ from 2300 to 0100 B.S.T. but all attempts to raise him failed. DL1LH was also heard but at a strength much inferior to DL3MH. G stations were not outstanding, but GW3EJM (Cardiff) provided an exceptionally loud 'phone signal throughout the evening.

France was represented by F3LQ, 8AA and 8KF.

The Channel Islands

GC2CNC (La Rocque, Jersey, C.I.), who has been getting out well recently, wishes to thank G8IL (Salisbury)—with whom he made the first G/GC contact on May 24 this year—for his valuable assistance in getting going on the band. Best DX from GC2CNC so far has been with G3BA (Daventry) at 210 miles. G3BEX has been heard at RST 599. GC2CNC is active most evenings around 2130 G.M.T. on 145.13 or 145.44 Mc/s.

New U.K. Two Metre Record

GM3BDA (Airdrie, Lanarkshire) worked G3BLP (Selsdon, Surrey) and G2AJ (Biggin Hill, Kent) on June 8, the latter contact being, so far as is known, the greatest distance—approximately 355 miles—yet worked between two stations in the U.K. Signals were S5 to S6 on C.W. This is the first time in 2½ years of activity that GM3BDA has heard 2 M. signals from the London area. His gear includes a "4 over 4" wide-spaced beam 45 ft. above ground and 500 ft. a.s.l., an all-6J6 converter into an R.1155 receiver and 75 watts to an 829B in the transmitter. His frequency is 144.25 Mc/s. Other Scottish 2 M. stations who are in good positions for working towards the south are GM3EGW (Dunfermline, Fife) on 144.25 Mc/s. (approximately) and GM3OL (Dumfries) on 144.025 Mc/s. All make a point of beaming south around 2200 B.S.T. whenever conditions appear to be promising.

Other Two Metre News

GI3GQB informs us that GI3AXD and 3BIL (both in Belfast) are on 2 M., while GI6YM, the station of the Belfast Y.M.C.A. Radio Society, hopes to be working shortly. GW5MQ has been heard by GI3GQB at strengths up to RST 569 but attempts to contact him have so far proved futile.

G3ETI (Great Meols, Wirral, Cheshire) is now on 144.137 Mc/s. with 15 watts to a dipole, every Friday evening from 2200 B.S.T. onwards and sometimes at weekends. Reports would be welcomed from any distance. His converter employs EF91, 6F13 and EF91 as R.F. stage, mixer and oscillator with an I.F. of 9.5 Mc/s. G3ETI is also experimenting with F.M. on 10,000 Mc/s. using a 723A/B klystron.

G3WW, despite a series of misfortunes which included a feeder broken off at the top of the beam, an R.F. stage in the receiver passing out and the failure of five by-pass condensers in the receiver, managed to work ON and PA0 on June 4 and heard DL3MH. G8IC (Doncaster) was contacted on June 9.

G4MW (Cambridge) worked G3BW (Whitehaven, Cumbs.) on June 8 and on the same evening heard GM3BDA. G2FQP, HOP, UQ and 3BX are active nightly in Cambs. together with G2HCG and 3DUP in Northampton.

G6LI was in QSO with GM3ENJ (Dunfermline) on April 24, and on May 20 at 1600 B.S.T. he worked GM5VG/P, 2,600 feet up on the Lowther Hills, Dumfries. Signals were S6 over a distance of 210 miles.

G3EHY heard a number of carriers from the direction of the Continent on June 4, all unreadable. If C.W. had been in use many of these signals would have been fully readable. He comments on the very good strength of signals from EI2W and 8G and G3BW, despite the fact that the first part of the 200-mile path to Dublin lies over the Welsh mountains.

GW2ADZ has heard, but not so far contacted, G2AHP, 3BCK and 6LX. G2WJ worked DL1LH, ON4XB, PA0EO, IK and FB on June 4. All contacts were on 'phone.

The 70 cm. Tests

It is much regretted by the writer that through a most unfortunate mistake in this feature in the last issue of the BULLETIN the date of the R.S.G.B. 420 Mc/s. Tests was given as July 8 which, of course, was that of the 2 M. Field Day.

Only one report has so far come forward regarding the Tests on June 16-17. G2QY, operating portable one mile S.E. of Princes Risborough and 800 feet a.s.l., worked five stations including G2FKZ/P (44 miles), 3APY/P (110 miles), 3BUR/P (50 miles), 3ENS/P (76 miles) and 8QY/P (46 miles). G4LU (Oswestry) was heard at RST 35/29 at a distance of 122 miles. G2QY's frequency is 435.1 Mc/s. He is also carrying out tests on the 2,400 Mc/s. band. (Can we have some details and photographs of your gear?—Ed.).

Other 70 cm. News

GM3BDA is active with an 832 tripler driving a pair of CV 53's at 12 watts input on a frequency of 433.38 Mc/s. GM3OL has been heard RST 539 over 56 miles of mountainous country where attenuation of V.H.F. signals is known to be high. The beam in use is a 5-element wide-spaced *Yagi* with 300-ohm open wire feeders. Other GM stations active include 3FOW (Bearsden, Dumbartonshire), 4HX (Paisley, Renfrewshire), 5VG (Glasgow), 6KH (Hamilton, Lanarkshire) and 6WL and 6ZV (Glasgow).

According to G4KD some interest is being shown in 420 Mc/s. operation in Southern France, and F8PL (Marseilles) is known to be active on the band. F3WV (Toulon) and F9AQ, 9CV, 9GB and 9TP (all in Nice) are on 2 M.

Following our request for further details from 70 cm. stations, G2WJ (Dunmow, Essex) states that his frequency is 435.78 Mc/s. and that he can operate also on 2, 10, 20 and 80 metres. He will be found on the latter band most Saturdays and Sundays at 0930 B.S.T. and will be pleased to arrange 70 cm. skeds.

Contests Diary

September 9	-	Low Power Field Day.
September 30	-	D/F Field Days—National Final.
October 6-7	-	Low Power (3.5 Mc/s.)
Nov. 10-11	-	"Top Band" (1.8 Mc/s.)
December 1-2		All European DX.
December 8-9		All European DX.

GW2ADZ managed to make three contacts during the period of the 420 Mc/s. Tests, one being with G2JT (Oldham) at 72 miles, and another with G3APY/P at 55 miles, which proves his new 16-element array with mesh reflector is working pretty well. As he remarks, "It only wants a bit of bending now to get to London." (The wave, and not the aerial, we presume!—Ed.)

G2DD has again heard G3EHY and it is to be hoped that a two-way will be made soon. G3EHY operates on 435.75 Mc/s., and is prepared to fix skeds. between 1830 and midnight on weekdays and at any time on Saturdays or Sundays, and cross-band working from 2 M. can be arranged.

* * *

Late Flash

From F8NH (President, R.E.F.) we learn that on June 17 the Mediterranean was bridged for the first time on 2 M. when FA3GZ (Algiers)—using only 7 watts to an 832 tripler—worked F9AQ (Toulon) and two stations in the Marseilles area. Signals were RS 59 in both directions over a distance of some 490 miles.

Amateur Radio at the Manchester Electronics Exhibition

AN Amateur Radio station—call G6QA—is to be a feature of the Sixth Annual Exhibition of Electronic Devices to be held in Manchester during the period July 24-26, 1951. The station will be operated by Messrs. T. A. Whitely, G6QA, and D. Stott, G2HBJ.

There will also be demonstrations of the *Compton* Electronic Organ and of the *Ferranti* Logical Computer. Television will be received on home-constructed equipment and modern scientific films displayed.

The Exhibition is being organised by the Institution of Electronics, North-Western Branch, and admission will be by ticket obtainable from the Hon. Secretary, Mr. W. Birtwhistle, 17 Blackwater Street, Rochdale, Lancs.

Old Timers

The Watford "A" station was manned for 24 hours during N.F.D. by Old Timers Bailey, G2QB (right) and Catt, G5PS, whose combined ages total over 110 years, and their "hamming" years more than 70! Both are members of the Watford and District Radio and Television Society.

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

THE HELPING HAND TO AMATEUR RADIO

In pre-war days, articles in "The Helping Hand" series appeared regularly in the Bulletin. Many of those who now display an Empire DX or DX C.C. certificate owe much of their success to the helping hand extended to them when they were newcomers to Amateur Radio. The present series of articles is intended to help a new generation of short-wave enthusiasts to attain a transmitting licence and equip their stations.

Part I—Preliminary Considerations

THIS article is the first of a short series written for the newcomer. It is not proposed to examine in detail the design of equipment or the theory of operation, but rather to suggest apparatus and techniques which the beginner may adopt for success in his early stages and proceed to develop as he gains experience.

Before radio apparatus may be operated, a licence must be obtained from the appropriate authority, this being the Postmaster-General in the case of the United Kingdom. For transmission the licence with which we are concerned is called the Amateur Radio Licence. This is granted after satisfying certain requirements of nationality, proving ability in Morse, and passing (unless already qualified) a written examination set by the City and Guilds of London Institute or other examining body.

First we must consider the implications of the word "amateur."

General Amateur Considerations

For centuries many contributions to science and arts have been made by people not financially dependent on the outcome of their particular branch of study. Thus, in mediæval times many of the finest examples of lettering and illumination of manuscripts originated in monasteries, where they were certainly not produced for gain, because the monks were, by their vows, debarred from worldly wealth and possessions.

Later, when physics and chemistry began to receive systematic and organised study, many of the early contributions came from those who by birth or fortune were able to devote the necessary time to observations and experiment, for their own interest and the general advancement of knowledge, with no thought of immediate financial return.

In the opening years of the present century practical communication by wireless came into being. As was natural, the laboratory rather than the engineering side was the first to originate, and in consequence university staffs, physicists, chemists and others became interested in the developments of their colleagues though not professionally engaged in communications. So originated the first wireless amateurs. They built their own equipment, using spark transmitters and coherers or crystal detectors and they operated their private stations. Then the 1914-18 war broke out and many in the Services or in the firms making the equipment came into contact with wireless for the first time. After the war a proportion of these maintained their interest in the subject until gradually the circle of those building and operating their own stations widened to include many whose everyday professions held little connection with wireless or—as it had then become to be known—radio. As their numbers grew, manufacturers in the United Kingdom and America were able to devote part of their output to the production of specialised valves, components and other items to meet the need of this small but expanding market. What is loosely known as Amateur Radio had come to stay.

The value of this self-trained body became evident at the outbreak of the 1939 war. Men with knowledge of telegraphy and operating procedures were immediately available. Equipment manufactured for them could be put into rapid production with only trivial changes in design. Amateurs with their experience of building and improvising their own equipment were ready to install new Service equipment in stations throughout the world with the minimum of instruction, and to train others in the new techniques. Those were testing years and Amateur Radio came through them with distinction.

Comparison of Power v. Radio Engineering

Now that we have traced the origin, let us see what scope is offered. Many readers of these articles will have had little background of electrical training, and may find some difficulty in visualising abstractions such as radio efficiency and power in terms of the familiar workaday world. The following contrasting examples illustrate the difference between the power engineer's and the radio amateur's conception of power and its applications.

(1) A power of 1 kilowatt will heat a sitting-room in cold weather. In a 1949 transmitting contest, where the maximum power was limited to 1 kilowatt, the winning station contacted 113 *countries* in two week-ends.

(2) A lamp of 25 watts will illuminate a staircase. In the 1950 Junior British Empire Transmitting Contest, where the maximum input was 25 watts, the winning station (VS1CW) made 174 Empire contacts, working from Singapore, while a station in India (VU2JP) made 140 Empire contacts.

(3) A power of roughly 1 watt is taken by an average pocket torch to illuminate objects as far as across a road. Using *half* this power in the annual R.S.G.B. Low Power Contest, the leading stations regularly make more than 70 contacts in 24 hours covering all parts of the British Isles at excellent signal strength.

Such examples are typical of what may be achieved with amazingly small expenditure of power. They entail, needless to say, skill, experience and often endurance, but they will serve to show the newcomer what heights can be attained if he perseveres in the science he is choosing to practice.

Qualifications for Licence

Now let us see what preparation is necessary to qualify for a transmitting licence. We have already

noted that proof of nationality will be required. Also the written examination paper set by the City and Guilds of London Institute, covering matters such as general regulations, precautions to be taken against causing interference with other services, questions on simple equipment and elementary electrical calculations. This examination cannot be discussed in the limited space of an introductory article, so more will be said of it in due course. Meanwhile we will proceed to the third test, that of receiving and sending Morse at a speed of not less than 12 words per minute.

The Morse Test

This Morse test is often a subject for criticism by those who anticipate that they will operate almost entirely with telephony, but a reasonable knowledge of Morse is nevertheless essential. A telegraphy transmitter is a good deal simpler in construction and adjustment than one for voice transmission. Also, contrary to what might be expected, the transmission of many types of intelligence is more rapidly effected by telegraphy than by telephony, for it must be remembered that one

What's the Score ?

Fred Lambeth, G2AIW (South-West London District Representative), checking the final tally at the East Molesey "A" station at Dorking, with Leslie Cooper, G5LC (Honorary Secretary, R.S.G.B., and President, Thames Valley Amateur Radio Transmitters' Society).

of the limiting factors in copying a message by hand is the speed at which an operator can write, not the speed at which it can be dictated. For this reason telegraphy is very widely used for routine traffic in ship and aircraft services, while telephony finds its place more for short distance communication such as police or army patrols, vehicle direction or small craft where no trained operator may be available.

There are few short cuts in learning Morse. The beginner should from the start learn the code by the sounds of *dits and dahs*, not visually by dots and dashes. To accustom himself to the characters it is helpful to practice mentally sending the registration numbers of passing cars, slogans on hoardings, house names, numbers and so on at frequent intervals throughout the day. A search of the short wave bands will reveal some stations repeating call signs at a fairly slow speed, and these will prove invaluable. Slow Morse practices are transmitted from certain stations in the 1.8 Mc/s. band, details of which appear in the R.S.G.B. BULLETIN. Where possible a reliable operator should be asked to check the beginner's formation of letters. If there is a club in the area, and most large towns provide one, the beginner should certainly apply to join it. Apart from the Morse practice classes which are often held during part of their regular evening meetings, he will gain valuable knowledge from the more experienced members and will doubtless be able to see equipment in actual operation. The learning of the code by "opposites" (D for instance being the "opposite" of U) is inadvisable, as it so frequently causes hesitation and confusion at later stages. In general, perseverance will prove the main factor in mastering the code.

The possession of equipment having transcontinental range should be accompanied by a due sense of responsibility. Accordingly, from the start the newcomer should resolve to train himself in approved practices. Good workmanship—however simple the tools—and the resulting pride in equipment are invaluable assets. The safety of the equipment, both to the owner and to others, must never be neglected. Subjects discussed "over the air" are far better restricted to technical matters, while personal or political criticism should be reserved for transmission by other methods than by radio. A remark that may be quite harmless in one country may be offensive in another. As in so many other spheres good manners do greatly contribute to the enjoyment of others.

Use of Abbreviations

One frequent error is for beginners to use excessive "radioese." It is natural that abbreviations can speed up any form of communication, and consequently there are many standardised examples. Some are self-evident, such as *rprt* for *report*. A considerable number are based on internationally accepted lists such as the Q series (QRK? indicating *At what strength are you receiving me?)* and the Z series used mainly for commercial automatic transmissions, (ZHC? enquiring *How are receiving conditions?)* Certain abbreviations date back to telegraph operating practices of seventy or more years ago. *73* meaning *best wishes* is a typical example. Others have no official recognition but are used in personal exchanges between operators, such as CUL for *see you later.*

An example on the use of these abbreviations may be helpful. Thus, in a transmission it is perfectly in order to render :—

Received and understood your message. Thanks for details. Will listen on 14 Mc/s. tomorrow. Best wishes. See you later. End contact

in the form :

R. TKS FR DETAILS WL QRX 14 TMRW 73 CUL SK.

but the use of such abbreviations in written correspondence would only lead to natural ridicule.

Radio communication, however elementary or part-time, is not a science to be undertaken in any spirit of irresponsibility any more than driving a car or small boat sailing. Abuse of accepted procedures may endanger lives; good practices go far towards the safety and enjoyment of all concerned.

Part II will deal with the layout of stations, bearing in mind the addition of auxiliary apparatus, together with the choice of grouping controls, and the preparation of the station aerial.

FIELD DAY FUN IN THE SOUTH

R. J. Donald, G3DRD, Acting Region 8 Representative, contributes this N.F.D. story based on a tour which he made through Kent and Sussex.

ONCE again the "Weather Clerk" joined forces with the R.S.G.B. Contests Committee in making National Field Day an outstanding success. Sparkling sunshine and gentle breezes were the order of the day as amateurs invaded the countryside to battle for the coveted award, armed with their latest low-power transmitters, "hotted-up" receivers, and ancillary equipment. Shortly after 12 noon on the Saturday, tall masts, supporting ingenious aerial arrays, sprang up on selected sites; soon the ether was filled with /P call signs as the 260 odd stations, who had notified their intention of competing, entered the fray. Once again the Swiss Society (U.S.K.A.) arranged their Field Day for the same period, thereby adding much interest to the event.

A STUDY IN CONCENTRATION

Chasing elusive DX at the Southgate "A" station (call G3GNB/P) in Hadley Wood. Left to right: G3EPV, G3BWQ and G3AQM.

Incidentally, N.F.D. is a great social occasion, for there is always a steady flow of visitors to the stations. Members who can seldom attend local functions usually manage to drop in to see how things are going, and many a first "personal QSO" has resulted in this way.

Aerial Ingenuity

Modern practice, coupled with the power limitation of 5 W. input to the final, seems to favour the almost universal use of specially-built transmitters incorporating V.F.O. control, one or more buffers or doublers, and a small tetrode P.A. It is safe to assume that the power available for radiation was about the same for all stations. No doubt the choice of aerials had more bearing on results than any other factor. This year, the rules allowed the use of three wires, but banned elaborate arrays, a popular restriction among many contestants, who regarded it as an incentive to ingenuity.

Eastbourne Forethought

Eastbourne "B" station, for instance, erected an aerial system that showed signs of considerable forethought and work before the event. Four fine tall masts supported the three long

FOUR MILES FROM ST. PAUL'S.

Primus stove trouble at the Finsbury Park station, G2BAB. Reg Harris, whose call was used, stoops—to conquer the QRM.

wires in the shape of a fan, a specially built four-wire feeder coupled to a massive multi-bank ceramic wafer switch permitting adjacent pairs of wires to be used as V-beams on Australia and South America, or on America and mid-Europe. Alternative switch positions enabled any of the three long wires to be used with a Zepp feed. The operator was provided with a great-circle map showing the radiation patterns of the various systems.

By 11 o'clock on Sunday morning the station had made contact with W1, 2, 3, 4, 5, 8 and 9; VE1, 2 and 3; VQ2, 3 and 4; VK, ZL, EK1, ZB1 portable on both bands, and a VS6 in Hong-Kong. They reported some difficulty, however, in working G's, due to lack of high angle radiation!

No Snags

Commercially built superhets were widely used, with the *National HRO* as favourite. The choice of power supplies was more or less evenly divided between car batteries and vibrator or rotary power packs, and petrol generators. The latter permitted such luxuries as electric fires and even fluorescent lighting for the night shift!

Breakdowns seem to have been very few in number. G5BS/P at Maidstone closed down after only a few hours as it was found that the avail-

TEAMWORK

Scarborough "B" station, with G8SI (foreground), BRS18461 (logging), and G3BYH.

only a few hours as it was found that the available batteries would not keep both stations going for the full period. "B" station was therefore sacrificed in order to keep "A" on the air. The "chief engineer" at the Medway Towns "A"

GOT HIM—NEARLY !
G6HD at the key of the Bromley and Beckenham station.

station spent a hectic time repairing damage done to the equipment just before the start, when the petrol generator governor decided to stop governing ! The revs. soared gaily, and so did the volts—with the result that most of the electrolytics gave up the struggle, ruining some perfectly good rectifiers. An adequate stock of spares had been brought along, however, and the station was serviceable again before the start of the contest.

Lesson of N.F.D.

Each year it becomes more obvious that the Trophy can only be won by careful preparation, hard work, and practical testing on the site, but this does not discourage the less ambitious Groups who enter solely for a pleasant week-end of radio. All the fun can be had with simple equipment, and complicated aerials are not essential to good scores—nor is it necessary to make too much hard work of the operating. There can be a great sense of achievement in making a better score than neighbouring groups, and in rising a little higher in the list of results. For those who put the station on the air, it means plenty of hard labour —but mentally and physically it is a good thing. No wonder N.F.D. is this country's most popular Amateur Radio contest !

Radio Amateurs' Examination

THE Overseas Telecommunication Department of the G.P.O. are arranging to conduct a Radio Amateurs' Examination on similar lines to those of last year. Due to increased costs, however, it has been necessary to make the fee £1.5.0 on this occasion and even this amount is subject to the number of candidates being not appreciably less than last year.

Provisional arrangements have been made with the Cripplegate Institute, Golden Lane, London, E.C.1, to conduct the examination at that centre on Saturday, October 6, 1951, between 2.30 p.m. and 5.30 p.m. Applications to sit the examination should be sent to:

The Inspector of Wireless Telegraphy,
Telecommunications Dept.,
G.P.O. Headquarters,
London, E.C.1,

and must be received not later than September 1, 1951.

The fee, which should accompany the application, may be remitted by cheque, money order, or postal order made payable to the Postmaster-General. An acknowledgment of the fee, together with confirmation of the date and place of the examination, will be sent to each applicant.

The G.P.O. wish it to be clearly understood that the City & Guilds of London Institute will not be associated with this examination and that comparisons between the standards of the two examinations will not be admissible.

May Examination

THE following questions were set by the City and Guilds of London Institute for the Radio Amateurs Examination held on May 2, 1951.

1. Give a circuit diagram of a three-valve tuned radio-frequency receiver for the reception of radio-telegraphy on the 1.7 and 3.5 Mc/s amateur frequency bands. State the functions of each stage. (15 *marks*.)
2. Describe the construction of a three-electrode valve and explain the functions of the various electrodes. Illustrate your answer with a typical characteristic curve. (15 *marks*.)
3. With the aid of a diagram, describe a variable radio-frequency oscillator suitable for the frequency control of a low power transmitter. What steps are taken in the design to ensure stability in operation ? (15 *marks*.)
4. How would you devise a station log to comply with Post Office Regulations ? Set out the headings, and show how you would enter :—
   (*a*) an unanswered CQ call.
   (*b*) a two-way communication with another station
   (15 *marks*.)
5. What steps should be taken with a receiving aerial to obtain maximum signal strength, with minimum interference from nearby electrical appliances ? (10 *marks*.)
6. Describe a simple absorption type wave-meter and say how it is used for checking the frequency of a radio-frequency valve oscillator. (10 *marks*.)
7. What is the standing bias voltage produced by a cathode bias resistor of 1,000 ohms, where the characteristics of the valve are such that the anode current is 5mA. and the screen grid current is 1mA. ? What is the wattage dissipated by the resistor ? (10 *marks*.)
8. What are the principal causes of loss of energy in the tank circuit of an amateur transmitter ? What can be done to minimize these losses ? (10 *marks*.)

Candidates were invited to attempt all questions and to make use of diagrams where applicable. The maximum possible marks obtained is affixed to each question.

A Report from the examining body will be issued later in the year.

IT'S TOPICAL

MORE about **radio noise** from space . . . according to recent research in America, the intensity of magnetic storms of solar origin is directly related to the positions of the planets with respect to each other and the sun. Radio-magnetic weather forecasts, based on predicted configurations of the planets, have, it is claimed, provided a day-to-day accuracy of about 85 per cent. It has also been determined that the degree of disruptive bombardment which occurs in sunspots is not a function of their size, but depends on their age and position on the face of the sun. A critical zone, 26 degrees in radius from the optical solar centre, marks the region of greatest sunspot activity, and this zone expands as the sunspot cycle approaches its maximum (the next being due in 1954).

Apropos the short article on **flying-spot television** last month, the possibilities of the system are adequately demonstrated by a Belgium amateur who states that he can now transmit 625-line 50-frame interlaced pictures in closed circuit, using an arrangement very similar to that described. Definition is up to standard, the video bandwidth being approximately 5 Mc/s. Some of the "phantom" TV-transmitters, which are radiating unauthorised still pictures in Belgium, are using flying-spot "cameras." And, of course, our own B.B.C. tele-cine projectors at Alexandra Palace both use the flying-spot system for scanning the film, with no falling off in definition as compared with "live" cameras.

Miss Barbara Jordan, member of the Guildford Secondary School Amateur Radio Club (call G3FYN), has, at the age of 14 years, just passed the **G.P.O. Morse test.** She is the first member of this "all YL" club to pass the test, and what is more, she made the grade at her first attempt. Barbara can be heard from G3FYN, and occasionally from G2ATM, where she has operated as guest operator. Sending in this item of news, G2ATM wonders whether she is the youngest YL operator to pass the test in this country. Any challengers. . . .?

Emisiones en Morse lento organizadas por la R.S.G.B. is the title of a full-page feature in the May issue of **U.R.E. Revista de Radio,** which turns out to be our old friend "Slow Morse." A close examination, however, reveals a number of curious discrepancies, all of which add up to the fact that the U.R.E. reprint of "Slow Morse" is not only non-current, but does not correspond with *any* of the **R.S.G.B. Slow Morse** tables published during the last twelve months. Its nearest counterpart appears in the July, 1950, issue! Let's hope that not too many Spanish S.W.L.'s will search the ether in vain for these non-existent transmissions. A re-morseless fate indeed!

"A bronze plaque will be awarded to the amateur who first receives a television transmission from across the Atlantic." This sentence is quoted from a letter printed in the April issue of **QSO** (Organ of U.B.A.). The contest, which apparently is being organised by **Radio-Revue,** is designed to collect and collate information regarding **DX Television reception.** It is thought that reception of American TV transmissions should be possible at certain periods during the year, depending on propagation conditions. Examples of DX-TV to date are—the reception of pictures from Leningrad in Belgium (2,200 kilometres), and the reception of the Boat Race in South Africa (10,000 kilometres). It will be interesting to see which country will be the first to "look in" at American video!

CONVENTION (Continued from Page 15)

Gadsden presented the prizes. The disposal of the major items was as follows: the Eddystone 740 Communications Receiver went to Mr. G. Webster, G5GK; the Miniscope to Mr. Woodbridge, and the Component Bridge to Mr. Hammersley.

DRAW DONORS

THE gifts included in the free draw on the Saturday were donated by the following concerns: **Antiference Ltd.** (short-wave aerial), **J. Bull & Sons Ltd.** (miscellaneous small items), **Butler Radio Manufacturing Co. Ltd.** (low-pass filter for T.V.I.), **Chapman and Hall** (books), **Easibinder** (vouchers), **Edison Swan Electric Co. Ltd.** (electric clock), **E.M.I. Institutes** (enrolments for home study course "Radio for the Amateur"), **Cyril French Ltd.** (cabinet loudspeaker), **Henley's** (soldering irons), **Labgear Ltd.** (tuning capacitors), **E. R. Martin Ltd.** (Festival of Britain QSL cards), **McGraw-Hill Co. Ltd.** (books), **Mullard Ltd.** (valves), **Newnes and Pearson** (books), **Oliver Pell Control Ltd.** (choke), **Reosound Ltd.** (rack-mounting cabinet), **Rock Radio** (V.H.F. tuning unit), **Short-Wave Magazine** (subscriptions), **H. L. Smith & Co.** (soldering iron), **Southern Radio** (transmitting condensers), **Standard Telephones and Cables Ltd.** (valves), **T.C.C.** (condensers), **T.C. & M. Co.** (300-ohm feeder), **Webb's Radio** (globe), **Westinghouse Brake & Signal Co.** (radio units and *Viewmaster* kit), **Wireless World** (subscriptions and books), **C. H. Young** (meters).

Multicore Solders donated one gross of soldering kits. In addition 24 copies of the A.R.R.L. Handbook (donated to the Society by the Metropolitan Radio Club of New York) were used as prizes.

During the period following the Business Meeting, the latest T.V.I.-proof transmitter from the shack of its designer, Mr. Louis Varney, A.M.I.E.E., G5RV, was exhibited, and attracted much attention.

The arrival of tea signalled the final hour of National Convention, and perhaps the main feeling experienced by everyone present at this stage was one of regret that four days should pass so quickly. But that's the way it is with all good things. Convention has come and gone, bringing its own kind of pleasure to those who were fortunate enough to attend. Perhaps, in a year or so, we shall all be saying once more—*C.U.A.C.*

Convention Photographs

Copies of all Convention photographs may be obtained from Mr. F. G. S. Wise, 5 Victoria Street, London, S.W.1, size 6 in. x 4 in., 2/6 each.

London Members Luncheon Club

AMONG the record attendance of 43 at the June meeting of the Club—held on the Friday of Convention—members were glad to welcome amateurs from France (F8NH), Germany (DL1KV), U.S.A. (W4EFG), Sweden (SM5GG), Spain (EA4CV) and Malaya (VS1AY). After lunch F8NH and DL1KV addressed the Club.

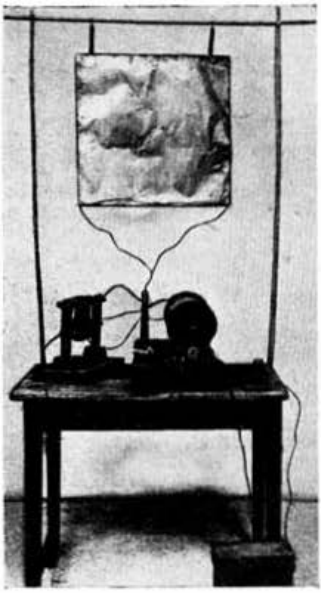
Meetings will be on July 20 and August 17 at the Kingsley Hotel, Bloomsbury Way, London, W.C.1 (opposite Headquarters). 12.30 for 1 p.m.

Stanley Vanstone, G2AYC (fourth from left), Chairman of the London Members' Luncheon Club, with W4EFG, DL1KV, F8NH, EA4CV and SM5GG.

Festival Wireless Exhibits
The First Transmitter/Receiver

By V. E. Hughes, G3AVG

THOSE of us who are wont to indulge in a little pardonable pride when we show someone over the "station," can see the forerunner of our gleaming rigs at the South Bank Exhibition of the Festival of Britain. In the Transport Pavilion the History of Wireless is illustrated with priceless exhibits which include the first transmitter-receiver ever built. It is the original spark-gap transmitter and coherer receiver built by Marconi and demonstrated by him in London in 1896. (The small showcase does not allow the erection of the elevated aerial which was a copper sheet suspended between two bamboo poles.)



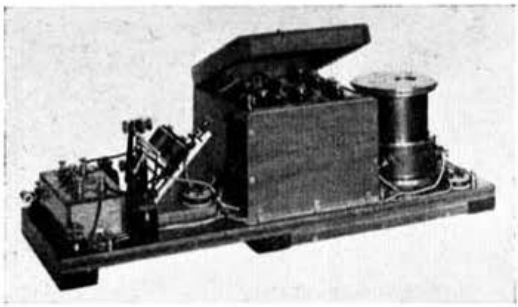
Model of the first wireless transmitter used by Marconi, showing the induction coil for obtaining a high voltage with a multiple ball spark-gap. One side of the spark-gap is connected to the copper sheet aerial and the other side to earth

Alongside this revered "Grandfather" is a transmitter and receiver used on board a ship in 1900—the first time a sea-going vessel could signal beyond visual range. These old-timers were in use before the advent of the thermionic valve.

Other outstanding wireless exhibits which have been loaned to the Exhibition by *Marconi's Wireless Telegraph Co. Ltd.* include a magnetic detector (1902), an original Fleming diode (1904), and an early triode, a carbon microphone used by Dame Nellie Melba in June, 1920, when she made the world's first public entertainment broadcast from the *Marconi* Works in Chelmsford, and many examples of present-day equipment.

A complete full-size mock-up of the *Marconi* equipped cockpit of the "Comet" is also in the Transport Pavilion, while in the Telekinema a *Marconi* Image Orthicon television camera chain is responsible for the large-screen television interviews.

Even the Shot Tower is *Marconi* equipped, for the lighthouse optic which sweeps across London each night is remotely controlled by V.H.F. from St. James's Square.



Complete coherer receiver.

British Radio and TV for the World

RADIO, television and electronic equipment, which British manufacturers have done so much to invent and develop and are now exporting to the value of nearly 18 million pounds sterling a year, is reviewed in a booklet published by the *Radio Industry Council* for circulation overseas in connection with the National Radio Show to be held at Earls Court, London, from August 28 to September 8, 1951.

Twenty-five different aspects of the industry are touched upon, ten chapters being devoted to television development in Great Britain and the remainder to radio and sound reproduction, communications and navigational aids, electronics in industry, science and medicine, valves and cathode ray tubes and components and accessories.

The photographs cover many subjects, including the B.B.C.'s V.H.F. broadcasting station at Wrotham, Kent, in which A.M. and F.M. transmitters have been tried out side by side; a T.V. camera working from an aircraft; the large screen television cinema projector; permanent equipment for televising surgical operations; the sound reproduction system in the House of Commons; and the equipment in the cockpit of the "Comet" jet airliner.

Copies of the booklet are available upon application to the Secretary, R.I.C., 59 Russell Square, London, W.C.1.

Royal Naval Volunteer (Wireless) Reserve

EX-NAVAL Telegraphists, and ex-Army or R.A.F. wireless operators, who live in South Yorkshire and wish to do a worthwhile job in their spare time, are invited to enrol in the Sheffield Unit of the Royal Naval Volunteer (Wireless) Reserve. Pre-National Servicemen are also eligible. The scheme provides for suitable training at a Signal School, or at sea with the Royal Navy. Accepted candidates, when proficient, are supplied with a transmitter and receiver on loan, for home use on R.N.V.(W.)R. frequencies. In addition, a bounty and expenses are payable.

The Sheffield Unit meets each Tuesday and Friday evening between 8 p.m. and 10 p.m. at the Vestry Hall, Cemetery Road, Sheffield 11, where prospective candidates will be welcomed. If sufficient volunteers are forthcoming from the Doncaster area, a separate unit may be formed. Enquiries should be addressed to the Section Officer at the above address.

Congratulations

TO Vice-President H. A. M. Clark, B.Sc.(Eng.), G6OT, upon being elected a Member of the Institute of Electrical Engineers. On several occasions in the past Mr. Clark has been invited to read papers to the Institution, and last year he was awarded the Norman Keith Adams Prize in recognition of his many technical contributions to the Society.

First Scottish Amateur Radio Exhibition

THE first exclusively Amateur Radio Exhibition ever to be held in Scotland took place in the Music Hall, Aberdeen, from May 24 to May 26, 1951. Organised by the Aberdeen Amateur Radio Society—a Society in affiliation with the R.S.G.B.—the Exhibition gave many citizens of the Granite City their first insight into the mysteries of Amateur Radio.

The Exhibition was opened by the Senior Baillie of Aberdeen—Baillie McGee — whose speech was recorded on a *Scophony Baird* machine.

The Exhibition Station

The Exhibition station, loaned by GM2FHH, was operated under the call sign of the Aberdeen Society—GM3BSQ/A. The transmitter consisted of a Clapp VFO-807-P.P.PT15's, plate and screen modulated, running at 100 watts, whilst the receiving equipment comprised an HRO, power pack, loudspeaker and monitoring oscilloscope built into a single unit. The 'scope was used to monitor incoming and outgoing transmissions. The aerial was a "GM6IZ Special" fed by 80-ohm co-ax cable. The station proved the greatest single attraction and at all times commanded a very interested audience.

GM3BSQ/A., the station of the Aberdeen Amateur Radio Society in operation at the Aberdeen Amateur Radio Exhibition.
Left to right: GM3DWX, 3ALZ and 3EOJ.

Displays

On entering the Exhibition visitors were confronted with a 10-metre beam mounted on a tower, to which was attached a map and a flashing sign spelling out the words "Amateur Radio."

Some of the prize-winning exhibits displayed at the Aberdeen Amateur Radio Exhibition.

Other exhibits included a two-way duplex V.H.F. telephone system operating in the 420 Mc/s. band; a radio-controlled model railway (which did some queer things when the Exhibition transmitter was operating!); oscilloscopes which depicted speech wave forms and several items of sound recording and reproducing equipment.

A complete beginner's station, shown by GM3HGA, comprised a 20-watt C.C. transmitter, a BC 348 receiver and Class D wavemeter. Also on display was a 50-watt V.F.O. transmitter and receiver both built by GM3DWX into an upright piano case.

Constructor's Competition

In the constructor's competition first prize was won by GM3EOJ for a well made 150-watt rack-mounted transmitter. GM3ALB, who showed a 3-40-watt miniature V.F.O. transmitter designed to operate from mains or accumulators, won the second prize, and GM3HGA the third. The latter exhibited a 420 Mc/s. long-lines transmitter using a pair of 8012s.

Just before the Exhibition closed a recording was made by all members of the Society then present. This has been sent to the U.S. in the hope that it will find a place in a future V.O.A. Amateur Radio programme.

Although team spirit was responsible for the success of the event it is appropriate to record that had it not been for the special efforts of GM2FHH, 3ALZ, 3BCL and the Society's hard-working Secretary (George Jamieson) there would have been no Exhibition.

The Society owed much to Messrs. J. W. Anderson for the use of their facilities and for a donation of £10. J.D.

Ten Minute Quiz

This month's posers for the radio enthusiast.

1. *How many National Amateur Radio societies make up the membership of the International Amateur Radio Union?*
2. *What is "Capture effect"?*
3. *What is the approximate daily average number of BC/TVI complaints dealt with by the G.P.O.?*
4. *Approximately how many portable stations were active in Great Britain during N.F.D.?*
5. *Give the date and times of the R.S.G.B. Low Power Field Day and by what date after the contest must entries be posted?*
6. *What are the frequencies of the B.B.C. experimental V.H.F. broadcasts?*
7. *Which is the "odd man out"?*
   33⅓ 45 56 78
8. *From what simple formula can the approximate beam width of radiation from a paraboloid reflector be obtained?*
9. *Which amateur band is scheduled (in Region 1) to be halved under the Atlantic City allocations?*
10. *What is the RST code for:*
    (a) A musically modulated C.W. note, and
    (b) A good D.C. note with just a trace of ripple?

Now turn to page 41 and see whether you have beaten the Question Master.—H.E.B.

Two-Metre Contest Results

THIRTY-SIX competitors submitted logs for the event held on May 19-20. Several entrants commented that activity appeared to be lower in all parts of the country. Conditions, too, were certainly poor on the Saturday, but improved considerably on the Sunday, when fading and even QRM was noted at times. The best contact was between G3BLP and G3BW over a distance of 270 miles. In addition, G5MA/P worked G5YV, GW2ADZ worked G2CPL, G6LI worked GM5VG/P, G3BW worked G6NB, and G6UH worked F8LO—all over 200 miles.

Winner of the contest is Mr. W. R. Joss, G2AJ, of Biggin Hill, Kent, who is followed by Mr. G. W. J. Haydon, G3BLP, of Selsdon, Surrey—both stations repeating their 1950 positions. G2AJ's 89 contacts brought him 334½ points, compared with G3BLP's 72 contacts and 295½ points.

G5MA/P used an interesting transmitter consisting of three EL91's driving two 6C4's in push-pull with an input of 12 watts. This brought him 214½ points and third place. G6LI used a pair of 826 triodes, and G6UH a pair of TT11's. All other competitors pinned their faith on 832's or 829's. Crystal-controlled converters were much in evidence, while in several cases the "cascode" R.F. stage was used. Aerials generally consisted of stacks and Yagis in approximately equal numbers.

Scoring System Criticised

For a variety of reasons the scoring system came in for some critical comment. G3BLP believes it favoured London stations, while G6CB is of the opinion that it definitely worked against them. G6LI thinks it favoured the distant stations. There were suggestions that increases for distance should begin at 40 or 50 miles, and that points should be awarded on a mileage basis with a county bonus, and that no points should be scored for contacts up to 80 miles.

Analysis of the logs received shows that a county bonus would have done little but increase scores all round, because, generally speaking, the higher the station in the list, the more counties were worked. Scoring one point per 10 miles would make GW2ADZ third and G3CGQ fifth, otherwise the order of the first seven places would not be affected. Deleting all contacts under 80 miles would materially alter the top of the list, and would certainly reduce the number of entries, as several stations under this arrangement would have a "score" of zero!

The Contests Committee thank all those competitors who sent comments and made suggestions for improving the contest. These will be carefully considered when formulating the rules for the next event.

Position	Call Sign	Location	Points	Contacts	Power
1	G2AJ	Biggin Hill, Kent	334½	89	L
2	G3BLP	Selsdon, Surrey	295½	72	L
3	G5MA/P	Storrington, Sussex	214½	59	L
4	G5YV	Leeds, Yorks	184½	22	L
5	GW2ADZ	Llanmynech, Mont.	182	33	H
6	G2NH	New Malden, Surrey	177	52	L
7	G3CGQ	Luton, Beds.	172½	56	L
8	G3ENS/P	Loughborough, Leics.	162	49	L
9	G2XV	Cambridge, Cambs.	154½	44	L
10	G3BA	Daventry, Northants.	150	41	L
11	G2CPL	Lowestoft, Suffolk	147	26	L
12	G2XC	Portsmouth, Hants.	142½	33	L
13	G6LI	Grimsby, Lincs.	137	24	H
14	G5DS	Surbiton, Surrey	133	62	H
15	G3VM	Norwich, Norfolk	126	25	L
16	G3FD	Southgate, Herts.	118½	48	L
17	G3FAN	Ryde, I.O.W.	117	34	L
18	G3BW	Whitehaven, Cumb.	109	14	H
19	G6UH	Hayes, Mddx.	108	34	L
20	G5RP	Abingdon, Berks.	106½	29	L
21	G5DF	Reading, Berks.	102	44	L
22	G6CB	Wimbledon, S.W.19.	93	38	L
23	G2FQP	Ramsey, Hants.	91½	22	L
24	G3BK	March, Cambs.	85	40	H
25	GM5VG/P	Lowther Hill, Dumfries	84	18	L
26	G5UM	Knebworth, Herts.	79½	23	L
27	G3SM	N. Harrow, Mddx.	70	37	L
28	G3GBO	Denham, Bucks.	69	46	L
29	G2AHP	Perivale, Mddx.	64½	34	L
30	G5LQ	Chiswick, Mddx.	60	40	L
31	G4MR	Slough, Bucks.	55½	28	L
32	G5MR	Hythe, Kent.	53	18	H
33	G3EYV	Clapham, S.W.4.	46½	31	L
34	G2HDY	Roehampton, S.W.15.	45	21	L
35	G8LN	Plumstead, S.E.18.	21	14	L
36	GM3EGW	Dunfermline, Fife	18	9	H

Check Logs: The following are thanked for forwarding check logs—G3EHY, G2UJ, G5JU, G8SB, G2DHV, F8NW.

Other Points from the Logs

Many thanks for organising this jolly little contest—G8LN; The scoring really does not encourage DX—G3BK; I think the Contests Committee is being very fair—GW2ADZ; The contest rules were poor—G3BLP; The banning of 'phone contacts was a mistake—G2NH; Heartily agree with your C.W. rule: phone operation spoils contests—G5DF; Contest spoilt by being C.W. only—G6CB; Am entirely in favour of this contest being confined to C.W. only . . . excellent idea—G5MR; It is pointless to limit working to C.W. only—G3GBO; I missed the urbane sanity of the phone boys—G3CGQ; It was a mistake to limit the competition to C.W. only—G2AHP; It seems that a number of operators have great difficulty in C.W. work—G3ENS; Working locals by 'phone would have been much quicker—G3FD; Congratulations on having the courage to ban all types of emission except C.W. in a V.H.F. contest—G5RP; Certainly look forward to the next—G6LI.

GB3FB Operates From Leeds

THE Festival of Britain station GB3FB recommenced operations at Leeds on June 23, when the Land Travelling Exhibition was opened by the Princess Royal. Three dipole aerials were erected on 52 feet masts, and the 7 Mc/s. band proved to be the most popular during the first week. Numerous contacts were made on c.w. and telephony, but the organiser (Mr. C. A. Sharp, G6KU), offers his apologies to the many stations who answered CQ calls but did not receive a reply. This was due to the very high background noise which prevailed. Great interest was taken in the station, the chief items of which were the transmitter which fed a monitor speaker to serve the public, the QSL cards, and an oscilloscope which showed the carrier and speech modulation. Special QSL cards are being sent to all stations contacted.

Mr. Sharp wishes to thank all those who manned the station, under adverse conditions.

Silent Key

It is with deep regret that we record the passing of Mr. George Towsey, G2FYD, of Chatham, at the early age of 37 years. In spite of a prolonged illness, George, a true amateur in every way, maintained interest in his hobby right to the end. The local club transmitter, which he designed and constructed, remains to perpetuate his memory. Our sympathies are extended to his family and relatives in their sad bereavement.

REGIONAL REPRESENTATIVES' CONFERENCE

Saturday, April 28th, 1951

AS reported in the June issue of the BULLETIN, a meeting between the Council of the Society and the Regional Representatives was held at the Kingsley Hotel, London, W.C.1, on Saturday, April 28, 1951. A full attendance was recorded.

The President, who was in the Chair, opened the meeting, welcoming those present and thanking them for their attendance. He pointed out the difficulty Council had had in drawing-up the Agenda and also suggested that it might be helpful to agree on procedure. As a result of ensuing discussion it was decided that the deliberations of the Conference be made known to the membership as soon as possible. Copies of the motions submitted by Representatives had been classified under the Agenda headings and placed before each delegate.

The Agenda of business was as follows:—

1. The Government of the Society and the Scheme of Regional Representation.
2. The R.S.G.B. BULLETIN.
3. Staff and Headquarters.
4. Subscription Rates.
5. Organisation and Finances of Local R.S.G.B. Meetings.
6. Relation of the Society to Affiliated Societies.
7. Services to Members.
8. Revision of Articles of Association.
9. Any Other Business.

In the report which follows, the motions submitted have been tabulated and the results shown, with details of the voting of the Regional Representatives. Officers and Members of Council took part in the discussions but not in the divisions. The motions which were carried will now be passed to Council as recommendations from the Conference.

AGENDA ITEM 1.

	MOTION	PROPOSER	SECONDER	AYE VOTES	NAY VOTES	RESULT
1.	Mr. Webster to move (a) "That the Articles of Association be amended to read :— "The Constitution of the Council shall consist of one representative from each Region and if any Region shall fail to nominate, the Council shall have the right to make their own nominations." (b) "Should any Region nominate more than one candidate the choice shall be by national ballot."	1.	—	—	—	not put
2.	Dr. Vance to move (a) "That in view of the uncertainty now prevailing an overhaul of the present system of Representation in Council should be carried out preferably on a Constituency System." (b) "That the Council of Members should be Regional."	4.	—	—	—	not put
3.	Mr. Jefferies to ask "That this meeting shall consider the Constitution of the Council and if thought fit to recommend that a Committee be appointed to investigate the reconstitution of the Council on a Regional basis, similar in idea to the present system of Parliamentary representation."	—	—	—	—	not put
4.	Mr. Bartlett to move "That the present method of selection of Council members be abolished. Council members should represent and be elected from a Region or group of counties. Voting for such nominees should be confined solely to the region or group of counties a member would represent should he be successful in the Ballot."	9.	—	—	—	not put
5.	Mr. Southworth to move "That the present Council and R.R. scheme be abolished and that the Council should consist of 15 members each one representing a Region (or group of counties) in which he is normally resident and that the voting for such representative should be confined to members of the Region (or group of counties) concerned."	—	—	—	—	not put

The numbers in the tabulation under Proposer, Seconder, Aye Votes, Nay Votes, refer to Region numbers. For example Agenda Item 1-1 was proposed by the Region 1 Representative.

AGENDA ITEM 1. (Continued)

	MOTION	PROPOSER	SECONDER	AYE VOTES	NAY VOTES	RESULT
(A)	**That the Council shall be composed of the President, Immediate Past President, Executive Vice President, the Honorary Officers and a Representative elected by the Members in each Region; that the conduct of the Society shall be entrusted to an Executive Committee consisting of the President, the Immediate Past President, the Executive Vice President, the Honorary Officers and five other Members of the Council; that the full Council shall meet at least four times per annum to receive the report of the Executive Committee and give such directions to policy as shall be required.**	5.	7.	2. 4. 5. 6. 7. 8. 9. 10. 11.	1. 3. 12. 13. 14. 15.	CARRIED 9 to 6

During the lengthy discussion of opinions from all quarters which followed the introduction of the first section it became clear that all the proposals under Agenda Item 1 were so interrelated that they could be covered by one composite motion. This motion, agreed upon by the delegates, and printed immediately above was carried.

AGENDA ITEM 2.

	MOTION	PROPOSER	SECONDER	AYE VOTES	NAY VOTES	RESULT
1.	Mr. Webster to move "That the Council shall consider the appointment of a whole time professional editor for the 'Bulletin' so as to improve the quality of the articles with a view to generally raising the standard of this publication and increasing the membership thereby."	1.	11.	—	—	Amended See A below
2.	Mr. Jefferies to ask "That this meeting shall consider the suitability and quality of the subject matter of the 'Bulletin' and the amount of advertising printed in each issue with relation to other publications in the Radio Field depending on public approbation for their existence and to make such recommendations for its improvement as may be thought fit."	—	—	—	—	Question raised
3.	Mr. Southworth to move "That the 'Bulletin' should be raised to the standard of interest of a commercial magazine or abolished and a monthly news letter substituted. One suggestion is that with the money so saved visiting lecturers should be provided."	—	—	—	—	Withdrawn
(B)	**That the Council be asked to consider the appointment of a whole time professional editor for the 'Bulletin' with a view to generally raising the standard of the publication and increasing the membership thereby.**	1.	11.	1. 2. 4. 5. 6. 7. 8. 9. 10. 11.	3. 12. 13. 14. 15.	CARRIED 10 to 5

Among the points made in discussing the above were the appointment of a full-time editor; the quality of and payment for articles and postal arrangements. The proposer pointed out that his motion was no reflection on the present editor or staff. A Council Member recalled that the appointment of a Technical Manager had been considered in the past but had been dropped for financial reasons. The Secretary explained that variations in delivery dates were due to postal delays and therefore beyond his control despite simultaneous posting.

As with Agenda Item 1 a new motion was framed and put to the meeting.

AGENDA ITEM 3.

	MOTION	PROPOSER	SECONDER	AYE VOTES	NAY VOTES	RESULT
1.	Dr. Vance to move (a) "That an Expert Committee of Investigation be set up to examine the internal workings and administration of Headquarters, and, if necessary, to advise upon measures which should be taken to improve the efficiency of the organisation. Such Committee of Investigation shall not contain the person of anyone now in office in any branch of the Society." (b) "Copies of the findings of this Expert Committee of Investigation to be posted to all members of the Society or published in the appropriate 'Bulletin.'"	4.	5.	4. 5.	1. 2. 3. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15.	Lost 2 to 13
2.	Mr. Southworth to make the point "That Administrative expenses should not exceed 15% of members' total subscriptions."	—	—	—	—	Point raised
3.	Mr. Thurlow to move "That, notwithstanding the legal advice given to the Council (which is challenged) the Council shall not appoint any person in the employment of the Society, whether he be a member of the Society or not, as a member of any Committee of the Society, whether by direct appointment or by co-option, on the ground that any such appointment is unconstitutional and contrary to public policy."	5.	None	—	—	Lost. Not seconded
4.	Mr. Matthews to move "That the General Secretary have no voting power on any Committee in view of his special position as a paid servant of the Society."	—	—	—	—	Not formally moved
(C)	**That the Council be requested to refer back to the Society's legal adviser the question of the General Secretary's appointment to serve on Committees of the Council with voting power.**	7.	2.	1. 2. 4. 5. 6. 7. 9. 10.	3. 8. 11. 12. 13. 14. 15.	Carried 8 to 7

This section of the Agenda provoked lively discussion, in the course of which the proposer of Item 3/1 stated that, although his resolution had been put forward at meetings at six centres, it was not intended to be offensive. Many delegates, however, made it quite clear that they would not support what they considered was an unwarranted attack on the General Secretary and H.Q. Staff. A Council member pointed out that a General Purposes Committee had been in existence for some time and that one of its terms of reference was to advise Council on all matters relating to the running of Headquarters.

AGENDA ITEM 4.

	MOTION	PROPOSER	SECONDER	AYE VOTES	NAY VOTES	RESULT
1.	Dr. Vance to make the point that "Increased subscriptions would be acceptable if some "per capita" portion of the Annual Subscription were to come back to the Regional, County, District, Town and Area Representatives of the R.S.G.B. to implement the R.S.G.B. activity in the Provinces, and a return to the 1939 standards of service to the membership as a whole."	—	—	—	—	Question raised
2.	Mr. Southworth to move "That any alteration in the subscriptions should be left till after a decision on the future of the 'Bulletin' has been taken."	—	—	—	—	Not formally moved
	That subscription rates be increased as required and that the Council be left to decide upon the best method of applying the increase.	9.	2.	2. 4. 6. 7. 9. 15.	1. 3. 5. 8. 10. 11. 12. 13. 14.	Lost 6 to 9

In discussing higher subscription rates, a number of delegates expressed support in general terms, but were concerned that any increase should be returned to members as improved services. A Council member drew attention to the fact that costs had increased as had the size of H.Q. staff, especially taking into account appointments to be made in the near future. It was generally agreed that local meetings should be self-supporting. Society records were discussed and the General Secretary explained the difficulty accompanying a complete overhaul of the present system. He also emphasised the impossibility of maintaining accuracy in any system while members still failed to notify changes in address, etc.

AGENDA ITEM 5.

	MOTION	PROPOSER	SECONDER	AYE VOTES	NAY VOTES	RESULT
1.	Same as Agenda Item 4 (1). Business already covered.	—	—	—	—	—

AGENDA ITEM 6.

1.	Dr. Vance to move "That the R.S.G.B. should give far more consideration to the affairs and requirements of local affiliated societies."	4.	None	—	—	Lost. Not seconded
2.	Mr. Jefferies to ask "That this meeting shall consider the position of Affiliated Societies in relation to the R.S.G.B. and if thought fit to pass a resolution. "That meetings of Affiliated Societies in good standing to be held to be local meetings of the R.S.G.B. excepting that insofar as matters concerning the parent Society are under consideration, the voting shall be confined in those instances to full Corporate paid-up members of the R.S.G.B."	—	—	—	—	Question raised
3.	Mr. Matthews to move "That Affiliated Societies be given a status more in conformity with their value and services to Amateur Radio and incidentally to the R.S.G.B. for whom they act as recruiting offices."	7.	4.	4. 7. 13	1. 2. 3. 6. 8. 9. 12. 14. 15.	Lost 3 to 9 3 not voting

A general discussion of the operation of local R.S.G.B. groups and of Affiliated Societies took place. The General Secretary gave a brief historical survey to show the origin of affiliation. Emphasis was laid upon the value of Affiliated Societies as sources of potential members of the R.S.G.B. It was also noted by one representative that affiliation had enhanced the status of his local society.

AGENDA ITEM 7.

	MOTION	PROPOSER	SECONDER	AYE VOTES	NAY VOTES	RESULT
1.	Dr. Vance to move "That consideration be given to the lack of services available to the country member of the Society, bearing in mind the provisions of Article 37 of the present Articles of Association."	4.	None	—	—	Lost Not seconded
2.	Mr. Jefferies to ask "That this meeting shall consider and, if thought fit, pass a resolution authorising the Society to give free legal representation to its members, on matters relating to the practice of Amateur Radio."	—	—	—	—	Question raised
3.	Mr. Matthews to move "That the QSL Bureau be a separate charge upon the users."	—	—	—	—	Withdrawn by proposer

The present services were discussed, and suggestions made regarding further facilities which might be made available to members. Items mentioned included the QSL Bureau, the Handbook, slow Morse transmissions, the Headquarters station, provision of lectures and the production of a British call book. It was agreed, on the recommendation of the Representatives, to adjourn discussion and to leave Council to consider the suggestions which had been made.

AGENDA ITEM 8.

	MOTION	PROPOSER	SECONDER	AYE VOTES	NAY VOTES	RESULT
1.	Mr. Webster to move "That the Articles of Association be amended so that members shall have freedom to vote for ANY number of candidates for the Council up to the required number."	—	—	—	—	Withdrawn on the understanding that the point would be considered by the Council
2.	Dr. Vance to move (a) "That the Articles of Association should be very carefully considered in relation to the present position of the Society and should, if necessary be extensively revised." (b) "That the Articles of Association require early revision and in particular they should provide for (i) the aims and activities of the Society to be defined in a manner more suitable to present day conditions. (ii) the scheme of representation and government should be revised on a more democratic basis with more adequate monetary assistance to the Provincial officers concerned."	4.	None	—	—	Lost. Not seconded
3.	Mr. Southworth to move "That the new Articles of Association should be submitted for approval by members by June 30, 1951."	—	—	—	—	Withdrawn
(D)	**That as the Society is a Company Limited by Guarantee and not having a share capital, Article 34 (providing for the requisitioning of a Special General Meeting by not less than one tenth of the members of the Society in accordance with Section 114 of the Companies Act, 1929, as repealed and replaced by Section 132 of the Companies Act, 1949) be deleted from the Articles of Association so that henceforth not less than five per cent. in number of the members of the Society may call a meeting as provided by Section 134 of the Companies Act, 1948.**	5.	7.	Unanimous	—	Carried 15 to 0

It was explained to the meeting that revision of the Articles had been under consideration for some time. The Representatives were asked to collate any suggestions for revision received from their members and to forward them to Council.

The length of time necessary before new Articles could be in force was discussed, and it was agreed that a considerable period must elapse, during which Council would consider the draft already prepared, submit it to the membership and pass it for approval to the Board of Trade. It was estimated that the draft copy would reach the membership some time this year.

AGENDA ITEM 9.

	MOTION	PROPOSER	SECONDER	AYE VOTES	NAY VOTES	RESULT
1.	Mr. Webster to make the point that Region 1 representatives earnestly hope that the Council will ensure that proxy forms are forwarded to each member should there be a need for an Extraordinary General Meeting.	—	—	—	—	Question raised
2.	Dr. Vance to move "That the R.S.G.B. Headquarters station GB1RS should be made more active."	—	—	—	—	Withdrawn

	MOTION	PROPOSER	SECONDER	AYE VOTES	NAY VOTES	RESULT
3.	Mr. Matthews to move					
	(a) "That all policy statements made at official meetings be made either by, or in the name of, the responsible officer of the Society."	7.	—	—	—	Lost. Not seconded
(E)	**(b) "That the regulation 'Claims must be fully substantiated and details submitted of each individual item e.g., it is not sufficient to claim for postage on 24 letters at 5s.; each posting must be listed' be modified in order to encourage the T.R. to circulate his members."**	7.	11.	Unanimous	—	Carried 15 to 0
	(c) "That a definition of 'no claims can be accepted for expenses which should be borne out of local funds' be given or the clause deleted."	7.	8.	4. 7. 8. 10.	1. 2. 5. 6. 9. 11. 12 13. 14. 15.	Lost 10 to 4
	(d) "That the R.R.'s meetings shall not be confidential and that the minutes be published and distributed to all representatives."	—	—	—	—	Withdrawn See (F) below
4.	Mr. Matthews to raise the following :— "The Society, being governed by Company law, which requires that a register of members be kept, showing records of past and present members, that the Society should have such a record, but that in cases of known past members, the office report 'No trace on records' upon enquiry. Can this be explained or justified ?"	—	—	—	—	Question raised
5.	Mr. Southworth to make the point that members in Region 11 deplore the attitude of the Council in compiling a questionnaire in such a form that the answers cannot give a true indication of the members' feeling.	—	—	—	—	Point raised. Already covered
6.	Mr. Southworth to move "That the name should be changed to the Amateur Radio Society of Great Britain."	11.	—	—	—	Lost. Not seconded
7.	Mr. Southworth to make the point that members in Region 11 lack confidence in the present form of management of the Society.	—	—	—	—	Point raised. Already covered
(F)	**That a Report on, and a Copy of the Motions submitted to and considered by, the Conference be issued to the Regional Representatives.**	1.	11.	Unanimous	—	Carried 15 to 0

Much of the business tabled under this heading had already been discussed and was consequently withdrawn or merely raised to the proposer's satisfaction.

It was agreed that proxy forms would be available to the membership as required by Item 9(1).

Regarding the Headquarters station, GB1RS, it was reported that attempts were still being made to find a suitable "home" for the equipment where better maintenance would be available and greater use made of the station.

The motion 3(c) was amended to read "that a definition . . . be sent to Regional Representatives" before being put to the meeting.

The proposer of 6 wished to emphasise the "amateur" nature of the Society to avoid the exploitation of the initials R.S.G.B. for commercial purposes.

A vote of thanks to the Headquarters staff for the preparations for the Conference and votes of confidence in the Council and in the General Secretary were expressed. The President thanked the delegates for these and for the work which they had put into the Conference.

During the afternoon session the President reminded the delegates that the business had been scheduled to cover two days. He pointed out, however, the possibility of completing the agenda in one day if it was agreed to continue working beyond the published time of adjournment. This suggestion was accepted by the meeting and the Conference continued until about 9.45 p.m.

HEADQUARTERS CALLING

COUNCIL, 1951

President :
WILLIAM A. SCARR, M.A., G2WS.

Executive Vice-President : F. Charman, B.E.M., G6CJ.

Hon. Treasurer : A. J. H. Watson, F.S.A.A., G2YD.

Hon. Secretary : L. Cooper, G5LC.

Hon. Editor : Arthur O. Milne, G2MI.

Immediate Past President : V. M. Desmond, G5VM.

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

General Secretary : John Clarricoats, G6CL.

May Council Meeting

Résumé of the Minutes of the Proceedings at the Meeting of the Council of the Incorporated Radio Society of Great Britain held at New Ruskin House, Little Russell Street, London, W.C.1, on Tuesday, May 8, 1951, at 6 p.m.

Present.—The President (Mr. W. A. Scarr), in the Chair, Messrs. W. H. Allen, A. P. G. Amos, F. Charman, L. Cooper, W. N. Craig, T. L. Herdman, A. O. Milne, P. A. Thorogood, P. W. Winsford and John Clarricoats (General Secretary).

Apologies were submitted for the absence of Messrs. V. M. Desmond and C. H. L. Edwards.

* * *

Finance.

Resolved to accept and adopt the Balance Sheet for the quarter ended March 31, 1951, and the Cash Account for the month of April, 1951, as submitted by the Honorary Treasurer.

Membership.

Resolved :—

(a) to elect 81 Corporate Members and 16 Associates ;
(b) to grant Corporate Membership to 5 Associates who had applied for transfer.

Applications for Affiliation.

Resolved to grant affiliation to :—

Cambridge and District Amateur Radio Club,
Merseyside Radio Society,
Newbury and District Amateur Radio Society.

Representation.

Resolved to appoint Mr. F. A. Jefferies, G8PX, Acting Region 6 Representative.

Civil Defence.

It was reported that Mr. W. N. Craig and the General Secretary had attended a meeting at the House of Commons on April 19, when they explained to Mr. Geoffrey de Freitas, M.P. (Under Secretary to the Home Office), and others how they considered the services of radio amateurs might be used to good effect in connection with the Civil Defence programme. Mr. de Freitas had agreed to give full consideration to the views expressed by the Council's representatives.

Convention.

Consideration was given to a number of matters connected with the forthcoming Convention.

British Amateur Radio Call Book.

The Secretary reported upon correspondence which had been received from "Short Wave Magazine" and the publishers of the "Radio Amateur Call Book Magazine" concerning the decision of the Society to issue a British Amateur Radio Call Book. After consideration of the correspondence it was resolved to advise "Short Wave Magazine" and "Radio Amateur Call Book Magazine" that the R.S.G.B. proposes to proceed with its plan to produce a British Amateur Radio Call Book.

Resolved to accept an estimate from South London Press Ltd. for printing the first edition of the Call Book.

A dummy make-up of the proposed publication was submitted and approved.

Records.

Resolved to place an order with Remington-Rand for 12 2-drawer metal cabinets at an approximate cost of £3 each and to authorise the Secretary to purchase such quantities of record cards as may be required.

Memorandum and Articles of Association

The Secretary handed to each Member of the Council present a copy of the first redraft of the Memorandum and Articles of Association.

Resolved to fix the date of the Special Meeting of the Council to discuss the draft of the Memorandum and Articles of Association at the next regular meeting of the Council.

Questionnaire.

The President suggested, and it was agreed, that the members who had analysed the questionnaires should prepare a list of the major items which had been raised in correspondence and submit the same to the Secretary in sufficient time prior to the next regular meeting of the Council to enable him to produce a comprehensive summary for the consideration of the Council at that meeting.

Worthing Group.

The Council took note of a resolution adopted at a meeting of the Worthing Group when matters concerning the last Annual General Meeting were considered.

R.S.G.B. Bulletin.

Resolved to continue the contract for a further 12 months with the South London Press Ltd., for printing the R.S.G.B. BULLETIN, in accordance with the terms and conditions set out in their letter dated April 17, 1951.

Argentine Radio Club.

The Secretary read the translation of a letter received from the Argentine Radio Club concerning an earlier decision of the Council not to handle certain QSL cards received from Argentine amateurs.

Resolved to take no action other than to thank the Argentine Radio Club for their letter.

Empire DX Certificate.

A letter was submitted from an Australian member who offered to pay two years' subscriptions in advance in order to obtain the Empire DX Certificate immediately. Alternatively he offered to pay for the cost of the certificate and badge.

Resolved to make no alteration in the arrangements recently approved by the Council in regard to the Empire DX Certificate.

[The Council resolved in January last that the Empire DX Certificate shall not be granted except to Corporate Members of the Society of at least three years standing.—ED.]

Amateur Television

The Secretary reported upon the arrangements which were being made for amateur television tests in the 420-460 Mc/s. band.

Tape Recording Machine.

The President suggested that the Society would do well to acquire a sound recording machine in order to preserve a record of important speeches delivered to the Society. After discussion it was resolved to purchase a tape recording machine and to request the Technical Committee to give advice on suitable types of equipment.

Welsh Industries Fair.

Resolved to reimburse the Cardiff Group up to an amount of £5 for the cost of constructing a display unit for R.S.G.B. publications.

The resolution was adopted on the understanding that the Cardiff Group is prepared to provide storage space for the unit and to forward it to any other R.S.G.B. town or area group who might wish to use it and is willing to pay carriage costs in both directions.

Regional Representatives' Conference.

The Secretary submitted a Report covering the Motions submitted to and Resolutions adopted at the Conference based on his own notes. He stated that the verbatim report had not yet been received from the stenographers.

Messrs. Herdman and Winsford agreed to co-operate in the preparation of a report for publication in the BULLETIN.

A letter was read from Mr. H. A. Bartlett (Region 9 Representative) in which he asked to have placed on record his sincere appreciation of the arrangements which were made for the Conference.

Correspondence.

The Council considered correspondence from Mr. A. E. Dymock, whose application for permission to erect an aerial tower had been refused, and from Mr. J. Peach concerning proposals for a Marathon Field Day Contest.

The meeting terminated at 10.35 p.m.

REGIONAL AND CLUB NEWS

Brighton and District Radio Club

On July 31, G5QZ will give a talk with demonstrations on "Tape Recording." During August meetings of the club will be informal in order to welcome enthusiasts who are in the area. Hon. Secretary: R. T. Parsons, 14 Carlyle Avenue, Brighton, 7.

Coventry

Prior to the 70 cm tests on June 17 local contacts only had taken place. During the tests G5PP/P, using a 17-element Yagi sited at Meriden Riding, contacted G8QY/P on Ilmington Downs (25 miles) and G3BUR/P on Fish Hill near Broadway (35 miles). G3GA and 3HGY also participated in the tests.

East Surrey Radio Club

At the meeting held on June 14, Mr. W. Barnard gave the first of a short series of lectures on "Comparisons between British and American Television Construction and Practice." The Club would be glad to hear from any member who knows of a room to let (at reasonable rent) in the Redhill-Reigate area, suitable for permanent premises. Meetings are held monthly at present in the Barn Room, Lesbourne Road, Reigate, at 7.45 p.m. The Hon. Secretary is L. G. Knight, G5LK, 6 Madeira Walk, Reigate.

Hampstead

Meetings of the Hampstead Radio Transmitters' Group will be held on July 20, September 14, October 19, November 16, December 21, at 1 Broadhurst Gardens, N.W.6 (behind John Barnes, Finchley Road), commencing at 8 p.m. Basil Wardman, G5GQ, 59 Eton Place, N.W.2 (Primrose 2175), is the Hon. Secretary.

Sightless group member Nina Barrett, G3GYL, broadcast from London on June 29 in a special Woman's Hour programme. The subject of her talk was "Friendship by Radio." Nina is the second Hampstead member to broadcast recently.

G3DCU on his way to take up an appointment in Australia maintained contact with group members from amateur stations at all ports of call *en route*.

Horsham

A meeting will be held in the Town Hall, Horsham, on Wednesday, August 1, at 7.30 p.m., to discuss the formation of a local group. The organiser is R. Street, BRS.12366, Coney's Farm, West Grinstead, Sussex.

Midland Amateur Radio Society

A lecture on "Selenium Rectifiers" was recently given by Messrs. Browning and Nearn, of *Standard Telephones & Cables, Ltd.* The next meeting will be held at the Imperial Hotel on July 17.

R.E.U. Amateur Transmitting Society

Correspondence should be addressed to the Society c/o S/Ldr. Copeland, 328A Officers' Married Quarters, R.A.F., Henlow, Beds.

Sheffield Amateur Radio Club

The Club, which now has more than 50 members, holds technical and ordinary meetings each month. The President is H. Hinchcliffe, G3FA, and the Hon. Secretary: E. Walker, G2LT, 11A Welwyn Close, Intake, Sheffield.

Southend & District Radio Society

At a meeting last month, Mr. W. MacDonald talked on and demonstrated his frequency meter (the prize-winning exhibit in this year's Pocock Cup Contest). During the summer recess, a number of outside events, including D/F contests, have been planned. The Hon. Secretary is J. H. Barrance M.B.E., F.I.L., 49 Swanage Road, Southend-on-Sea

The Southgate and Wood Green Group station in operation at the Wood Green Hobbies' Exhibition.

Southgate and Wood Green

At the Hobbies Exhibition arranged by the Wood Green Rotary Club, an Amateur Radio station, call G3GBN/A, was operated on 1.7 and 3.5 Mc/s. by members of the Southgate and Wood Green Group. Equipment exhibited included a 50-watt transmitter, the "A" station N.F.D. rig, deaf-aid apparatus, a 1914 spark transmitter, and a home-built receiver and oscilloscope. A tape-recorder was loaned to the Group for demonstrations.

The Exhibition was opened by the Mayor of Wood Green, Alderman A. R. Harrison, J.P., who during his tour contacted G3AGP/A on "Top Band." Many local amateurs visited the stand, including the General Secretary, G6CL, who was accompanied by Miss May Gadsden. Thanks are extended to the many stations who QSL'd quickly enough for their cards to be displayed.

Group meetings are held at the Empire Restaurant, 4a Queen's Parade, Green Lanes, N.8. (near Turnpike Lane station) on the second Tuesday each month. Visitors are always welcomed.

South Shields Amateur Radio Club

The Secretary of the Club is Mr. W. Dennell, G3ATA, 12 South Frederick Street, South Shields.

Teeside Amateur Radio Club

The Society has recommenced activities with accommodation at the Joe Walton's Boys' Club. Several receivers are available, and a Club transmitter is under consideration. Prospective members should write to the Hon. Secretary and T.R. —H. Walker, G3CBW, 64 Ayresome Street, Middlesbrough.

Torbay Amateur Radio Society

The Chairman—old timer Frank Wadman, G2GK, T.R.—reports that the new Hon. Secretary is W. Launder, B. Sc., 15 Cambridge Road, Torquay, and not Mr. Spencer-Turner as announced last month.

Warrington and District Radio Society

Meetings will be held at 7.30 p.m. on the first and third Mondays in each month at 30 Queen's Avenue, Warrington, except during August. Society activity will resume on September 3.

Worthing and District Amateur Radio Club

A "Bucket and Spade" Party will be held on Sunday, August 26, on the beach. Interested clubs are invited to notify G. Morton, 42 South Farm Road, Worthing, as soon as possible. Meetings take place on the second Monday evening of the month at the Adult Education Centre. Hon. Secretary: F. Betterley, 42 Anweir Avenue, Lancing.

Can You Help?

Lt.-Cmdr. R. H. N. Johnston, R.N. (G2ZP), wishes to purchase or borrow a copy of the *Proceedings of the Institute of Radio Engineers* for February, 1943. He is particularly interested in a paper by Bereskin on a Stabilised Power Unit which appeared in that issue.

Mr. A. J. H. Warner, G3ABZ, 288 Tonbridge Road, Maidstone, Kent, wishes to borrow the circuit diagram of the pre-war *Ultra* Television Receiver T22.

Holiday Exchange

Twenty year old P. Turillon, F3VN, 56 Rue Pierre Lamande Houilles (S. & O.), France, wishes to visit London during the next few weeks on an exchange arrangement. In return for hospitality in England he will entertain any British amateur of about his own age, who would like to tour Paris with him this summer. His home is about seven miles from the French capital.

V.H.F. Contest for Amateurs

An Output Meter, donated by *Messrs. E.M.I. Sales and Service Ltd.*, has been presented to Mr. D. Biltcliffe, G6NB, of Aylesbury, Bucks, winner on merit of the V.H.F. Contest for amateurs which took place on April 21-22, 1951. Runner-up was Mr. G. F. Barrett, G8IP, of Hampton, Middlesex—joint winner in last year's Contest—who was awarded one year's subscription to *Short Wave News*.

Around the Trade

The *General Electric Co. Ltd.* is increasing the diameter of the bases of the following types of Osram valves from 30 millimetres to 34 millimetres: X61M, W61, DH63, Z63, H63, L63 and W63. The increased size should be borne in mind in connection with screening cans. The new design will eliminate the trouble of bases becoming loose.

NEW BOOKS

RADIO INSTALLATIONS—THEIR DESIGN AND MAINTENANCE. By W. E. Pannett, A.M.I.E.E. Page size 8½" x 5½"; 454 pages with 244 illustrations and tables. Published by Chapman & Hall. 45/-.

This new book is intended to provide an account of the principles of design, construction and maintenance of radio transmitting and receiving installations. Early chapters are concerned with the selection of the site and station planning. Later chapters are devoted to the general features of design of transmitting and receiving equipment. There are also chapters on auxiliary apparatus and on station maintenance and testing.

The chapter on Amplifiers and Oscillators is very comprehensive and bears witness to the author's practical knowledge of modern circuit techniques.

There are also interesting chapters on Radio Frequency Transmission Lines and on Keying and Modulation Systems.

Whilst the book is essentially intended for station engineers there is much between its covers to interest the amateur.

* * *

MAGNETIC TAPE RECORDING. By P. A. Tarry, A.M.Brit.I.R.E. Page size 8½" x 5½"; 70 pages with 12 illustrations. Published by Audigraph Ltd. 6/6 (by post 7/-).

This is the 4th Edition of a book which has come to be recognised in acoustic circles as an important reference to the subject of magnetic tape recording.

The current edition takes note of the very considerable advances which have been made recently in the technique used in the design of both electronic and tape handling mechanisms.

* * *

RADIO CIRCUITS. By W. E. Miller, M.A. (Cantab), M.Brit.I.R.E. Third Edition. Page size 8½" x 5½"; 120 pages with 64 diagrams. Published by Trader Publishing Co., Ltd. 5/- (by post 5/4).

Earlier editions of this book have helped many beginners to acquire a full understanding of the operation of modern radio receivers. This is largely because the author has set out the principles in a simple and straightforward manner and without resort to mathematics and involved theoretical considerations.

The present edition has been brought up to date and a new chapter added on "all dry" portables, A.C./D.C. battery sets, band-spread and automatic tuning.

A.C./D.C. TEST METERS. By W. H. Cazaly and Thomas Roddam. Page size 7¼" x 4¼"; 180 pages with 112 diagrams and half tones. Published by Pitman. 18/-.

This new book deals with the principles, circuit design and practical construction of multi-range test instruments of workshop grade for the measurement of voltage, current, resistance, capacity and audio frequency in low power apparatus.

The chapter on A.C. Ranges and Current Transformers is particularly comprehensive, whilst that on Construction contains much useful advice to the amateur. Recognising that the average experimenter does not possess a large outfit of expensive precision standards, a wide assortment of tools and considerable experience in high-class instrument making, the author suggests constructional methods which, although perhaps unorthodox, should be within the scope of the average amateur workshop.

The book should appeal to the service engineer, the laboratory technician and the amateur.

* * *

RADIO SERVICING—THEORY AND PRACTICE. By Abraham Marcus. Page size 8½" x 5½"; 775 pages. Profusely illustrated. Published by George Allen & Unwin Ltd. 35/-.

Practical and comprehensive in scope—ranging from the fundamentals or radio theory to the latest developments in F.M.—this book uses the non-mathematical methods which were employed by the author in his earlier work "Elements of Radio."

Special features are the inclusion of chapters on instruments used for servicing, procedures and techniques.

Although written from the U.S. viewpoint, the presentation should appeal to service men everywhere.

* * *

BETTER TV RECEPTION—IN FRINGE AND LOW-SIGNAL AREAS. By Smith & Dawley. Page size 9¼" x 6"; 141 pages. Numerous illustrations. Published by Editors & Engineers Ltd., California. 18/6 through R.S.G.B. (delivery about four weeks).

Intended as much for the professional service man, who is called upon to instal a set in fringe and low-signal areas, as for the amateur experimenter. The emphasis throughout is on "rules of thumb" and empirical information, with sufficient theory to give the reader a general idea of the considerations involved when they may help in solving a particular problem.

The book is devoted entirely to problems related to the reception of the V.H.F. television channels in use in the U.S.A. and does not cover the possible extension of the service to U.H.F. channels falling above 470 Mc/s.

Nattering

DEAR SIR,—May I support Mr. C. R. Green's letter on the subject of "Nattering"? Surely the greatest value of Amateur Radio today is in its power to bring about understanding and friendship between the democratic nations of the world. It is very significant that as soon as a country disappears behind the Iron Curtain, its Amateur Radio stations cease to operate or do so only through the agency of a State-controlled Radio Club.

I am sure H.M. Postmaster-General in referring to "nattering" had in mind the type of QSO in which the participants engage in nonsensical, pseudo-technical chatter such as one hears so often on the lower frequency bands. The friendly ragchewing in which one learns so much about other people's mode of living and in which we in turn can interest them in so much which is typically British, can do nothing but good. The "XYL near Oporto" is certainly a grand ambassador for her country and is it too much to suppose that had her husband been an Argentine meat magnate instead of a doctor of medicine, the meat ration here would have been greatly improved by now?

Very few of us can ever be anything more than "ham" experimenters, but—with a little thought before we speak into our microphones—most of us could become quite useful advocates of the British Way of Life.

As one who has been enabled through the medium of Amateur Radio to learn a very great deal about the people of other countries, I would like to see much more official attention given to this most valuable aspect of Amateur Radio.

Yours faithfully,
(DR.) ARTHUR C. GEE, G2UK,
President, International Short Wave League,
London, W.9.

Lowestoft, Suffolk.

DEAR SIR,—While being in agreement with some of the sentiments expressed in G5LN's letter regarding "Nattering," there is the important point of the subject matter being dealt with by the "natterer."

When this consists of thinly veiled sneers, directed at the serious-minded amateur, unpleasant remarks regarding one's "Viewer" neighbours, and open criticism of our National Radio Society, it ceases to be entertaining. Additionally, there is the well-known type who carefully weighs-up each sentence before uttering it in order to ensure that it is going to sound impressive, clever, and funny. Such "natterers" do not *engender* goodwill and understanding, they *endanger* it.

The "born natterer" of the type referred to is a menace to Ham society, and—a boor!

(Boor: A coarse rustic, an ill-bred fellow, a peasant.)

Yours faithfully,
H. E. SMITH, G6UH.

DEAR SIR,—It is surprising that the recent pronouncement on nattering has evoked so little response. If amateurs in this country have, since the war, not engaged in serious experimental work, a perusal of the licence conditions will surely supply the answer. Was it not the official U.K. delegation which, at Atlantic City, successfully opposed the use of the word "experimentation" in the proposed definition of the Amateur Service? The long battle for Amateur Television and the lack of any frequency on which the newer Pulse Modulation techniques may be used are only two examples of the way in which amateurs have been "encouraged." If discussion is to be limited to "the licensee's private affairs," it is senseless to complain of the time taken up by "nattering" about the XYL's hair style or the latest exploits of little Alfred.

Nowhere has the present policy produced such marked results as on 144 Mc/s., probably our most scientifically interesting band. The lack of experimental incentive has opened the way for the importation of the less desirable features of the lower frequencies. Countries have been replaced by even less logical geographical boundaries, stations do not appear on the band unless it is "open for DX," the Class AB 813 modulators have arrived and the "wolf-pack" V.F.O. is expected shortly.

It would seem that, if amateurs are to be expected to contribute significantly to serious scientific study, the first step must be a considerable revision of licence conditions. Only in this way can the present decline be arrested and the true balance of our hobby restored.

L. G. STOODLEY (G8DM).

DEAR SIR,—I think the June issue of the BULLETIN was one of the most interesting for many months. Two items in particular intrigued me; although they were separated by many pages they did in fact have close connection.

First of all, that letter from G5LN about nattering has a lot of real "ham" sense about it. After all, if we *don't* natter, every QSO is going to be like the one before—and the one after. "Rag-chewing" is a time-honoured institution in radio and ought to be encouraged rather than deplored.

All the same, like any other indulgence, it must be undertaken reasonably; and judging from some of the effusions that can be heard in the 'phone section of the 80-metre band one would be excused for imagining that he was listening not to "reasonable" beings but to a crowd of fanatics who were wasting a lot of ether space that could be turned to better—and more professional—use.

Here now is the connection with the other item in your June issue, namely, the editorial about the operation of the I.A.R.U. European Bureau. If the objectives of this Bureau are ultimately to preserve the best in Amateur Radio, then more power to it. But I do think the Bureau's case is going to be gravely weakened while irresponsible Amateur Radio operating—mostly in the telephony bands—continues.

Yours truly,
JACK HUM (G5UM).

Bulls Green. Near Knebworth, Herts.

D.A.R.C. Convention

About 800 amateurs took part in the D.A.R.C. Convention held from June 11th to 17th in Cuxhaven. A Convention station operated on 3.5, 7, 14, 28 and 144 Mc/s. under the call DLOKT.

Visits were made to Elbe-Weser Radio (DAC); to a weather station and to a terrestrial magnetism institute. Lectures on propagation were given by a member, who is a prominent German scientist.

It was announced during the Convention that DL stations working on 2 metres are now turning their beams towards F, G, ON and PA every evening.

A number of interesting items of V.H.F. measuring equipment were exhibited by the North German Broadcasting Corporation. British amateurs may be interested to hear that there are now about 40 V.H.F. F.M. broadcasting stations operating from Germany with powers up to 10 kW. on frequencies between 87.7 and 95 Mc/s.

Visitors to the Convention came from DL2, DL5, HB, ON, OZ and PA.

R. Rapke, DL1WA, was elected President of D.A.R.C. for the current year.

DL2MW

Ten Minute Quiz

Answers to the questions set on page 30.

1. 41 at present.
2. The ability of a F.M. receiver to discriminate automatically between two F.M. signals on the same mean radio frequency, in favour of the stronger without undue interference from the weaker.
3. About 260.
4. About 260.
5. September 9, 11 a.m. to 6 p.m. B.S.T. Entries must be posted by September 17, 1951.
6. A.M. on 93.8 Mc/s. F.M. on 91.4 Mc/s.
7. 56 is not a commercial gramophone record speed. (R.P.M.)
8. $\text{Beam Width}^\circ = \frac{70\lambda}{D}$ Where λ equals wavelength and D the diameter of the paraboloid, both (normally) in centimetres.
9. The 40-metre band will be reduced from 7-7.3 Mc/s. to 7-7.15 Mc/s.
10. (a) T5; (b) T8.

NEW MEMBERS

The following have been elected to membership:—

Corporate Members (Licensed)

G2BMP C. C. Pratt, 29 Devon Road, Shepway, Maidstone, Kent.
G3ABF D. A. Mullen, 44 Sussex Road, Maidstone, Kent.
G3AMR †G. J. Stuck, 70 Friars Street, Sudbury, Suffolk.
G3BIS P. V. Edwards, 50 Rockwell Avenue, Haughton, Darlington, Co. Durham.
G3DDQ I. V. Bowden, 2 Petersfield, Cambridge.
G3DKG J. D. McKenzie, 35 Ruscote Avenue, Warwick Road, Banbury, Oxon.
GM3EMV J. McGreevy, 240 Braidcroft Road, Pollok, Glasgow, S.W.3.
G3FK E. W. Taylor, 18 William Road, Sutton, Surrey.
GM3FUB D. A. Boyle, 84 Stanmore Road, Glasgow, S.2.
G3GBR A. Swinglehurst, 137 Gisburn Road, Barrowford, Nelson, Lancs.
G3GFG *D. R. Payne, 62 Padnell Road, Cowplain, Portsmouth, Hants.
G3GQS L. J. Billing, Monument Road, Helston, Cornwall.
G3GQW D. J. Whitehead, 328 Upper Fant Road, Maidstone, Kent.
G3GWG J. Oliver, 6 Shelley Road, Maidstone, Kent.
G3GXA J. Payter, 13 Bramshott Road, Milton, Southsea, Hants.
G3HFO *N. A. Smith, 63 Westfield Road, Surbiton, Surrey.
G3HFW E. F. Brooks, 29 Falsgrave Road, Scarborough, Yorks.
G3HGC W. Atkinson, 43 Sidney Road, Grimsby, Lincs.
GM3HGU D. Melville, 97 Pratt Street, Kirkcaldy, Fife, Scotland.
GW3HHO S. Y. Howard, The Croft, Godregraig, Swansea Valley, Glam.
G3HIP R. G. Thorburn, 83 Harewood Gardens, Sanderstead, Surrey.
G3HIW F. G. Jarvis, 60 Auckland Road, Ilford, Essex.
G3HKA C. W. Booth, 147 Goldcroft, Yeovil, Somerset.
G3HKD D. C. Money, 309 Aylsham Road, Norwich.
G3HKH M. J. Harrison, 66 Grant Road, Battersea, London, S.W.11.
G3HKP Rev. T. G. Hughes, The Vicarage, Seaview Avenue, West Mersea, Colchester, Essex.
G3HKQ *L. V. Westmoreland, 29 School Road, Langold, Worksop, Notts.
G3HLP G. A. Brown, 110 Tarvin Road, Chester.
G3HRO C. J. Salvage, 2 Cedar Road, Bromley, Kent.
G3IIA †S. Johnson, The Green, Westerham, Kent.
G4BL †F. J. Towell, 506 I.A.D., Rainford, Nr. St. Helens, Lancs.
G4SH H. V. Scott, Locarno, Haslemere Road, Liphook, Hants.

Corporate Members (Overseas)

DL2RD 3500976 Cpl. S. R. F. Gough, A.S.R.U., H.Q. Unit, B.A.F.O., B.A.O.R.29.
MD2RG R.S.M. E. R. Gay, H.Q. 1 Inf. Div. Sig. Regt., M.E.L.F.1.
SV0AN 924937 A.Q.M.S. Whiting, R.A., c/o Camp H.Q. (B.M.M.G.), British Forces in Greece.
VE2FX W. R. Cartledge, 157 Thornton Avenue, Town of Mount Royal, P.Q., Canada.
VE2XZ H. M. Ward, 242 Mount Vernon, Montreal West 28, Canada.
VK2ACL L. W. Louttit, Cathay Pacific Airways, Peninsula Hotel, Kowloon, Hong Kong, China.
VQ4RF F. Featherstone, Box 264, Nakuru, Kenya Colony.
W4POH R. W. Cox, 106 Mendoza Avenue, Coral Gables, Florida, U.S.A.
W2LSX M. D. Hall, 571 Quinton Avenue, Kenilworth, New Jersey, U.S.A.
ZC4ND †M. W. Heffernan, Near East Arab Broadcasting Stn., P.O. Box 219, Limassol, Cyprus.

Corporate Members (British Receiving Stations)

4964 †S. F. Asquith, 46 Broadlands Road, Hockey, Essex.
9753 †C. G. Tilly, 18 Cornwallis Crescent, Clifton, Bristol.
13187 †H. F. Cooper, Harrowdene, Southfield Road, Nailsea, Nr. Bristol.
19179 L. A. James, 2 Bayford Road, Bridgwater, Somerset.
19180 R. D. Raby, c/o 66 King's Road, Richmond on Thames, Surrey.
19181 D. S. MacHardy, 7 Albert Street, Aberdeen, Scotland.
19182 B. Suddes, 46 Shaftesbury Avenue, Roundhay, Leeds 8.
19183 J. Foster, 6 Challis Grove, West Bowling, Bradford, Yorks.
19184 Capt. J. S. Waugh, 3 Leigh Road, Leigh on Sea, Essex.
19185 E. H. Werninck, 47 Goldsmith Road, Friern Barnet, London, N.11.
19186 S. H. Fostfr, 51 Shamroak Road, North Court Estate, Denton, Gravesend, Kent.
19187 W. Johnstone, Ward 6, County Hospital, Stonehouse, Lanarks, Scotland.
19188 N. P. Pryse, 7 Oatenfields Estate, Hunnington, Nr. Birmingham.
19189 G. K. Allen, 18 Selsdon Road, New Haw, Nr. Weybridge, Surrey.
19190 R. H. Pollock, 189 Liberton Street, Carntyne, Glasgow, E.1.
19191 A. R. Turner, 992 Green Lane, Dagenham, Essex.
19192 G. R. Thomas, 122 Mercer Street, Newton-le-Willows, Lancs.
19193 D. Richards, 25 Lyons Lane, Eastburn, Nr. Keighley, Yorks.
19194 B. W. Peck, 88 Thurleigh Road, Balham, London, S.W.12.
19195 W. G. Axtell, Prospect Place, Kingwell, Timsbury, Bath, Somerset.
19196 W. G. Henning, 117 Whitehall Road, Whitehall, Bristol 5.
19197 A. J. Taylor, c/o Laboratory, Mearnskirk Hospital, Newton Mearns, Renfrews, Scotland.
19198 D. J. L. Brown, 40 Statton Road, Broadgreen, Liverpool 13.
19199 J. M. Bottomley, 62 Wrose Road, Bradford, Yorks.
19200 K. J. Chislett, 2 South View, Rock Street, Croscombe, Nr. Wells, Somerset.
19201 P. D. Reding, Cpl., A.M.Q. 17, R.A.F. Station, Biggin Hill, Westerham, Kent.
19202 P. Simmons, 32 Glebe Street, Loughborough, Leics.
19203 A. Cuthbertson, 5 Bryn Gorf, Lower Cwmtwrch, Swansea, Glam.
19204 N. A. Samwell, 29-33 Station Road, Bagworth, Leics.
19205 J. H. Greenwood, 40 Malsis Road, Keighley, Yorks.
19206 G. P. Grindell, 16 Mill Lane, Beverley, E. Yorks.
19207 A. D. Hopla, 102 Gt. Victoria Street, Belfast, N. Ireland.
19208 T. Way, 24 Newman Road, St. Thomas, Exeter, Devon.
19209 E. J. Brickstock, 27 Manor Lane, Norton Estate, Stourbridge, Worcs.
19210 W. J. Stone, Penlee House, Morrab Road, Penzance, Cornwall.
19211 J. Willerton, 42 Beeton Street, Holderness Road, Hull, E. Yorks.
19212 G. J. Rawlinson, 70 Edenbridge Road, Bush Hill Park, Enfield, Middlesex.
19213 K. B. Khatry, E.M.I. Institutes, 10 Pembridge Square, London, W.2.
19214 *W. H. Freeman, 50 Edinburgh Road, Lowestoft, Suffolk.
19215 *C. E. Thomas, 4 Fulford Grove, Carpenders Park, Nr. Watford, Herts.
19216 J. L. Crockatt, Langley Cottage, Perth, Scotland.
1927 G. Hamilton, 20 New Street, Riccarton, Kilmarnock, Scotland.
19218 R. Cross, 96 Duckworth Street, Darwen, Lancs.
19219 E. R. Newman, 44 Petherton Road Highbury, London, N.5.
19220 J. O. Savage, 14 Salt Hill Avenue, Slough, Bucks.
19221 L. H. E. Buhr, 45 Beverley Avenue, Sidcup, Kent.

* Denotes transferred from Associate Grade.
† Denotes re-elected to membership.

Representation

THE following are additions or amendments to the list published in the February 1950 issue of the R.S.G.B. Bulletin:

County Representative

Region 9:

Somersetshire.—H. Andrews, G5DV, 175 Moorland Avenue, Weston-Super-Mare.

Town Representative

Region 7: London South:

Bromley & Beckenham.—M. J. Frost, G3GNL, 15 Northbourne, Hayes, Kent.

Vacancies

Messrs. R. F. Wood, B.R.S. 12165, J. St. C. T. Ruddock, G8TS, H. W. Cross, G3HCY, and R. B. Forge, G3FRG, have resigned as Town Representatives for Barnes, Putney & Richmond; Farnham & Farnborough; Hayes (Mddx.), and Worthing respectively.

Nominations for their successors should be made in the manner prescribed in the September, 1949, issue of the Bulletin and sent to reach the General Secretary by July 31, 1951.

Changes of Address

Region 1.—Address of H. M. Synge, G3BOC (C.R. for Cheshire), is now, Gipsy Corner, Willaston-in-Wirral.

Region 7.—Address of A. M. Alcock, G3DAG (T.R. for Beaconsfield area), is now, Hill Rise Cottage, Austen Waye, Gerrards Cross.