

R.S.G.B.



BULLETIN

August 1951

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Editor:
JOHN CLARRICOTS

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

Telephone: Holborn 7373



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AUGUST 1951

THE GENEVA CONFERENCE

THE Extraordinary Administrative Radio Conference, originally planned to open in The Hague on September 1, 1950, and postponed at the request of the United States Government because of the war in Korea, is due to start in Geneva on the 16th of this month.

Members will remember that the Atlantic City Conference of 1947 divided the frequency spectrum between the various services—aeronautical, amateur, broadcasting, maritime, etc.—and made provision for the setting-up of planning boards to prepare schemes for the allocation of frequencies within the various bands to individual users, groups or countries.

Last year it was believed that the task of the Hague Conference would be limited to adopting these schemes but, from information then available, it appeared that several completely new schemes were under consideration. Presumably these will now be submitted to the Conference.

The Society is in close touch with the A.R.R.L., concerning the Conference and is prepared, as is the A.R.R.L., to send a representative to Geneva should such a course appear to be necessary. At this time of writing, however, it does not seem likely that the agenda will include any matters of direct concern to amateurs. The danger, if there is one, concerns the 3.5 Mc/s. band. At meetings held in preparation for the postponed Hague Conference certain European countries appeared anxious to confine amateurs to a small exclusive band around 3.5 Mc/s. rather than to a wide shared band. If this point is raised at Geneva the U.K. and several other delegations will, no doubt, support the idea of a wide shared band for amateurs.

In addition to maintaining a close liaison with the A.R.R.L. on Conference affairs the R.S.G.B. is in correspondence with the European Societies in Region I. It is anticipated that the Swiss Society (U.S.K.A.) in particular will be able to hold a watching brief throughout the Conference.

Members may rest assured that the Society will not hesitate to send a representative to the Conference if such a step appears to be necessary.

J.C.

NOTHING NEW UNDER THE SUN

THE saying "There is nothing new under the sun" is usually attributed to King Solomon. Had that illustrious monarch been alive today, he would often be struck by the truth of his words.

The recent appearance of the Society's new booklet, *Television Interference*, with its wealth of information and sound advice, set us looking through back numbers of the BULLETIN, for we felt certain, somehow, that we had heard much of this bother as between amateurs and the B.B.C. services before. Sure enough, there it was in an Editorial published in August, 1933—"The Transmitting Member and his Neighbours." Substitute "Television" for "Broadcasting" and the words written then are as true today as ever they were. We quote: "Some of our members have recently written us expressing alarm at the proposed extension of broadcast hours which has been announced in the Press. . . . We would point out that this same outcry has been made with every extension of broadcast hours in the past, yet somehow we appear to have survived it." Of course we have! The B.B.C. Sound services are now on continuously from 6 a.m. to midnight and who lets it worry them? Turning the pages of this old issue, judge of our surprise to find under "Correspondence" a letter from one, G2MI, appealing for more activity during broadcast hours, complaining that the Amateur is taking the matter of B.C.I. too much lying down, and often closing down without knowing whether he is causing interference or not!

One of the things we lacked in those far-off days was the wealth of technical information on how to cure our troubles, which is now so readily to hand. Nowadays we really have no excuse. If we want to operate our transmitters during television hours, there is nothing to stop us. All the relevant information is available for a modest outlay, so let us hear no more of T.V.I.!

In years to come, when we complain about an extension to the B.B.C.'s three-dimensional, stereophonic colour-vision service someone may be handy to remind us that, after all, no one keeps off the air for black and white T.V.!

A.O.M.

ORDER THE R.S.G.B. AMATEUR RADIO CALL BOOK NOW

A DOMESTIC F.M. RECEIVER FROM THE BC624

By G. A. MEEK, Ph.D., A.R.C.S., D.I.C., (B.R.S.14687)*

In the March issue an article entitled "The Wrotham Experimental Station" (by G3VA) drew attention to the recent progress of F.M. broadcasting. For the benefit of many amateurs who may wish to carry out experiments in the reception of these transmissions, the following article describes a typical F.M. conversion on the BC624, illustrating the principles and circuitry involved in modifying a modern communications receiver for this purpose.

THE circuit to be described is intended for reception of the B.B.C. experimental transmissions from Wrotham, Kent, which are on 91.4 Mc/s. (F.M.) and 93.8 Mc/s. (A.M.), both with a power of 20 kW. The carriers are modulated up to 15 kc/s. on live broadcasts, and this receiver, when used in conjunction with a suitable amplifier and loudspeaker system provides domestic reception with a high degree of fidelity.

Circuit

The BC624 was designed for reception of A.M. signals on four crystal-controlled channels between 100 and 150 Mc/s., and requires only a switch, a meter and a few resistors and condensers for the conversion to an F.M./A.M. receiver. The receiver as it stands comprises a crystal oscillator (one side of 12AH7 double triode), a harmonic generator (9002), a harmonic amplifier (9003), an R.F. amplifier (9003), a mixer (9003), 3-I.F. stages at 12 Mc/s. (12SG7s), detector and first A.F. amplifier (12C8), a noise limiter (12H6), and audio output (12J5). The other side of the 12AH7 is used to operate an audio squelch relay. Care must be taken in selecting the receiver for conversion, as older models had no noise limiter, and this is essential for the construction of the discriminator.

The converted circuit consists of a conventional superhet comprising R.F. stage (9003), oscillator (9002), mixer (9003), a three-stage, wide-band 12 Mc/s. I.F. amplifier (12SG7s), limiter (12C8) and discriminator (12H6) for F.M. reception. For A.M. reception, the 12C8 pentode section control grid is used as a diode anode in conjunction with the limiter self-biasing network. A feature of the circuit is the use of the 12AH7 double triode as an S-meter amplifier, which is essential for the correct tuning of the F.M. signal.

R.F. Unit

This is mounted on a separate, easily removable sub-chassis. The R.F. amplifier is untouched except for the removal of the A.V.C. circuit, and changing the grid and anode coils. The mixer grid coil is also changed, and the harmonic amplifier circuit is rewired to use the 9002 as an oscillator. The split-stator tuning condenser C32 (see Fig. 1) is modified to give a frequency coverage of 78-83 Mc/s. for the required signal coverage of 90-95 Mc/s. The output from the oscillator grid is fed through a 2 μ F. condenser C34 straight on to the mixer grid.

I.F. Amplifier

The A.V.C. circuit is removed, and the bandwidth is increased by the addition of the damping resistors R6-R11. This reduces the gain to about 10 per stage.

Limiter

A limiter, V7, is used to remove all amplitude modulation from the frequency modulated signal before it is applied to the discriminator. The limiter valve is supplied with low anode and screen voltages, and consequently clips the amplitude peaks of the output from the I.F. amplifier. The

self-biasing network C39, R30 is included in the grid circuit in order to reduce sudden changes in carrier amplitude.

A.M. Detector

Any amplitude modulation appears across the limiter biasing network, since it is rectified at the limiter control grid. For A.M. reception, the anode and screen potentials are removed from the limiter, V7, by opening the switch S1, and the receiver output is switched to the live end of the bias network by the switch S2. The tuning meter amplifier, V9, is also connected to this point, and the meter now behaves as a normal S-meter. The diodes of the 12C8 double diode-R.F. pentode limiter are strapped to earth.

Discriminator

The frequency-to-amplitude converter is the usual Foster and Seeley phase discriminator, which

COMPONENT LIST CONDENSERS

| | |
|--------------|-----------------|
| C1-C24, C38 | .00058 μ F. |
| C25-C28 | 10 μ F. |
| C29-C31 | 6-36 μ F. |
| C32 | See text |
| C33 | 47 μ F. |
| *C34 | 2 μ F. |
| *C35 | 47 μ F. |
| *C36, 41, 42 | 6-30 μ F. |
| *C37 | 25 μ F. |
| *C39 | 100 μ F. |
| *C43 | 47 μ F. |
| *C44 | 100 μ F. |
| *C45 | 47 μ F. |
| *C46 | .01 μ F. |
| C47, 48 | .1 μ F. |

RESISTORS

| | |
|--------------------|----------------------------|
| R1 | 330 ohms |
| R2, 18, 19, 20, 21 | 100,000 ohms |
| R3, 17 | 6,800 ohms |
| R4 | 330 ohms |
| R5, 22, 23 | 4,700 ohms |
| *R6-R13 | 33,000 ohms 1/10-W. |
| R14 | 1,000 ohms |
| *R15, 16 | 47,000 ohms, 1/2-W. |
| R24 | 390 ohms |
| R25 | 270 ohms |
| R26 | 470 ohms |
| *R27 | 10,000 ohms, 1/2-W. |
| R28 | 82,000 ohms |
| R29 | 4,700 ohms |
| *R30, 34 | 470,000 ohms, 1/2-W. |
| *R31 | 33,000 ohms, 1-W. |
| *R32, 33 | 100,000 ohms, 1/2-W. |
| *R35 | 1 megohm, 1/2-W. |
| *R36 | 1,000 ohms, 1/2-W. |
| R37 | 150,000 ohms potentiometer |

VALVES

| | |
|----------|-------|
| V1, 2 | 9003 |
| V3 | 9002 |
| V4, 5, 6 | 12SG7 |
| V7 | 12C8 |
| V8 | 12H6 |
| V9 | 12AH7 |

MISCELLANEOUS

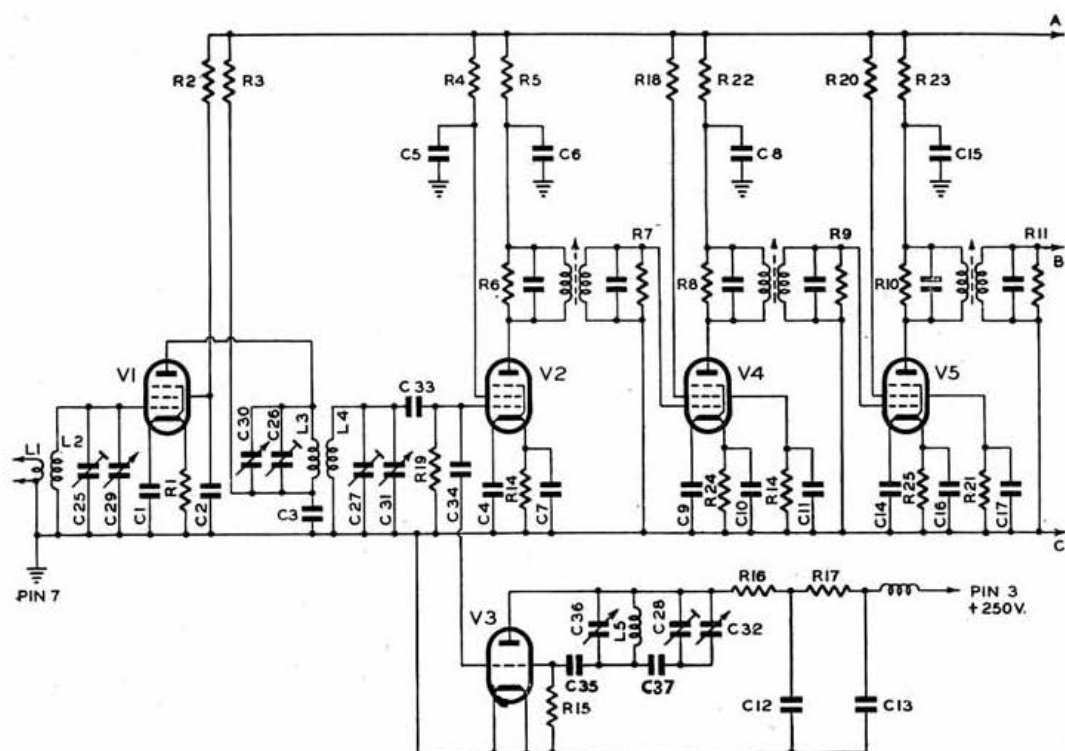
- *One 2-pole 2-way wafer switch (S1,2)
- *One 0.5 millimeter
- *Two 8-1 epicyclic drive units
- *One 10-pin female Jones plug

* Components not included in the original circuit. All others are already wired in.

* 26 The Lees, Sirey, Surrey.

depends on the fact that the voltage across the secondary circuit of a double tuned transformer is 90° or 270° out of phase with that across the

frequency, the outputs of both diodes are equal and opposite and no D.C. voltage appears at the output. As the frequency fed to the primary alters



primary at the resonant frequency to which both are tuned. The primary of the transformer is included in the anode circuit of the final limiter, and the secondary is centre tapped with two diodes connected across it. At the resonant

above or below resonance, so one diode will conduct more and the other less, and a positive or negative D.C. voltage will appear at the output. Fig. 2 shows the relationship between frequency and output voltage, which takes the form of a

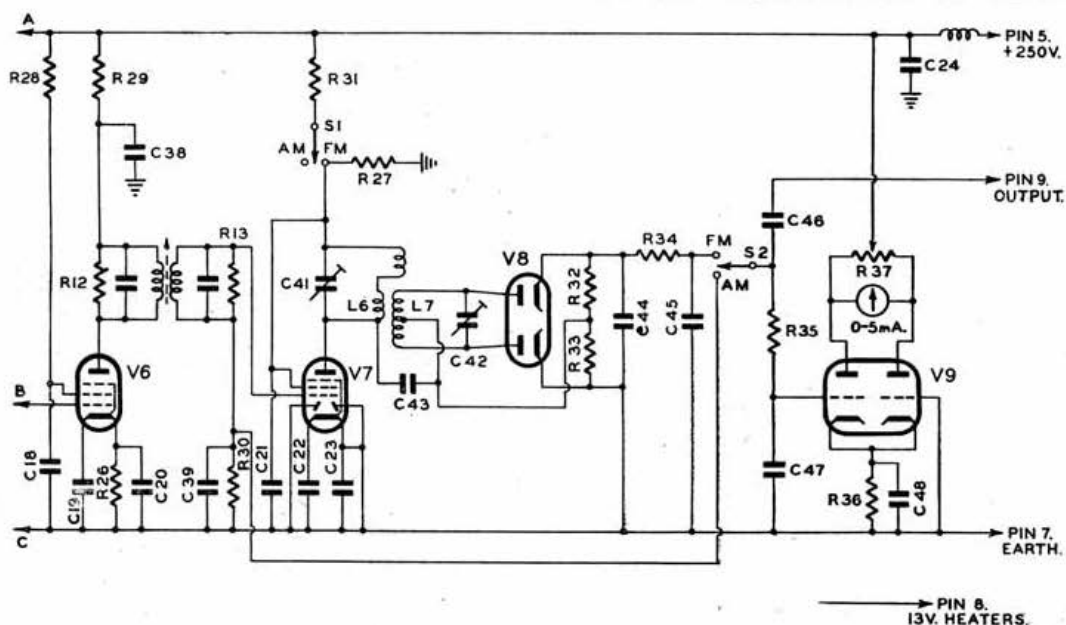


Fig. 1.
Circuit diagram of F.M. receiver.

positive peak and a negative peak spaced equally about a central frequency, the D.C. output being zero both at the "mid-point zero" and at points spaced well away from the resonant frequency. The curve is substantially linear about the resonant frequency, and the output is directly proportional to frequency excursion. The conversion efficiency, expressed as volts output per kc/s. off resonance per volt input, depends on the slope of this linear portion, becoming greater as the separation between the peaks is reduced. The separation is dependent on the mutual inductance between the primary and secondary coils, becoming greater as the mutual inductance is increased.

The B.B.C. F.M. transmissions have a peak deviation of ± 75 kc/s., and if there is to be no distortion in the output the separation between the peaks must be at least ± 120 kc/s. The discriminator construction specified gives approximately this separation, resulting in optimum conversion efficiency. The primary and secondary are tuned by the two Philips 6-30 μ F. air trimmers C41 and C42. The secondary tuning determines the position of the mid-point zero and the primary tuning affects the relative heights of the two peaks.

Tuning Meter

It is essential to be able to tune to the centre of the F.M. carrier, otherwise distortion will occur, and signal-to-noise ratio will decrease. The D.C. output from the discriminator is taken through the long time constant circuit, R35, C47, to one grid of the 12AH7, the other grid being earthed. Both cathodes are earthed through a common bias resistance, so that when the current through one half of the valve increases, the current through the other half decreases, and the off-balance is indicated by the 0-5 mA. meter inserted between the anodes. The meter is set to the centre of its scale at no signal by adjustment of R37. As a carrier is tuned through, the output from the discriminator becomes, say, first negative, then returns through the mid-point zero to an equal positive potential and then returns to zero again. The tuning meter indicates the mid-point zero with great precision, acting as a normal S-meter for A.M. tuning and is a very useful indicator for lining-up the I.F. stages and adjusting the discriminator.

Power Supply

The receiver requires 200-250 volts at about 30 mA. and 13 volts at 1.2 A. The H.T. must be well smoothed, preferably with two filter stages, and should be of adequate size and of good regulation, otherwise oscillator instability may arise.

For further information on circuit design and the methods used in calculating component values, the reader is referred to the *Electronic Engineering* monograph **Frequency Modulation** by Dr. Sturley, which contains 56 references to the literature.

Construction

It is advisable at first to make a single valve super-regenerative receiver covering about 50-100 Mc/s. in order to get some idea of the field strength of the Wrotham signal, and to act as a signal generator for lining-up the receiver, and checking the oscillator frequency. It may easily be calibrated from the harmonics of a signal generator.

It is also advisable to obtain a copy of the original American circuit diagram, wiring diagram and components list, from *Clydesdale*. Components in the section following will be referred to by the data reference sheet number and/or by the component number given in the component list to Fig. 1.

Firstly, check the BC 624 to ensure that H.T. +

is not short circuited and that the valve heaters are sound. Connect a high impedance loud-speaker between pins 4 and 7 of the Jones plug; 250 volts through a meter between pins 3 and 5 joined (H.T.+) and pin 7 (earth); and 13 volts between pins 7 and 8. On switching-on, a hiss,

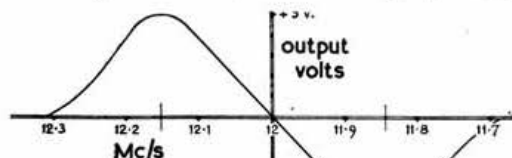


Fig. 2.
Discriminator Characteristic.

but no hum, should be heard in the speaker if the circuit is in order. Check this by applying a modulated 12 Mc/s. signal to the mixer grid. Watch the meter, as by-pass condensers may be expected to break down in the first few minutes running.

Next, remove the whole of the wiring connected to the detector, A.V.C. and first A.F. circuits (12C8) with the exception of the heater wiring and the heater by-pass condensers, and remove the audio squelch wiring and relay (246), the two audio transformers (294 and 296), and the electrolytic condenser can (212). This is essential, as hum may easily be picked-up in loose lengths of wire. Solder the damping resistors across the pins of the I.F. transformers, remove the A.V.C. leads, and earth the grid coil pins of the first three I.F. transformers with short leads. Wire in the F.M./A.M. Yaxley switch, S12, the A.M. detector and the tuning meter circuit. The tuning meter, which is a surplus 0-5 mA. "battery charge" meter with a centre-zero scale inked on, is most easily mounted by its terminal screws on the paxolin panel intended for the crystals, above the Jones plug in the original circuit.

Discriminator

Remove the noise limiter sub-chassis, and remove all the components from the tag board. Drill the six holes for the two coils and two trimmers (see Fig. 3). Wind the primary and secondary coils on ordinary moulded 1½ in. high by ½ in. diameter television type coil formers, using 20 turns of No. 30 S.W.G. enamelled copper wire for the primary L6, and 40 turns of No. 40 S.W.G. enamelled copper wire, centre tapped, for the secondary, L7. No dust cores are used. Leave enough wire at the top end of the primary for the coupling link, which is one complete turn wound around the centre of the secondary. With the coils mounted 1 in. apart, this gives the correct amount of mutual inductance. Wind all coils in the same direction, so that the mutual inductance from the coupling coil opposes the leakage. Mount the coils and the two Philips 6-30 μ F. concentric

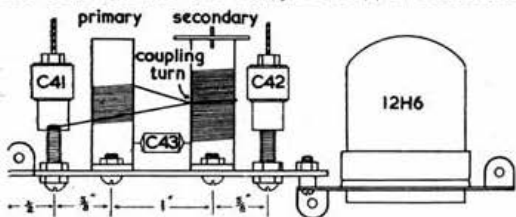


Fig. 3.
Discriminator Construction.

air trimmers on the tag board with the secondary nearer the valve holder, and wire in the other components rigidly. Replace the sub-chassis and wire the heater, primary and output to the switch.

R. F. Unit

The whole R.F. sub-chassis can easily be removed from the main chassis after the automatic cam-tuning mechanism has been removed. Trouble may be experienced with the Allen grub screws, which are very securely cemented in, but methylated spirit or a hot soldering iron will probably free them. The R.F. and mixer units require very little modification. The three coils 222, 223 and 224 (L2,3,4) are replaced by three turns each of 16

chassis, which is in turn reassembled on the main chassis. Drives for the oscillator and R.F. tuning condensers are easily constructed by mounting two epicyclic reduction units on the back plate of the automatic tuning assembly, the front plate and remainder of the parts being discarded. There is really no necessity to fit a manual tuning drive on the R.F. condenser, as the tuning is fairly broad and need not be altered when changing from the F.M. channel to the A.M. channel.

Receiver Alignment

First align the I.F. and limiter transformers. Wire a 0-50 μ A. meter in series with the limiter grid-leak, or connect a 0-100 V. meter between anode and earth. Apply a 12 Mc/s. signal to the mixer grid, and adjust the dust cores for maximum reading. The limiter anode voltage should be about 45 V., rising to about 90 V. on signal. The tuning will be very broad and little adjustment should be necessary. Next adjust the discriminator. Turn the F.M./A.M. switch to F.M. Adjust R37 so that the indicator meter is at the centre of the scale. Apply the signal generator to the grid of the limiter and step up the output to about 1 V. at 12 Mc/s. As the trimmer, C42, is adjusted, the tuning meter should give a large deflection to one side, returning through the mid-point zero to give a large but probably unequal deflection on the other side, finally returning to zero. Set the trimmer to the mid-point zero. This adjustment is very critical. Now swing the generator tuning about, and check that the two peaks are approximately 250 kc/s. apart. Next adjust the primary trimmer, C41, so that the two peaks are equal in amplitude on either side of the mid-point zero. Repeat the adjustments if necessary. Return the signal generator stage by stage up to the mixer grid and check the bandwidth and the gain of each stage. Full-scale deflection on the tuning meter should be obtained with about 200 μ V. input to the mixer grid.

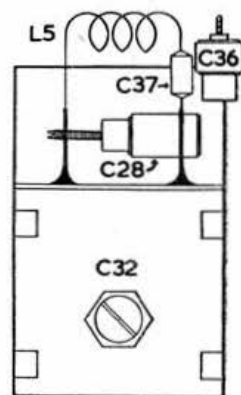
Next, connect a dipole aerial of overall length 5ft. 1in. by a coaxial cable to the single aerial coupling loop (221) mounted on the main chassis. A signal is broadcast from Wrotham on weekdays only between 11 a.m. and noon, and from 2.30 to 4.30 p.m. (Light Programme), and from 6 p.m. onwards (Third Programme, Monday, Tuesday and Thursday; Home Service, Wednesday, Friday and Saturday). On tuning the oscillator condenser, two strong signals should be picked up. With the switch at F.M., the F.M. carrier will give maximum audio output at the mid-point zero; the A.M. will give minimum. With the switch at A.M., the A.M. signal will give maximum audio output at maximum reading of the tuning meter; the F.M. will give minimum. The R.F. tuning condenser should be adjusted with the mixer grid in tune. If the signal is weak, tune the R.F. grid and anode circuits to resonance by means of the S-meter (switch at A.M.), but if the signal is very powerful, off-tune them a little either side. The lining-up procedure may be carried out using the super-regenerative receiver as a signal generator. A deflection of about two millimetres on the meter was obtained from the third harmonic of a signal generator set at 31 Mc/s.

Performance

The output from the receiver, which is about 10 V. peak from the F.M. and about 3 V. peak from the A.M., should be taken to a high quality tone control circuit and feedback amplifier, such as the Williamson. A de-emphasis circuit, R34, C45, is included in the F.M. output. The quality

(Continued on Page 79)

Fig. 4.
Oscillator Coil Mounting.



S.W.G. tinned copper wire wound on a $\frac{1}{4}$ in. diameter former, turns being spaced $\frac{1}{10}$ in. apart. Care should be taken to wind these in the same directions as the originals. The A.V.C. circuit on the grid of the R.F. amplifier is removed, the grid being connected directly to the live end of the coil.

Oscillator

This is the heart of the receiver, and must be carefully and rigidly constructed. Remove the harmonic generator and amplifier unit from the R.F. sub-chassis, and strip all components except the heater wiring and by-pass condensers. The 3-30 μ F. split-stator tuning condenser, 217A, has its swing reduced in the following manner. Remove the rotor spindle, taking great care to conserve the ball bearings. Remove the rotors from the spindle, and cut off the first three vanes of one rotor with a fine hacksaw. This will leave a grub screw in the centre of the three-vane unit. Straighten the slotted outer vane if necessary, remove the harmonic generator stator 217B, and reassemble the condenser with the three-vane rotor in the centre of the remaining stators. The coil L5 is wound with four turns of 16 S.W.G. copper wire on a $\frac{1}{4}$ in. diameter former, spaced to $\frac{1}{4}$ in. overall length. Solder it firmly into place with the longer leg in the stator connection further from the 9002 grid (see Fig. 4). The series condenser, C37, is soldered in the shorter leg. The 3-30 μ F. Philips band-setting condenser, C36, must be wired in with 16 S.W.G. leads for rigidity. The 9002 and 9003 heaters are left in series, and the spare 9003 must be plugged in, although it serves no other purpose.

Test the oscillator by applying H.T. and heater supplies, and picking up the signal with the super-regenerative receiver. The oscillator grid current should be about 0.4 mA. Adjust the band-set condenser, C36, so that the oscillator covers the range 78-83 Mc/s. (only 90° on the tuning dial), and replace the oscillator unit in the R.F. sub-

SETTING UP A BUG KEY

By H. S. CHADWICK (G8ON)*

The original Bug Key was designed not for speed but to save fatigue in an operator whose sending hand had been injured in World War I. The writer of the present article—who uses a Bug Key for similar reasons—asserts that if the speed craze can be eliminated, readability is better than with "straight" keys, and, with practice, it becomes the perfect code machine. Much bad sending is due to paucity of information regarding the correct method of adjustment, and in the following article the author carefully explains the procedure for setting-up the Bug Key.

PERHAPS the best way to understand the operation of a Bug Key is to take it to pieces; in this way the mechanism and adjustment will be the more clearly understood. The less adventurous, however, may content themselves with slackening off all adjustable controls. In this condition, the main arm should be able to swing freely around its vertical axis, and respond to the lightest touch. If necessary, the bearings at either end of this axis should be adjusted with this object in mind: ideally, they should be tight enough to ensure that there is no up and down play when the dash paddle is depressed vertically—but no tighter.

The bearings, if they are not jewelled, should be lubricated sparingly with a light oil. If the key is used in other than a low-voltage relay circuit, then the oil should have a little fine graphite scraped into it from a soft lead pencil (graphite dust alone will suffice if it is very finely powdered). The arm should be evenly balanced. If the weighted end is much heavier than the other, it may be advisable to replace the ebonite paddle and knob by heavy metal replicas in order to achieve balance, but the key must not thereafter be used for other than low-voltage relay circuits.

Next, the stationary dot and dash contacts (A and B) are screwed in until the contact studs on the moving arm make a good flat contact over the entire stud area during operation. Contact at a point will cause arcing and oxidation, resulting in failure of high-speed relays to follow the dots, and perhaps producing a mysterious oscillator chirp. Having made sure that these contacts are correctly aligned, they should, for the present, be slackened off again.

The Dot Mechanism

The stop D may now be screwed in until the "dithering" end, when at rest, is just free of the back stop, which is normally a fixture. A few imaginary dots should be sent to ensure that at the end of each "burst," the vibrating arm is very quickly damped and comes to rest. Stop D can then be locked in this position. Stop C should be screwed in until the movement of the main arm in the dot direction is restricted to about one-eighth of an inch, as measured at the paddle tip.

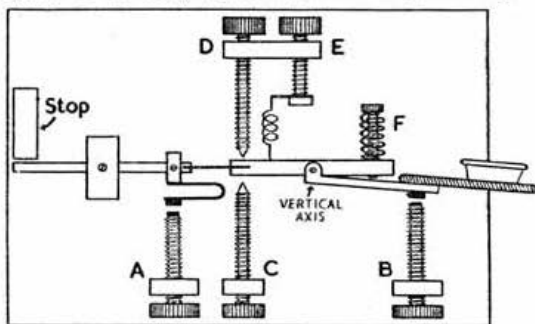


Fig. 1.

Layout of a typical Bug Key.

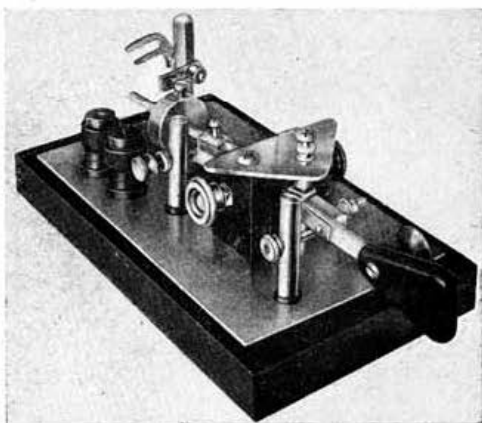


Fig. 2.

Front view of an automatic Morse key as described by G. H. Stanton (G8QY), in the January, 1943, issue of the Bulletin.

This adjustment will vary with different individuals, usually being slightly less as the operator becomes more experienced. For the beginner, a movement of as much as three-sixteenths of an inch is permissible.

The spring control E is then set so as to return the main arm to the central position on cessation of the dots. Here again, beginners and heavy operators will require greater tension, but this should not err on the side of tightness. For a light-handed operator, the tension should be just sufficient to bring the arm back as soon as the paddle is released.

The dot contact A can now receive its final adjustment. With the main arm held in the dot position and allowed to come to rest, a battery, a suitable resistance, and a meter (preferably sluggish in movement) should be connected in a series circuit. With the dot contact advanced up to the point where the circuit is just made, the meter reading is noted; after this the contact is locked and the main arm released. Keying a long train of dots should now produce a meter reading of one-half of that originally recorded (or perhaps a little less, because of the inertia of the meter movement). If, however, the reading is less than 40 per cent. of the original, then the contact should be very slightly advanced and, conversely, if over 50 per cent., very slightly backed off. The position of this contact is, of course, dependent on stop C, and will need correcting whenever the stop is readjusted. The latter, incidentally, should always be adjusted with great care, as incorrect setting can ruin otherwise perfect operating.

Estimating Speed

The Bug should now be arranged to key an R.F. oscillator or V.F.O. unit of good stability,

* 25 Raines Avenue, Workop.

the resulting signal being monitored on a receiver, with gain reduced to provide a clean "clickless" signal. For this test it is essential to have the key mounted on a perfectly flat table. With the weights set at about the centre of the "dither" bar, the paddle should be moved sharply over to the dot side, and held there, while the number of dots is counted until they cease to sound like clear separable dots, becoming either a continuous dash or complete silence. To facilitate counting, the dots should be divided up mentally into groups of four or eight, the groups only being counted. With a little practice, and a sense of rhythm, it is possible to count dots as fast as sixteen per second.

A good key should be able to produce well over a hundred dots in a series, and, in fact, the number of dots is the measure of the quality of the key. At G8ON, a twelve-year-old *McElroy Junior* can still produce over three hundred consecutive dots in this test. Any key that is not capable of more than one hundred is below standard, and should have all the foregoing adjustments checked again, particularly the positions of stop C and contact A.

The position of the weight on the "dither" bar governs the speed of the dots, and also determines the speed at which good Morse can be sent. It cannot be too strongly emphasised that once the weight has been fixed it is impossible to vary sending speed by more than two words per minute (faster or slower) without producing those inequalities of spacing which for years gave the Bug a bad name among operators.

Final Adjustment

The operator should determine the speed at which he can consistently read and send Morse well with a straight key, and should not attempt

to use the Bug at greater speeds than this until considerable facility has been gained through practice. Assuming that the operator is competent at about 15 words per minute, he should proceed as follows. For every five words per minute of sending speed, the Bug should produce nearly two dots per second. By means of the group counting technique mentioned above, and with the aid of a watch having a reliable seconds hand, the dots should be counted during a period of thirty seconds. At 15 w.p.m. there should be 180 dots, at 18 w.p.m. 216 dots, and so on, *pro rata*. Errors up to 5 per cent. may be disregarded.

Finally, the dash contact B should be adjusted to provide a dash-lever movement of no more than one-eighth of an inch at the paddle tip, the tension of the dash spring being set so that the lever returns to the centre on release. As experience is gained, contact B can usually be screwed in to give a slightly smaller gap.

The key is now ready for use at its proper speed.

While it is customary to clamp an ordinary key on the right-hand side of the table, the Bug should be tried in all sorts of positions. It may be found more comfortable in front of the receiver, with its paddle end to the right, and stops C and D in line with the operator's line of vision.

When the contacts need cleaning, a little *Brasso* (or similar metal polish) should be shaken out on to a flat surface (e.g., a plate of glass), the contacts being removed and rubbed in a perfectly flat position. Even the finest file is much too harsh. Finally, the contacts should be carefully washed with petrol or carbon tetrachloride, and then polished with a soft cloth.

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A SIMPLE HETERODYNE FREQUENCY METER

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

As the pick of the surplus material is rapidly disappearing from the market, and the BC.221 and other frequency meters are beyond the reach of many amateurs' pockets, it becomes more difficult to combine economy with reliability in the construction of test apparatus. The instrument described in this article is inexpensive, of simple construction, and will provide a frequency standard that complies with G.P.O. requirements.

IN its original form, this frequency meter was designed by Mr. J. Payne (G2XP), who used it both as station standard and for calibrating crystals. It consisted of a PM2DX valve fed by L.T. from a 2 V. accumulator, with an H.T. supply of 18 V. supplied by two grid-bias batteries in series. Since the valve was of the directly heated type, with low current consumption, there was no warming-up period after switching on, and accurate readings could be taken immediately, while stability was such that no noticeable frequency drift occurred after long periods of continual operation. A separate 100 kc/s. oscillator was used for calibration purposes, the signal being fed into the receiver, and the frequency meter then being correctly adjusted on its calibration curve by trimming the small zero-setting condenser to zero beat with the 100 kc/s. signal at a spot frequency in the 160-metre band.

In modernising this instrument, it was decided to make it portable, at the same time incorporating the 100 kc/s. bar in the circuit, so that a reliable frequency standard would be available for use either on the station, or on outside occasions such as National Field Day. In order to keep the cost as low as possible, all components used were from surplus material, with the exception of the H.T. and L.T. batteries, and the 100 kc/s. bar. The latter was obtained from *Brooke's Crystals, Ltd.*, of Greenwich, and is mounted in a vacuum tube with a B7G base. It readily oscillates on the 90 V. supply, with sufficient output to provide strong signals on both the 160 and 80-metre bands.

Construction

In order to reduce H.T. current drain to a minimum, surplus 1A5 pentodes were used, operating

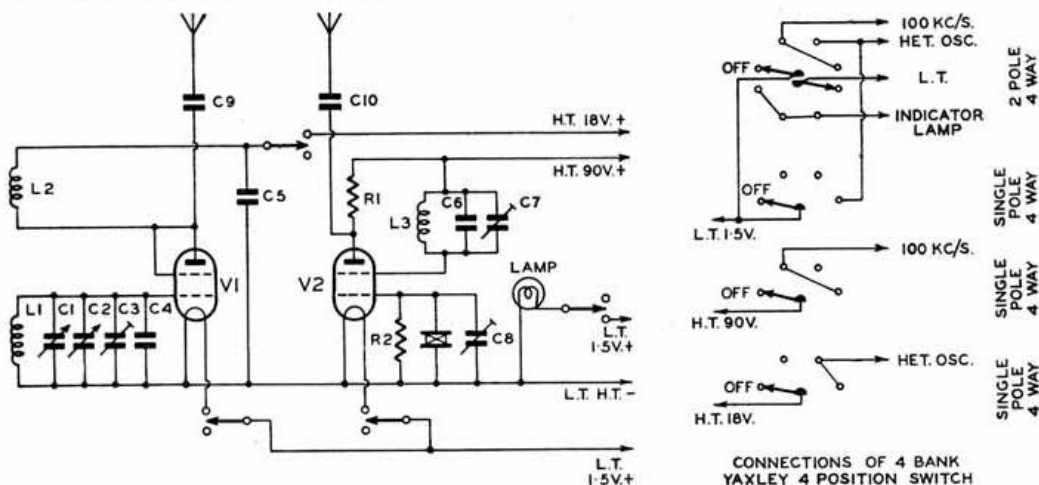
* 10 Chepstow Crescent, Newbury Park, Ilford, Essex.

from a 1.5 V. dry cell, but any other small battery triode or pentode would probably be satisfactory. Some economy in filament current was effected by switching the supply so that either the 100 kc/s. oscillator, the heterodyne oscillator, or both, could be used as required. The switch used was a 4-bank Yaxley, made up of 3 single-pole 4-way leaves and one 2-pole 4-way leaf, the latter connecting a small dial indicator lamp to a U2 cell in all three switch positions.

All components were mounted on the rear of the front panel, or on top of the chassis, the under-chassis space being used to house the L.T. and H.T. batteries (Fig. 3). Leads were kept as short as possible, No. 16 gauge wire being used throughout to ensure rigid connections and good stability. A slow-motion dial with no backlash or slip was chosen so that accurate readings could be obtained (surplus dials of this type are still available at about 5/- each). For the short antenna posts, steel knitting needles proved satisfactory. In the 100 kc/s. oscillator section, L3 was made by removing the top tier from an *Eddystone* 2-tier R.F. choke (Cat. No. 1066, wavelength 24 Mc/s.-150 kc/s.), and this trimmed satisfactorily with 300 μ F. capacity across it.

Calibration

As mentioned earlier, the instrument operates accurately without any delay or warming-up period as is the case with many frequency meters, so that calibration can commence immediately after switching on. With the master switch set to "100 kc/s. Osc.," find the harmonic in the receiver at 1700 kc/s.; then, switching to "Het. Osc.," swing the dial towards 100°, with the zero-set condenser half-way in. If no note is audible in the receiver, turn the band-set condenser set until it comes in.



Circuit diagram of a simple, portable heterodyne frequency meter, incorporating a 100 kc/s. bar.

Next switch back to "100 kc/s. Osc." and find the harmonic again in the receiver—this time at 2000 kc/s. Then, switching to "Het. Osc.," swing the dial through the scale towards 0°, until zero beat is obtained. If this does not spread the dial adequately, and zero beat comes in say at 25°, pull out one of the moving vanes of the condenser, and again retune. It may even be necessary to remove two vanes in order to bring zero beat down to about 5°, but care should be taken not to remove one too many.

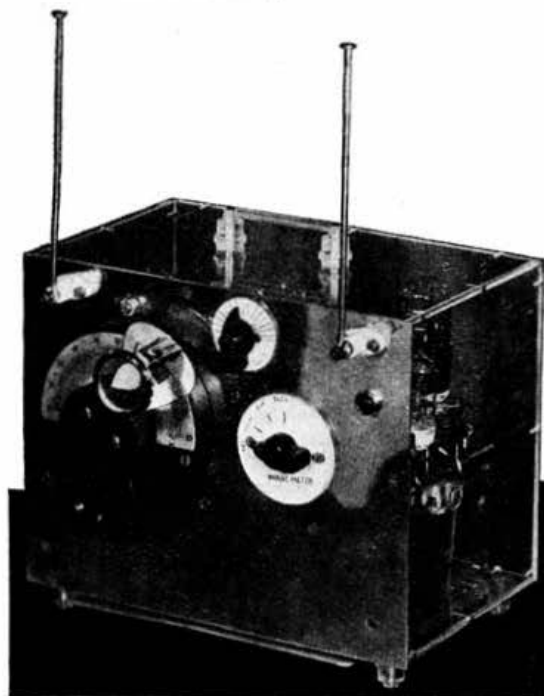


Fig. 2.
Front view of the frequency meter showing layout of controls.

Spot frequencies of 1800 and 1900 kc/s. can then be found and easily noted, while additional points may be plotted with the aid of a BC.221 frequency meter or similar instrument. If a frequency meter is not available, checks can be

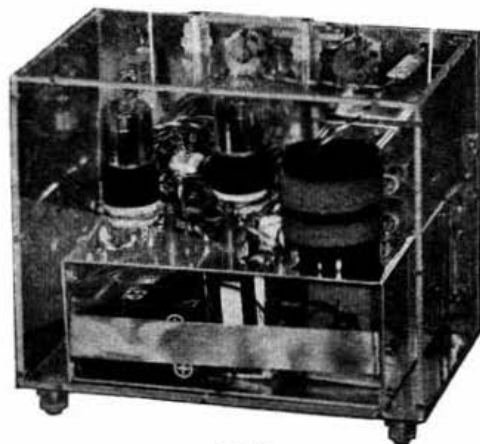


Fig. 3.
View from the rear showing interior layout.

COMPONENT LIST

CONDENSERS

- C1 .0003 μ F. variable (bandsread).
- C2 10 or 20 μ F. variable (vernier zero set).
- C3 120 μ F. airspaced (bandset).
- C4 .0005 μ F. silver or good quality mica.
- C5 .005 μ F. mica.
- C6 200 μ F. silver or good quality mica.
- C7 100 μ F. trimmer.
- C8 0-40 μ F. ceramic trimmer.
- C9 20 μ F. silver or good quality mica.
- C10 20 μ F. silver mica.

RESISTORS

- R1 30,000 ohms.
- R2 1 megohm.

COILS

- L1 12 turns No. 22 gauge D.C.C. wire.
- L2 18 turns No. 22 gauge D.C.C. wire.
(Both wound on 2" diameter former with spacing of $\frac{1}{4}$ " between windings.)
- L3 Eddystone R.F. Choke, Cat. No. 1066.

MISCELLANEOUS

- Crystal 100 kc/s. bar, (B7C base). Brooke's Crystals, Ltd. (Specify circuit when ordering.)
- V1, 2 1A5.
- L.T. Ever-Ready Alldry 35-1.5 V. (for indicator lamp) U8-1.5 V.
- H.T. Two 9 V. grid bias batteries. One 90 V. Drydex 526 battery.

made on crystal controlled stations in the 160-metre band, and the calibration curve completed from this data.

The finished graph is practically linear. Frequency in kc/s. is marked off vertically, while dial readings in degrees are indicated on the horizontal scale. Using standard 1-in. square graph-paper, a long curve (some 17 in. in length) can be obtained, enabling readings to be taken with an accuracy of $\frac{1}{4}$ kc/s. on Top Band. Scaled off also are the 80, 40 and 20-metre bands.

The completed graph was finally mounted under glass in a wooden frame, the latter being slotted to take runners on which were fitted steel or perspex cursors, facilitating quick and accurate reading.

Operation

To set the frequency meter on to its curve, one of the two following simple methods may be employed.

First of all, switch to "100 kc/s. Osc." and beat the output into the receiver at 1900 kc/s. Turn the dial to the reading corresponding to this frequency on the calibration curve, then switch to "Het. Osc." and adjust the vernier trimmer for zero beat.

Alternatively, switch off the B.F.O. in the receiver and switch the frequency meter to the third position where both the 100 kc/s. and heterodyne oscillators are operating. If these are not synchronised, a heterodyne tone will be heard in the receiver, due to the beat note produced. Trim the vernier condenser to obtain zero beat.

The instrument is then ready for use.

LOW POWER FIELD DAY

If you are a QRP enthusiast—this is to remind you that the first R.S.G.B. Low Power Field Day will take place next month, and that you should make your own arrangements with the G.P.O. to obtain the necessary portable licence. Full details and rules appeared on page 466 of the June issue.

SEPTEMBER 9, 1951

THE HELPING HAND TO AMATEUR RADIO

Continuing this series, which is intended to help a new generation of short-wave enthusiasts to attain a transmitting licence and equip their stations, the author surveys the general requirements of an amateur station, listing the various factors that must be considered in order to secure maximum efficiency and operating convenience.

Part II.—Station Layout and Mast Fittings.

IN planning the layout of a station, it is desirable to estimate the minimum amount of equipment that will be in use during the first eighteen months or so, and then allow for subsequent expansion. Initially three units will be employed, namely—a receiver, a low-power transmitter, and (to comply with licence requirements) a wavemeter. Some form of table is necessary, preferably in the form of an office desk, as illustrated in Fig. 1. This simple form of construction enables shelves and plywood panels to be fitted later to improve the appearance, and the whole can be expanded if desired.

The Operating Desk

Professional communication equipment is generally mounted in racks of angle-iron, standardised by international agreement to take panels 19 in. in width, and multiples of 1½ in. in height. These panels have slots at standard spacing for bolting to the rack uprights. Since many commercial and Service units have this standard width of 19 in., it is advisable to make the length of the table-top sufficient to take three of these units, with a spacing of about 8 in. between them for auxiliary equipment, such as a V.H.F. converter, a monitor, and perhaps a control-box. The resultant minimum length is therefore around 72 in.

For the front-to-rear dimension, it is wise to allow some 12 in. chassis space, plus another 12 in. of writing space for the log-book, key, etc. Some

equipment—for example a well-known post-war receiver—has a front-to-rear dimension of 19 in., necessitating a corresponding increase in the table area. Finally, the height of the table is a matter of great importance to the comfort of the operator who, during emergencies or contests, may spend perhaps 22 out of 24 hours at the operating position. Correct dimensioning will greatly minimise fatigue.

The Operating Position

If there is a choice between a ground-floor or a top-floor room, the following factors should be borne in mind. A vertical down-lead from the aerial is desirable, together with a short earth connection to minimise the pick-up of hum and R.F. in the equipment and wiring. Both these requirements are best met by a ground-floor room.

THE OPERATING DESK

Materials suitable for the construction of an operating desk as illustrated in Fig. 1.

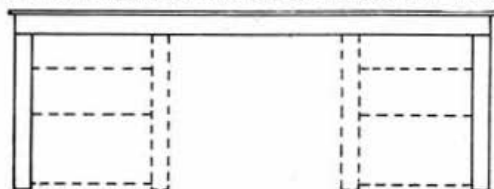
| | |
|-------------------|---|
| Top | ½-in. 5-plywood. |
| Front doors | ½-in. 5-plywood. |
| Apron | 4 x ½-in. whitewood. |
| Legs | 2½ in. sq. whitewood. |
| Shelves | ½-in. 5-plywood. |
| Side panels | ½-in. 3-plywood. |
| Finish | Blue-grey enamel, or a colour toning with room decorations. |

On the other hand, a room on an upper floor will offer greater freedom from disturbance by the household, with reduced mains-borne or mains-radiated interference. Outside accommodation such as a shed or garage should be selected only as a last resort, because condensation of moisture on the equipment will be detrimental, causing, in addition to rust, electro-chemical action on fine-gauge windings, and electrolytic action at the junction of dissimilar metals.

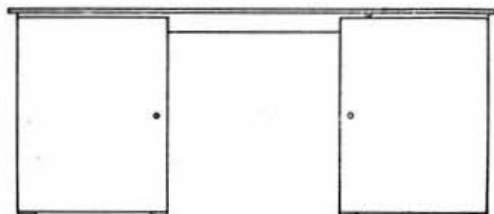
The operating position itself should always be under a window, the light and air being beneficial, particularly during long operating sessions, and the eyes being rested by allowing them to focus naturally at intervals on outside objects as a change from station controls.

Where a window recess limits the length of the desk, it is good practice to use a "U" or "L"-shaped layout, both of which offer the advantage that the operator can reach a number of units without leaving his position, and can, in general, keep instruments under better observation than would be possible in a layout running the length of a wall.

Each unit will require connection to the mains supply. For this purpose several 5-ampere sockets should be provided on a mounting block attached to the skirting board near the operating position. The connection to the domestic power circuit should preferably be wired under the floorboards,



(a)



(b)

Fig. 1.

The operating desk is constructed initially with the outer legs only (a). The inner legs and shelving, shown dotted, are added later. Finally plywood side-panels and doors are fitted, to give the desk the appearance shown in (b). (Not to scale.)

and should comply with the requirements of the local Electricity Authority. In addition, a double-pole master switch adjoining the sockets is a useful feature, enabling all equipment to be disconnected from the supply in the absence of the operator.

The Station Aerial

The more technical aspects of aerial performance will be considered in a later article in this series, but as it will probably take several weeks to obtain, paint, and erect a suitable mast, it is convenient to discuss these preliminary details at the present stage.

Although the station may, in due course, have a 14 and 28 Mc/s. rotary beam aerial, for the beginner a plain single wire aerial of as great a length as can conveniently be erected is more suitable, especially as the rotary beam will not perform satisfactorily on the lower frequencies. A mast of the flag-pole type (Fig. 2a) is neat, and when properly painted and guyed, can add an imposing touch to the general appearance of the station. In these days of tubular steel scaffolding, most builders will sell a wooden scaffolding pole for about one shilling per foot length. The pole

obviously essential from a structural point of view. Many station owners prefer to use three only—which are ample so long as each holds. Failure of one guy, however, often results in the collapse of the mast. With four guys the mast will usually remain undamaged, even if the windward guy parts in bad weather. Best stranded galvanised wire should be used, broken into sections by egg insulators so that no section approaches within several feet of lengths of 16 and 33 ft.—thus avoiding troublesome resonance effects. The guys should end at ground level on eye-bolts passing through angle-iron set in cemented boulders. These eye-bolts enable the final tension to be adjusted (Fig. 2d).

Pulleys at the mast top are always useful, and it is suggested that three of the four mast-band hooks be fitted with these. It is important to ensure that there is only a small clearance between the sheave and the surround, or the halyard may become jammed. The main pulley should have a halyard consisting of an endless loop of stranded wire, while the two auxiliaries may have endless halyards of glacé cord (as sold for blinds) since they will not be used to support any great load. To prevent the cords rattling against the mast in high winds, they should be twisted together. Cleats should be on the mast tabernacle, not screwed to the mast itself.

The mast foot should not be sunk below ground level as a loss of useful height will result, and the wood may deteriorate or decay. The base of the mast should rest on bricks, a tabernacle being provided, as shown in Fig. 2e and 2f. This arrangement will facilitate the lowering of the mast for routine maintenance.

Location of the Mast

The normal length for an aerial is a half-wave, or a multiple of a half-wave, and consequently the mast should, where practicable, be sited far enough away from the house to allow for this. Due to the fact that the speed of electromagnetic waves in free space is not the same as in a conductor, an electrical half-wavelength is rather longer than a linear half-wavelength, giving on the 160-metre band a figure of around 264 ft. for $\lambda/2$. Few gardens can accommodate so long a wire, and in any case the sag at the centre would tend to be excessive; therefore, on this band other modes of aerial operation will be necessary.

On the 80-metre band the correct length is about 132 ft., and every effort should be made to erect a wire of this length, even if part of it has to pass over the roof of the house. The near end of the aerial may be taken to a fixing bracket mounted on the chimney stack, provided the latter is of stumpy design: on no account should a long aerial be anchored to a slender chimney without prior approval by a qualified builder. The beginner will be well advised to make this end accessible either by means of a halyard, or by employing a lower mounting point (such as the eaves of the roof) which can be reached with the average ladder. Thus aerial lengths and feed systems can readily be altered as he gains experience.

In most cases the direction of the aerial will be settled by the line of run of the garden, with a possible variation of perhaps 15 degrees by diagonal fixing. Where the station owner is in the fortunate position of having sufficient surrounding land to permit him to choose the direction of the mast, he can start examining the radiation patterns of various aerials calculated on the basis of multiples of a half-wavelength. Such patterns

(Continued on Page 65)

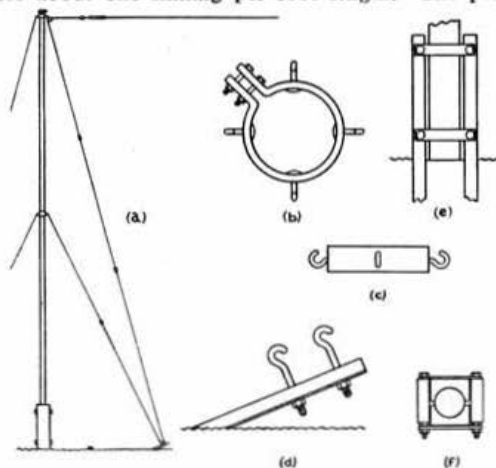


Fig. 2.

General arrangement of aerial mast and fittings.

should be straight, and not much less than 40 ft. long. Knots can be smoothed down with a chisel and plane, and cracks filled with putty. Thorough sandpapering is essential, followed by a coat of primer, after which three separate coats of the very best white paint may be applied, sufficient time being allowed for each coat to dry hard before adding the next. In this way a high degree of finish will be obtained, and no deterioration of the mast is likely to occur during the several years of weathering that will elapse before the owner can face the task of lowering it for routine maintenance.

A "cap" is essential for correct appearance, and to prevent water penetrating down the grain of the mast. It should be of hardwood, and approximately twice the mast-top diameter. For securing the guys, and to avoid holes (which are a source of weakness in any mast), two mast bands should be prepared by a blacksmith. Fig. 2b and 2c illustrate a typical design. The bands should receive several coats of the best black enamel, and should be fixed to the mast at the top and half-way up.

Guys are always objectionable in any aerial system, as they cause absorption and general distortion of the radiation pattern, but they are

In The Workshop

Recent articles in this series have dealt with the construction of paraboloid reflectors and dipole heads for U.H.F. operation. This month "Donex" surveys some of the problems involved in mounting paraboloid structures, and indicates practical ways in which they may be overcome.

THE two main difficulties confronting the experimenter in mounting paraboloid reflectors are (i) the necessity for providing adjustment of the paraboloid in two planes, implying some form of gimbal mounting, and (ii) the provision of sufficient rigidity to meet the high wind stresses involved. The adjustments in (i) are required to be accurate, in view of the narrow beam width characteristic of paraboloid reflectors, so that the latter should preferably be in an accessible position. Consequently, if elevation is aimed at (as it must be for successful working), a mast or tower which can be "scaled" is highly desirable. This may not be possible, however, and methods employing a simple pole support will be considered later. As regards (ii), the engineering involved in providing a means of continuous rotation for a paraboloid (such as is employed in orthodox multi-element beams) is beyond the scope of the average amateur, so that an alternative solution must be devised.

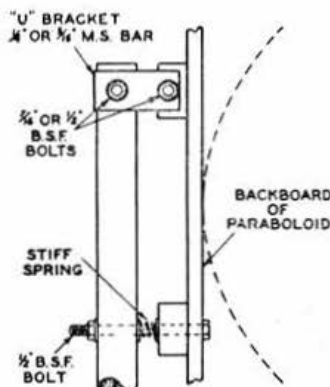


Fig. 1
Supporting a paraboloid at a mast head.

Mast-head Mounting

Fig. 1 illustrates the manner in which the paraboloid may be mounted at the mast-head. Simplicity is the keynote of the system, and may appeal to those who are interested in the U.H.F. field, but have previously been deterred by the mast question. It should be noted that the adjustment in the vertical plane is provided for by a simple spring-loaded bolt and nut, rotation of the mast (and therefore the paraboloid) being achieved in a manner to be described later.

Details of construction are as follows: A "U"-shaped bracket is formed from a piece of mild steel, 3 in. x $\frac{1}{4}$ in., the diameter at the round end being that of the pole at its upper extremity. The local blacksmith will supply such a bracket at low cost. Next, two hardwood blocks are secured by woodscrews (or bolts) to the backboard of the paraboloid, the depth of the upper one being such as to provide a tight fit between the arms of the "U"-bracket. The positioning of the blocks will, of course, depend on the size of the paraboloid, and is a matter for judgment. A hole for a $\frac{1}{8}$ or $\frac{1}{2}$ in. bolt is now drilled through the bracket, so as to give a snug fit to the pole,

and a similar hole is drilled through the arms of the bracket and the top block to provide a clearance of about one inch between the block and the pole. The reason for this is to allow a few degrees of adjustment in the vertical plane. A hole for a bolt of similar diameter is then drilled through the pole and the lower block. A stiff spring (part of a car exhaust spring is suitable) is inserted between washers as shown, and the securing nut run on. As a precaution against corrosion, cadmium-plated bolts should be used if possible, spring washers being inserted beneath all nuts.

The arrangement as shown in Fig. 1 may be varied to suit individual requirements, but the engineering should be kept tidy and effective.

Rotatable Mast

It is quite a simple matter to construct a mast (up to 30 ft. or more in height) which can be rotated from its base by manual means. Obviously it will be necessary to attach the guys to some form of movable collar, so that they do not wrap themselves round the mast as it rotates. The method adopted is illustrated in Fig. 2.

The pole should first of all be cleaned and smoothed by means of a small roughening plane or spokeshave. A piece of stackpipe about 1 ft. long (as used in domestic roof-drainage gutters) and of such a diameter that it can be made a tight fit round the pole at about 5 ft. from the top (i.e. clear of the paraboloid mounting previously described). The length of stackpipe should be carefully sawn in half, having previously been marked out so that the subsequent joint will be square. One half is now drilled to take four large screw-eyes which have been cut off at the top of the thread and welded into the holes—a job which the local garage will do in a matter of minutes.

The other half is cleaned internally, and given a coat of bitumen paint, after which it is slid over the top of the pole, and forced down until reasonably tight. Four countersunk holes for No. 8 woodscrews are drilled as shown in the diagram. The screws should be greased and tightened up very securely. Next the other half of the pipe section, after having been painted

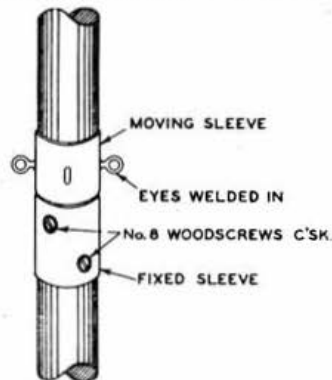


Fig. 2
Guying arrangement for rotatable mast.

internally as before, is passed over the top of the mast until it rests on the fixed piece. It is important to ensure that the diameter of the mast just above the fixed pipe has been sufficiently reduced with the aid of the spokeshave so that the moving section with the screw-eyes (the collar) will rotate freely against the fixed piece. The "cleaned-off" portion of the pole should be heavily creosoted.

This arrangement will allow the mast to be rotated inside the movable collar, to which the fixed guys are attached.

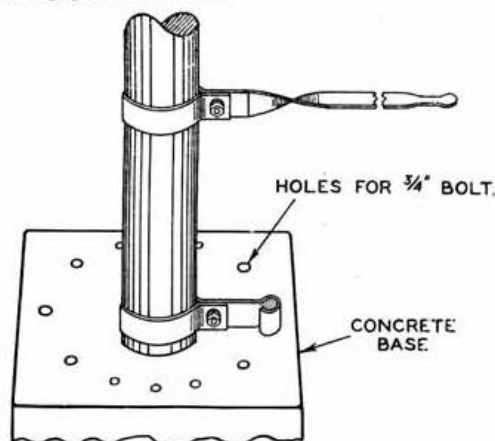


Fig. 3
Base mounting for rotatable pole.

The Pole Base

Finally, a simple method of providing a rotatable mounting for the base of the mast is illustrated diagrammatically in Fig. 3. The base

of the pole should first be sawn off square, and then a further four inches removed, this piece being retained. A rough box should be prepared about 14 in. square by 4 in. deep in which the concrete base may be cast. The piece cut from the base of the pole is set in the centre of the box, which is then filled up with a normal mix of quick-drying concrete and allowed to set firm. The box and cylindrical off-cut may then be removed, leaving the concrete block with the hole in the centre. This should be placed in position in a recess dug in the ground, with a smooth heavy tile positioned beneath the hole for the butt of the pole to rest on. The earth round the base should be well flattened down, preferably with gravel.

The illustration (Fig. 3) also shows a refinement which can be incorporated with a little more trouble. A circle of holes can be cast in the concrete by fitting a series of plugs in the box prior to pouring in the concrete. A stout clip is then made to bolt round the butt of the pole, as shown, its end being bent round to take a $\frac{3}{4}$ -in. bolt, or piece of iron bar, which can be dropped through into one or other of the holes, thus locking the mast in the desired position.

A further refinement consists of bent-up clips forming a convenient handle for turning the pole. It is highly desirable to nail a narrow fillet of roofing felt round the base of the pole to prevent water from seeping into the butt and keeping it perpetually "soggy."

The guys may now be fitted to the eyes in the movable collar at the top of the pole in the manner previously described in these articles, and made off to secure pickets. If this guying is properly carried out, there is no reason why footholds in the form of fairly heavy bolts should not be fitted to the pole so that it can be scaled for the purpose of making adjustments to the paraboloid. Alternatively, a ladder, suitably lashed, could be used.

THE HELPING HAND TO AMATEUR RADIO

(Continued from Page 63)

may be found in most standard reference works dealing with aërials.

Certain systems for feeding power to an aerial require two spaced lines. Accordingly two lead-in tubes about 6 in. apart should be provided in the upper part of the window frame. These may be of the usual ebonite type, to be replaced later by those types having pyrex bowls or ceramic stand-offs—which will add a more professional appearance with some slight increase in efficiency. The tubes should enter the house at a rising angle to prevent seepage of rain during bad weather.

The Earth Connection

Transmitters and high-gain speech amplifiers require greater care in earthing than ordinary receiving equipment. The earth wire should pass through a lead-out tube in the lower portion of the window frame and follow a direct path to a large metal plate which should be buried at least three feet below ground level, or to several metal pipes driven five feet or more into the ground. The greater the area of metal exposed to the surrounding earth, the better will be the station performance, especially in towns, where restrictions on space may necessitate the use of a Marconi type of aerial ($\lambda/4$) for operation on the 160-metre band.

It is necessary to have an aerial change-over switch so that the aerial can be connected to either the receiver or the transmitter, or earthed if desired, as a protection against lightning.

Switches of this type should be sturdy but of low capacity, and are generally double-pole double-throw on a porcelain base. Two metallic strips can be arranged to touch the blades in the mid-way position, enabling the aerial to be left earthed out of operating hours. Even if a thunderstorm is some distance away, a high and well insulated aerial can develop a considerable static charge, so that a direct connection to earth must be provided.

* * *

Next month the performance of "straight" receivers for the station will be discussed.

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Amateur Radio and the Festival of Britain

Provincial Exhibitions Well Supported

Uxbridge Industrial Exhibition

AN Amateur Radio Station, call G2FMF/A, was featured at an Industrial Exhibition held in Uxbridge, Middlesex, last month. The Exhibition—opened officially by Mr. Frank Beswick, M.P., Parliamentary Secretary to the Minister of Civil Aviation, in the presence of local notabilities, industrialists and representatives of the Council and Headquarters staff of the R.S.G.B.—contained an Amateur Radio exhibit arranged by the Uxbridge and Hayes Group.

The station itself was formally opened by the Chairman of the Uxbridge Urban District Council, who autographed some of the QSL cards sent out in confirmation of contacts. Considerable interest was shown by the general public in the operation of the station, although reception was marred by a high level of interference of local origin. Propagation conditions, too, were very poor, but in spite of this nearly 200 stations were contacted on 7 and 14 Mc/s., the best DX being Haifa and Iceland. Many stations called G2FMF/A, but only a small proportion were worked due to adverse receiving conditions. The organisers wish to express their regret that such calls were not answered. Those who called the Exhibition Station, and who would like a QSL, should forward a reception report to G2FMF.

The main transmitter used (that belonging to G2FMF) consisted of a Franklin V.F.O., wide-band multiplier stages, buffer and 813 P.A., modulated Class "B." The aerials were dipoles, fed with 80-ohm feeder cable. Power input was in the region of 100 watts, although at times it was as low as 80 watts due to poor regulation of the power supply.

The auxiliary transmitter (owned by G3CKX) was a double transmitter rack containing transmitters for 1.7 and 144 Mc/s., the former feeding the main dipole, and the latter feeding a 6-element co-linear array. An automatic transmitter-head

was available for use with both the 1.7 and 144 Mc/s. transmitters for demonstration purposes, and for making CQ calls on 144 Mc/s. Receivers used were an Eddystone S.740, a National NC81X, and an American counterpart of the R.1132.

The most interesting exhibits, however, were those representing the present trend of construction on self-contained table-top lines, the most ambitious being a band-switched gang-tuned transmitter, complete with V.F.O., modulators and power supplies, constructed by G3BPN. Another transmitter of similar design, but without power supplies or gang-tuning, was exhibited by G2BML. Much interest was aroused by a miniature 10-watt, 7 and 14 Mc/s. transmitter utilising miniature valves and components, shown by G3CUL. Other exhibits included a miniature transmitter for operation on 144 Mc/s. contained in an R.F.27 unit case (G3GBO), a V.F.O. heart (G6JJ), a rotary 144 Mc/s. beam (G3CKX), and specimens of semi-automatic Morse speed keys.

Congratulations are due to members of the Uxbridge and Hayes R.S.G.B. Group who worked so hard to make this Exhibition one of the most outstanding advertisements for the work and aims of the Society ever staged by a local Group.

The Story of G3FYI/A—Darlington

ON Saturday, June 9, an Amateur Radio Exhibition, organised by the Darlington and District Amateur Radio Society as part of the local Festival of Britain celebrations, was formally opened by the Deputy Mayor of Darlington, Councillor P. Pigg, and Mrs. Pigg, in the presence of members of the Borough Council. After a preliminary inspection and demonstration of the various exhibits, the transmitter was switched on, and the Exhibition station (call G3FYI/A) came on the air. The first two contacts were with MB9BJ and F8NH, the President of R.E.F., with whom greetings were exchanged.

RADIO CORNER

at the Uxbridge Industrial Exhibition, where members of the Uxbridge and Hayes Group of the R.S.G.B. staged an amateur radio exhibit. Main feature was a station (call G2FMF/A) which operated throughout the period of the exhibition—special QSL cards being used to confirm contacts.



G3FY1/A got away to a good start at 0755 G.M.T. on Sunday, June 10, when a CQ call brought in G2MI at R5 S9, followed shortly after by G6CL. This developed into a five-country QSO with ON4RU, F9HE, PAOUN, GM3BN and GM3DHD joining in until 0920 G.M.T. Short skip conditions prevailed until late evening, some 40 G-stations being worked on 20 m. At 2100

General view of the operating position at G3FYI/A showing some of the receivers in use.



Equipment exhibited included a 72 Mc/s. V.H.F. transmitter/receiver, a ship-to-shore transmitter/receiver, a 130-watt spark transmitter (vintage 1914), a type 63 transmitter/receiver, two N.F.D. transmitters, a band-switched low-power transmitter, two *Cossor* double-beam oscilloscopes, a 12-in. screen television receiver in a transparent case, and several cathode-ray tubes and valves broken open to show internal construction.



Members of the Darlington Group who took part in the operation of G3FYI/A. Seated second from right is G3BQJ, T.R. and organiser. Also featured are G8IA, G3GEJ, G3EQH, G3CDM, G3FFB, G3GVP.

THE contribution made by the R.S.G.B. to the Welsh industries Fair comprised an Amateur Radio station (call GW3WIF), an exhibition of amateur-built equipment, and entertainment of the public by means of a *Soundmirror* tape recorder. The transmitter, built by Mr. Bernard Randell, GW3ALE (now in India), gave a very good account of itself, some 250 stations in 28 countries and four continents being worked. Best DX was with the Philippines. Aerials in use were a 20 m. centre-fed dipole, and a 264 ft. end-fed. As a receiving site, the location was disappointing: trials with no fewer than four receivers ranging from an AR88

At 4 p.m. on Friday, July 6, M.M. Combe and Rollin of the B.B.C. Overseas (French) Service visited the stand. An hour later a line was installed to Broadcasting House, and efforts were

made to contact French amateurs. High noise level rendered this impossible, but the day was saved when LX1DC answered a call. Part of the proceedings were recorded and broadcast in the Overseas Service of the B.B.C.

There was an almost daily visit from the Press, who were seldom disappointed. Luck often played a part. For instance, it transpired that the one and only Canadian station contacted (VE1HI) had a Cardiff connection. His great-grandfather sailed from Cardiff in 1810 with several other Welsh families to found the present Welsh Colony on Prince Edward Island.



CARDIFF STAND

General view of the Cardiff R.S.G.B. Group stand at the Welsh Industries Fair. Many of the items of home-constructed equipment displayed received high commendation from the judges of the Constructor's Competition. The attractive display unit for R.S.G.B. publications can be seen on the right.

The number of visitors attracted to the stand was quite remarkable, and it was by no means unusual for the 8ft. aisle to be solidly blocked along the 24 ft. stand length for several hours on end. The stand was particularly popular with overseas visitors, many of whom registered their impressions on the tape recorder.

It was a great disappointment that Her Majesty the Queen, when she visited the Fair on the closing day, was prevented from inspecting the annex where GW3WIF was situated. Nevertheless,

GW5FN, '5AB and '3BZH, who had worked overtime on a special painting effort, were able to console themselves that the Exhibit really was fit for Royal inspection. All praise to G6BY for standing by uncomplainingly for two hours in case a demonstration QSO was required.

The organisers (GW3BZH and GW5FN) wish to record their thanks to: the National Industrial Development Council of Wales and Monmouthshire for providing the stand, and whose co-operation was a major factor in achieving success; Mr. Douglas Low, GW5WU, for providing generous financial assistance; Mr. Bernard

Randell, for placing the entire contents of his shack at their disposal; Mr. Eric Martin, G6MN, for donating QSL cards and a log book; Messrs. *International Marine Radio* for transport and other assistance; Messrs. *Thermionic Products, Ltd.*, for loaning *Soundmirror* recording equipment; R.A.F., Llandaff, for exhibits and assistance; and to all members who helped by exhibiting, operating and staffing the stand—particularly to those who put in many hours of work without even the return of "having a bash."



A corner of the R.S.G.B. stand at the Welsh Industries Fair showing some of the prize-winning entries in the Constructor's Competition.

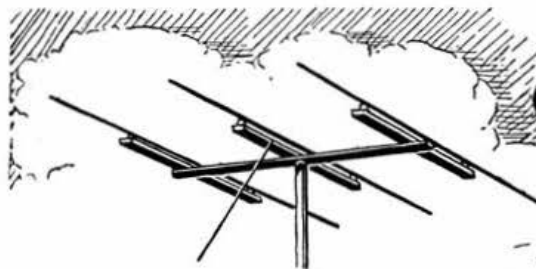
Footnote: The display unit for R.S.G.B. publications is available to any group willing to pay two-way carriage from the storage in Cardiff. It is in three sections: centre section 3 ft. 6 in. x 2 ft., and two wings 3 ft. x 19 in. The colour scheme is cream and blue with red initial letters. It is booked for Dulwich and New Cross, August 26 to September 15. Inquiries should be addressed to Mr. S. A. Howell, GW5FN, 46 Africa Gardens, Cardiff.

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).

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



AROUND THE V.H.F.'s

G3APY and G5BY raise 70 cm. record to 227 miles.

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

WE are glad to record that a new 70 cm. record was set up on July 17 by G3APY (Kirby-in-Ashfield, Notts.) and G5BY (Bolt Tail, Devon) over a distance of 227 miles. This is within striking distance of the world record at present held in the United States, and reflects considerable credit on the stations concerned. Contact was established with G5BY on 2 m. at 2200 B.S.T. and a change made to 70 cm. Signals from the Devon station were received at S8 but unfortunately the power pack feeding his 25-watt P.A. stage gave trouble and output had to be taken from the tripler instead. This caused the received signal to fall to RST 449, with fading, and a similar report resulted when two-way contact was established by G3APY at 2253 B.S.T. A somewhat remarkable feature of this and other long distance contacts from G3APY is the unfortunate necessity of his employing no less than 80 feet of co-axial cable to feed his 5-element Yagi beam at a height of 40 feet. The cable in use is air spaced except for a thin spiral insulator and has a velocity factor of 90 per cent. A power of 25 watts was in use to a CV 90 P.A.

Continental Two Metre Opening.

The exceptional conditions which existed on the 2 m. band on June 4-5 will still be fresh in the minds of those who were lucky enough to be operating at the time, and it is therefore of interest to have a report of propagation and weather for the period from the monitoring service in Germany, *Fernmeldetechnisches Zentralamt* at Darmstadt, contributed by Mr. G. C. Oxley, DL2MW.

From 1900 G.M.T. on June 4 to 0150 G.M.T. on June 5 extraordinary conditions of V.H.F. propagation were observed. The highest field strength values were reported by the station on the Mönkeberg Mountain near Horn/Lippe. There the field strength of the B.B.C. transmitter at Wrotham, Kent, on 91.4 Mc/s., 600 km. distant, reached at times a value of 8,000 μ V/m. It is interesting to note that the 93.8 Mc/s. transmission from the same station was only one-tenth of this figure.

Only stations situated within the angle 235 to 345 degrees—true bearing—from Mönkeberg yielded excessive field strength values, and reception of these stations was very stable indeed. Apart from broadcast stations in Holland and Germany, several control stations (presumed to belong to the London police) were intercepted in the range 95 to 98 Mc/s. together with some police cars, but whether the latter were received direct, or by re-transmission from their respective net control stations, is not known.

On the 2 m. amateur band the same excellent conditions were observed, Mönkeberg logging 49 British, 7 Dutch and 15 Belgian stations during the opening. The strongest signals were those from G2XC and G8VR.

Weather observations made by the German

FOURTH 70 cm. ACTIVITY PERIOD

Suggested times of operation

| | | | | |
|------------------|-----|-----|-----|-------------|
| Sept. 1 | ... | ... | ... | 15.00-16.00 |
| | | | | 19.00-20.00 |
| Sept. 2 and 9 | ... | ... | ... | 10.00-12.00 |
| | | | | 22.30-23.30 |
| Sept. 3, 4 and 7 | ... | ... | ... | 19.00-20.00 |
| | | | | 22.00-23.00 |
| Sept. 5 and 6 | ... | ... | ... | 22.00-23.00 |
| Sept. 8 | ... | ... | ... | 15.00-16.00 |
| | | | | 22.30-23.30 |

All times B.S.T.

Central Meteorological Office at Bad Kissingen explain this V.H.F. opening by peculiar weather conditions which, although rare, are not unknown during the summer months. Radiosonde "runs" over Downham, Brussels and Iserlohn showed that a wedge of high pressure extended from England to N.W. Germany, and that at the latter boundary the air had a relative humidity of 100 per cent., causing drizzle and fog near the surface. Since the temperature of the ground was high, a correspondingly high evaporation pressure of 9.2 mm. resulted. The upper air layers of the high pressure wedge descending upon the heated Continental air masses near the surface were extraordinarily dry, with an evaporation pressure of only 2.1 mm.

It is inferred, therefore, that a sloping or even curved subsiding inversion layer must have been formed, touching the surface of the ground in the Lower Saxony region. All signals reaching this layer were ducted to that area, and it is noteworthy that no increase in normal field intensity was noticeable at the receiving station in Berlin.

As it is intended, in co-operation with Meteorological Services, to make a further study of this case of abnormal propagation conditions, reports on V.H.F. observations made by individuals or by institutions from the evening of June 3 to the morning of June 6 would be welcomed by *Fernmeldetechnisches Zentralamt*—Radio Monitoring, Rheinstrasse 110 (16) Darmstadt, Germany.

Two Metre News.

GW5MA/P gave many stations their first contact with Brecknockshire during the week-end July 7-8. Arriving on site, 4 miles N.W. of Bryn Mawr, 5MA had his gear working from about 1800 B.S.T. on the Saturday evening, and by the time he closed down at 0200 to get some sleep before starting on the real object of his journey, the R.S.G.B. Field Day, he worked no less than 27 stations. Choice of site had lain between the highest point in the district, some 1,600 feet a.s.l., but with higher ground between it and the London area, and a somewhat lower position with a clear view down the Usk valley as far as the distant Cotswolds. From the latter situation his signals in the south-eastern part of the country were excellent, bearing in mind that input to the push-

* 32 Earls Road, Tunbridge Wells, Kent.

pull 6C4's in the P.A. was not more than 12 watts. Three Mullard EL91's were employed in the exciter, driven from an 8 Mc/s. crystal, and the aerial was a 4-element wide spaced Yagi 25 feet above ground. The receiver, a modified ZB3 unit, had three type 954 R.F. stages, a similar type of mixer valve, and a 6J6 tuned harmonic oscillator. The I.F. amplifier, at 5 Mc/s., was provided by an R.103 receiver.

His signals were up to S8 at times with G2UJ on the Saturday evening, and although contact was again achieved on the following day, the signal strength was much lower. It was interesting to note, however, that signals varied little during daylight hours on the Sunday of the Contest.

During the Field Day period 25 stations were contacted, making a total of 59 contacts with 39 stations over the week-end. The best DX was ON4BZ (Brussels) over 350 miles away, a really outstanding performance.

With long periods of really stable conditions on the band during the past four weeks, G3EHY (Banwell, Som.) has found conditions nearly ideal, with 200-mile contacts possible most days. The Irish stations EI2W and EI8G were consistent signals nearly every evening, usually between 2230 and 2300 B.S.T., with signal strengths up to S9 on 'phone or C.W. EI9N has also been heard on the band. A number of portable stations were worked during the Field Day, and it was interesting to note that much more use was made of QHL/QLH procedure with a consequent saving of time on calls. Apropos of this, one or two portables would have made much larger scores if more attention had been paid to searching the band thoroughly after a CQ call. At times half the stations on the band seemed to be calling one particular portable, but he continued to transmit CQ's at minute intervals, thereby missing many contacts.

EI2W (Dublin) continues to get out well on 145.32 Mc/s. Starting with a 4-element Yagi, a 12-element stack, recently increased to 16 elements with a spacing of 0.15 wavelength between radiators and reflectors, has increased the range considerably. A report has been received from ON4BZ who has heard EI2W more than once, and a two-way contact should be only a matter of time. On July 2 at 2240 B.S.T. EI2W heard a Swedish station calling CQ, but the signal faded before positive identification could be made, but the call probably emanated from SM7BE at Lund. During Field Day G6CW/P, G12FHN/P and GW3DA/P were all worked. While in contact

with the GI station a sudden and considerable rise of signal strength coincided with a peal of thunder, obviously an instance of reflection of the signals from the area of ionisation. Contact has been made with G3DH (Bramhall, Cheshire) and watch is being kept for GC2CNC.

70 cm. Activity Period.

As promised, a fourth 70 cm. Activity Period has been arranged from Saturday, September 1, to Sunday, September 9, inclusive. The suggested times of operation are shown in the accompanying "box." Observations and reports on the results obtained would be appreciated as soon after the conclusion of the event as practicable so that a complete summary may appear in the October BULLETIN.

Portable Tests by G3ENS/3APY on 70 cm.

G3APY and 3ENS propose to operate portable in the Charnwood Forest area to the south of Loughborough, Leicestershire, on August 26 and again on September 23. Times of operation will be between 1200 and 2000 B.S.T. on a frequency of 433.296 Mc/s., and the call sign G3ENS/P. It is hoped that as many stations as possible will co-operate on one or both of these two dates and so make the expedition worth while. The transmitter in use will include a CV 90 P.A. in a co-axial line circuit with an input of 25 watts on C.W., and it would be appreciated by the operators if stations would use C.W. at least for calling purposes.

In addition to the new record performance, G3APY has been having some success with G4LU (Oswestry, Salop.) and GW2ADZ (Llanymynech, Mont.) 75 and 79 miles away respectively. Contact was established on July 2 between 2100 and 2200 B.S.T., signals being RST 569 from G4LU and 578 from the GW with fading present in both cases.

Later in the month G3APY got his CV 90 P.A. working, and a further contact with the same two stations yielded an RST 599 report on July 16 while the incoming signals from both stations were RST 589. Signals from G3EHY were heard on July 4 at RST 339, fading to zero, compared with a strength of S8/2 on the 2 m. transmission. The distance is 135 miles.

The latter station has added an R.F. stage to his receiver, using the R.F. cavity from an ASB8. The nearest station on 70 cm. to G3EHY is more than 100 miles away, which gives little chance of carrying out tests unless conditions are good. Skeds. are being conducted with G2JT, GW2ADZ and GW5MQ.

GW2ADZ again worked G2JT (Oldham) on June 25, signals being RST 56/79 on C.W. and somewhat poorer on 'phone. The transmitter at 2JT includes an 832 tripler in the final stage. ADZ found that, with a 5-element Yagi, no trace of 2JT's signals could be heard. The above results were obtained with a 16-element array with a "curtain" reflector.

After keeping regular skeds. with G2FKZ (London, S.E.22) for some time on Mondays at 2000 B.S.T. without result, the Welsh station was heard at 2345 B.S.T. on July 2 at a strength of RST 559 peaking to 569. Unfortunately he could not hear G2FKZ. A further test was arranged for the next evening, but although 2 m. signals from FKZ were received at RST 599, with RST 55/79 in the other direction, no 70 cm. transmissions were audible from the London station. GW2ADZ was just readable at S3 with G2FKZ, over the distance of approximately 160 miles.

(Continued on Page 79)



PRACTICAL PARABOLOID

Wire mesh paraboloid reflector constructed by G3BUR in accordance with recent articles on U.H.F. radiators by "Donex." This equipment was used in the R.S.G.B. 420 Mc/s. tests at Fish Hill, near Evesham, 1,048ft. a.s.l. The dipole radiating element was driven by a CV82 acting as power tripler to a QV04-7 on 144 Mc/s.

THE MONTH ON THE AIR

WE wonder if some words of advice could not be spoken into the ears of the "Olah!" boys, who so diligently adjust their transmitters to "200 per cent. mod." by devious puffings, blowings, and whistlings, thereby ruining many kilocycles of our precious bands in the process? Unless 14 Mc/s. in particular is to become unusable, some way must be found of checking these malpractices. The only people who can really do this effectively are their own colleagues in their own country. We can't imagine what these stations sound like at close quarters, but in countries where blood is reputed to run hot, it is little short of miraculous that no one has been knifed long since.

Let us hope that some way can be found to show these fellows how to adjust a transmitter correctly, thus preventing ill-feeling from becoming widespread—a state of affairs which we should be sorry to see.

Notes and News

BRS 250 noted African signals coming in during the early mornings of June. Between 04.30 and 05.30 he copied FR7ZA, FQ8AC, ZE4JC, VQ4RF and ZD1SS. He has heard IIAHR/M1, from whom a bunch of cards has recently arrived.

VP7NM (Inagua Island) now on 'phone notes the following frequencies: SU1AD 14025, KS4AP 14055, KJ6AP 14030, KB6AT 14100, VR1G 14090, HC8GI (Galapagos Is.) 14180. VP7NX is a pirate.

BRS 16304 reports that the medium broadcast band has been lively in the early mornings, WCBR at Albany being the loudest signal. On 14 Mc/s., the only signals of note have been from JA and KR6. On 28 Mc/s., CE, CX, LU, PY and EA8, with short-skip Europeans, have been copied, but activity has been low. Static level has been high on the low frequency bands, though they have yielded some DX. A1193 of Cambridge also comments on short skip, and mentions copying EI9A on July 5 at S9+. He wonders who HQ1DZ is, heard at 22.40 on July 7. On this date G3ELW, G3FRR, HC1FG and VE2ZW were all running S9.

G2FAY of Oldham has worked ZE4JC 14060 and VE5MS 14070, and is still looking for KM and ZM. Cards are in from ZK2AA. BRS 7594 offers a long list of likely ones: CP5EZ 14150, 23.15 'phone; CR4AD 14185, 20.30; DU1AL 14200, 18.00; EQ3FM 14135, 20.15; HE9LAA 14285; HI6EC and KG6AAE 14240, 18.50; VE8TC 14170, 17.00; VU2WR 14272, 17.50; EL1OA and ZD6HJ 28320, 17.15. He has heard PX1A on 14 Mc/s. 'phone, who says he is EA3HE on holiday—a pity to pick such an ill-famed call. G3CMH has worked TA3QZ, who gave his QTH as T.U.S.A.F.G., c/o American Embassy, Ankara. Operator W3QZU.

GW3CDH has tried increasing the watts, and has added SU1NK, VQ3BNU, KG4AT, ST2GL, OQ5RA, VS1DU, VP4LZ and IS1AHK, together with Idaho. He wants Nevada, North and South Dakota for W.A.S. Any offers? G2HKU, still on D.C. now has 125 countries in 36 zones with 44 States. New ones on 14 Mc/s. 'phone are: VS6CA (QSL'd by air), TI8CM, FG7XA (now operated by W4LVV), KV4AA, VK3BZ (who now has 221 worked) and FQ8AC. There seems to be a spate of Monaco stations recently, the latest being 3A2AK. On 14 Mc/s. C.W. he has heard LZ1KAB,

CP5EK (04.55 on 14105), and ET3Q (06.10 on 14050).

G8DR (London, N.W.2.), has collected HR2AD, VP2KH, VP5BH, VP3VN, PJ5RE, YN1OC and VP1AA. Cards are in from HI6EC, F9QV/FC, CT2BO and ZP2AE. A1180 of Newcastle comments on the number of KP4's about nowadays. The following frequencies may be of interest: ZD1SS 14272, 18.40 G.M.T.; HZ1AB 14271, 15.32; and EL9A 14313 at 17.18.

G2BJY has worked ZK1BC, FN8AD, FQ8AG, and Y13PDR. The latter is a new one. G2BJY has also heard the curious 555EE and SHIEE! GM2DBX has worked LN7B, 14395 kc/s. 'phone. This station is on Bouvet Island—a Norwegian Dependency in the Antarctic. MD5PM's identity is known—QSL via R.S.G.B. G2DQ has been having fun with a portable on 80 and "Top Band," working 7-9 watts input to a loaded whip aerial—with excellent results.

W9NLY, now back at home, sends his 73 to the Thanet Area, where he had such a pleasant time. GM3CSM of Rutherglen tips CR9AF on 14092 at 17.00 G.M.T. and also UM8KAB on 14095 at 17.30 G.M.T. He needs four more for W.A.A. and only ZS3 and ZS7 for A.A.A.—also two more cards for the top D.U.F. award. He mentions that the Sutton Coldfield television transmitter puts in a usable signal to the hills near Dublin.

DX on 7 Mc/s.

G5JL of Hayes, Middlesex, has been patronising 7 Mc/s. in the early mornings with some surprising results, which include the following: MF2RE 7040 at 06.30 B.S.T.; EA9AP 7045; VU5ND 7045 at 06.00; OA3F 7050 at 03.30; HR1MC 7050 at 05.10; SU1FX 7030 at 03.30; ZD4BC 7030 at 06.30; VP5BH 7060 at 04.50; VP9AK 7030 at 05.15; XE3AH 7060 at 02.45; VO4AJ 7060 at 04.00; TA3KA 7045 at 04.40. In addition, quite a few ZL's have been heard between 05.00 and 06.00 B.S.T.

"Top Band" News

G3GZJ reports OK1HI's appearance on the "Top Band" on July 25 at about 23.00 B.S.T. He worked several G's, and was about 569 with QSB.

G5LP, in a QSO with HA5BK, elicited the information that he was the operator of HA5BK/1 which appeared on 1.7 Mc/s. in November last year. He also tackled him on the subject of QSL's, so here's hoping.

Who's Who

From OQ5BQ via G6KC comes the news that OQ5AA will be in operation from 18.00 to 24.00 daily on both 28 and 14 Mc/s. from August 1-15. This is in connection with an Exhibition being held in Leopoldville. Special souvenir QSL cards will be issued. G3GKC at No. 2 Radio School, Yatesbury, is looking for ex-Yatesbury people on 7 Mc/s. 'phone and C.W. G3EET will soon be on the air with a VS1 or 2 call.

G3AYN will be home shortly from the Lebanon, and hopes to be active from Bromley, Kent. He does not consider that there is much hope of foreign nationals obtaining licences in Syria or Lebanon at present. Jim Mackintosh, VS2AA, ex-VS1AA, is returning home for good in September after 25 years in Malaya, and is handing

* 29 Kechill Gardens, Hayes, Bromley, Kent.

The R.A.F. Voluntary Radio Service

FURTHER details have now been released concerning the administration and training of the Royal Air Force Voluntary Radio Service, which exists to provide an adequate reserve of male wireless operators for the support and reinforcement of the Royal Air Force signals organisation in time of war.

Officers

The organisation requires the services of officers who will be granted Commissions in the Royal Air Force Reserve of Officers or R.A.F. Volunteer Reserve with the rank of Flight Lieutenant, and will be appointed as Officers i/c Districts, V.R.S. They will be responsible to the Air Ministry for matters connected with training and to Commandants of Reserve Centres for matters affecting the administration of members. Their duties will include (a) recruiting and enlistment or enrolment of members; (b) arranging meetings of V.R.S. members as and when required (normally about every three months); (c) arranging training programmes; (d) vetting and certifying members' log books; (e) the issue and maintenance of wireless equipment held on their charge; and (f) security precautions.

Members

Voluntary Radio Service membership comprises both Air Force and civilian personnel, the former being enlisted as airmen with a mobilisation liability in the R.A.F. Volunteer Reserve. All candidates must be British subjects and (except in the case of civilian members for whom no upper age limit is fixed) must be between the ages of 18 and 45. Volunteers with or without previous service experience may apply to join as Air Force members quite irrespective of the service trade (if any) to which they were formerly mustered, provided they are not already active members of any of the reserve or auxiliary forces. If, by reason of health, age or other cause, they cannot join as Air Force members, they may (if otherwise eligible) volunteer their services as civilian members, in which case they are, of course, not liable to be called up for full-time Air Force service on mobilisation. The initial period of service in the V.R.S. is five years with the prospect of re-engagement for a similar period. Civilian members may be discharged at any time for unsatisfactory conduct, inefficiency, or if their services

are no longer required. Airmen's conditions of service are identical with those laid down for other volunteer reservists in Air Ministry Pamphlet 199.

Duties

All members will be required to undertake W/T reception duties in their own homes in accordance with specified programmes comprising 16 one-hourly periods in each month, and to attend meetings when arranged by the Officer i/c District. A Royal Air Force wireless receiver is to be issued on loan to each member. Technical qualifications required are the ability to receive Morse code at 20 words per minute and previous experience of operating and minor servicing of radio communications receivers. Air Force members will receive an allowance of £3 annually to cover the maintenance of equipment on loan and a further £2 annually will be allowed for any additional expenditure necessarily incurred. They will also be eligible for an annual bounty of £7 10s. plus £1 10s. if adjudged efficient in their duties.

Civilian members will be eligible to receive a general expenses allowance of 12s. per month, to cover the cost of upkeep of the receiver and associated equipment, and to meet normal out-of-pocket expenses (such as fares under 1s., postage, and telephone charges paid on official business). Reimbursement will be allowed in respect of minor repairs and replacements (not exceeding 7s. 6d.), and on fares exceeding 1s., incurred in attending meetings convened by the Officer i/c District. Where a car is used for such journeys, a car allowance of 1½d. per mile may be claimed.

Enlistment and Enrolment

R.A.F. reserve centres are responsible for the enlistment of all Air Force candidates into the R.A.F. Volunteer Reserve, their names and addresses being forwarded to centres either by Headquarters, Home Command or by the Officer i/c District. Candidates who apply direct to a reserve centre are interviewed by the Officer i/c District before enlistment. Civilian members will be selected and enrolled by Officers i/c Districts and will be nominally attached to the local reserve centre for administrative convenience.

Air Force members who have not previously served in the Royal Air Force are to attend, during their first year of service in the R.A.F.V.R., for one period of 15 days continuous training at a regular station or unit of the Royal Air Force.



A GOODLY COMPANY

The North-Eastern O.R.M., held in Sheffield on May 20, was supported by members from many parts of Northern England and the Midlands. In this picture C. A. Sharp, G6KU (R.R. No. 2) is in the front row (holding a paper), C. Webster, G5GK (R.R. No. 1) is on his right, and F. Charman, B.E.M., G6CJ (Executive Vice-President) on his left. The General Secretary and Miss Gadsden are behind G6KU. Council Members, G8TL and G2MI are to the right of G6KU.

Direction Finding Field Days

Peterborough Qualifying Event

SIXTEEN teams competed in the Qualifying Field Day held at Stilton near Peterborough on Sunday, July 1. Slade, Romford, Rugby, Southend, High Wycombe, Wisbech and Peterborough—the only town group taking part in this series of events—were among the clubs and societies who, in blazing sunshine, set off to locate the hidden transmitter. The transmitter was concealed in a hedgerow on a disused road about six or seven miles from the start, the operators having spent the previous evening tunnelling into a thorn bush to secure a perfect camouflage. One or two hawk-eyed competitors spotted the aerial of black Litz wire threaded through the top of the hedgerow, which was about ten feet high. Only one contestant failed to locate the transmitter, while two failed to secure a place owing to late arrival.

and the fact that their receiver was not fitted with sense, this was a good effort.

The transmitting party—led by Mr. C. Walker, G3AZT—were rather surprised when the first team appeared only 55 minutes after the first transmission, closely followed by the next three teams. Arrival times were as follows: Mr. S. A. Phillips (Birmingham) 14.55; Mr. L. A. Griffiths (Birmingham) 14.59; Mr. N. B. Simmonds (Stourbridge) 15.01; Mr. W. F. Holdaway (Romford) 15.03; Mr. J. Frings (Westcliff-on-Sea) 15.15; Mr. I. T. Haynes (Rugby) 15.35; Mr. P. V. W. Jude (Reading) and Mr. H. Turner (Rugby) 15.36; Mr. J. J. Grant (Rugby) 15.54; Mr. R. D. Charlton (Twickenham) 16.03 B.S.T.

The event, which was organised by the Radio and Television Section of the B.T.H. Recreation Club, came to an end with tea at the Club House,



STILTON SEARCH PARTY

Sixteen teams took part in the Peterborough Qualifying Field Day. The large group of cheerful participants pictured here testifies to the outstanding success of this occasion.

The first six arrivals were: Mr. G. T. Peck (High Wycombe) 15.13; Mr. R. K. Seabrook (Southend) 15.14; Mr. J. K. Finch (High Wycombe) 15.15; Mr. W. F. Holdaway (Romford) 15.15½; Mr. R. H. Whitley (Peterborough) 15.16; Mr. R. Houtby (Peterborough) 15.20 B.S.T. As Messrs. Peck, Seabrook and Holdaway have qualified at a previous event, Messrs. Finch, Whitley and Houtby will go forward to the National Final on September 30.

During tea (attended by 55) at the Royal Restaurant, Stilton, a Trophy was awarded to the winning team. This Trophy, presented by Mr. W. Miles, G3GCK, is to be awarded annually at this event, and is intended to promote local interest. Other prizes included a tankard and books from local traders, and chocolates and cigarettes from "Top Band" listeners.

Rugby Qualifying Event

SOUTHEND, Stourbridge, Birmingham, Romford, Reading, Peterborough and Twickenham were among the Clubs and Groups represented when fifteen teams took part in a Qualifying Field Day of the R.S.G.B. Direction Finding Contests, 1951, held near Rugby on July 15. The transmitter was hidden in a hedge on the east side of the Guilsborough-Ravensthorpe Road between Coton and the Northampton reservoir almost 10 miles from the starting point. Ten teams were successful in locating the transmitter: the eleventh team, who were using bicycles for transport, arrived two minutes after close-down. In view of the distance,

when Mr. B. C. Oldham, G3CKQ, the Chairman of the Radio and Television Section, presented prizes to the first three competitors. Mr. Oldham expressed thanks to the transmitting party, to Mr. Blackwell and Mr. Pilz, the two independent observers, and to Mr. Prior for organising the event.

Final Qualifying Field Day

DETAILS of the final Qualifying Field Day are as follows:

August 26, 1951

Organiser: Mr. J. H. Barrance, 49 Swanage Road, Southend-on-Sea, Essex. (Essex C.R.)

Call Sign: GSQK/P.

Frequency: 1922 kc/s.

Assembly Point: May-Phil Hotel and Swimming Pool, Battlesbridge. NGR: 51/776947.

Map: Ordnance Survey, Sheet No. 162.

Assembly Time: 1330 B.S.T.

Intending entrants are requested to notify Mr. Barrance of their intention to compete not later than August 20, 1951, stating the total number in party who will require tea, which will be available at 2s. 6d. per person.

V.F.O. for B2?

Mr. J. A. Rouse, G2AHL, would be pleased to hear from members who have succeeded in modifying the B2 transmitter for V.F.O. control. He would also welcome information regarding the use of this transmitter on 10 metres by doubling in the P.A. stage. His address is 3 Betchworth Avenue, Earley, 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 |
| 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 | .. Winesham, 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.

Radio Amateur Training Courses

THE following courses of instruction in radio theory and allied subjects have been arranged for the benefit of those who wish to study for the Radio Amateur's Examination. The courses take the form of evening classes at Colleges or Institutes, arranged in conjunction with the Local Education Authority. Further details, if required, may be obtained from the Principal of each Institute, except where otherwise stated.

Brentford Evening Institute, Boston Manor Road, Brentford. *Radio Amateur's Examination Course*, conducted by E. J. Pearcey, G2JU. *Television and Radio Theory*, conducted by J. Gibbons. Commencing September 19 — Wednesday evenings 7-9 p.m. Fee 10/- for either course. Enrolment during preceding week.

Deptford Men's Institute, Childeric Road School, New Cross, S.E.14. *Series of weekly lectures in Amateur Radio*. Commencing September 24. Enrolment September 17. Fee 6/-.

Dowham Men's Institute, Durham Hill School, Downham Estate, Bromley, Kent. *Series of weekly lectures in Amateur Radio*. Commencing September 24. Enrolment September 17. Fee 6/-.

Ilford Literary Institute (High School for Girls), Cranbrook Road, Ilford (adjacent Gant's Hill Station, Central Line). *Radio Amateur's Examination Course* (Wednesdays); *Radio Amateur's Refresher Course* (Tuesdays); *Amateur Television Course* (Mondays); *Morse Code and Operating Procedure* (Mondays); 7-15-9.15 p.m. Fee 7/6 to members resident in the Essex County Council Area—10/- to members from elsewhere. Enrolment at College September 10-13, 7-8.30 p.m.; but names should be sent to Mr. C. H. L. Edwards (G8TL), 10 Chepstow Crescent, Ilford, in the first instance.

Lewisham Men's Institutes, Holbeach Road, Catford, S.E.6. *Series of weekly lectures in Amateur Radio*. Commencing September 24. Enrolment September 17. Fee 6/-.

Preston Technical Institute, Coombe Road, Brighton 7. *Series of lectures covering syllabus of R.A.E.* Conducted by F. R. Canning, A.M.I.E.E., G6YJ. Commencing September 17, weekly 6.45-8.45 p.m. Fee 7/6.

Wembley Hill Evening Institute, High Road, Wembley. *Course of lectures in Amateur Radio*, by A. Bayliss, B.Sc., G8PD.—Enrolment at Park Lane School, Wembley, during week commencing September 10, from 7 p.m.

Worthing Bucket and Spade Party

A "BUCKET and Spade" party—organised by the Worthing and District Amateur Radio Club—will take place near The West Kiosk, Beach House, Splash Point, Worthing, on Sunday, August 26. This will be an informal "get-together," where XYL's and YL's can relax, Junior Ops. can paddle and play with their buckets and spades, while the OM's can get down to the serious business of "rag-chewing."

There will be no organised meals, but a group photograph will be taken. At 6 p.m. raffle prizes will be presented (including an R.1155 receiver—and nylon!). A further attraction will be a Channel trip in G3DQ's motor yacht "Pendennis," with accommodation for 180.

A car park is available in the grounds of Beach House, there is also a Peter Pan Playground for children. Those interested are invited to write to G. W. Morton (G3DRC), 42 Southfarm Road, Worthing, Sussex . . . or just turn up!

MORE than 300 members and guests including the General Secretary of the R.S.G.B. and Council member P. A. Thorogood, attended the inaugural dinner of the Festival Convention of the British Institution of Radio Engineers at the Savoy Hotel, London, recently. The event, which was under the Chairmanship of Vice-Admiral the Earl Mountbatten of Burma, K.G. (Vice-Patron of the Institution) was filmed on television newsreel. During the following days, a number of technical papers on various aspects of radio technology were read. The programme included visits to the Atomic Energy Research Establishment at Harwell and various manufacturing organisations. A welcome feature of the Convention Dinner and the first two Sessions was the attendance of overseas members and visitors from eleven countries.

The Convention has been arranged as the Institution's contribution to the Festival of Britain, and further Sessions will be held during Festival year.

McMurdo Valveholders for U.H.F. Equipment

REFERRING to recent articles on the construction of 70 cm. equipment, *Messrs. Cyril French Ltd.* state that, due to the limitation of supplies of P.T.F.E., this material is no longer generally available for the manufacture of valveholders. They are, however, employing nylon-filled bakelite as a substitute, and while not quite so low-loss, it has been found satisfactory for the equipment described. Where valveholders are specified as FM/, they should be ordered as XM/, the numbers following the oblique stroke/ being unchanged.

Side Slips

IN the list of Convention Draw Donors (page 28, July issue), reference was made to a donation of 24 copies of the A.R.R.L. Handbook by the Metropolitan Radio Club of New York. The books were, in fact, provided by the Metropolitan Radio Club of Los Angeles as reported in the April issue of the BULLETIN (page 385).

* * *

IN the VT 501 output stage of the Mobile Transceiver circuit diagram (Fig. 1) on page 17 last month, the value of the volume control in the grid circuit should read 0.5 M Ω —and not 0.5 μ F. as shown. Also, the cross-over in the anode circuit (the lead joining the .001 μ F. condenser to the switch) should be shown as a join.

LONDON MEMBERS' LUNCHEON CLUB

THE Club will meet at the Kingsley Hotel, Bloomsbury Way (opposite Headquarters), at 12.30 p.m., on the following Fridays during the Festival of Britain:

August 17, September 20,

when Overseas and Provincial Amateurs will be cordially welcomed. The Club Secretary is Frank Fletcher, G2FUX, 11A Ickenham Road, Ruislip, Middlesex (Ruislip 2763).

FESTIVAL LUNCHEONS



NOW that Festival time is here, it is customary to glance backwards through the century just past in order to compare the world of yesterday with that of today. One hundred years is a little too long for editorial recapitulation, however, so the next best thing is a quarter century. The columns of the *T. & R. Bulletin* of 25 years ago form a window in time, permitting a fascinating glimpse of Amateur Radio during the early days of the movement. Here are some of the highlights of what many refer to as "the good old days" ... or were they?

1926 was the year of the General Strike, and consequently there was no issue of the BULLETIN for May. The following month, thanks were expressed to all members who had offered to place their stations and services at the disposal of the Government during the strike. In the same issue, four lines at the bottom of a page modestly announced: "It is proposed to hold a 'Ham' Convention some time in June ..." Thus—quietly and almost apologetically—the first-ever Convention of radio amateurs in this country took shape, and was eventually held on September 17-18, 1926, at the Institution of Electrical Engineers, London. The event was adjudged a great success. Footnote: During Convention, a typewriter was presented to the Editor of the BULLETIN! We wonder how many of those who were at the 1951 Convention were present in 1926 and at all subsequent Conventions?

Round about this time there was much alarm at the increasing number of "pirates" on the air, whose numbers were much larger than had been anticipated. Members were warned in the strongest terms not to work them. Spark transmitters were advertised at 15/- each; crystal sets at £3 each. An Editorial stated: "The amateur transmitter of America is the mainstay of the wireless industry." Danish amateurs received official recognition with the issue of seven licences.

A technical article by G2ZC on short-wave fading suggested that—"fading can be caused by tobacco smoke, especially where indoor aerials are concerned. This interesting experiment was discovered by accident, but was tested and retested with the same result. The percentage of 'hams' who smoke during operating hours must be large, and adequate provision should be made for a proper atmosphere free from hanging tobacco smoke." Later the author concluded: "Short-wave work has demonstrated that blindspotting can be reduced, especially where cities having heavy smoke atmospheres are concerned, owing to the wave penetrating the smoke at a steeper angle and therefore having a shorter path through it."

Finally, at the end of another technical article describing a system of grid modulation, the following warning appeared: "... keep lips away from the microphone mouthpiece, as H.F. burns on the lips are not pleasant!"

Region 1 Field Day

THE Annual Region 1 Field Day, to be held on August 26, will commence at 10 a.m. and finish at 6 p.m. Stations will operate in the 1.7 and 3.5 Mc/s. bands only. The Rules will be the same as those which applied to "A" stations during National Field Day.

IT'S TOPICAL

BOYS aged from nine to 90—including radio amateurs—will find much to interest them at “**The Model Engineer**” Exhibition, 1951, to be held at the New Royal Horticultural Hall, Westminster, London, from August 22 to September 1. Among the many radio-controlled models to be exhibited and demonstrated are: a model cruiser which fires actual shells from its guns; ten marine models fitted with the latest receiving sets and actuating mechanisms; two sailing boats running, reaching and tacking under full control; four or five miniature speedboats (to be operated by the public from outside the water tank); a giant model airship (12 ft. 6 in. in length); a model Churchill tank (4 ft. long and weighing 2½ cwt., which took 2,500 hours to build and is valued at £500); a model of a 1949 Buick convertible (claimed to be the smallest radio-controlled car in England); and a model of the S.S. Port Brisbane, which will be shown coming into dock and unloading cargo—in this case remotely controlled by submarine sound transmissions.

There is room in this column for a hobbies corner. Take Irish amateur **Don O'Hare, EI2S**, for instance, who normally modulates a 150-watt rig in his shack in Bishopstown, Co. Cork. During August and September he will be on the air (Saturday nights 8.30-9 p.m.) modulating 100 kilowatts—from Eire broadcasting stations! Don is taking part in an all-amateur (but not all radio-amateur) variety programme called “The George McSweeney Show.” This is his 60th broadcast to date, and his speciality is the vibraphone, zylphone and drums. Any more members with unusual hobbies?

Seventeen miles from Glasgow, on a site 900 ft. above sea level, the **Kirk o'Shotts television station** is under construction. If all goes well, it will be in service early in 1952, bringing more than 70 per cent. of the population within range of television. The vision transmitter (output 50 kW. on 56.75 Mc/s.) will be the most powerful TV transmitter in the world, employing air-cooled valves, with water-cooled valves in the output stage. The aerial mast will be similar to that at Sutton Coldfield—750 ft. in height, weighing 100 tons, poised on a steel ball. The radiating section will comprise eight vertical dipoles arranged in two tiers, with built-in electric heaters to keep off ice or snow. The completion of the fourth new station at **Wenvoe** next year will bring television to 78 per cent. of the population.

The method used by the **B.B.C.** for testing likely sites for television stations is reminiscent of a miniature field day. A mobile transmitter radiates test signals from an aerial suspended by means of a balloon 600 ft. above the ground. A receiving van tours the countryside, recording the strength of signals picked up. From this data field strength contour maps are prepared, enabling a direct comparison of the effectiveness of various sites to be made.

And still they come. . . . **BRS 18599** writes to say that he has been with the **St. John Ambulance Brigade** for ten years, and holds the medallion and six labels. He sends 73 to S.J.A.B.-members **BRS 12474** and **BRS 11228**.

Opening an “**Atoms for Peace**” Exhibition in New York, Brig. General David Sarnoff (of R.C.A.), tapped a Morse key, thus sending around the world a radio message which, upon its return, activated a uranium pile. Energy from the splitting uranium atoms exploded a magnesium charge that

literally blew the Exhibition open. . . . A Taylor pattern generator connected to a **Masteradio** television receiver drew crowds when displayed in a dealer's window in **Auckland, New Zealand**. A metal disc placed near the window acted as a capacity switch, enabling onlookers to change the bars on the screen from vertical to horizontal at will. . . . When the cargo ship **Ketos** sank in the Atlantic after an explosion which occurred in the engine room, distress calls were sent out by the telegraphist—**21-year-old YL**, Miss Ingebard Tyvand. . . . Just arrived in this country—the second (1951) Edition of the **R.E.F. Callbook**, comprising 132 pages in a very readable and attractive format. The price is 3s. 6d.—by post 4s.—from R.E.F. (R.S.G.B. Headquarters is prepared to stock this publication provided there is sufficient demand). The 1951 Edition contains an ad. for OTC which introduces a new “French” word—speakerine. What is a speakerine? Why, a female radio announcer, of course!

Radio Amateurs' Examination, 1951

ALTHOUGH there were 221 fewer entries for the 1951 Radio Amateurs' Examination set by the City and Guilds of London Institute than in 1950, the work done by candidates, both technically and in the method of answering the questions, was again of a fairly high standard. With very few exceptions, all questions were attempted by the candidates. A report on each question follows the table of results.

| Candidates | 1951 | | 1950 | |
|------------|------|--------|------|--------|
| Home | 604 | 100.0% | 823 | 100.0% |
| Passed | 505 | 83.6% | 653 | 79.4% |
| Failed | 99 | 16.4% | 170 | 20.6% |
| Overseas | 8 | 100.0% | 10 | 100.0% |
| Passed | 8 | 100.0% | 7 | 70.0% |
| Failed | Nil | - | 3 | 30.0% |

Question 1 (Receiver.) This question, which requires a detailed circuit diagram, was well done by most candidates. A few of the candidates omitted the beat oscillator or reaction winding for C.W. reception.

Question 2 (Valve.) Very well done by practically all candidates.

Question 3 (Variable Frequency Oscillator.) Fairly well done by most candidates. A few omitted to state the steps to be taken to ensure stability of the oscillator.

Question 4 (Log.) Well done by practically all candidates.

Question 5 (Receiving aerial.) Well done by most candidates. A few missed the point in this question by dealing with interference from unwanted radio transmissions instead of interference caused by electrical appliances.

Question 6 (Absorption wavemeter.) Well done by practically all candidates.

Question 7 (Calculation.) Well done by practically all candidates.

Question 8 (Losses in tank circuit of transmitter.) Fairly well done by nearly all candidates.

The 1951 Radio Amateurs' Examination Question Paper was printed on page 27 of the July issue of the **BULLETIN**.

European and North Africa V.H.F. Contest

EARLY this year a proposal for an international V.H.F. Contest was received from the Swiss Society (U.S.K.A.). This proposal was circulated by the I.A.R.U. Region I Bureau, with suggestions for dates and other details, and several European Societies later gave approval. The Netherlands Society (V.E.R.O.N.) replied with a complete set of rules for a 144 Mc/s. contest, and offered to organise the event this year. This offer has been accepted.

The contest, which it is intended shall become an annual event, will take place over two weekends in September, and it is hoped that openings will occur for new contacts and new records. It is realised that September is late in the season, but it was not possible to make arrangements in time for an earlier date: it is hoped to be able to use a mid-summer period next year.

The rules below are based on general contest ideas discussed at the Paris I.A.R.U. Conference in 1950. It will be noted that points are awarded on a mileage basis, with restrictions to prevent excessive local scoring in congested areas. Serial numbers are progressive as in the B.E.R.U. Contest.

Rules

1. The Contest is open to any amateur station in Europe and North Africa.
2. Contacts are to be made in the 144 Mc/s. amateur band.
3. The period of the contest is from 0001 G.M.T. September 22 to 2400 G.M.T. September 23, and from 0001 G.M.T. September 29 to 2400 G.M.T. September 30.
4. Contacts may be made on C.W., 'phone, or C.W.-'phone. Only one contact with any station will count for points in each weekend. The same station may be worked twice, once during the period September 22-23 and once during the period September 29-30.
5. Logs are to be sent to: V.E.R.O.N. Traffic Department, Prunsslaan 33, Delft, Holland, and must be posted before October 15, 1951.
6. In case of disagreement, the final decision is with the Contest Committee chosen by V.E.R.O.N. Headquarters.
7. Code numbers are to be exchanged during each contact, and contacts will only count for points if both stations receive the code numbers correctly.
8. The code number will consist of six figures for C.W. and five figures for 'phone. The first three or two figures are the RST or RS report and the last three or four a serial number which starts between 000 and 100 for the first contact, and increases by one for each successive contact.
9. Points may be claimed as follows:
Up to 40 miles: one point per contact.
40 to 80 miles: 3 points each for the first 25 contacts and then one each.
80 to 160 miles: 5 points each for the first 12 contacts and then 3 each.
160 to 240 miles: 10 points each for the first 10 contacts and then 5 each.
Above 240 miles: 15 points for every contact.
In this rule the distances are between the two stations in British Statute miles, equivalent to 1,609 metres.
10. Logs must be in the form illustrated below, giving operator's call, name, address and claim, and must be accompanied by a short description of the station, stating P.A. input power, type of frequency control, modulation system, type of receiver, and aerials. The height above sea-level may also be given.
11. During the contest the station must be operated by one and the same operator.
12. A certificate will be issued by V.E.R.O.N. to each of the first ten classified stations.

NOT A V.E.R.O.N. CONTEST

In order to avoid confusion it should be clearly understood that the above event is an I.A.R.U. (Europe-North Africa) Contest and not—as has been stated elsewhere—a V.E.R.O.N. 2 m. Contest.

Contests Diary

- September 9 - Low Power Field Day.
- September 22-23 European and North
- September 29-30 African V.H.F.
- September 30 - D/F Field Day—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

VK-ZL Jubilee DX Contest 1951

THIS year—the Jubilee of the Australian Federation—the Commonwealth Government has honoured the Wireless Institute of Australia by sponsoring the VK-ZL International DX Contest; making available a money grant in recognition of its status as one of the world's leading Amateur Radio Contests. It is hoped that a record number of logs will be received, irrespective of the number of contacts made. The rules which follow are substantially the same as those for last year.

Rules

The Contest is divided into three sections: (a) C.W., (b) Telephony, and (c) Receiving ('phone and C.W.). The C.W. section will commence at 0001 G.M.T. on Saturday, October 13, and will conclude at 1200 G.M.T. on Sunday, October 14. The Telephony section will commence at 0001 G.M.T. on Saturday, October 20, and conclude at 1200 G.M.T. on Sunday, October 21. There is also an "Open" section—i.e. all bands on either 'phone or C.W., or any one band in either section.

Serial numbers must be exchanged, and will be made up as follows: C.W. section—the first three figures will be the RST report, followed by a three-figure serial number, which may commence at any number between 001 and 100, increasing in value by one for each successive contact. Telephony section—the first two figures will be an RS report, followed by a three-figure serial number as for the C.W. section.

Logs must show in this order: date, time (G.M.T.), band, call or station worked, serial number sent and received, and new country or VK-ZL district worked. One point is scored for each contact, the final score consisting of the number of contacts multiplied by the number of countries or VK-ZL districts worked on all bands. Overseas logs should be sent to the Contest Manager, Box 1734 G.P.O., Sydney, Australia, not later than January 31, 1952. Each contestant will receive a copy of the results, together with a QSL acknowledging his participation in this Jubilee DX Contest. Certificates will be awarded to the leading contestants in each country.

R.S.G.B. Amateur Radio Exhibition

THE Fifth Annual R.S.G.B. Amateur Radio Exhibition will be held at the Royal Hotel, Woburn Place, London, W.C.1, from November 28 to December 1, 1951. Applications for space should be made to the Exhibition Manager (Mr. H. Freeman), National Publicity Co., Ltd., 358 Strand, London, W.C.2.

| Call | Date | Time | Sent | Received | Distance | QTH | Pts. |
|--------|------|------|--------|----------|----------|------------|------|
| PA0AAA | 22.9 | 0300 | 579085 | 568075 | 30 | Amersfoort | 1 |
| PA0ZZZ | 22.9 | 0315 | 57086 | 589099 | 100 | Assen | 5 |
| LA0XXX | 23.9 | 2355 | 559087 | 58143 | 700 | Oslo | 15 |
| F8BOF | 29.9 | 1350 | 599088 | 589165 | 280 | Paris | 15 |
| G4XYZ | 30.9 | 2205 | 56089 | 58264 | 120 | London | 5 |
| Total | | | | | | | 41 |

SPECIMEN LOG: Call: PA0AA. Name: Bill Veron. Address: 88 Radio Avenue, Hamshuck, Netherlands. Claim: 41 points.

THE R.S.G.B. AMATEUR RADIO CALL BOOK

The First Edition of the R.S.G.B. Amateur Radio Call Book is now available from Headquarters, price 3/6 (3/9 post free). This new publication lists upwards of 6,000 call signs, names and addresses of amateur transmitting stations in the British Isles and Eire. Amateurs living in Eire may obtain copies from the Hon. Secretary of I.R.T.S.—Captain A. C. Woods (EI3L), 17 Butterfield Crescent, Rathfarnham, Dublin.

All communications concerning the Call Book (other than purchases), should be sent direct to the Call Book Editor—Mr. J. P. P. Tyndall (G2QI), 174 The Drive, Ilford, Essex. When changing their address, Members of the Society need not notify Mr. Tyndall direct: prompt notification of call sign and new address to Headquarters will ensure that they appear in the next edition. Non-members of the Society should write direct to Mr. Tyndall when changing their address.

Hampshire County Meeting

A MEETING of members resident in and near to the county of Hampshire will be held at the Polygon Hotel, Southampton, on September 23 at 2.30 p.m.

The President and several Members of the Council, together with the General Secretary, will be present when a number of important subjects (including Regional boundaries) are due to be discussed. A buffet tea is being arranged, tickets for which (price 4s. 6d. each) can be obtained from any local Hampshire Representative.

Further details are available from the Hampshire C.R. (Mr. L. G. Fitzgerald, G4QL, 27 Keydell Close, Horndean, Hants).

Association of Kent Radio Amateurs

MEETING at Maidstone on Sunday, June 17, delegates from most of the Amateur Radio Societies in Kent inaugurated a new body—the Association of Kent Radio Amateurs (A.K.R.A.).

The Association has been formed to link together these Societies, and to foster the formation of Societies or groups in parts of the county where none has hitherto existed.

A governing Committee has been set-up consisting of delegates from the Foundation Societies with Mr. W. E. Nutton (G6NU) as Chairman, and Mr. C. S. Bradley (G5BS) as Honorary Secretary.

An important function of A.K.R.A. will be to arrange the exchange of lectures and visits and to maintain liaison with Kentish amateurs living in other parts of the country or abroad, to whom honorary membership will be available. It is also hoped to arrange contests.

Further information can be obtained from Mr. Bradley at "Half Yoke," East Farleigh, Maidstone (Telephone Maidstone 86259).

FIFTH ANNUAL R.S.G.B. AMATEUR RADIO EXHIBITION

November 28th to December 1st 1951

National Radio and Television Exhibition, 1951

AT the 1951 Radio Show which will be held at Earls Court, London, from August 29 to September 8 (admission 2/6), the accent will once again be on television. Technical services, organised by the Exhibition Technical Committee of the Radio Industry Council, provide for: a closed-circuit R.F. television distribution system over which suitable programmes can be relayed throughout the day from received B.B.C. transmissions, or a local film scanner in the Technical Control Room, or live cameras in the B.B.C. television studio specially built within the Exhibition; sound reinforcement systems for relaying musical programmes and announcements; closed circuits feeding A.F. and medium-wave R.F. signals of high quality to recording and wireless apparatus on demonstration; and a service for the prevention of electrical interference within the Exhibition.

The focal point of all the technical services is the Control Room, in which the equipment will be on view to the public through glass panels. The cable carrier frequencies used for the sound and vision relays will be those of Sutton Coldfield (58.25 and 61.75 Mc/s.), to avoid beat frequency patterns being produced when Alexandra Palace is on the air. Film scanning equipment will be located adjacent to the television distribution racks, enabling 35 mm. films to be scanned and passed as video-frequency to the distribution panels.

The sound reinforcement system for the main hall is being carried out by means of a large number of slot-type loudspeakers operated at low level. The problem of interference will be met by taking necessary suppression measures to prevent radiation from electrical machinery. In addition, suppressors for discharge lighting will be fitted. In order to ensure interference-free reception of the television programmes from Alexandra Palace, arrangements have been made to provide a microwave radio link on 6,800 Mc/s. over which the transmissions will be passed to Earls Court (a normal aerial being used as stand-by).

D.S.I.R. at the Radio Show.

METHODS used to forecast short-wave propagation conditions and optimum frequencies will be featured on the D.S.I.R. Stand at the 1951 Radio Show. The accuracy of the current forecasts, which are derived from Radio Research Stations operating all over the world, will be demonstrated by means of three radio receivers, all tuned to station WWV in the U.S.A. on three different frequencies. The public will be able to see how correct the forecasts are by noting the difference in the reception of the same broadcast on the three frequencies—only one of which will be the recommended optimum. The forecasts are used by the B.B.C., ships at sea, the Armed Forces, the Post Office, Cable and Wireless, and other organisations.

A second display on the Stand will show how weather can affect the range of television reception. For best results a clear warm summer's day followed by a clear night—anticyclonic weather—provides suitable conditions; or in winter—continuous cloud, based at 2,500 feet. There will be two television sets working on the stand—one tuned to Alexandra Palace, the other to Sutton Coldfield. The signal strength available from the latter will vary with the weather, a direct comparison being visible on the screens.

The D.S.I.R. Stand will be S.8, in the Gallery near to the B.B.C. Studio.

should be as good as, or better than, L.P. records, with a higher signal-to-noise ratio. With the gain well up on F.M., the "breathing" of the receiver on an unmodulated signal is barely detectable, and is well below the B.B.C. microphone circuit noise, although the noise is the usual hiss on A.M. The limiter virtually eliminates interference, but ignition noise is loud on A.M. Hum is undetectable on F.M., while a little is noticeable on A.M.

Trouble may be experienced with threshold howl due to audio feedback on the microphonic 9002 valve. This has been minimised by supporting the chassis on rubber blocks and enclosing it in a cupboard well away from the loudspeakers. The oscillator drifts about 30 kc/s. during the first 15 minutes after switching on, but is quite stable after this, and one retuning is all that is necessary. This drift could be reduced if the H.T. voltage for the oscillator were taken from one of the anodes of the tuning meter, so that as the oscillator frequency increased, its anode voltage would be reduced and thus the frequency would be reduced. By suitable choice of circuit constants the oscillator drift can be reduced to one quarter or less. This modification has not been found necessary, but presents an interesting refinement.

The screen voltages of the I.F. valves are set very low on the original circuit, and more gain may easily be realised by reducing the screen dropping resistor values. It may also be found advantageous to adjust the primaries of the I.F. transformers to give maximum response on one peak of the F.M. signal, and the secondaries on the other. This improves the receiver band-width.

AROUND THE V.H.F.s. (Continued from Page 70)

First 70 cm. Contact between France and Holland.

From *Radio R.E.F.*, the journal of the French society, it is learned that 70 cm. signals were exchanged for the first time between France and Holland on July 2—certainly a good day for the 70 cm. band—the stations concerned being F8OL, F9AE and PA0PN.

The closing date for reports to appear in the September BULLETIN will be Monday, August 20. **Late News.**

On July 21, after an evening of considerable activity on 2 m. with DL, F, ON and PA, G5BY was heard saying that the 70 cm. band appeared to be wide open, with harmonics audible from 2 m. stations up to 200 miles away. G2WJ (Dunmow, Essex) called him and established two-way contact on 70 cm. at 0030 B.S.T. on July 22 over a distance of approximately 220 miles. G5BY was a good S9 on C.W. and 2WJ S7/8, some slight fading being present in both cases. 2WJ was using a 7-element Yagi. An interesting point is that G2WJ had, earlier in the evening, been receiving a vision signal from Paris at full programme value on his home-constructed *Electronic Engineering* television receiver.

F8MX will be operating from St. Valéry-en-Caux (Seine-Inférieure), between Dieppe and Fécamp, from August 6th or 7th until the 31st. He hopes to work G stations on 2 m., and will normally operate from 1330 to 1430 and from 2230 to midnight. Whether B.S.T. or G.M.T. is not known. Frequencies will be 144.48, 144.90 and 145.00 Mc/s. on 'phone and C.W. with 40 watts input. He hopes also to be equipped for 70 cm. operation, frequency 435.00 Mc/s., but requests that those wishing to test with him first make contact on 2 m.

R.S.G.B. BULLETIN, AUGUST, 1951.

over the QSL Bureau to VS2BA until the return from leave of VS1DV. DL2RO masks the identity of a very old-timer—none other than Jack Drudge-Coats, G2DC.—YDCR, etc., etc.

Early Mornings on Two

G2XV (Cambridge) appeals for activity on 2 m. between 00.50 and 00.80 B.S.T. He says the band sounds "open" if only the signals were there. How about learning something new about this band at an unusual time of day? Activity periods suggested every Saturday.

The First Transatlantic Signals

A SHORT strip of paper tape, bearing the first recorded signals ever received across the Atlantic, was recently presented to the Science Museum, South Kensington, by Mr. P. J. Woodward.

On 12th December, 1901, after preliminary experiments had shown that wireless waves could travel across the Atlantic, Marconi, then in Newfoundland, received the first faint signals, the single letter "S," from the transmitting station at Poldhu in Cornwall. By the following winter a powerful transmitter had been installed at Glace Bay, Cape Breton Island, and on the night of 28th November, 1902, Mr. P. J. Woodward, Marconi's personal receiving engineer, heard faint signals at Poldhu, using the new magnetic detector and a Collier-Marr telephone. A few days later the signals were so strong that Mr. Woodward was tempted to try to record them by means of the less sensitive coherer-receiver and Morse tape-recorder. The experiment was successful, and a short strip of tape was preserved as a memento.



SPALDING D/F DAY

G3ANM operating the transmitter during a recent D/F Day at Spalding, Lincs., in which Peterborough and Wisbech amateurs took part. Winner of the contest was G3HJY who located the transmitter in 1½ hours.

London Members' Luncheon Club

SUMMER holidays no doubt accounted for the smaller attendance at the July meeting of the Club, but particularly welcome among the 21 guests present were SM5WL (Editor of *QTC*) and Mrs. Eliaeson; SM6BWE; ZS1FD (Vice-President S.A.R.L.); ZS6F; 4X4CZ (Secretary of the Israel Society), and VS6AR, all of whom were persuaded to say a few words. In addition, OE377 and ex-SM5GG were present on a second visit.

Don't forget that all are welcome—a telephone call to G2FUX at Ruislip 2763 or to Headquarters being all that is necessary.

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.

June 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, June 19, 1951.

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

Apologies for absence were submitted on behalf of Messrs. F. Charman and V. M. Desmond.

Finance.

Resolved to accept and adopt the Cash Account for the month ended May 31, 1951, as prepared by the Honorary Treasurer. It was reported that Mail Transfers for U.S. publications, in the sum of £627, covering a period of about six months, had been approved by the Treasury. It was also reported that revenue from subscriptions during the first eleven months of the current financial year was 9.5 per cent. less than during the corresponding period in 1949/50.

Membership.

Resolved (a) to elect 92 Corporate Members and 26 Associates.

(b) to grant Corporate Membership to 12 Associates who had applied for transfer.

Applications for Affiliation.

Resolved, subject to the receipt of satisfactory reports from the appropriate R.R. or C.R., to grant affiliation to the:—
Darlington and District Amateur Radio Society.
Lowestoft and Beccles Amateur Radio Club.
Nottingham University Radio Society.
B.T.H. Recreation Club, Rugby (Radio and Television Section).

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

It was agreed to publish the First Edition of the R.S.G.B. Amateur Radio Call Book during August, 1951. A design for the front cover was submitted and approved.

Miniature Pennants.

Resolved to place orders for two sizes of double bunting, dye printed pennants and to fix the selling prices at 5/6 and 6/6 for each type respectively.

East London District.

Consideration was given to a resolution passed at an East London District meeting concerning the projected new amateur licence. A Member agreed to outline verbally to the members concerned the views of the Council regarding the point which they had raised.

Hampshire.

Consideration was given to a lengthy Report submitted by the Acting R.R. for Region 8 concerning matters discussed at a recent meeting held in Portsmouth.

Resolved to inform the Acting R.R. for Region 8 that the Council is prepared to appoint delegates to attend a meeting in Hampshire during the early autumn to deal with the matters referred to in the Report.

Revision of Memorandum and Articles of Association.

Resolved to convene a Special Meeting of the Council on July 12 to discuss the revision of the Memorandum and Articles of Association.

Two Metre Contest.

Correspondence was submitted from a member of the Society concerning the decision of the Contests Committee to restrict the recent 2-Metre Contest to telegraphy operation.

Resolved to refer the correspondence to the Contests Committee for their consideration.

R.S.G.B. Amateur Radio Exhibition, 1951.

Revised hire charges for stands were approved.

National Field Day.

It was reported that an examination of the Press cuttings received recently by the Society show that a number of affiliated societies participated, as such, in N.F.D. The Secretary explained that it has been the policy of the Council in the past not to permit affiliated societies, as such, to participate in N.F.D.

Resolved to refer the matter to the Contests Committee for their consideration.

I.A.R.U. Region 1 Bureau.

The Secretary submitted the Minutes of a Meeting of the Committee which met on April 12, 1951.

Resolved to receive and accept the Minutes in lieu of a Report.

It was moved and seconded that Recommendation 3 (relating to the delegation of power) be not approved. The motion was lost by 5 votes to 2. It was thereupon resolved to adopt the undermentioned Recommendations contained in the Report:—

- (1) that as far as possible, Bureau expenditure shall be kept separately from R.S.G.B. expenditure.
- (2) that the Committee shall report to the R.S.G.B. Council.
- (3) that the Committee shall be given full delegation of power in order that it may have executive power to implement the decisions and wishes of the I.A.R.U. Societies in Europe.
- (4) that the Bureau shall use distinctive notepaper.

Technical Committee.

The Secretary submitted the Minutes of a Meeting of the Committee which met on May 31, 1951.

Resolved to receive and accept the Minutes in lieu of a Report.

Arising from a consideration of the Minutes the Secretary reported that the G.P.O. had now explained why the 1225-1290 Mc/s. band had been released for amateur television on the basis of non-interference with other services.

The Secretary also reported upon field trials which were being arranged to take place on July 1 to ascertain whether or not there is a likelihood of amateur television signals radiated on frequencies within the 420-460 Mc/s. band interfering with radio altimeters.

The Secretary was authorised to make application to the Institution of Electrical Engineers for permission to hold lecture meetings in the Institution building during the 1951/2 session.

Acting upon a recommendation of the Technical Committee the Council

Resolved (a) to place an order for printing 5,000 copies of a new book in the Amateur Radio series, entitled "Modulators and Modulation Equipment."

(b) to commission Mr. G. L. Benbow, M.Sc., G3HB, to write the book.

The Council took note of the view expressed by the Committee that the sales of this book may be slow and that loss may be incurred. The Council agreed with the opinion of the Committee that such a publication should be considered as part of the Society's service to members.

Finance and Staff Committee.

The Minutes of a Meeting of the Committee which met on June 7, 1951, were submitted.

Resolved to receive and accept the Minutes in lieu of a Report and to adopt a Recommendation of the Committee concerning the remuneration of the General Secretary.

The Council was advised that the Committee would shortly submit proposals for an extension of the present Staff Pensions scheme.

Membership and Representation Committee.

The Secretary reported verbally upon a meeting of the Committee which had taken place earlier that day.

Resolved to accept a Recommendation of the Committee that Hampshire be included in the new Region 6.

The Secretary reported that a proposal received from members in Gravesend, that they should be transferred to Region 8, would be referred to the Region 7 and 8 Representatives for their consideration.

Regional Representatives' Conference.

Resolved to give full consideration at the next meeting to the Recommendations adopted at the recent Conference.

The meeting terminated at 10.20 p.m.

REGIONAL AND CLUB NEWS

British Two-Call Club

Membership is open to British Empire amateurs who have held fixed-station licences in two or more countries. The annual subscription of 2s. 6d. covers the issue of certificates and the publication of a quarterly news-letter. Membership now stands at 90. Inquiries should be addressed to the Hon. Secretary, G. V. Haylock, G2DHV, 63 Lewisham Hill, London, S.E.13.

Brighton & District Radio Club

G3EVE, the Club call sign, should be heard on the air more often now that the transmitter is conveniently installed. A dance will take place on October 17. Membership remains high, and intending members are asked to contact the Hon. Secretary, R. T. Parsons, 14 Carlyle Avenue, Brighton, 7.

Cheltenham Amateur Radio Society

All local amateurs are invited to participate in a Cheltenham Derby—a 1 watt 3.5 Mc/s. contest between G3CGD/P (on Wistley Hill) and G3CEG/P (on St. Mark's Centre Playing Fields) on Sunday, September 2. As the primary purpose of the event is to compare propagation on high and low ground, listener reports will be welcomed and acknowledged.

The Society meets at 8 p.m. on Fridays at the St. Mark's Community Centre, Brooklyn Road. The Secretary is F. Humphreys, 136 Whaddon Road.

Exeter

Programme highlights for the next three months include: Sale of members' surplus gear (Sept. 7), a talk by R. P. Ellis, G3SN (Oct. 5), "Microwaves," a talk by E. Wills, G3AEZ (Nov. 2). Meetings are held at the Y.M.C.A. Exeter, 41 St. David's Hill, commencing 7.30 p.m.

Falkirk

Twelve out of 14 members of the local R.S.G.B. group were successful in the Radio Amateurs' Examination set by the City and Guilds of London Institute. The instructor was GM3OM.

South Manchester Radio Club

In future meetings will be held at the cafe attached to the Tatton Arms, Northenden. On August 17 there will be a film show, while a talk on "Clippers and Filters" will be given on August 31. The Secretary is E. R. Taylor, 12 Marton Avenue, Didsbury, Manchester 20.

Stourbridge & District Amateur Radio Society

A cine-film of the Society's effort in N.F.D. (filmed and presented by D. Barlow, G3HGI) was a popular feature at a recent meeting. This was followed by a talk entitled "A Simple Transmitter" by T. Cashmore, G3BMY. The Hon. Secretary is W. A. Higgins, G8GF, 28 Kingsley Road, Kingswinford, Staffs.

West Suffolk Amateur Radio Society

Recent meetings have been attended by American officers from R.A.F. Station, Lakenheath. Future plans include an outing to visit stations in Great Yarmouth and Gorleston. The Club welcomes new members. Meetings are held on the first and third Saturday each month. Further particulars may be obtained from the Secretary, C. A. King, 44 Bishop's Road, Bury St. Edmunds.

WEST OF SCOTLAND OFFICIAL REGIONAL MEETING GLASGOW

SATURDAY, SEPTEMBER 15, 1951

Business Meeting, 2 p.m., 39 Elmbank St.

Dinner and Entertainment, 5.30 p.m.

"The Rhul," 123 Sauchiehall Street.

Tickets (15/6 each) from the R.R. (Mr. D. Macadie, GM6MD (154 Kingsacre Road, Glasgow, S.4), or other Representatives.

Early application desirable.

NORTH OF SCOTLAND OFFICIAL REGIONAL MEETING SUNDAY, SEPTEMBER 16, 1951

NORTHERN HOTEL, ABERDEEN

| | |
|--------------------------|------------|
| Assemble | 12.30 p.m. |
| Lunch | 1.00 p.m. |
| Business Meeting | 2.30 p.m. |
| Tea | 5.00 p.m. |
| Evening Session | 6.30 p.m. |

Tickets (including lunch and tea): Single 12/6,
Double (Lady and Gentleman) 23/-,
Tea only 3/6 each.

Tickets may be obtained from the R.R. (Mr. John Douglas, 43 Abbotswell Drive, Aberdeen), or from any Town or County Representative.

Representation

THE following are additions to the list published in the February, 1950, issue of the R.S.G.B. BULLETIN:—
Town Representatives

Region 7 : London South-West :

Barnes, Richmond & Putney.—N. G. V. Anslow, G4GD,
35 Gilpin Avenue, East Sheen, S.W.14.

London West :

Hayes (Middx.).—V. E. W. Whitaker, BRS.18311, 6 Warley Avenue.

HAMPSHIRE COUNTY MEETING

Polygon Hotel, Southampton,

September 23, 1951, at 2.30 p.m.

The President, General Secretary and Members of Council will be in attendance. A Buffet Tea is being arranged. Tickets (4s. 6d.) from any Hampshire local representative.



The Annual Field Weekend of the Midland Amateur Radio Society was held recently at Redhill Farm in ideal weather and propagation conditions. G5IW/A (pictured above, with a 14 Mc/s. beam mounted atop of tramway wire-repair vehicle) worked 30 countries on that band while G3EKN/P and G3BUR/P were active on 1.7, 3.5 and 145 Mc/s.

SOUTH-EASTERN OFFICIAL REGIONAL MEETING SUNDAY, SEPTEMBER 30, 1951

**ROYAL MOUNT EPHRAIM HOTEL,
TUNBRIDGE WELLS**

Programme:

| | |
|------------------------|-----------|
| Assemble - - - | 12 noon |
| Luncheon - - - | 1 p.m. |
| Business Meeting - - - | 2.30 p.m. |
| Tea - - - | 5 p.m. |
| Topical Talk - - - | 6 p.m. |

Tickets (9/6 each) from the R.R. (Mr. R. J. Donald, G3DJD, 2 Canfield Road, Brighton 7), or from County Representatives. Early reservation is advised.

EAST MIDLANDS OFFICIAL REGIONAL MEETING SUNDAY, OCTOBER 14, 1951

THE GRAND STAND HOTEL, DERBY

(adjoining County Cricket Ground,
½ mile from Town Centre)

| | |
|----------------|-----------|
| Assemble - - - | 12 noon |
| Lunch - - - | 1 p.m. |
| Meeting - - - | 2.15 p.m. |
| High Tea - - - | 4.30 p.m. |

After tea Mr. J. Spragg, G3APY (Midland Representative of the Five Band Club) will give a lecture and demonstration on 70 cm. work. Station visits will follow about 6.30 p.m.

Tickets (12/6 each) from Derby T.R. (Mr. C. Drinkwater, G3FNK, 79 Hillsway, Littleover, Derby), or the R.R. (Dr. E. S. G. K. Vance, G8SA, 43 Blackwell Road, Huthwaite, near Mansfield, Notts), by not later than October 9. A stamped addressed envelope should be included with all postal applications. Remittances to be made payable to the R.R.

PULLING POWER!

Dear OM,

In the last issue I advertised that I had for disposal about fifty 829s. As a result of letters and calls, I could have sold more than 400 to date, and have spent the past few nights and mornings returning all surplus cash. What a job! I trust nobody will mention 829s to me over the air again!

Many thanks for your service, and I am very sorry to have let down so many of the chaps.

73,

Cheshire, J. G. Barnes, G3AOS.
July 24, 1951.

Silent Keys

On June 26, 1951, the death occurred of one of the pioneers of the Amateur Radio movement in the Eastern Counties. Ronald James Bates, G2SM, of Bury St. Edmunds, received his first artificial aerial permit on June 12, 1920, and a radiating permit for 440 metres on November 15, 1922. He was not long in making good use of his knowledge and quickly put the small town in which he lived to the forefront in amateur matters. He took no mean part in the Trans-oceanic summer experiments during 1926 and subsequent years, having a special permit for 100 watts for the purpose. Mr. Bates was active until the close down in 1939 and resumed activity on a lesser scale in 1946. During the war he acquired the local radio relay diffusion network which took up much of his time. Of genial personality and well liked by the business fraternity of the neighbourhood, he will be long remembered as an Old Timer. G2TO.

The death, after a long illness, of Harold Webber, G5YR, of Tiverton, Devon, has removed yet another Old Timer from our ranks. Harold, licensed during the early 20s, was one of the first British amateurs to use telephony. He gave generously and always anonymously. His outstanding attribute was his unflinching helpfulness to anyone who was in need of assistance.

He had been through many operations, the last at the Royal Masonic Hospital, London, when his leg was amputated. Through all this he never forgot to smile a welcome to anyone who called.

To his wife and only son Roy we offer our heartfelt condolences. G5QA.

With deep regret we record the death on June 14, 1951, of Michael Collins, EI3N, who was electrocuted whilst operating his amateur station. His passing is mourned by all amateurs who knew him and in particular by those resident in Dublin. Our sympathies are offered to his wife and family.

It is also our sad duty to record the passing of Robert A. Colby Cubbin, GD5CZ, of Douglas, Isle of Man.

Mr. Cubbin was very active, particularly on 1.7 Mc/s., and it was whilst listening on that band in May, 1950, that he received distress signals from the steam trawler "Mary Heeley." An account of the part he played in the rescue operations appeared in the June, 1950, BULLETIN. Mr. Cubbin was the owner of the S.Y. Glen Strathallan (GFRS), and it was with much disappointment that he learnt that his application for permission to operate an amateur station aboard ship had been refused by the Post Office. Prior to the 1939-45 war he held a Maritime Mobile experimental licence.

His death, at the age of 47 years, removes from our ranks a colourful personality whose interest in Amateur Radio was second only to his love for the sea.

With sorrow, also, we record the death quite suddenly on July 17, 1951, of Mr. T. W. Gentleman, GM6UK. A member of the Society since 1931, he took an active part in Society affairs, and had only just returned from a holiday in the south, during which he attended Convention. During World War I he served in the Royal Flying Corps, and in the last war was a member of the Royal Observer Corps. He was also an instructor in the A.T.C.

"Bill" Gentleman possessed the knack of making himself welcome wherever he went. His cheerfulness and wise counsel will be sadly missed. Sympathy is tendered to his wife and family in their great loss.

The many friends of James Fairley (G2IX) will be shocked to learn of his sudden death on July 12. Jim was T.R. for Leicester in 1947 and a one-time Chairman of L.A.R.S., but in recent years spent little time on Amateur Radio owing to his work as an Urban District Councillor for Blaby.

He leaves a widow and one daughter to whom we extend heartfelt sympathies.

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