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Contents

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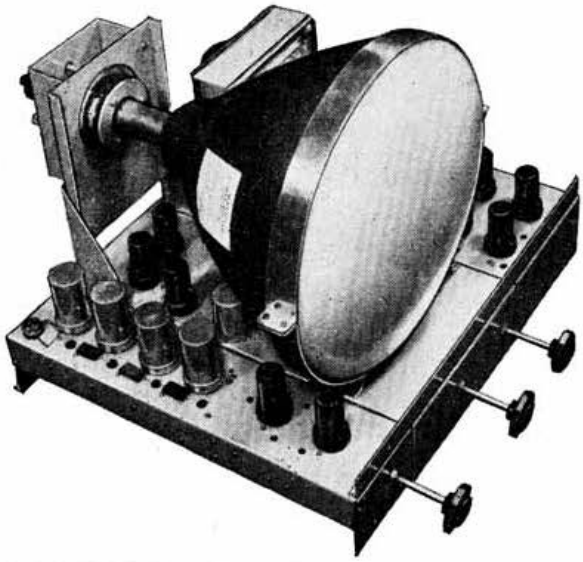

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BULLETIN

For the advancement of Amateur Radio

VOLUME XXVI No. 5 NOVEMBER 1950

AN EXPERIMENT WORTH WATCHING

IF we were asked who is the most important person in Amateur Radio, our answer would be: "The youngster who, this morning, found a light blue form entitled *Licence to Establish an Amateur Wireless Station* in his post-box." The future progress of our hobby lies, inevitably, with those who, nervous with excitement, are today stumbling over their first CQ calls and experiencing the thrill of hearing their brand-new call-signs repeated back to them from afar.

What will these newcomers make of Amateur Radio? Will they assimilate and maintain the traditions that date back to the first three-letter calls of the beginning of the century? Are they inheriting the same spirit of ingenuity, knack of improvisation, and willingness to have a crack at the impossible which characterised the early brass-pounders? Or will the future bring strange new systems of communication which will banish the Morse key into the furthermost recesses of dusty attics? Already the teleprinter and the television camera clamber for admission to the "shack."

But for the present, at least, the Morse key looms large upon the horizon of every new or prospective amateur. C.W. operating is still the hurdle which separates the licensed amateur from other radio enthusiasts—a hurdle which can only be surmounted with the active help of those who have already mastered the code. So it is with particular interest that amateurs throughout the world will watch the progress of a most important experiment shortly to be tried out in the United States: the establishment of a Novice Class of amateur licence with a Morse test of only five words per minute, intended primarily to help newcomers overcome their main bug-bear—learning Morse. For, no matter how much enjoyment a sound knowledge of Morse brings in its wake, few could claim that they actually *enjoyed* the slow process of striving to reach "12's." It would also be difficult to estimate the number of potential amateurs who have been lost because training facilities were not available in their locality—despite the valuable work of those stalwarts who generously devote time and energy to regular "Slow Morse Transmissions."

The new American scheme has many good points: the facilities offered—a distinctive call-sign; C.W. operation in the band 3700 kc/s. to 3750 kc/s. (in the U.S.A. the 3.5 Mc/s. band extends up to 4 Mc/s.); C.W. or telephony operation between 145 and 147 Mc/s.; a maximum power of 75 watts compared with the standard American limit of 1kW.—are sufficiently restricted to ensure that no real enthusiast will be satisfied with them for long but will press on towards his Class B licence. Furthermore, to eliminate the dabblers, the licence will remain in force for only one year and cannot be renewed. Those who fail to make the grade in twelve months thus automatically lose all transmitting privileges.

Contrary to some expectations, this far-reaching experiment has been welcomed by the vast majority of licensed amateurs in the United States who realise that unless there is a constant flow of new blood into the movement—in normal times as well as in the exceptional conditions which obtain after a long war—Amateur Radio must eventually lose the very real prestige which it now enjoys.

Whether or not a modified novice licence for genuine learners would be a practical proposition in this country is difficult to answer at this stage, but the British licensing authorities as well as the Council of the Society will surely follow closely the results achieved by this important American innovation.

Let us consider some of the matters which would require examination. Could frequency space—even supposing the P.M.G. was convinced of the practicability of such a scheme—be found in our all-too-narrow bands? How could non-amateur services be protected against interference? Would general operating standards be lowered, or raised? Would fully-licensed amateurs be prepared, occasionally, to reduce speed and send with the utmost care?

Obviously the question of novice licences has many aspects. But the fact that the United States, with the largest "amateur population" in the world, is to introduce such a system suggests that it is not one to be lightly dismissed. Why not discuss it as some future Group or Club meeting? Headquarters would be interested to learn the views expressed.

FILTERS FOR SPEECH CLIPPING

By ALAN G. DUNN (G3PL)*

Although more and more British amateurs are adopting speech clipping as a means of increasing average modulation levels, the necessity for an efficient low-pass filter as an integral part of the system is often disregarded —perhaps because of the supposed complications in filter design. Here G3PL gives a practical explanation of how to design and build suitable filters, as well as full information on the results which may be expected.

WHEN speech clipping is employed in an amateur station, a low-pass filter should be considered an essential part of the system. One of the chief effects of the clipper is to generate much greater distortion than is usual in modulation equipment. To prevent those distortion products which have frequencies above about 4 kc/s. from modulating the carrier, and causing needless interference, the clipper must be followed by a really effective filter. In the case of anode, or anode-and-screen modulation, a high-level filter, *i.e.* one connected between the modulator stage and the modulated R.F. amplifier as in Fig. 1, has the advantage that, even when the clipping is done at a low power level in the speech equipment, the normal distortion products of the modulator stage are also restricted by the filter.

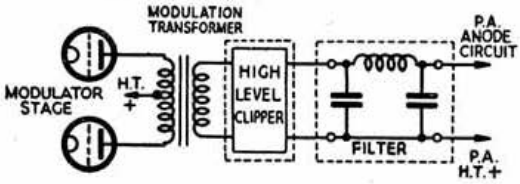


Fig. 1.
Low Pass Filter used between High Level Clipper and P.A. stage. Where a clipper is not employed, the filter should be connected directly to the secondary of the modulation transformer.

The design data given in this article can, of course, be used for other purposes where a low-pass filter is required. The theoretical discussion following is of the simplest kind, but those interested solely in the practical aspects of the subject may prefer to start with the section headed " Practical Filters."

Filter Design

The customary " high-brow " treatment of this subject gives the impression that filter design is very difficult, and that component values must be correct within extremely close limits. In point of fact, for amateur applications, the rules can be relaxed to a considerable extent. The types of filter to be dealt with here are the constant-k and m-derived types. Only the π version will be discussed, because this requires one inductance as against two for the T section. The inductances are likely to be the chief problem of supply, so it is an advantage to use as few as possible.

Constant-k or Prototype Filters

The simplest low-pass filter is the " constant-k " or " prototype " filter, as shown in Fig. 2 (a). When terminated with the correct resistance R at each end, this filter passes freely all frequencies below a certain value, known as the " cut-off " frequency, which will be abbreviated to f_c in this article. This is the frequency at which L resonates with the total capacitance across it, *i.e.* the two capacitors in series. Above f_c, the filter commences to offer increasing opposition to the passage of current, the attenuation which it causes increasing rapidly with the frequency. In practice, owing to the inevitable losses in the components, a small amount of attenuation is also caused at and below f_c. The attenuation at f_c is generally about 2 db. per section, and at lower frequencies may be less than 1 db.

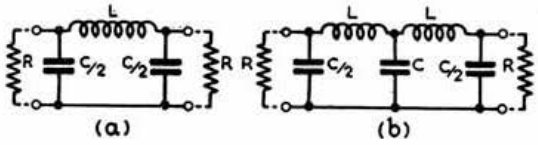


Fig. 2.
(a) Constant-k or prototype filter. (b) Two constant-k sections in tandem.

Typical attenuation curves of a practical filter and of the " ideal " case, *i.e.* when no component losses are present, are given in Fig. 4. The constant-k filter has the advantage of simplicity, but sometimes a steeper attenuation curve is required. To obtain this, two sections may be used in tandem, as in Fig. 2 (*b*). Such a system gives double the attenuation of a single section at frequency, but, in practice, it may be cheaper to use an m-derived filter, as described later.

The values of L, C, and R, of Fig. 2, are connected by the relationship $R = \sqrt{\frac{L}{C}}$ where L is in henries and C in farads. This may be re-stated as $R = \sqrt{\frac{1000L}{C}}$ where L is in millihenries and C in microfarads, as these are handier units to work with. The ratio of L to C is fixed, for a given value of R. If the required f_c, and the value of R, are known, L (in mH.) $= \frac{R}{\pi f_c}$, and C (in μF.) $= \frac{1000}{\pi f_c R}$, where f_c is in kilocycles per second.

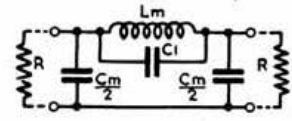


Fig. 3.
M-derived single section filter.

M-Derived Filters

The m-derived filter is obtained by modifying a prototype section as shown in Fig. 3. A capacitor C1 is shunted across the coil, and the values of L_m and C_m are correspondingly reduced from the prototype values. The cut-off frequency is still given by the resonant frequency of the coil with the total capacitance across it. This is now made up of C1 + $\frac{C_m}{4}$. There is a second resonant frequency, that at which L_m resonates with C1 alone. At this frequency, the attenuation of the section is highest, and this is the " frequency of maximum attenuation," abbreviated f_m, which enters into the design formulæ. L_m and C1 form, in effect, a wavetrap for this frequency.

The two critical frequencies of this type of filter are therefore f_c and f_m. The latter can be chosen as any frequency greater than about 1·15 times f_c. The higher f_m is made, relative to f_c, the greater will be the attenuation. In Fig. 4, the kind of attenuation

* 79 *Hayton Grove, Hull, Yorkshire.*

curve which is obtained from m-derived filters can be compared with that of the prototype section.

Since the m-derived filter is based upon the

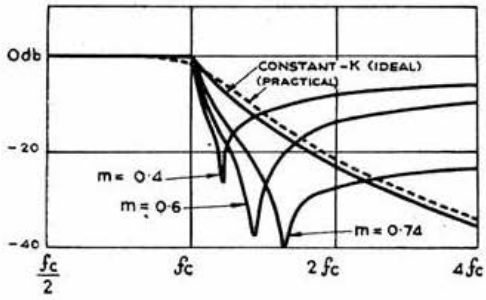


Fig. 4.
Typical loss curves of m-derived filters, showing how attenuation increases as f_m is made higher relative to f_c. Curves of a typical and an ideal constant-k filters are given for comparison.

prototype, the first step in design is to work out the element values for the prototype section which has the required cut-off frequency. The frequency f_m must then be decided upon, and if there is no overriding reason for fixing f_m at a particular value, a good compromise between steepness of the curve and amount of attenuation is given by making f_m = 1·5 times f_c.

After the values of f_c, f_m and R have been decided upon, a factor m is found from the formula $m = \sqrt{1-\frac{f_c^2}{f_m^2}}$. The values of L_m, C_m and C1 are then found by using this factor, m, in conjunction with the values already found for the prototype. In Fig. 3, L_m = m times L, C_m = m times C, and $C1 = \frac{1-m^2}{4m}$ times C. C1 must resonate with L_m at f_m, and once L_m has been calculated, C1 may be found from abac.

Practical Filters

The impedance (R) of a filter is usually the first of the design factors to be fixed. If the transmitter is always used at the same input power, R is taken as the equivalent resistance of the P.A. valve, which is found by dividing the H.T. voltage by the anode current. If the input power is altered, the impedance will also alter. Fortunately, a filter will operate satisfactorily over a range of impedances of about 2 : 1. In such cases, the design impedance should be chosen as 1·4 times the lowest impedance at which the filter is required to operate.

Table I gives the element values for some filter sections at an impedance of 1,000 ohms. The values for any other impedance can be found by multiplying the values of L and L_m, and *dividing* those of C, C_m and C1 by R/1,000, where R is the required impedance. If the filter is required for use at 5,000 ohms, for example, the values of the inductances given in the table should be multiplied by 5, and those of the capacitors divided by 5.

There is some difference of opinion as to what cut-off frequency should be used by amateurs, so the table caters for two frequencies, 3·3 and 4·5 kc/s. Component values for a constant-k section, an m-derived section with $\frac{f_m}{f_c}$ = 1·5, and another with $\frac{f_m}{f_c}$ = 3·0 are given for each value of f_c

Components

For some applications, the greatest care is taken to obtain correct component values to within less than 1 per cent. Such accuracy is a luxury for amateur purposes, as an error of 20 per cent. in the value of L or C causes an error of only 10 per cent., approximately, in the resonant frequency and impedance, since L and C enter the formulæ as square roots. Components of 10 per cent. tolerance may be used without the need for checking actual values, and even 20 per cent. tolerance components are not

TABLE I

f_c	Type	$\frac{f_m}{f_c}$	m	L	C	L_m	C_m	C1
kc/s.				mH.	μF.	mH.	μF.	μF.
3·3	Constant-k	—	—	97	·097	—	—	—
	m-derived	1·5	0·74	—	—	70	·07	·014
	m-derived	3·0	0·94	—	—	90	·09	·003
4·5	Constant-k	—	—	70	·07	—	—	—
	m-derived	1·5	0·74	—	—	50	·05	·01
	m-derived	3·0	0·94	—	—	65	·065	·0022

Element Values for 1,000 *ohm Filters*
(Values for any other impedance can be obtained from this table, as described in the text.)

likely to cause serious error. The difference between a filter made up of 20 per cent. tolerance components and one with 5 per cent. tolerance components can usually be found only by accurate measurements. There will certainly be no risk of a filter failing to work through the use of 20 per cent. tolerance components.

Provided that good quality paper capacitors are used, there is no need to go to the expense of using mica types, as there will be no noticeable difference in performance. The voltage ratings should be *at least* twice the H.T. voltage on the anode of the P.A. stage.

Coils

Air-cored coils may be used for these filters. These can be supplied to special order by various firms, but it is also possible to make them at home. The winding data to be found in various publications is usually for 36 or 38 S.W.G., which may not be heavy enough to pass the required P.A. anode current, and the resistance—and therefore the losses—of the coils, is likely to be high. Some coil winding data for 32 S.W.G. is given at the end of this article.

It will be seen from Fig. 1 that the coil winding is at a high voltage above earth so that the coils should

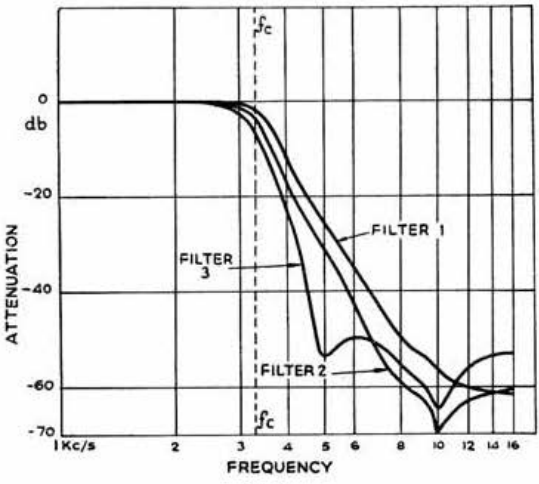


Fig. 5.
Performance curves of the three practical filters shown in Fig. 6.
Filter 1—Two constant-k sections.
Filter 2—Two m-derived sections, f_m = 10 kc/s.
Filter 3—m-derived section, f_m = 10 kc/s. in tandem with an m-derived section, f_m = 5 kc/s.

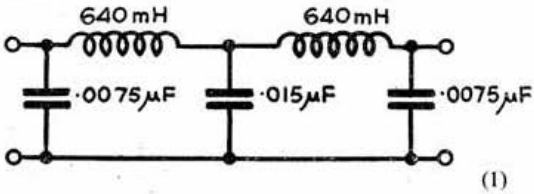
be insulated to stand at least twice the P.A. H.T. voltage between the winding and any earthed metal bracket or mounting bolt. When more than one filter section is used, the coils should be mounted at right angles to each other, or screened, to prevent mutual coupling. Suitable precautions should also be taken to avoid hum pick-up on the coils, especially in high impedance filters.

Results

The measured performance of some filters is shown in Fig. 5. The cut-off frequency was 3·3 kc/s. in all cases.

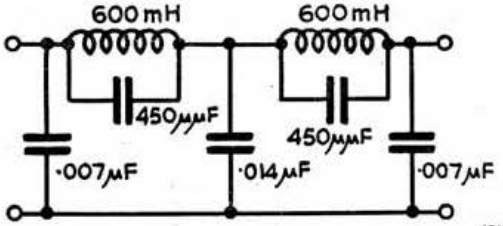
The circuits and component values of these three filters are shown in Fig. 6. These are for R = 6,600 ohms, a suitable value for a 150 watt P.A. stage drawing 150 mA. at 1,000 V.

Filter No. 1 was two constant-k sections in tandem. This would be quite an effective filter, but the attenuation around 5 kc/s. could with advantage be greater.



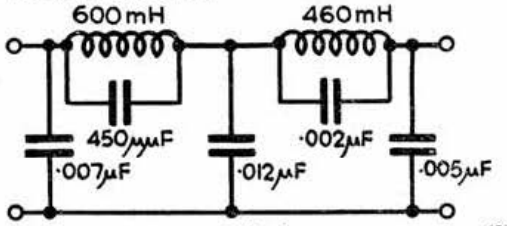
(1)

Filter No. 2 was two m-derived sections, with f_m = 10 kc/s. This filter would be somewhat better than No. 1, although the attenuation above 14 kc/s. is less.



(2)

Filter No. 3 consisted of two m-derived sections, the first with f_m = 10 kc/s., and the second with f_m = 5 kc/s. This filter has a better performance, between 3·3 and 7 kc/s., than either of the others and is recommended.



(3)

Fig. 6.
Circuits and component values of three practical filters.

A single section will give a worth-while amount of splatter suppression where a clipper is not used, but two sections should always be used after a clipper. With a properly adjusted clipper and an effective filter, the use of too much audio gain in the speech amplifier cannot cause splatter, but it will reduce the intelligibility of the speech. In extreme cases the speech will sound very woolly and indistinct. This is not the fault of the filter or the clipper, but is due to incorrect adjustment of operating conditions.

Coil Winding Data

The information given in Table II is for coils wound on a former of the basic dimensions shown in Fig. 7. The outside diameter of the coil cheeks given in the table allows a margin for variation in the amount of space taken up by the winding, or slight variation in wire diameter, which often occurs between different batches of wire of the same nominal gauge. The inductance, as well as the winding space, will vary according to the tension put on the wire during the winding operation, as well as the evenness of winding.

TABLE II

Approximate Inductance mH.	No. of turns	Outside diameter of Bobbin
		Inches
80	2,030	2½
100	2,240	2½
120	2,400	2½
150	2,620	2½
180	2,800	3
200	2,930	3
250	3,200	3
300	3,450	3
350	3,660	3½
400	3,850	3½
450	4,030	3½
500	4,200	3½
600	4,570	3½
700	4,840	3½
800	5,160	4
900	5,480	4
1,000	5,800	4

Coil winding data for use with coils wound on bobbins of the dimensions shown in Fig. 7. Intermediate inductance values can be obtained by simple interpolation.

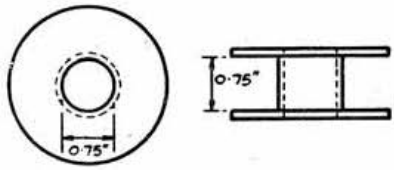


Fig. 7.
Basic dimensions of bobbin for coil winding.

The gauge of wire to be used is 32 S.W.G. enamelled, which will carry 200 mA. without overheating. The largest coil in the table, of 1 H., will take 1 lb. of wire, and the resistance will be about 260 ohms. The coils should be random wound, *i.e.* as evenly as possible without attempting to wind in layers.

Postmaster-General Visits Amateur Radio Exhibition

THE Postmaster-General (the Rt. Hon. Ness Edwards, M.P.) visited the R.S.G.B. Amateur Radio Exhibition during the afternoon of Thursday, November 23.

Mr. Ness Edwards was greatly impressed by the high standard of workmanship achieved by those members who contributed apparatus for display on the Society's stand. He also showed keen interest in the demonstration of Amateur Television equipment arranged by Mr. I. Howard, G2DUS.

The Exhibition was opened on November 22 by Mr. Hugh Pocock, M.I.E.E., Managing Editor of *Wireless World*, in the presence of a large and distinguished company.

A full account of the Exhibition will appear next month.

By M. RODWELL (G3DRG)* and R. B. WILLIAMSON (G5RW)*

A LOW NOISE CONVERTER covering 430 to 440 Mc/s.

RECENTLY, in conjunction with G3APY (Sutton-in-Ashfield), who is 31 miles from G3DRG (near Lincoln), a number of tests were carried out on the 420 Mc/s. band using a slightly modified ASB8 surplus receiver. Twenty-five-watt self-excited transmissions from G3APY were received on the ASB8 at S9 although 5-watt crystal-controlled transmissions were received at only S2 and S3. Similarly G3APY received 9-watt S.E. transmissions from G3DRG at S9 on a modified P58 receiver but at only S3 on the ASB8. These results clearly suggested that the ASB8 required a complete rebuild in order to improve both its stability and its sensitivity. The receiver was therefore stripped of the coaxial line R.F. stage (into which the R.F. "lighthouse" valve fits) and the mixer concentric line. These components were then used as the basis of the converter described in this article.

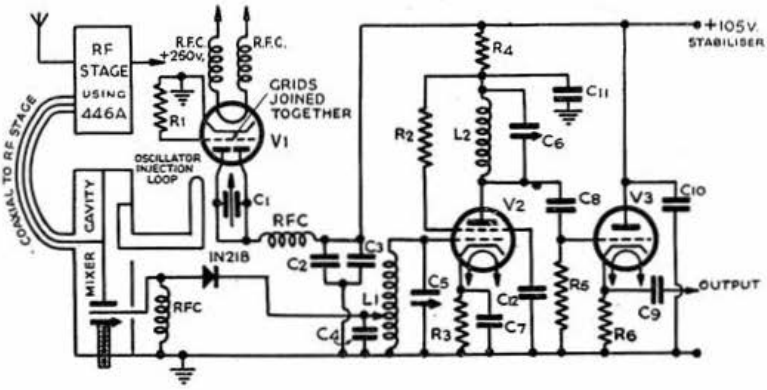


Fig. 1.
Circuit of Low-noise Converter. The R.F. Stage and Mixer Cavity are taken from an ASB8 Receiver.

C1	5μμF. split stator
C2	.0001 μF.
C3	32 μF.
C4	20 μμF.
C5, C6	30 μμF.
C7, C10, C11, C12	.001 F.
C8, C9	.0005 μF.
L1, L2	To resonate at approx. 8 Mc/s. 24 turns 26 S.W.G. D.C.C. L1 tapped at 6 turns from earthy end.
R.F.C.	All R.F. chokes 12 turns 18 S.W.G. enamelled, self-supporting ¼in. internal dia.
R1	7,000 ohms.
R2	100,000 ohms.
R3	250 ohms.
R4	5,000 ohms.
R5	500,000 ohms.
R6	5,000 ohms.
V1	6J6
V2	6AK5
V3	6C4

Circuit Details

The converter consists of an earthed-grid R.F. stage, a resonant mixer cavity with an IN21B crystal diode mixer, a 6J6 push-pull oscillator used on its fundamental frequency, a 6AK5 first I.F. stage tuned to between 8 and 9 Mc/s., and a 6C4 cathode follower stage. In the circuit diagram (Fig. 1) the R.F. stage is depicted in block form since it is a complete assembly taken from the ASB8. This stage is link coupled to the mixer cavity, into which the output from the 6J6 oscillator is also injected. It might appear that the use of an intermediate frequency only some 8 Mc/s. from the signal frequency would result in the blocking of the R.F. stage by the local oscillator. In practice this is not so and, due to the excellent screening of the "lighthouse" R.F. amplifier, no damping of this stage occurs. Output from the 6C4 cathode follower stage is connected by coaxial cable to the main I.F. and audio section: a BC455 is particularly convenient for this purpose, but almost any communications receiver could be employed.

Modification of the R.F. Stage

The first thing to be done is to remove the coaxial line R.F. stage and the mixer cavity from the ASB8. The mixer cavity should be unsoldered carefully from its supporting platform.

It is not proposed to describe in detail the modifications made to the coaxial line assembly as there is more than one way in which it may be done and many owners of ASB8 receivers will already have made suitable modifications to lower the frequency coverage to tune to around 430 Mc/s. The modifications carried out in this case were suggested by G3APY, and consisted of dismantling the R.F. stage to allow the anode and grid-cathode lines to be capacity loaded with brass sleeves. The anode sleeve which is fitted around the anode cap of the lighthouse tube is ¼ in. long, ⅛ in. wall thickness, and of internal diameter such that it is a fairly tight fit around the cap. The cathode sleeve is 1½ in. long, ⅛ in. wall thickness and approximately 8/10 in. internal diameter, and should fit tightly over the grid cathode line. The 680-ohm resistance connected at the end of the

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output loop should be removed. In tuning the R.F. stage two tuning positions will be found to give an increase in background noise. The correct one is with the tuning knob turned further in, when the stage will tune to align with the oscillator working on the lower side of the signal frequency. The mixer stage resonates half a turn out from the position when the knob is screwed fully in. The mixer tuning knob must be set correctly before tuning of the R.F. stage can be heard as an increase in noise. The knurled disc

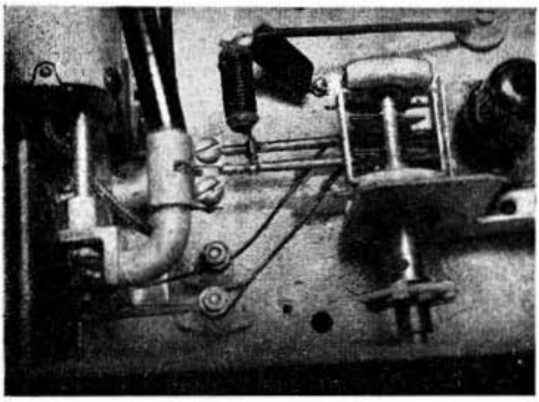


Fig. 2.
Close-up view of the oscillator section. The mixer cavity is below the tuning spindles of the R.F. assembly.

just below the centre of the R.F. assembly allows the aerial input coupling to be adjusted and it should be set for minimum noise without loss of signal.

The Mixer Cavity

Modification to the mixer cavity consists of drilling a small hole half way down the length, on the top and in line with the slot. Fed through the slot and soldered to this hole is a piece of wire, which should be insulated where it runs inside and emerges from the cavity, of sufficient length to form a loop which is inductively coupled to the oscillator lines; the other end of the wire being soldered to the outer casing of the mixer cavity. The total length of this piece of wire is rather less than one foot and makes a hairpin loop of about five inches in length. Adjacent to the mixer cavity, on the oscillator side, are two small *Eddystone* stand-off insulators which hold the loop near the mixer cavity. The closed end of the loop is supported on a polystyrene block under the oscillator parallel bars. The wire may be fixed to the polystyrene by moistening the block with trichlorethylene until tacky, placing the wire into position and allowing the polystyrene to set. The loop can be seen quite clearly in Fig. 2.

Oscillator

The oscillator requires some care in construction if best results are to be obtained. A split-stator condenser of 180-degree rotation, such as are readily available in the surplus market, is used. Each section of the condenser comprises one stator and one rotor plate and has a maximum capacity of about 5 $\mu\mu$F. A copper platform, large enough to hold a B7G valve base for the 6J6 oscillator valve, is soldered to the right-hand side supporting bar of the condenser so that the lower ends of the anode pin-sockets come about one inch away from the bottom of the condenser. Soldered to each stator plate at the points where they are closest together are two parallel bars of 12 gauge silver-plated copper wire. Each bar is about 3 in. long and is connected directly to an anode pin-socket of the valve base; the other ends are left free with a shorting bar across them very near the ends. This bar is about $2\frac{1}{2}$ in. from the anode sockets of the valve base. Once the oscillator frequency has been adjusted correctly by varying the bar, the connections are soldered. These details are shown in Fig. 2. All earth returns for the 6J6 stage are made to the copper platform.

The split-stator condenser with its attached platform for the 6J6 is mounted by means of three screws on the front of the condenser to a small, but rigid, aluminium angle plate which is itself bolted to the chassis. The aluminium plate is placed a sufficient distance from the front panel to allow the condenser shaft to be connected *via* a flexible coupler to a good slow-motion dial. A standard *Eddystone* chassis is used. The general layout and position of the components on the chassis may be judged from the photographs and are not critical.

The IN21 crystal diode is soldered directly in circuit on the left side of the mixer cavity (viewed from the front). The IN21 should be soldered as quickly and with as little heating as possible. The wire from the base of the diode goes to a feed-through insulator on the extreme left of the front of the chassis just behind the front panel. The 6AK5 I.F. amplifier is mounted on the chassis and is of conventional design with coils wound on *Alladin* formers with dust-iron slugs.

The grid input coil has 24 turns of 26 S.W.G. D.C.C. copper wire, close-wound and tapped six turns from the "earthy" end. The wire may be held in position with shellac or plastic cement. The anode coil is constructed similarly but has no tap. A small shield of copper is arranged to screen the input from the output circuit of the I.F. amplifier as shown in the under chassis view. The output from the I.F. amplifier is fed to the 6C4 cathode follower and thence to a coaxial socket on the rear of the chassis.

As there is plenty of room available, the power supply, which is of conventional design, is also mounted on the chassis. A VR105 voltage regulator stabilises the H.T. to the oscillator, I.F. amplifier and cathode follower valves. The lighthouse tube alone receives the full H.T. of some 250 volts. A send-receive switch is placed on the front panel. The switch, which is of the double-pole type, breaks the H.T. supply to the R.F. stage, I.F. amplifier and cathode follower

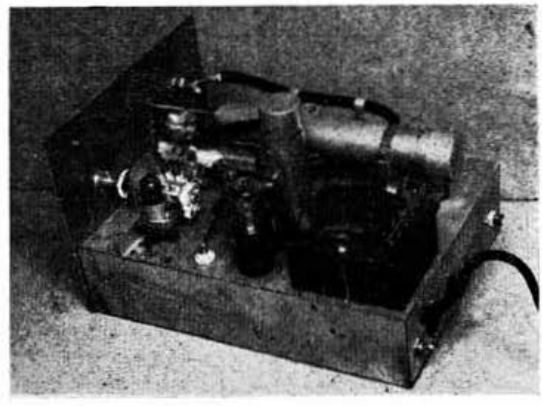


Fig. 3.
General view of convertor, showing layout of main components.

when sending. In the interests of stability the oscillator is left running the whole time the receiver is on. At the back of the chassis is a mains on-off switch, valve base sockets which are used as points for supply voltages for a noise generator and tone source, a fuse, and the *Belling Lee* coaxial output socket. The front panel is of thick aluminium, machine turned to give an elegant finish and to set off the enamelled labels of the controls which were obtained from the original ASB8 receiver.

Results

It should be stated that this receiver as described is only suitable for the reception of crystal-controlled signals. For self-excited transmissions a much wider pass-band would be required for all I.F. stages. This has not been attempted as it is thought that all worthwhile development on this band will be made by means of crystal-controlled transmissions. Tone modulated signals from a self-excited transmitter may be read with some distortion by detuning to a side band, but self-excited telephony transmissions are in the main unreadable. The converter was

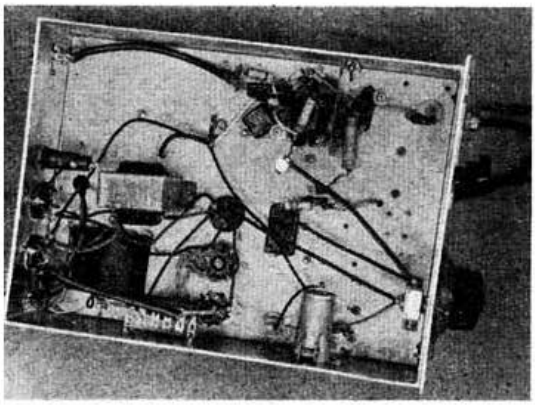


Fig. 4.
Under chassis view of convertor.

first tested out at the same location and with the same aerial as was previously used with the ASB8. G3APY's 25-watt self-excited transmission was now S9 plus on M.C.W. but unreadable on telephony. His 5-watt crystal-controlled telephony was S9 and his C.W. note was T8. Used in Ilkeston to receive crystal-controlled telephony and C.W. transmissions from G3ENS at Loughborough (17½ miles) and C.W. from G3APY (10 miles) the converter has given consistent results over a period of several months with reported reception S8 to S9 on all occasions.

The converter represents a very great improvement on the old ASB8 due mainly to the use of the crystal mixer, low noise I.F. amplifier and the coaxial R.F. stage. The noise factor was measured using a noise generator diode. An arbitrary noise factor reading of 4.5 db. was obtained. This result may be open to some doubt as the efficiency of the noise diode was not known but compares with the reading obtained for the ASB8 of 12 db. using the same generator.

Appendix

The converter described herein was used at Alport Height, Derbyshire (1,000 feet above sea level) during the R.S.G.B. 420 Mc/s. Field Day Tests on August 20. Two stations were heard besides G3APY, who shared the site. G3BUR/P (Walton Hill, Worcs.), using crystal control, was S9 on telephony and S9 T9 on C.W. G8QY/P (Coventry), using a self-excited oscillator, was R5 S9 on M.C.W., but only odd words of his telephony could be read. Conditions were unfavourable in that it was raining heavily throughout the period of the tests. On returning to Ilkeston the same day G3BUR was again heard at only slightly less strength than at Alport. The converter was operated from a 6-volt vibrator pack and fed into a BC455 receiver which had been modified to use 6-volt valves, the line-up being 6AC7, 6K8, 6SK7, 6SK7, 6SQ7, and 6J5 output to headphones.

Natural Direction Finding

RADIO navigation experts, despite the enormous advances made in recent years, have often been heard to express envy of the powers of the "homing" pigeon. Believing that technical progress can spring from the careful observation and limitation of natural phenomena, they have repeatedly discussed the possibility of developing a navigational system founded on the remarkable properties of such birds as the Golden Plovers which regularly fly the 3,000 miles from Alaska to Hawaii across the Pacific Ocean.

Many ideas have been put forward in the past to account for this strange ability of birds to migrate or return home over unfamiliar territory, but few have withstood the test of practical experiments. Writing in the *Journal of Applied Physics* (December, 1947), Dr. H. L. Yeagley of the Pennsylvania State College expounds a new theory—formulated in 1942—and also gives an account of a large number of tests which have yielded valuable data in support of his views. Although so far only pigeons have been used, it is intended to extend the range of the tests to include migratory wild birds.

Based on the known effects of motion through the vertical components of the earth's magnetic field and the effort necessary to overcome the forces exerted on a moving object by the earth's rotation (part of the Coriolis effect), the theory implies that the bird is able to correlate these two influences—which together form a navigation grid-work—with its observed speed over the ground in order to fly towards a point, where the effects will be the same as those to which it has become accustomed during training flights near the home loft. The practical experiments have been largely directed towards proving that because in certain districts more than one point can possess similar combinations of the magnetic field and rotational forces, then, in such cases, the bird would be as likely to fly towards the "spurious" location as to succeed in returning to its home loft.

The theory suggests the existence of an organ or organs sensitive to extremely small electrical variations. For example, the effect of motion through the magnetic field is shown to approximate to a .13 microvolt change for 70 miles of flight. But despite the minute figures involved, the experiments do suggest that a bird moving across a magnetic field experiences an awareness to the effect produced. Incidentally, Dr. Yeagley takes into account the reports that the "homing" powers of pigeons have been affected when released near powerful radio transmitters.

ALL-BAND GRID-DIP OSCILLATOR

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

ALTHOUGH several articles on the grid-dip oscillator have already been published(1) in the BULLETIN, there are still many members who have not yet built one of these versatile test instruments which have a thousand-and-one uses for constructors of either transmitting or receiving equipment. In this article it is not proposed to cover theoretical aspects but to give concise details of the construction of an efficient 1.5-220 Mc/s. instrument which can be built largely from readily available "surplus" or "junk box" material.

From the accompanying photographs and sketches it can be seen that the oscillator section is quite small, and built completely separate from the power supply. Thus it can be employed as a probe when testing coils, etc. without the necessity of employing a search coil which might introduce complications in the V.H.F. ranges. For this purpose the oscillator section is fitted with a wooden handle, and the plug-in coils are mounted clear of the oscillator assembly. The oscillator is connected to the power supply *via* a 5-core flexible cable and a miniature *Jones* plug.

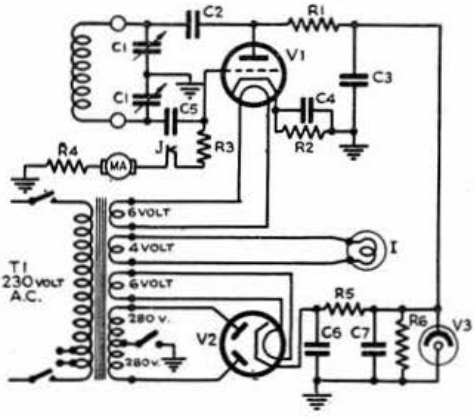


Fig. 1.
Circuit diagram of all-band grid-dip oscillator and associated power supply.

C1	100+100$\mu\mu$F. twin-gang variable.
C2, 3, 4, 5	.0003 μF.
C6 and 7	16+16 μF. or 8+16 μF.
R1, 3	10,000 ohms., ½-watt.
R2	200 ohms.
R4	30,000 ohms., ½-watt.
R5	10,000 ohms., 10-watt.
R6	47,000 ohms., ½-watt.
I	Panel indicator lamp.
J	Headphones jack.

A small mains transformer provides 6.3 volts for the heater of the 955 and the few milliamperes of H.T. current required. In the original model an extra 4V. winding was utilised for an indicator lamp. Resistance and capacity smoothing eliminates the need for an L.F. choke. To improve frequency stability a small neon stabiliser is used with advantage; almost any standard type will prove satisfactory. The 0-500 microammeter shown is of the "plug in" pattern, for convenience in mounting, but a flush mounting type of instrument would be equally satisfactory.

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

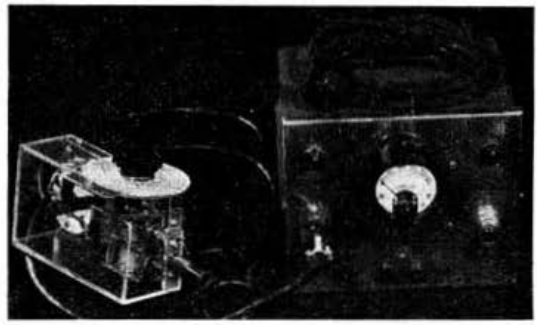


Fig. 2
General view of all-band grid-dip oscillator with associated power supply.

Coils and Oscillator Assembly

Seven plug-in coils give a complete coverage from 1.5 to 220 Mc/s. These are mounted on 2in. by ¼in. strips of polystyrene, and are pressed into two sockets sweated directly on to the twin gang tuning condenser. In order to keep the unit free of dust a perspex cover is fitted. The long sides are first cut and screwed to the wooden base of the oscillator; the back and top sections are then cemented into position with perspex cement or chloroform. The wooden handle is drilled through the centre to take the feed cable; an old soldering iron handle is ideal for this purpose.

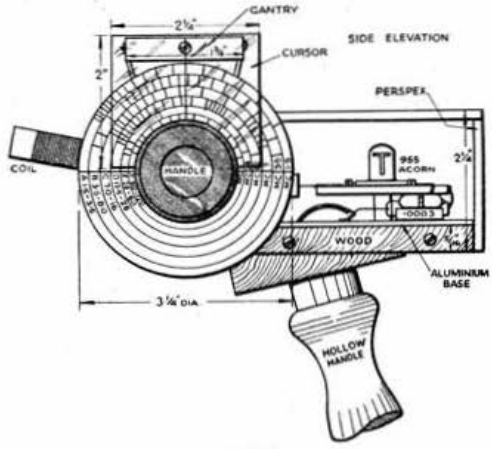


Fig. 3
Sketch showing lay-out of the grid-dip oscillator.

A 3¼in. diameter flat dial with white paper glued to the face provides the directly-calibrated scale; this again being covered by clear perspex for protection. A small metal gantry, suitably adjusted, is fixed to the twin gang condenser to carry the perspex cursor. As an additional refinement a small magnifying glass can be clipped on to the

Coil Data

	Range	Former	Wire	Winding
A	1.5-3.5 Mc/s.	1in. dia.	36 D.S.C.	1⅝in. closewound
B	3.5-8 Mc/s.	¾in. dia.	30 S.S.E.	1⅛in. closewound
C	7.0-16 Mc/s.	½in. dia.	30 S.S.E.	9/16in. closewound
D	12.5-28 Mc/s.	½in. dia.	22 E.	21½ turns closewound
E	28.0-65 Mc/s.	5/16in. dia.	20 E.	13 turns spaced 1 dia. of wire
F	56.0-125 Mc/s.	5/16in. dia.	20 E.	4½ turns spaced ⅛in.
G	110-220 Mc/s.	1½in. of copper tube bent in a loop of ⅜in. diameter.		

Note: D.S.C. double silk covered; S.S.E. single silk enamelled; E. enamelled.

gantry as shown, enabling more accurate readings to be obtained.

Calibration and Performance

Calibration of the lower frequency bands (up to 28 Mc/s.) was carried out with the aid of a 100 kc/s. crystal calibrator and a BC221 frequency meter. A type 758A absorption wavemeter provided accurate check points up to 220 Mc/s. Members who do not have access to such instruments will find that reasonably accurate calibration can be carried out by beating the oscillator against a calibrated receiver: with careful adjustment the note should be quite stable.

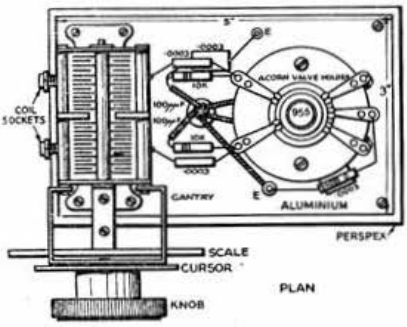


Fig. 4
Plan view of oscillator section.

For a detailed description of the uses of this handy instrument, reference should be made to the articles previously mentioned(1). It should be noted, however, that the unit can be used as a normal absorption wavemeter and also as a 'phone monitor. A sectional wooden box with hinged lid and handle, in which the oscillator, power pack and complete set of coils are stored, completes the unit, which, incidentally, was constructed at a cost of under £2.

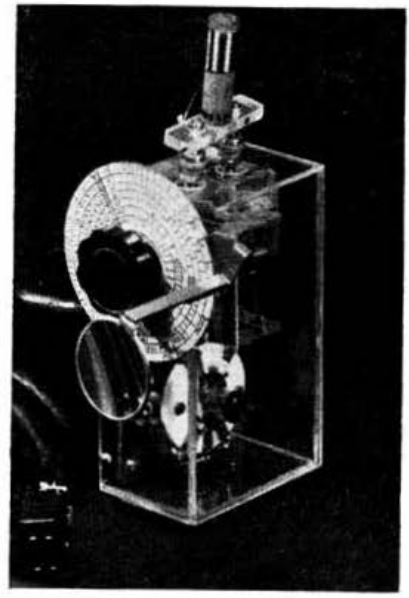


Fig. 5
Close-up view of oscillator.

Acknowledgement

The author wishes to thank Mr. J. W. Mathews (G6LL) for his helpful suggestions and assistance in the design of this instrument.

References

(1)Anderson, G.P., "A Grid-dip Oscillator," R.S.G.B. BULLETIN, September, 1948, p. 63.

Sharp, C. A., "A Grid-dip Meter and Monitor," R.S.G.B. BULLETIN, June, 1950, p. 410.

Ten Minute Quiz

This month's posers for the radio enthusiast.

1. *Which is the odd man out?*
   802; 807; 813; 832; 862.
2. *What is the accepted frequency spacing between medium wave broadcast stations?*
3. *What are the laws of magnetism?*
4. *What is the 1st harmonic of 7,050 kc/s.?*
5. *What special limitation is placed on an amateur station situated within half a mile of the boundary of any aerodrome?*
6. *Complete the following sentence:*
   In an A.C. circuit, the voltage across a coil . . . the current.
7. *What is the approximate wavelength of light waves?*
8. *Are newly licensed amateurs permitted to use telephony?*
9. *How many inches in a metre?*
10. *What are the dates of the Festival of Britain R.S.G.B. National Convention?*

Now turn to page 179 and see whether you have beaten the Question Master.—H.E.B.

By ROGER V. THORNE (G3CHN)*

SPRING CLEANING THE C.W. END

In this article G3CHN, who as a sea-going Radio Officer has spent much time listening to British amateurs from various parts of the world, offers a few words of advice to all who aspire to become good C.W. operators.

OPERATING skill, it has been said, cannot be learnt from a book, but comes only with practice. The newly-licensed amateur can, therefore, be readily excused if in the first few months his operating technique lacks the polish which readily distinguishes the proficient C.W. operator. But, unfortunately, due perhaps to a lack of knowledge of the standards which form the basic requirements of good operating, many amateurs never become really "at home" on the key: as soon as their licences permit, Morse is hastily discarded in favour of speech on which, it is mistakenly supposed, poor procedure will pass unnoticed.

Newcomers apart, there can be little excuse for many of the "crimes" against good operating practice which can be heard almost every time the B.F.O. is switched on. That notable example—the CQ call—was never intended to be repeated practically *ad infinitum*. Yet despite the many reminders published every year, just listen on any band for a few minutes: if you fail to hear at least one long drawn out call in which 20 or more CQs are followed by a spluttering, almost indecipherable, call-sign or two, then you will indeed have struck a fortunate patch.

Correct CQ Calls

The commercial rule is "three times three" *e.g. CQ CQ CQ DE GBR GBR GBR.* Due to the length of amateur call-signs compared with those of commercial stations this rule is not entirely suitable for amateurs: a happy medium is to send *four* CQs followed by *two* call-signs *e.g. CQ CQ CQ CQ DE G3CHN G3CHN.* This represents a well-balanced combination which can be warmly recommended. Secondly, always limit the number of times this combination is repeated. On a crowded band where semi-single-channel working is in common use, the total length of a CQ call can be drastically reduced. Two short calls with a pause to listen between them are much better than one long call: the station who wishes to contact you will be grateful for not having to wait a long time; there is less chance of having half-a-dozen stations reply at once; and of having a high-power station settle on your frequency. The actual length of an amateur CQ call must depend largely upon band-activity. For example a call that would not seem unreasonable on 420 Mc/s. would almost certainly be intolerable on 7 Mc/s. The guiding principle should always be to keep the call as short as possible, for the particular band in use.

Normally a CQ call should be terminated with K. If it is intended to listen for replies elsewhere than on frequencies close to the calling frequency, this fact should be indicated by means of the appropriate abbreviation: *e.g.* CQ*DE G3CHN QLM K* indicates that it is intended to search from the low frequency end of the band towards the middle. A replying station towards the L.F. band edge would immediately know that only a very short call would be necessary. The other commonly used signals, the meanings of which are self-evident, are QML, QHM, and QMH.

**M/V "African Prince," c/o Prince Line Ltd., 56 Leadenhall Street, London, E.C.4.*

GOOD OPERATING

- Courtesy is the hallmark of a good operator.
- Give genuine and helpful reports.
- Never interrupt a contact already in progress.
- Reduce power whenever possible, especially when tuning up.
- Make all calls as short as possible giving your own call-sign at frequent intervals.
- Do not reply to Directional CQ Calls or calls not addressed to your station.
- Make sure your transmissions do not occupy more frequency space than is absolutely necessary.

Telegraphy Stations

- Use correct procedure signals.
- Never send faster than you think the other operator can copy.
- Avoid jerky, uneven sending.

Telephony Stations

- Use R...S... signal reporting; not QSA...R....
- Avoid unnecessary Radiese; standard English will make your meaning clearer.
- Remember that the man-in-the-street will judge Amateur Radio by the quality of your signals and what he hears you talking about.

During the Contact

After contact has been established, it will be sufficient under normal circumstances to send each call-sign once only at the beginning and end of each transmission. For the benefit of newcomers it should be explained that customary procedure on establishing contact, is to thank briefly the station for replying; give him an RST report on his signals; followed immediately by an indication of your location. On subsequent transmissions details of equipment and other information can be given, but do not attempt to "ragchew" on the first "over" before signal reports have been exchanged. Always give accurate and helpful signal reports, referring frequently to the listed meanings of the RST code. The importance of accurate reports cannot be stressed too heavily: incorrect and unduly flattering reports are not only valueless but may often mislead a station into supposing that his tone, for example, is much better than the awful truth—with the result that he will make no attempt to correctly adjust his transmitter even when this is urgently required.

Transmission should be kept short, without an excess of break signs (BT) and the former exclamation mark (MIM) which as a matter of fact no longer exists. How often does one hear a long string of break signs, denoting the painful efforts of a poor operator to think of something to say: if you have no information of interest do not attempt to spin out the contact by making inane remarks or long drawn out farewells. Generally speaking, words or phrases should never be sent double except when specifically requested to do so (QSZ), the only exception being the RST report, location and particularly unusual words, but even then, twice is quite enough unless signals are extremely weak.

If more than one station answered your initial call, on completion of the contact send CQ DE G3CHN QRZ ? K to see if anyone is still waiting. This procedure is much less tiring than calling CQ again, as well as being more polite to the original callers. When it is desired to close down, the signal CL should be sent immediately after the $\overline{SK}$ which concluded the last contact. This will indicate to other stations that no further listening will take place; that the station is, in effect, closed.

The RST Code

Readability

1. Unreadable.
2. Barely readable, occasional words distinguishable.
3. Readable with considerable difficulty.
4. Readable with practically no difficulty.
5. Perfectly readable.

Signal Strength

1. Faint, signals barely perceptible.
2. Very weak signals.
3. Weak signals.
4. Fair signals.
5. Fairly good signals.
6. Good signals.
7. Moderately strong signals.
8. Strong signals.
9. Extremely strong signals.

Tone

1. Extremely rough hissing note.
2. Very rough A.C. note, no trace of musicality.
3. Rough, low-pitched A.C. note, slightly musical.
4. Rather rough A.C. note, moderately musical.
5. Musically modulated note.
6. Modulated note, slight trace of whistle.
7. Near D.C. note, smooth ripple.
8. Good D.C. note, just a trace of ripple.
9. Purest D.C. note.

(If the note appears to be crystal-controlled add a x after the appropriate number. Where note is " chirpy " add c.)

Hints and Tips

Finally a few generalities, the close observance of which will soon indicate a high standard of operating. Always listen on your own frequency before commencing transmissions to make sure that the frequency is fairly clear of other stations; at the same time check the calibration of your receiver as well as the frequency of the transmitter. Make your operating position comfortable—and use a good key. Do not send CQ calls at a high speed; 15 w.p.m. is quite sufficient; a fast CQ call is really a form of " snobbishness " apart from being a contravention of operating regulations. Only speed up when you are certain that the other station is able to copy you comfortably. If break-in working is in use—and the system is ideal for amateur operation—be sure to send the call-signs of both stations every two or three minutes. If the frequencies of the two stations are not the same, listen on your own frequency periodically. Abbreviations of language should be simple enough to be easily understood—particularly when working overseas stations, for example TTFN is unlikely to mean much to a Frenchman. Try to become fully conversant with the Q code and other standard abbreviations. Unlimited patience is an asset to any operator and should be assiduously cultivated. Above all, pay strict attention to the *quality* of your sending. Correctly sent Morse is a pleasure to listen to and can be copied through severe interference, when a " poor fist " would almost certainly be unreadable!

Mobile Operation

THE growing interest in mobile operation overseas has led to some dissatisfaction with the restrictions placed on similar activities in the United Kingdom. The present position is that, while a transmitter can be installed and operated from a car under the general conditions governing portable licences, transmissions can only be made from a stationary vehicle within the prescribed 10-mile limit. The G.P.O.—it should, however, be said—does normally permit the " operational area " to be changed at short notice. Despite these restrictions, the number of British amateurs equipped for mobile operation is increasing rapidly.

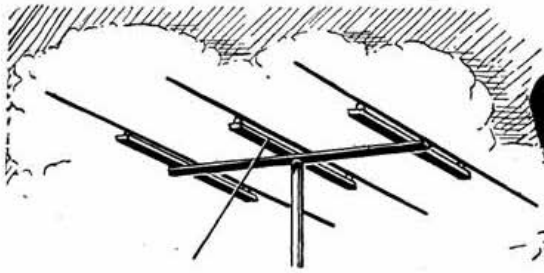
In the United States and Canada mobile operation has become one of the major interests of the amateur community. Numerous clubs have sprung up devoted exclusively to the mobile enthusiast. So far, operation is mainly in the 3.5 and 28 Mc/s. telephony bands, and recently the A.R.R.L. requested its members to reserve voluntarily the section 29600-29700 kc/s. for mobile stations. On 3.5 Mc/s. contacts up to 400 miles from travelling vehicles are reported with 15 to 20-watt transmitters feeding centre- and end-loaded whip aerials. On 28 Mc/s. reliable ranges are much shorter, but under good conditions trans-continental and DX contacts take place. A tritet crystal oscillator and power amplifier modulated with a single stage of push-pull audio amplification and a high-output carbon microphone seem to be standard practice, but high power equipment up to 250 watts is not rare. The design of compact mobile transmitters and whip aerials offers a valuable field for experimental work.

Just how interesting mobile operation can be was vividly described in a recent issue of the Canadian newspaper *Daily Colonist*, a copy of which has been forwarded to Headquarters by G3DXC. It recounts a few of the adventures of VE7EB who has a 100-watt transmitter installed in the luggage-boot of his car. With this equipment he has contacted hundreds of stations all over North America. One day, for example, a Saskatchewan amateur with whom he was in contact mentioned that his mother and father lived close by where VE7EB was driving. Shortly afterwards the parents were much surprised when VE7EB walked in and said their son would like to speak to them. The mobile transmitter was soon being used for a family reunion.

But there is a much more serious aspect of mobile operation. Such facilities have already proved their value for emergency communications. Unlike the vast majority of fixed amateur stations, mobile equipment does not depend upon public power supplies. Unlike the majority of police and commercial mobile stations, amateur equipment is suitable for medium distance—as well as purely local—communication. American Civil Defence plans have always recognised the value of radio communication provided by amateur operators. . . . Who would dare to say that our own authorities can afford to ignore that example?

WORKSHOP PRACTICE

Due to pressure on space the " Workshop Practice " article contributed by " Donex " has, unavoidably, been held over until next month.



AROUND THE V.H.F.'s

Another New 3 cm. World Record

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

LESS than a month after raising the world record for amateur communication on 3 cm. to 12 miles, G3APY succeeded, on October 22, in more than doubling that figure by contacting G3ENS over a distance of 27 miles. G3APY/P was located at Allford Height (1,034 ft. a.s.l.) near Ambergate, Derbyshire, while G3ENS/P operated on Broombriggs Hill (730 ft. a.s.l.) near Loughborough, Leics. As on the previous tests with G8UZ, 23 cm. gear was employed to make preliminary contact, and the 3 cm. units, provided with spirit levels and compasses, were then lined up and 'phone signals exchanged at a strength of S9. All the apparatus was constructed by 3APY, but nevertheless both operators are to be congratulated on yet another notable British achievement.

70 Centimetres

Undoubtedly the outstanding feat of October so far as operators interested in 70 cm. are concerned was the reception of signals from G5BY (Bolt Tail, S. Devon) by G2CIW (Romford, Essex) on October 20, over a distance of approximately 200 miles. G5BY was heard on two occasions on 70 cm., and was worked cross-band on 2 metres. Signals were R5, the strength varying between S3 and S7. At the time a good path existed for 2-metre signals between the West Country and the London area.

The receiver in use at 2CIW consisted of a crystal mixer in a co-axial line circuit, a *Mullard* EF54 10 Mc/s. I.F. amplifier, and a tunable oscillator in the 142 Mc/s. region fed into a 6J6 push-pull tripler. The output of the transmitter was an 832 tripler, and the aerial an 8-element stack with wire mesh reflector. The best two-way contact so far made on this band by G2CIW is with G5TP (Stoke Row, Oxon), just over 50 miles away.

The Two Metre Band

There were a number of excellent openings during October and November, but none better than those experienced on four evenings in the third week of October. Conditions were excellent for north and south contacts on the 19th, with GW2ADZ rating a steady S8 on 'phone in S.E. England around 2130 G.M.T., followed by almost equally strong signals from F8GH (Beauvais) and F8OL (South Paris) during the next two hours. Very faint transmissions, with considerable fading, were heard from PA0PAX and ON4HN at about the same time, but it was obvious that the good conditions prevailing in this country and in France did not extend across the North Sea.

During the late evening of the next day, the west and south-west were favoured with the Isle of Wight, Hampshire, Somerset, Devon and Cornwall all represented. A further shift in good "paths" occurred on the 21st when only stations to the north and north-west were received at good strength. Few, if any, Continental signals were heard on either of these evenings.

* *32 Earls Road, Tunbridge Wells, Kent.*

V.H.F. Achievements

2 metres (144 Mc/s.)	W5VY—W8WXV	1,196 miles
	G2BMZ—DL4XS/3KE	520 miles
70 cm. (420 Mc/s.)	W6VIX/6—W6ZRN/6	261 miles
	W1PBB—W2QED / G5BY—G6LK	161 miles
23 cm. (1,215 Mc/s.)	G8DD/P—G3QC/P	75 miles
13 cm. (2,300 Mc/s.)	W6IFE/6—W6ET/6	150 miles
3 cm. (10,000 Mc/s.)	G3APY/P—G3ENS/P	27 miles

G5RO (Hastings) reported very favourable conditions for France on the 22nd with Parisian stations S9 on 'phone. He also heard, but failed to raise, F3LL, who is believed to be near the Franco-Spanish frontier on the Mediterranean coast. This French station was also heard calling G5UF, but it is not known if contact was established.

In the opinion of G3EHY (Banwell, Som.) there was more to be heard on the band in October than during summer peak conditions, with propagation excellent for all directions. High spots in his log include G8GL (Northallerton), 220 miles, on October 5 and G2FO (Stockton-on-Tees), 238 miles, on October 18. G2CPL (Lowestoft) at a distance of 220 miles was often up to S9 on 'phone during their daily sked.

New stations on two metres include G3GEN (Gloucester), G3GDR (Woking) and G3ENI in Oxfordshire. DL4XS recently replied to a CQ call from G4GR, but the latter apparently did not hear what was probably his best DX so far.

GW2ADZ (Llanymynech) and G4LU (Oswestry) could receive the French stations on October 19, but although both F8GH and F8OB were putting in signals varying from S5 to S7, repeated calls for more than two hours failed to bring them back. During this period 'ADZ heard faint signals from his first DL4 (extreme L.F. end of the band) but in his excitement missed the full call! 'ADZ would like to see early evening activity encouraged. The only station in the south-west heard consistently by him is G3EHY who frequently sounds like a "local." G5BY and 6WT have been heard, but apparently they do not often direct their beams northward.

G6LI (nr. Grimsby, Lincs.) has made many attempts to hear signals from Scandinavia during the published sked. times but despite what should be a favourable location no success has so far been achieved. To the west, the Lincolnshire Wolds appear to present a barrier generally impenetrable to two-metre signals, and no activity has been heard this season from the Birmingham, Bristol, Cardiff or Manchester areas, although GW2ADZ has contrived to break through on several occasions.

Quoting the statement in *Painless Predicting of 2-Metre Openings* from a recent issue of *QST* that

good openings follow the line of high pressure isobars, G6LI remarks that this accounts for the difficulty in contacting Belfast and Glasgow and why reception from the west coast of Great Britain in general is so erratic.

Between 1900 and 2100 G.M.T. on September 13, 6LI worked ON4BZ and heard DL3NQ. He heard the Belgian station again on October 20 and 21 at strengths up to S7. On the 21st a number of 200-mile contacts were made and DL3FM was heard working PA0 stations around 2100 G.M.T. Earlier, on October 17, a useful opening provided contacts with Somerset, the London area and Newcastle.

Two Metre 'Phone Transmissions

Much undermodulated 'phone has been heard by G3EHY from time to time, and he refers caustically to unintelligible "mudulation" on carriers as strong as S7. He advocates plenty of "top" for long distance working, but admits that the general level of 'phone transmissions on the band has improved somewhat of late. Similarly G6LI appeals for better "quality" in regard to subject matter, and deprecates the use of Christian names to the total exclusion of call-signs! In general his complaints are much on a par with those which may be levelled at the type of "natter" which is rapidly bringing Amateur Radio into disrespect among both technical and non-technical listeners. It is to be hoped that this will not become general on the V.H.F.s.

The case for low modulation levels, however, is well put by G3BMY (Birmingham) who, while agreeing that full and well balanced modulation is desirable for long distance working, points out that short-range transmission, at the highest possible quality and free of the interference inseparable from operation on the lower frequencies, is of interest to many. For such work modulation depth may be deliberately kept low, and the carrier power reduced to that required for adequate and noise-free reproduction over the range required. We agree that the 2-metre band should not be given over entirely to spectacular DX contacts and record breaking. The two megacycles available are surely adequate for some time to come to accommodate both the DX and the high fidelity enthusiasts. 'BMY's remarks are welcomed as expressing the views of those whose call-signs seldom appear in V.H.F. notes but who, nevertheless, use the band almost daily.

Aurora Effects

So far as is known the "aurora effect," which provided interesting contacts from time to time on the old 5-metre band, has never been reported in this country on 2 metres. It was somewhat surprising, therefore, to read in a recent *QST* of frequent auroral openings in the U.S.A. and to learn that the world record for 2-metre operation—1,200 miles—was set up under these conditions last June.

For those who did not operate on 5 metres it should be explained that under certain conditions signals may be reflected from an area of auroral activity. When this occurs all signals appear to come from a northerly direction irrespective of their true bearing, and with a complete change in their character. The purest D.C. note, after reflection, becomes so rough that only the lower figures in the "T" code are adequate for its description, and 'phone signals are often rendered completely unreadable by the modulation superimposed upon them.

Displays of the aurora are most common in the spring and autumn, but are not confined to these periods, and *QST* mentions many during last summer which affected both 50 and 144 Mc/s. W8WXV, who helped establish the 1,200-mile record, is naturally interested in the possibilities of auroral reflection. He has found that every opening on the 28 Mc/s. band appears to have a corresponding effect on 144 Mc/s. Good signs are extraordinarily good conditions on 28 Mc/s., or the band staying open later than usual, followed shortly afterwards by a roar developing on foreign broadcast stations in the 15 and 22 Mc/s. bands. 144 Mc/s. signals reflected during these periods are seldom strong, the best being no more than some 25 db. above noise; slow C.W. signals, therefore, stand the best chance of being read.

The most frequent openings are in the late afternoon or early morning followed by a re-occurrence between 2200 and 2300 G.M.T. Some openings last only a few minutes, others several hours with repetition over a period of two or three consecutive days or nights.

It would be most interesting to learn whether such reflection has, in fact, been noticed on the 2-metre band in this country or elsewhere in Europe. If not, why should the effect be confined to or more pronounced in America?

THE S.C.R. 522 TRANSMITTER

ONE of the most popular transmitters in use on 2 metres is the Government-surplus type S.C.R. 522. As this set was not designed for C.W. operation some amateurs have experienced difficulty in modifying it for this purpose. Mr. A. E. Livesey, G6LI, offers the following suggestions.

A chirpy note may be due to supplying the oscillator from the same power supply as the later stages; the remedy is obvious. Another source of trouble is the failure to short circuit the primary winding of the modulation transformer when operating on C.W. The back-E.M.F. from the transformer is sufficient, in some cases, to break-down the insulation of the wiring, and even if this does not occur the surge produced on the H.T. line is quite sufficient to cause a bad chirp.

If a really stable V.F.O. is available it is possible to drive the oscillator valve in the S.C.R. 522 at 8 Mc/s. Alternatively, a 14 Mc/s. doubler stage in an L.F. transmitter could be adjusted to operate on 16.5 Mc/s. with its output link-coupled by one turn of wire to the anode coil of the 522 oscillator stage; the valve, of course, being removed. The only ill-effect in the latter case is the slight shift in tuning calibration caused by the absence of the output capacity of the valve.

The transmitter will operate well with one 45-volt dry battery as bias for all stages, provided the original bias network is removed and the various grid circuits are brought out clear of connections to the chassis.

An annoying chirp was recently cured in a transmitter—not an S.C.R. 522—which employed an 829B in the P.A., with a separate H.T. supply. Keying was accomplished in one of the earlier stages. On connecting the P.A.—biased beyond cut-off—a most obnoxious change in note occurred when keying. The trouble was eventually traced to the system of supplying the screen of the 829B—a dropping resistor from the main H.T. At cut-off there was, naturally, no voltage drop across this resistor, and in consequence the screen was at anode potential. The alteration in valve characteristics which occurred when the grid drive was made and broken was the cause of the trouble, which was cured completely by supplying the screen through a potentiometer.—W.H.A.

THE MONTH ON THE AIR

*By A. O. MILNE (G2MI)**

Antics

WHO amongst us would wish to insert a notice in the BULLETIN stating: "I am a selfish, inconsiderate, unscrupulous amateur; out to further my own interests with no concern for the rights or feelings of my fellow enthusiasts"? No one, of course, yet every day there are some amateurs who—by their actions—clearly advertise such qualities to all who may be listening.

These thoughts have been prompted by the antics of one particular amateur who, this time, shall be nameless. Recently he was heard trying desperately to raise a station of what could be called the "short-duration rarity" species. First he called the station three times—and each time his signal increased in strength considerably. Now this may have been the result of re-tuning or it may have indicated a vast increase in power.

Thought for the Month

Our Happy Lid is filled with joy,
Gazing at his latest toy:
A "bug" with which the salesman said,
"You could do forty—on your head."

* * *

He rushes home, no time to spare
For any practice "off the air,"
Switches on, with mounting passion
To twang that key, zither fashion.

* * *

His dots trip out in bursts of ten
With long, long dashes now and then.
To Lids like him, it seems to me,
Let's use the signal QSD.

G3VA

With this type of operator it seems hardly necessary to add that he called quite regardless as to whether or not the DX station was in contact with someone else at the time. Not to be defeated, he tried letting his "bug" key rip with dots for a while—presumably hoping to clear the air a bit—and then finally called again, this time floating his V.F.O. backwards and forwards over about 30 kc/s. of the band! The only pleasant aspect of the whole unsavoury incident is that he failed to make the contact for which, apparently, he was quite prepared to sacrifice his good name as an amateur.

Let us decide once and for all that no DX is worth such a sacrifice. Mistakes are human. Most of us have probably at some time called a station in error when he was in QSO. But flagrant violation of all amateur operating ethics, such as the behaviour detailed above, cannot be too severely condemned.

Notes and News

Several interesting calls appear in this month's reports. EA0AB, mentioned by G6DN, is active on 14020 kc/s. and QSLs. His full address is A. Margallo, Ap. C., P.O. Box 195, Santa Isabel, Spanish Guinea. ZC1AL is again operating from Jordan, with an 813 feeding a four-wavelength aerial on 14 Mc/s. Although mostly heard on 7 and 14 Mc/s., he is willing to try organised tests on 3.5 Mc/s. QSLs for this station should be sent only *via* R.S.G.B.

Cards have now been received—and distributed—from MD9AA. The operator—of multiple call fame—hopes to go to Yemen again, so those who missed him last time may get another chance. G3ATU was one of the fortunates who raised VR1C. Full address of this station is VR1C, c/o Navy 824 F.P.O., c/o P.M., San Francisco. 'ATU has also worked VQ8CB on Chagos Islands, heard on 14100 kc/s. at RST569. Less authentic are his 3.5 Mc/s. "plums"—AR88 heard working HRO!

Ken Skellaway, A1180 of Newcastle, has heard DU1AL working F9BO and F9HE. Another rare call logged was EP3SS at 1550 on October 1, but we wonder if this was really EP3UU. BRS16857 of Yeovil reports increasing activity in the Canary Islands and mentions hearing HS1SS in Siam (also reported by BRS16304) on 14150 kc/s. using telephony.

SU1MR continues to be active on 14250 kc/s., presenting a pretty puzzle as to his authenticity. In an application for R.S.G.B. membership, the operator certainly gives a Cairo address. LK2U, according to BRS18017, is an experimental station in Norway; he also mentions a Balearic station worth looking for—EA6AM on 14075 kc/s. VP8AS, a new station in South Georgia, has been raised by G2FAY of Oldham.

It is beginning to look as though a strong case could be made for the classification of Sicily as a separate country. GM3GDX is one of the stations who have drawn attention to the new prefix "IT" now being used on that island. It is worth remembering that, within living memory, Italy and Sicily were separate kingdoms.

Good news for many. As the result of our efforts at the Paris I.A.R.U. Congress, FA8IH has sent along a useful wad of QSL cards, and promises more. With luck, one of these days we may get confirmation of a pre-war QSO with FA8BG on top-band! Incidentally, G6HD received a card for his contact with a UA3 on 1.8 Mc/s. so that seems to settle the argument as to whether or not the Russian stations are permitted to use this band. TF5TP reports, *via* G8ML, that 1.8 Mc/s. transmissions from GW2XZ (559) and G6UC (579) were heard in Iceland on October 21.

That an O-V-1 is still as capable as ever of bringing in DX signals on 14 Mc/s. is shown by BRS17817. He has heard VQ4, UF6, ZB1, YI, VU and VE8 on C.W. and TF, VP8, VK7, HC and ZL on 'phone. Younger members whose pocket books will not stretch to multi-valve receivers should take heart. While on the subject of listeners, it is worth mentioning the reports sent out by Bob Iball of Langold, Worksop. G3GKQ has shown us an example of the useful and detailed information, given by this listener. There are few amateurs who would not welcome such comprehensive reports.

West Country members are still experiencing difficulties on the 28 Mc/s. band caused by a beam approach radar station working on about 30 Mc/s. and spreading over most of the band. American stations report that these transmissions cause much interference to European signals. This may be the same station that was moved to 25 Mc/s. after similar complaints some time

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

ago. More detailed information on times of operation, characteristics, etc., would be welcome. BRS7594 of Yeovil, who is one of the members affected, also reports hearing SV0WU/M and SV0WZ/MM while his October 14 Mc/s. log contains such calls as EA6AF, TA3AF, M1AB, PZ1QM, VE8OP and VS7BR.

G2JN complains of the stations operated by U.S. personnel in Europe who persist in working telephony at the low frequency ends of the bands. How about mentioning the frequency limits recommended in the R.S.G.B. Band Plan next time contact is made with these stations? '2JN also adds XE1PJ (28 Mc/s.) to the list of Mexican telegraphy stations.

Several members make a habit of "collecting" contacts with overseas stations bearing similar call letters. G5CR, who has just made DXCC, is one of these. His list to date includes CT1CR, EA4CR, SM5CR, UA3CR, VS1CR, 4X4CR, YO4CR and W4CR. He also has his eye on GW4CR and FA8CR.

S.S.S.C. activity is still increasing in the United States. Lists of the main U.S. nets using this system have been received. Anyone interested should drop a line to G2MI for details.

W3MAC asks if anyone has ever received a card from ZD1PW.

Vatican City

An official letter from the Director of the Vatican Radio Station, received recently by G3CDG, states categorically that HV1A is a fake, that no amateur permits have ever been issued in the Vatican State, and that all HV amateur calls must therefore be considered as bogus. It is still possible, of course, that some of the HV stations *may* have been operating in the Vatican City undercover.

Certificates

First British amateur to qualify for the W.A.E. certificate, issued by the German magazine *QRV*, is G5FA. To qualify, 100 points (one point per European country per band with a bonus for V.H.F.) are required. It is not so easy as it sounds! To our chagrin G2MI only rates 49 points, and we understand that many other DX stations have been caught napping.

Another first goes to G6RH, who now has the No. 1 A.A.A. certificate issued by S.A.R.L. to put alongside his No. 6 W.A.A. certificate. The latter, by the way, issued by the Brazilian Society, is a beautiful piece of work and carries a full colour reproduction of the national flag of the claimant's country. L.A.B.R.E. sent along a printing block for the BULLETIN but unfortunately it appears that H.M. Customs had other ideas.

Aurora

G6BY of Weston-super-Mare comments on the most unusual conditions experienced during the *CQ* World Wide Contest on October 28-29. On the first day conditions were about normal until 1000 G.M.T. when Europeans began to come through on 14 Mc/s. short skip and little of note was audible on 28 Mc/s. Then at 1400 G.M.T., VKs began to come through over the "short path" route on 28 Mc/s. and over the "long path" route on 14 Mc/s. Later on, around 2000 G.M.T., typical Aurora conditions set in with GM, GI and TF stations roaring in at S9 plus.

Gibraltar

Some interesting observations on Amateur Radio in Gibraltar are contained in a note from BERS775. Since most of the inhabitants live on the western side of the 1,400 ft. lump of very solid rock, few Middle East signals are ever heard and Far East signals usually come only *via* the "long path" in the mornings. On the other hand, American and Caribbean stations are extremely good, with VP6SD and VP4TH outstandingly so. As would be expected African stations are also good, although often inaudible when they are within the skip zone.

Spanish Goodwill Gesture

AT an informal ceremony at Headquarters recently, Harry Gil, LU9AD/LU3DJS, in the U.K. after a visit to Spain, presented to the Society the official pennant of the *Unión de Radioaficionados Españoles.*

U.R.E. have every reason to be proud of this pennant, a beautifully finished example of Spanish craftsmanship, with the diamond-shaped emblem picked out in silver thread on navy blue felt, set against a background of red and gold satin. While handing over the pennant, LU9AD, who is now well on his way to complete recovery from an attack of polio, conveyed a message of goodwill from U.R.E. to the Society.

Derby & District Amateur Radio Society

G5YY and G3EMJ (with microphone) operating the Derby Society's station, G3ERD/A during the Model Engineering Exhibition held in the Assembly Rooms, Derby, from September 4th to 9th. Numerous contacts were made on 7 Mc/s. in spite of high noise level. Wide interest in the Society's stand was aroused throughout the period of the Exhibition.

QUA

FRIENDS of **Bob Ford,** AC4RF, and **Reg Fox,** AC4YN, are anxiously awaiting news from Tibet. National press reports say that 4RF, whose home is in Burton-on-Trent, was in Chamdo when that city fell to the invaders. News of 4YN is better. With his Tibetan-born wife and daughter, he was recently in India undergoing treatment for arthritis after a 300-mile ride over the Himalayas from Lhasa.

The *Radio Industry Council* announces that the eighteenth **National Radio Show,** to be held at Earls Court, London, will be open to the public from August 29 to September 8, 1951. How many R.S.G.B. members know that the first show —the 1922 "All British Wireless Exhibition" at the Horticultural Hall—was held under the auspices of the Society? It has been said that this pioneer exhibition raised the manufacture of broadcast apparatus in this country to the status of an industry. R.S.G.B. Advertisement Manager, **Horace Freeman,** played an important role in the organisation, while leading Society personalities of the day delivered short semi-technical talks.

What is the most popular type of **transmitting aerial** on 28 Mc/s.? Based on contacts over a period of three years, a report by W6UPP in *CQ* gives the following order of popularity in the States: 3-element Yagi 36.7 per cent.; 4-element Yagi 20.3 per cent.; folded dipole 10.3 per cent; horizontal half-wave 6.5 per cent.; and 2-element Yagi 4.3 per cent. No other type registered more than two per cent. But the 28 Mc/s. beam constructed by W9EH must surely be unique. Described in *QST* recently, it has 36 elements, is 120 ft. high, and has a total weight of 2,500 lb. the theoretical power gain being 63!

Several British amateurs have already worked 13-year-old Juanita "Nell" Wood, **VE7AYL** of Victoria, B.C., who runs 200 watts on 14 Mc/s. Although she is probably the youngest YL operator in the British Empire, old-timers will remember the record of Madeline Mackenzie, **VK4YL** of Brisbane who was licensed at the age of 12. Madeline — the daughter of **VK4GK** — seems to have dropped out of Amateur Radio as her name does not appear in post-war call books. Feminine interest also continues to grow in South Africa with 41 calls now held by YLs. **ZS2AA,** vintage 1937, is doyen. Her hand-painted QSL cards depict the flower which is also her name—Iris.

Fuel to the C.W./'phone controversy now raging along the commercial air-lines is added by the recent statement in *The Signal*—journal of the *Radio Officers' Union*—that "it has been calculated that it takes 50 times more power to produce a spoken word in the 'phones on an aircraft than it does to make a dot and dash audible."

Denis Heightman, G6DH, has long been known among fellow enthusiasts as a leading exponent of the art of compiling detailed records of V.H.F. propagation conditions over long periods. Publication of his paper "Propagation of metric waves beyond optical range" in the October issue of the *Journal of the British Institution of Radio Engineers* should do much to introduce amateur research to a wider field, and to enhance amateur prestige. G6DH, however, is probably expressing a commercial rather than an amateur viewpoint when he states "in most circumstances the effects of tropospheric propagation are a nuisance rather than a blessing as the coverage of a transmitter becomes as uncertain as the weather."

Latest town to sponsor the production of special **QSL cards** for local amateurs is Willenhall, Staffs. Unusual feature of the card is a frieze silhouetting the chief industries of the district, designed by the Bilston School of Art. Two thousand cards have been presented to G3CXF, 3CZC, 3DLZ and G6UI with a promise of further supplies when these are exhausted.

The inclusion of a "low power field day" in the calendar of R.S.G.B. Contests for 1951, increases British interest in the results of the last **Swiss Mountain Day.** Winner was HB1J who, at a height of 1800 metres, made 26 contacts with a 1—V—1 (1T4—1T4—3S4) receiver and a 3S4 Pierce crystal oscillator driving two 3S4s in the P.A. Input was 2.5 watts. Total weight of all equipment had to be less than 13.2 lb., while the final 1,000 ft. climb had to be made on foot, carrying all equipment.

I.A.R.U. Headquarters confirm that W.A.C. certificates can be claimed for club stations provided that the club is affiliated to the R.S.G.B. or the trustee of the station is a member of R.S.G.B.

The *VS7 Newsletter* reprints a recent "Thought for the Month" with the following addition—by **VS7PS**—to the exploits of the Happy Lid:

He swoops on others' QSOs,
Treads on everbody's toes,
Busting contracts, butting in,
"Let the loudest signal win."

Increased national defence commitments have already caused some radio manufacturers to issue warnings of possible delay in delivery of their products. . . .12,305,200 broadcast receiving licences, including 470,800 television licences, were current in Great Britain and Northern Ireland at the end of September. . . . *Electronic Engineering* draws attention to the risk of fire from "insolation" caused by TV lenses concentrating the heat from the sun—particularly in radio dealers' windows. . . . *Pye Ltd.*, announce that they have produced a simple V.H.F. adaptor which could be retailed for £2 to £3 to enable standard broadcast models to receive high fidelity A.M. transmissions. . . . A New York beauty parlour is offering "supersonic permanent waves.". . . We are also curious to know what are the products of the "Sun Spot Company of America.". . . New TV aerials on the top of the Empire State Building in New York will be 1,300 ft. high.

LONDON MEETINGS, 1950/51

All meetings are held at the Institution of Electrical Engineers, Savoy Place, Victoria Embankment, W.C.2.

Friday, Dec. 29, 1950. ANNUAL GENERAL MEETING.

Friday, Jan. 26, 1951. **D. N. Corfield, D.L.C. (Hons.), A.M.I.E.E. (G5CD).** "EQUIPMENT FOR THE 420 Mc/s. BAND."

Friday, Feb. 23, 1951. **H. A. M. Clark, B.Sc. (Eng.), A.M.I.E.E. (G6OT).** "POST-WAR DEVELOPMENTS IN TELEVISION."

Friday, March 30, 1951. **R. H. Hammans (G2IG).** "HIGH SELECTIVITY 'PHONE RECEPTION."

Friday, April 27, 1951. **A. O. Milne (G2MI).** "LOW POWER PORTABLE EQUIPMENT."

All Meetings commence at 6.30 p.m. Tea will be served from 5.30 p.m.

Readers are reminded that the meetings listed are open to all members of the Society.

ANNUAL REPORT OF THE COUNCIL

THE Council takes pleasure in presenting a Report covering the activities of the Society during the year which ended on June 30, 1950.

R.S.G.B. Bulletin

Another improvement in the paper position was reflected in a further increase in the size of the Society's Journal. The 12 issues comprising Volume 25 contained 442 pages compared with 324 in Volume 24, and 256 in Volume 23.

During the year the Council invited a number of printing concerns to tender for Volume 26, commencing with the July, 1950, issue and the contract was awarded to *South London Press Ltd.* Unfortunately, due to a dispute within the printing industry, the Society has not yet been able to realise the full advantage of the change.

The standard of technical contributions has again been well maintained. The Norman Keith Adams Prize for the outstanding contribution of the year has been awarded to Mr. H. A. M. Clark, B.Sc.(Eng.), A.M.I.E.E. (G6OT), for his article "The Design and Construction of an Impedance and Power Meter for the 144 Mc/s. band." Other notable contributions were those submitted by Mr. R. L. Varney, A.M.I.E.E. (G5RV), on "The Suppression of Interference to Television"; by Mr. D. W. Heightman, M.Brit.I.R.E. (G6DH), on "Communication Receiver Design; by Mr. H. Whalley, M.Sc., A.Brit.I.R.E. (G2HW) on "Clipper-filter Systems"; and by Mr. N. G. Hyde, A.Brit.I.R.E. (G2AIH), on "Single Sideband Transmission applied to Amateur Telephony."

A special series of articles entitled "Workshop Practice" commenced in the January, 1950, issue. Because of its popular appeal, the series is being continued in the current volume. Other regular features have included "The Month on the V.H.F.'s" and "The Month on the Air" contributed by Messrs. W. H. Allen, M.B.E. (G2UJ), and A. O. Milne (G2MI), respectively. Both articles are intended to provide an historical record of contemporary activity and as such demand the support of all members in a position to provide topical and technical information.

Volume 25 contained more advertising announcements than any for the past 11 years. In this connection the Council records its appreciation to the Advertisement Manager (Mr. H. Freeman) and to the many concerns that reserved space. The Council also cordially thanks all contributors to Volume 25—a Volume which completes a quarter of a century of progress.

Technical Publications

Two new titles in the "Amateur Radio" series appeared during the year. The first, *Simple Transmitting Equipment*, is intended to help the newcomer to Amateur Radio to obtain efficient results with modern equipment for a modest outlay. The second, *Receivers*, is designed to provide the reader with a comprehensive account of the principles of receiver design and advice on the construction of suitable equipment for amateur communication purposes. The Council records its thanks to Messrs. W. H. Allen and J. W. Mathews, co-authors of *Simple Transmitting Equipment*, and to Mr. S. K. Lewer, B.Sc., author of *Receivers*. The publication of these two books brought the number of titles in the series up to eight.

The Transmitting Licence was revised for the third time and preliminary steps were taken to produce a new publication, *Television Interference*, based on an earlier publication, *Transmitter Interference*, which first appeared in 1948.

Although the sale of certain booklets has been rather below expectations the Council is of the opinion that they have proved of considerable value to members, as well as to many non-members interested in specific aspects of Amateur Radio.

It is pleasing to record that fairly substantial orders for these books have been received from Australia, Canada and Sweden. It is hoped that further orders will mature from these and other countries.

Very careful consideration was given to the question of preparing a new edition of *The Amateur Radio Handbook* but for a variety of reasons no final decision was reached. The cost of producing a completely revised edition would be very considerable and it seems doubtful at the moment whether sufficient members and others would be prepared to purchase a new edition at a price which might well be of the order of 15s.

The T.V.I. Problem

The Council again took steps to provide members with up-to-date technical information to assist them to solve their television interference problems. In this connection cordial thanks are offered to Mr. R. L. Varney, A.M.I.E.E. (G5RV) for his further valuable technical contributions.

During the year representatives of the Society and of the Post Office met together to discuss T.V.I. problems and to exchange information of a technical nature. It is hoped that further meetings will be held.

A leading article dealing with television interference appeared in the May, 1950, issue of the BULLETIN. This reviewed the position to date and criticised certain features of the current Post Office policy.

The Council will continue to offer guidance to members and in return expresses the hope that those who achieve success by unusual methods will communicate their results to the Society.

V.H.F. Achievements

During the year an increasingly large number of members turned their attention to V.H.F. communication problems.

To encourage interest in 420 Mc/s. work, Mr. V. M. Desmond (G5VM) in 1949, when President of the Society, offered silver trophies to the two members who first succeeded in communicating with one another over a distance in excess of 25 miles on that band from fixed addresses. On August 12, 1949, Messrs. F. Pike, G3ENS, and J. Spragg, G3APY, established contact over a distance of 26 miles, thus qualifying for the President's Trophies.

The first 420 Mc/s. tests organised by the Society took place on August 21, 1949, when 37 stations were successful in establishing two-way communication. The recently-donated Arthur Watts Trophy was awarded to Mr. Spragg for his outstanding work in these tests.

On October 8, 1949, Mr. D. E. Palin, operating from high ground in North Wales, and using the call GW6DP/P, established two-way contact on this band with Mr. P. Jones (GM2JT/P) located

on Criffell, Dumfriesshire—a distance of 130 miles. This achievement was surpassed on June 4, 1950, when Mr. E. J. Laker (G6LK), operating from Cranleigh, Surrey, worked Mr. H. L. O'Heffernan (G5BY) at Bolt Tail, Devon, over a distance of 160 miles.

Interest in long distance communication on frequencies within the 144-146 Mc/s. amateur band has been well maintained. A notable achievement was the reception in December, 1949, by Mr. H. A. Bartlett (G5QA) of Exeter, of signals from the Finnish station—OH2OK ; the distance was 1,325 miles. In June, 1950, the first recorded contacts on this band took place between England and Germany. An inter-British Isles record had been set up nine months earlier when G3BLP established contact with GI2FHN over a distance of 327 miles. United Kingdom amateurs have thus played a prominent part in the development of the very high frequencies and in so doing have made valuable contributions to existing knowledge.

Lectures

During the period from September, 1949, to April, 1950, a number of important papers were read at meetings of the Society held at the Institution of Electrical Engineers, London. A list of these papers follows:

September 30, 1949: "The Suppression of Interference to Television," by R. Louis Varney, A.M.I.E.E. (G5RV).

October 28, 1949: "Design and Applications of the Cathode Ray Oscillograph," by O. H. Davie, A.M.I.E.E.

November 18, 1949: "The Radio Control of Models," by Lt.(L) G. C. Chapman, B.A., R.N., and Peter Cummins, A.M.I.E.E.

January 27, 1950: "The Use of V.H.F. for Radio Telephone Services," by J. Neale, B.Sc.(Eng.), A.M.I.E.E.

February 24, 1950: "Panoramic Reception," by B. H. Briggs, M.A., Grad.I.E.E. (G2FJD).

March 31, 1950: "Radio Interference Suppressors," by H. Andrews, B.Sc., A.C.G.I., M.I.E.E.

April 28, 1950: "Mobile V.H.F. Equipment," by J. R. Brinkley, A.M.Brit.I.R.E.

The Council records its thanks to those who read papers.

Membership

As foreshadowed in the last Report a marked drop in membership occurred during the year. On June 30, 1950, the membership of the Society totalled 13,023 compared with 14,038 a year earlier and 14,439 in September 30, 1948. An analysis of members in the various grades at certain dates is given below:

Grade	Sept. 30 1947	Sept. 30 1948	June 30 1949	June 30 1950
Home Corporate ..	12,105	12,336	11,851	10,936
Overseas ,, ..	546	651	672	672
Life ,, ..	79	90	95	105
Honorary	8	8	8	7
Associates	1,132	1,354	1,412	1,303
Totals ..	13,870	14,439	14,038	13,023

The falling-off in membership is probably due in some measure to the unsettled economic state of the country as well as to the inability of many ex-Servicemen to obtain adequate accommodation to set up an amateur station.

A recent check of 400 members whose subscriptions had become overdue showed that 5% joined the Society prior to the 1939-45 war, 25% between 1940 and 1945, 50% between 1946 and 1948, and 20% in 1949. It is significant that only a very small percentage of pre-war members have allowed their membership to lapse.

There does not appear to be any marked reduction in interest in Amateur Radio but the problem of television interference seems to have resulted in a diminution of activity in the London —and to some extent in the Birmingham area— during television hours. Radio conditions were extremely poor during the year which may have caused some lessening of interest amongst the non-transmitting membership. The number of licences in operation as at June 30, 1950, was 7,487, compared with 6,983 a year earlier. The pre-war total was less than 3,000.

Affiliated Societies

During the year the Council was pleased to grant affiliation to 25 local societies and clubs. The total number of societies and clubs now affiliated to the R.S.G.B. is 94.

Affiliated societies are functioning in many towns in lieu of R.S.G.B. Groups. The advantages of such an arrangement are considerable provided R.S.G.B. members, who are not members of the local Society, are not prevented from participating in R.S.G.B. activities.

Licence Matters

Due to the postponement of the Special Administrative Radio Conference, no important development in connection with licences occurred during the year. If the Conference had taken place it is probable that by now the Society would have knowledge of the United Kingdom's proposals in regard to the 160 and 80 metre bands as well as a probable release date for the 15 metre band. It seems unlikely that the Conference will take place until some time in 1951.

As the result of discussions between the Society and the Post Office, U.K. amateurs who have been licensed for more than 12 months are now permitted to use powers up to 150 watts on all bands above 28 Mc/s., with the exception of the 420 Mc/s. band where the 25-watt limit still applies.

A request to the Postmaster-General to permit amateurs to transmit television signals was rejected without any reason being given. The matter was subsequently raised in both Houses of Parliament by Lord Waleran and Mr. Charles I. Orr-Ewing, M.P. (Permission has now been granted.—Ed.)

The Society has continued to press the claims of sea-going operators for permission to operate amateur transmitting equipment aboard ship but no decision has yet been reached.

The Society sought and obtained permission from the Post Office for U.K. amateurs to use the single side-band system of transmission on all amateur bands, and the frequency modulation system on all bands from 28 Mc/s. upwards, except the 144 Mc/s. band.

Aircraft Distress Communication Service

It was announced in the January issue of the BULLETIN that the Air Ministry and Ministry of Civil Aviation had accepted an offer of co-operation made by the Council on behalf of members. The announcement stated that after all normal distress procedures had failed, an aircraft which has force-landed may call for assistance on a frequency within the exclusive portion of the 7 Mc/s. amateur band. The Air Ministry and Ministry of Civil Aviation appreciate that radio amateurs are in a unique position to intercept distress messages by virtue of their ability to copy weak signals through intense interference.

Radio Amateurs' Examination

Of the total of 898 candidates who sat for the 1950 examination 636 (71%) were successful. The high percentage of passes was due in no small measure to the special courses of instruction provided at many Technical Institutes and Colleges. Frequently the lecturers were qualified radio amateurs. The co-operation shown by local education authorities in this connection is warmly appreciated by the Council.

Slow Morse Transmissions

Slow Morse transmissions were again organised by Mr. C. H. L. Edwards, A.M.I.E.E. (G8TL) on behalf of the Society. These transmissions, which take place daily on frequencies within the 1.8 Mc/s. band, are of great value to those who are preparing themselves for the transmitting licence.

Contests

A series of contests designed to cover a wide range of interests was organised by the Contests Committee. Good support was given to the B.E.R.U. Telegraphy Contest, Senior Section, but the B.E.R.U. Telephony Contest—an innovation—did not attract as many entrants as had been expected. When the telephony event becomes more widely known it is anticipated that it will receive full support from the amateurs of the British Empire.

National Field Day—held during the first week-end of June under perfect weather conditions—was again splendidly supported with no less than 247 stations from 137 town groups participating. Notwithstanding the 5-watt input power which was again imposed and restrictions placed both on aerials and equipment, the scores achieved by the leading stations reflect great credit on the technical skill and ability of the operators concerned. Without question National Field Day is the high spot in the Society's calendar.

About 30 stations took part in a Contest for Affiliated Societies arranged during the first week-end in March. Operation was confined to the 3.5 Mc/s. band. The event was won by the West Kent Radio Society after a close struggle with their near neighbours, the Surrey Radio Contact Club. The Council records its thanks to the Edgware & District Radio Society for presenting a trophy for award in connection with this event.

A Low Power and two "Top Band" Contests were again well supported. In the former event 41 logs were submitted, whilst in the "Top Band" events there were 75 and 84 competitors respectively.

Two-metre enthusiasts were catered for by means of an open contest held in May, 1950, and a field day in July, 1950. The former was supported by more than 160 stations although unfortunately only about one-quarter of that number took the trouble to submit an entry.

The task of drawing up the rules for and subsequently judging the contests has again thrown a great deal of work on the Members of the Contests Committee who are most cordially thanked for their services.

Headquarters' Station

The frequency-marker service provided by the Headquarters station GB1RS has been continued but it has not yet been found possible to use the station for other purposes. The opinion expressed in the last Report, that the solution of present difficulties appears to lie in the transfer of the equipment to the home of a qualified member who will maintain and operate the station, still holds good.

The Society's amateur station call sign—GB3RS—was used for the first time at the Manchester Convention.

QSL Bureau

Although there has been a falling-off in the number of outgoing cards, due probably to the high cost of printing and to poor conditions, the Society's QSL Bureau has continued to handle a very large number of incoming cards. Thanks are recorded to the QSL Manager (Mr. A. O. Milne, G2MI), his assistants, and all others who have contributed in any way to the smooth running of the Bureau. The services rendered by the Bureau are widely appreciated by the membership.

Committees of the Council

The following is a list of the Committees of the Council constituted during the year under review:

Contests.—Chairman, Mr. W. N. Craig, B.Sc. (G6JJ).

Finance and Staff.—Chairman, Mr. A. J. H. Watson, F.S.A.A. (G2YD).

G.P.O. Liaison.—Chairman, Mr. W. A. Scarr, M.A. (G2WS).

Membership and Representation—Chairman, Mr. V. M. Desmond (G5VM).

Scientific Observations.—Chairman, Mr. W. A. Scarr, M.A. (G2WS).

Technical.—Chairman, Mr. H. A. M. Clark, B.Sc.(Eng.) (G6OT).

The Council records its appreciation to the members who have served on the various Committees.

Council Meeting Attendances

The following is a list of attendances at Council meetings for the period from July 1, 1949, to June 30, 1950:

Name	Possible Attendances	Actual Attendances
Scarr, W. A.	12	10
Desmond, V. M.	12	7
*Lewer, S. K.	5	5
Watson, A. J. H.	12	7
Milne, A. O.	12	12
Mathews, J. W.	12	12
Allen, W. H.	12	10
Amos, A. P. G.	12	11
*Auchterlonie, I. D.	5	5
Charman, F.	12	8
†Cooper, L.	7	6
Corfield, D. N.	12	12
Craig, W. N.	12	12
†Edwards, C. H. L.	7	7
Thorogood, P. A.	12	12

* Retired December 1949. † Elected January 1950.

Conventions

The first post-war Convention and the first ever to be held in the Provinces took place at Belle Vue, Manchester, during October, 1949. The event was supported by more than 600 members who were also provided with an opportunity of attending a specially arranged Amateur Radio Exhibition in the Corn Exchange, Manchester. The organisation of the Convention and the Exhibition was in the hands of a special Committee under the Chairmanship of Mr. I. D. Auchterlonie (G6OM), who are thanked for their outstanding services.

During the year the Council set up an *ad-hoc* Committee to prepare plans for a National Convention to be held in London during June, 1951. The Council anticipates a large attendance at this function as the period chosen will coincide with the Festival of Britain.

Amateur Radio Exhibition

For the third year in succession the Society organised, at the Royal Hotel, London, W.C.1, an Amateur Radio Exhibition. The Exhibition was opened on November 21, 1949, by Lord

Sandhurst, O.B.E., in the presence of a large and distinguished gathering.

Although attendance figures were a little below those of the previous year the enthusiasm shown by visitors and the support given by Exhibitors was most encouraging. The Society was particularly fortunate in again having the support of the Post Office Engineering Department and—for the first time—the Air Ministry. The success of this Exhibition encouraged the Council to plan a fourth Exhibition for the autumn of 1950.

Official Regional Meetings

During the 12 months covered by this Report O.R.M.s were held in the following centres:

Venue	Region	Approx. Attendance	Headquarters' Representation
Aberdeen	12	50	Mr. W. A. Scarr, Mr. P. A. Thorogood and the General Secretary.
Belfast	15	30	The President (Mr. W. A. Scarr), Mr. Amos and the General Secretary.
Birmingham	3	50	The President (Mr. W. A. Scarr), Mr. V. M. Desmond and the General Secretary.
Brighton	8	45	Mr. W. A. Scarr, Mr. W. H. Allen, Mr. A. P. G. Amos, the General Secretary and Miss Gadsden.
Glasgow	14	95	Mr. W. A. Scarr, Mr. P. A. Thorogood and the General Secretary.
London	7	190	The President, several Members of Council, the General Secretary and Miss Gadsden.
Nottingham	4	40	Mr. A. P. G. Amos, the General Secretary and Miss Gadsden.

The attendances recorded at Belfast, Birmingham, Brighton and Nottingham were much below expectations. The reasons for these somewhat disappointing results have recently been fully considered at the Regional Representatives' Conference. It seems clear that unless an attractive programme is arranged only the most enthusiastic members will support O.R.M.s.

Clear proof of the "drawing-power" of a good programme was seen at the Lincolnshire County Hamfest when more than 200 members accepted an invitation to visit No. 1 Radio School, R.A.F., Cranwell, during April.

The General Secretary attended every O.R.M. held during the year and delivered an address at each meeting on matters of general interest.

The Council wish to thank those who were responsible for organising the meetings and to all who extended hospitality to their representatives. The Council also thank the General Secretary for devoting many weekends to attending these meetings.

Local Activities

During the year regular meetings took place in a large number of town centres. Lectures and demonstrations, as well as technical and Morse instruction, were given at many of the meetings. Local groups also co-operated with other organisations at Exhibitions and similar functions whilst social events and visits to places of interest were featured in many programmes.

The organisation of these activities was undertaken chiefly by the Town Representatives who are recognised as the "key-men" in the Society's scheme of representation. During the year "hamfests" were held in several counties under the direction of the County Representatives. These were well supported and served the important purpose of linking together town groups within the counties.

The scheme of representation which commenced on January 1, 1948, has continued to operate with considerable success in most parts of the United Kingdom. As the result of bi-annual elections several new Regional, County, District and Town Representatives took office on January 1, 1950. The Council thanks these members and their predecessors for the service they have rendered to the Society, as well as those who volunteered to take office again for a further period.

I.A.R.U. Congress

The 25th Anniversary of the formation of the International Amateur Radio Union was commemorated by a Congress held in Paris during May, 1950. The R.S.G.B. was represented by the President (Mr. W. A. Scarr, M.A., G2WS), Mr. Gerald Marcuse (G2NM), Past President; Mr. S. K. Lewer, B.Sc. (G6LJ), Past President; Mr. F. Charman, B.E.M. (G6CJ), Executive Vice-President; Mr. A. O. Milne (G2MI), Honorary Editor and QSL Manager; Mr. R. H. Hammans (G2IG), Vice-Chairman of the Technical Committee, and the General Secretary (Mr. John Clarricoats, G6CL).

The Council records that the President of the R.S.G.B. was elected President of the Congress and Mr. S. K. Lewer Chairman of the important Administrative Committee. The Congress was supported by 17 Member Societies of the I.A.R.U.

S.S.A. Anniversary

The Council was pleased to accept an invitation from the Swedish Society (S.S.A.) to send representatives to attend functions arranged to commemorate the 25th Anniversary of the formation of that Society. Mr. W. H. Allen, M.B.E. (G2UJ) and the General Secretary duly journeyed to Stockholm in February and an account of their visit appeared in the April, 1950, issue of the BULLETIN.

The Council considers that the importance of goodwill visits of this nature cannot be overstressed. At the Swedish meeting the Secretary had the opportunity of preparing the way for the participation of the Scandinavian Societies in the forthcoming Paris Congress. He was also able to furnish the representatives of the Scandinavian countries, who were present at the meeting, with up-to-date information on many matters of mutual concern and interest.

Headquarters

The Council again records its grateful thanks to the General Secretary and his staff for the conscientious and efficient manner in which they have continued to serve the Governing Body and for the able manner in which they have administered the Society's affairs.

The heavy burden of routine work which has fallen to the small staff during the year has been realised by the Council, who are particularly grateful for the uncomplaining way in which acute staffing difficulties have been faced.

The General Secretary, in addition to attending all O.R.M.s held during the year, was present at a number of Society functions held in London and the Provinces and spoke at many meetings and gatherings of Affiliated Societies.

Conclusion

Members will appreciate that it is not possible in this report to refer to any but the most outstanding matters dealt with by the Council during the year, but a perusal of the Resumés of Council proceedings will indicate the diversity of business transacted.

For and on behalf of the Council,
J. W. MATHEWS.
Honorary Secretary.

G.P.O. Special Amateur Radio Examination

AS forecast in the July, 1950, issue of the BULLETIN, an additional Radio Amateurs' Examination was held in London on October 7, 1950. There were sixty-nine candidates of whom forty were successful. The twenty-nine failures represent approximately 42 per cent. of the total entrants. In their official report, the G.P.O. state that there was a pronounced difference shown in the technical standard and method of approach to the questions as between candidates who passed the examination and those who failed. From the report it would also appear that mathematical questions once again proved a stumbling block to many entrants. The comments after each question are intended to show the shortcomings of the *unsuccessful* candidates. The examination lasted three hours.

The questions were as follows:

1. Explain what is meant by modulation. Describe briefly with the aid of a diagram one method of modulating a radio frequency transmitter. (20 marks.)

Comment.—The first part was fairly well answered by all candidates. In the second part most candidates drew some form of diagram but few gave any explanation of its method of operation.

2. State Ohm's Law. A battery of 36 volts E.M.F. is connected to a resistor of 5 ohms joined in series with two resistors of 2 and 3 ohms connected in parallel. If the current through the 3 ohms resistor is 2 amperes what is the internal resistance of the battery? (15 marks.)

Comment.—Very badly answered by most candidates.

3. What requirements have to be met under the "Power and Frequencies" condition of the Postmaster-General's licence. What purposes are these requirements intended to serve? (15 marks.)

Comment.—Well answered by a few candidates. The majority omitted mention of "spark," "unrectified alternating voltage," and "residual ripple voltage."

4. Describe a transmitting aerial suitable for one of the amateur bands, and show how it may be tuned to frequencies above and below its natural frequency. (10 marks.)

Comment.—In general, fairly well answered by most candidates.

5. What is the reactance of an inductor having an inductance of 2 Henrys at a frequency of (a) $100/\pi$ c/s., and (b) $10/\pi$ kc/s.? (10 marks.)

Comment.—Very badly answered by most candidates.

6. Explain briefly why pentode or tetrode valves are commonly used in preference to triode valves in the radio frequency stages of receivers. (10 marks.)

Comment.—In general, very badly answered. Few candidates mentioned the ill-effects of inter-electrode capacity in triodes at radio frequencies.

7. What steps should be taken in the design of a receiver to minimise the risk of instability? (10 marks.)

Comment.—In general, very badly answered.

8. The D.C. feed to the output stage of a transmitter is 250 volts at 80 mA. It is found that the R.F. current flowing in the artificial aerial load resistance of 1,000 ohms is 0.1 ampere. Calculate:

(a) the power input; (b) the power output; and (c) the efficiency of the stage. (10 marks.)

Comment.—Well answered by several candidates, and very badly by the remainder.

* * *

The G.P.O. are to be congratulated upon organising this extra examination and also upon the speed with which the full results have been announced.

Society Trophies, 1950

The Council has been pleased to make the following awards for the current year:

Courteney Price Trophy to Mr. F. Charman, B.E.M., G6CJ, in recognition of his technical contributions to the Society particularly in connection with his demonstrations of Miniature Aerials.

Braaten Trophy to Mr. C. R. Perks, G4CP, who scored the highest number of points from among the English entrants in the C.W. Section of the 1950 A.R.R.L. DX Contest.

Arthur Milne Trophy to Mr. G. W. Banner, GW3ZV, who scored the highest number of points from the U.K. entrants (other than English) in the C.W. Section of the 1950 A.R.R.L. DX Contest.

B.E.R.U. Senior Trophy: Mr. W. E. Russell, G5WP.

B.E.R.U. Junior Trophy: Mr. S. Clark, VS1CW.

B.E.R.U. Receiving Trophy: Mrs. J. Haydon, BRS 15,961.

Colonel Thomas Trophy: Mr. W. E. Russell, G5WP.

Somerset Trophy: Mr. H. J. M. Box, G6BQ (winner of Top Band Contest, February, 1950).

N.F.D. Trophy and Replica: Cheltenham.

"A" Station Replica: Coventry.

"B" Station Replica: West Cornwall.

Edgware Trophy: West Kent Radio Society (winners of Affiliated Societies' Contest).

Mitchell-Milling Trophy: Mr. W. R. Joss, G2AJ (winner of 144 Mc/s. Contest).

Arthur Watts Trophy: Messrs. C. Newton, G2FKZ, H. Knott, G3CU and G. Stone, G3FZL (combined entry in 420 Mc/s. Tests).

1930 Committee Cup: Mr. T. F. Herdson, G6ZN (winner of Low Power Contest).

Miniature Cups have been awarded to Mr. K. J. Grimes, G3AVF, the leading station in the 144 Mc/s. Field Day and to Mr. W. R. Joss, G2AJ, the leading station in the B.E.R.U. Telephony Contest.

Ten Minute Quiz

Answers to the questions set on page 167

1. An amateur would probably find difficulty in using an 862—a 50 kW. water-cooled triode with a 6.8 kW. heater!
2. 9 kc/s.
3. Like poles repel: unlike poles attract.
4. 7,050 kc/s.
5. The height of the aerial above the ground level must not exceed 50 feet.
6. ". . . the voltage across a coil *leads* the current."
7. 0.00008 cm.
8. Yes, but only on 420 Mc/s. and above.
9. 39.37.
10. June 22 to June 24, 1951.

B.E.R.U. CONTESTS, 1951

THE January periods chosen last year were generally considered unsatisfactory, and by popular request dates for 1951 have been chosen in the February-March period. The earlier dates, last year, did not avoid interference with other contests and the inferior seasonal conditions were accentuated by poor propagation.

The Telegraphy contest will occupy two week-end periods of 24 hours and the Telephony contest one such period. The Telegraphy contest has two sections—Senior (maximum licensed power) and Junior (maximum input 25 watts). The Telephony contest is still regarded as experimental, and, due to the poor response from low power stations in 1950, only a Senior section will be held, limited to 14 and 28 Mc/s. operation, since other bands are not universally available. In the Receiving contest, entries will be accepted based on either one Telegraphy weekend or on the Telephony section.

A trophy or miniature cup will be awarded to the fully paid-up member of the R.S.G.B. scoring the highest number of points in each section. Certificates of merit will be awarded to the first three stations in each section and also to the leading station in each prefix zone, provided that at least three entries have been received from the zone in question. In addition a second certificate will be awarded for each zone from which ten or more entries have been received. The prefix zones have been slightly regrouped; VK7 has been placed with VK4; VE4 with VE5 and 6; and a new zone for British Forces in Europe has been formed.

Rules should be carefully studied, particularly in relation to posting dates (Rule 9) and form of entry (Rule 8). Incorrect entries may not be accepted. Logs will be acknowledged on receipt: non-competitors are invited to submit check logs no matter how small.

Reports of off-frequency operation, over-modulation, bad tone or other unethical procedure may result in disqualifications. Competitors should conform, as far as the terms of their licences permit, with the *R.S.G.B. Band Plan*, which is as follows:

Telegraphy only:	3,500-3,600 kc/s.; 7,000-7,050 kc/s.; 14,000-14,150 kc/s.; 28,000-28,200 kc/s.
Telephony only:	3,600-3,635 kc/s.; 3,685-3,800 kc/s.
Telegraphy or Telephony:	7,050-7,300 kc/s.; 14,150-14,400 kc/s.; 28,200-30,000 kc/s.

Rules: Transmitting Contests

1. The event will be divided into three sections, namely:—
   (*a*) Senior telegraphy (max. licensed power).
   (*b*) Junior telegraphy (25 watts maximum input).
   (*c*) Senior telephony (max. licensed power).
2. The contest periods will be as follows:—
   Telegraphy: From 1700 GMT, February 24, to 1700 GMT, February 25, 1951, and continued from 1700 GMT, March 3, to 1700 GMT, March 4, 1951. Senior and Junior Sections will run concurrently.
   Telephony: From 1700 GMT, February 3, to 1700 GMT, February 4, 1951.
3. The contests are open to all British subjects living within the British Empire and British Mandated Territories and to British Occupational Forces operating properly authorised stations, who are fully paid-up members of either the R.S.G.B. or one of the British Empire Societies listed overleaf. All entrants agree to be bound by the Rules of the Contests.
4. An entrant who is not a member of the R.S.G.B. must certify in the declaration overleaf that he was a fully paid-up member of one of the listed British Empire Societies and that he was resident in that country at the time of the contest.
5. An entrant not located in one of the prescribed Prefix Zones shall be considered as being in the Prefix Zone nearest to his station.
6. Contacts with ships or unlicensed stations located in countries where licences are obtainable will not be permitted to count for points. The decision as to whether a station is to be classed as unlicensed will rest with the R.S.G.B. Contests Committee.
7. Only the entrant will be permitted to operate his apparatus for the duration of the contest.
8. Entries must be legibly written or typed on one side of quarto or foolscap paper (8in. x 10in. or 8in. x 13in.) Sheet 1 will bear the name, address, etc., and declaration, Sheet 2 the analysis. The continuation sheets will contain the log entries in time order, as set out overleaf.
9. All entries must be posted within 8 days of the close of the relevant section of the contest and bear postmarks dated not later than February 12, 1951, in the case of the Telephony, and March 12, 1951, in the case of the Telegraphy Contest. No entries will be accepted by the R.S.G.B. Contests Committee, New Ruskin House, Little Russell Street, London, W.C.1, later than June 4, 1951.
10. The judging of entries will be carried out by the R.S.G.B. Contests Committee. The decision of the Council will be final in all cases of dispute. No correspondence will be entered into regarding any decision made by the Council or Contests Committee.
11. Operation is restricted to the following bands: *Telegraphy*: 3.5, 7, 14 and 28 Mc/s. *Telephony*: 14 and 28 Mc/s. only. Telegraphy must be type A.1 (pure C.W.) only, and frequent tone reports of T8 or less may result in disqualification. Telephony may be type A.3 (amplitude modulation) or narrow-band frequency modulation where permitted, but reports of excessive frequency spread may result in disqualification.
12. The conditions laid down in the entrant's licence must be observed. The input to the valve or valves delivering power to the aerial must not exceed 25 watts in the Junior section.
13. Only one contact with a specific station may be made on each band during the contest.
14. Fifteen points will be scored for the first contact on a specific band with a British Empire station located in any Prefix Zone outside the competitor's own zone. Fourteen points will be scored for the second contact on the same band with the same zone, thirteen points for the third contact, and so on, to the fifteenth contact, which contact will score one point. All contacts with that particular zone on that band thereafter will count one point each. This scoring procedure will be repeated on each band to encourage multi-band operation.
15. Serial numbers must be exchanged and acknowledged before points may be claimed for a contact. The serial number of 5 or 6 figures will be made up of the RS (telephony) or RST (telegraphy) reports plus three figures which may begin with any number between 000 and 400 for the first contact and which will increase in value by one with each successive contact: e.g. 287 for the first contact, 288 for the second contact, etc.

Rules: Receiving Contest

1. Receiving entries may be made in respect of either one Telegraphy weekend or the Telephony section, as given above.
2. The scoring system will be the same as for the transmitting sections, viz.: fifteen points will be scored for the first station heard on a specific band within any Prefix Zone outside the competitor's own zone. Fourteen points will be scored for the second station heard on the same band in the same zone, and so on. This scoring procedure will be repeated on each band to encourage multi-band operation.
3. Before points can be claimed, the following information must be logged: (*a*) Call of station heard: (*b*) Call of station being worked: (*c*) Entrant's report on the signals of the station heard (RS) or (RST): (*d*) The Serial Number given by the station heard to the station being worked.
4. CQ and Test calls will not count for points.
5. The same station may only be logged once on each band during the contest.

British Empire Societies

Amateur Radio Club of India.
Canadian Amateur Radio Operators' Association.
Canadian Section A.R.R.L.
Ceylon Amateur Radio Society.
Hong Kong Amateur Radio Transmitters' Society.
Jamaica Amateur Radio Club.
Malta Amateur Radio Society.
Montreal Amateur Radio Club.
Newfoundland Amateur Radio Association.
New Zealand Association of Radio Transmitters.
Northern Rhodesia Amateur Radio Society.

Pakistan Amateur Radio Society.
Radio Society of East Africa.
South African Radio League.
Wireless Institute of Australia.

ENTRY FORM SHEET 1

B.E.R.U. Contest, 1951.....Section

Name (Block Letters).....Callsign.....

Address .....

Input Power to last valve.....

Aerial Systems used .....

(Other station details may be included.)

DECLARATION:—

I hereby certify that my station was operated strictly in accordance with the rules and spirit of this Contest, and I agree that the decision of the Council of the R.S.G.B. shall be final in all cases of dispute.

Date..... *Signed.....*

If an entrant is a non-member of the R.S.G.B., he must sign the following additional Declaration:—

I hereby certify that at the time of the Contest I was a fully paid-up member of.....

Date..... *Signed.....*

Date (1)	G.M.T. Contact Estab-blished (2)	Band Used Mc/s. (3)	Callsign of Station Worked (4)	Serial Nos. Sent (5)	Serial Nos. Revd. (6)	Points Claimed (7)	(Leave)

TOTAL .. .. ———

Receiving Contest

The entry form for this contest should be prepared on the lines set out above with the following amendments:—

Column 2: G.M.T. station heard.
Column 4: Station heard.
Column 5: Entrant's report on station heard.
Insert New Column: Station being worked.
Column 6: Serial number given by station heard to station being worked.

SHEET 2

Prefix Zone Chart and Analysis Sheet.

	Prefix Zone.	....Mc/s. Contacts	....Mc/s. Points	....Mc/s. Contacts	....Mc/s. Points	....Mc/s. Contacts	....Mc/s. Points
1	AP, VU2, 4, 5, VS7 ..						
2	G, GC, GD, GI, GM, GW						
3	DL2, MB9						
4	MD, MF, MT, ZB, ZC4.						
5	(VQ6), MI3, ST						
6	VE1, 2						
7	VE3						
8	VE4, 5, 6						
9	VE7, 8						
10	VK2, 3						
11	VK4, 7						
12	VK5, 6						
13	VK9, VR4						
14	VO						
15	VP1, 3, 5, 7, 9						
16	VP2, 4, 6						
17	VP8, VK1						
18	VQ1, 3, 4, 5, ZD6 ..						
19	VQ2, ZE						
20	VQ8, 9, ZC2						
21	VR1, 2, 3, 5, 6, ZK, ZM						
22	VS1, 2, 4, 5						
23	VS6						
24	VS9, VU7, MP4						
25	ZD1, 2, 3, 4, 7, 8, 9 ..						
26	ZL1, 2, 3, 4						
27	ZS1, 2, 3						
28	ZS4, 5, 6, 7, 8, 9 ..						
	TOTALS						

NOTE.—Some of the above prefixes may be out of date at the time of the Contest—*See* Rule 5.

MAKE SURE YOU HAVE READ THE RULES CAREFULLY AND DO NOT FORGET TO SIGN THE DECLARATION.

SUGGESTIONS FOR FUTURE CONTESTS ARE INVITED.

"One Ham's War"

THE July, 1950, issue of *Break-in*, journal of the N.Z.A.R.T., contains an absorbing account of the war-time activities of Herb Dixon, M.B.E. (ZL2BO)—then a lieutenant in the R.N.Z.N.V.R.—who was taken prisoner by the Japanese after the fall of Hong Kong. During his internment ZL2BO played a leading rôle in the construction and operation of three short-wave receivers in various prison camps on the island, until, in September, 1943, one of the sets was discovered by the guards.

How great was the technical ingenuity and the cool-headed bravery of ZL2BO and his colleagues can best be judged by a few brief extracts from this remarkable story.

To convert an old broadcast receiver, smuggled into the camp, flux was made from pine-gum scraped from firewood after minute examination of every piece of wood brought into the camp. Solder was scrounged from the tag-boards of the defunct camp power equipment. Prisoners contributed 300 torch cells which were strung together to provide H.T.

At another camp, where a set was built from scratch, a derelict Austin 7 was pressed into service to provide wire, nuts and bolts, while the rim of the horn formed a vernier tuning dial. Even headphones were constructed from small metal cheese and sugar tins. Pieces of lead pencil made effective resistors, while sheet metal and a four inch nail formed the basis of a tuning condenser. The filter condensers (A.C. was available in this camp) proved a major feat: it took seven months to scrape together enough tin-foil and wrapping paper from cigarette packets to make three 16 μF. condensers.

A supply of valves had been located in the nearby operating theatre, but for a long time no reasonable pretext could be found to enter the building. Then, at last, an unwitting patriot complained of a pain in his stomach: he returned to camp minus a perfectly sound appendix but with three valves concealed in his bandages. This particular receiver was completed in July, 1943, and, on its first trial, picked up the B.B.C. on 9.5 Mc/s.

Concealment of the sets was difficult as regular searches were carried out by the prison guards. In Shamshuipo camp, receiver and batteries were kept in a watertight container in a lavatory cistern with water continuously trickling over it. At North Point, a hole was dug beneath one of the huts: to cover the noise of digging it was arranged that the Canadian Brass Band should perform outside the building at the crucial moment. Afterwards there were many friendly arguments as to who had worked the harder: the band which played non-stop for more than an hour, or the pick and shovel squad inside the hut.

On September 21, 1943, after a four-hour search, the receiver was discovered. ZL2BO was one of the nine officers "interrogated" and later sentenced to 15 years' imprisonment, of which he served two years under appalling conditions before his release at the end of the war. The set was much prized by the Japanese, who treated it as a museum piece. In turn, the N.Z.A.R.T. are anxious to trace its whereabouts—if it still exists—and would welcome information from anyone who may have come across it in Hong Kong or Japan.

Low Power Contest Results

ALTHOUGH BULLETIN printing difficulties seriously jeopardised the 1950 Low Power Contest—rules not appearing until after the event—a fair number of flea-power enthusiasts once again demonstrated, beyond doubt, that transmitters with an input of less than ½-watt will cover the British Isles on 3.5 Mc/s.—when expertly handled! Conditions, this year, were erratic and most entrants snatched a few hours' sleep during the night when the band was open for DX signals but gave little encouragement to inter-G contacts.

Triple Victory

Mr. T. F. Herdson, G6ZN of Horbury, Yorkshire, winner of the contest in 1947 and 1949, completes his trio of post-war successes: 96 contacts in 37 counties placing him at the head of the table. This is some 20 contacts and four counties less than last year, representing the reduction in activity almost certainly brought about by the delayed publication of the rules. G6ZN's formidable score was compiled in about five hours less operating time than in 1949, with the same single stage Hartley oscillator running at 5 mA. from a 90-volt H.T. battery. The consistently good signal radiated by this tiny rig is shown by his average reports over the last two events: S5.7 in 1949, S5.8 in 1950.

Only 20 points separated the second, third and fourth competitors: G6GM of Holsworthy, Devon (1,850 points); G5MP of Hythe, Kent (1,840 points); and G8NF near Huddersfield, Yorkshire (1,830 points). The scores of 5MP and 8NF were particularly good in relation to their operating times of 13¼ hours and 14 hours respectively. G5KT of Bristol, a veteran QRP enthusiast, also put up a strong challenge to the leaders; his 1,660 points gaining him fifth place.

What They Used

For the benefit of low-power enthusiasts here are brief details of the transmitters used by the leading stations:

G6ZN—single stage Hartley—SP220—H.T. battery.
G6GM — single stage E.C.O. — VT501 — H.T. battery.
G5MP—E.C.O./P.A.—802/RK25B—H.T. battery.
G8NF — E.C.O./P.A. — 12SJ7/1625 — 70-volt stabilised supply.
G5KT — single stage Hartley — P425 — H.T. eliminator.

An analysis of the leading 20 logs confirms the trend towards single stage variable frequency transmitters (1949 figures in brackets): single stage V.F.O. 8 (3); two-stage V.F.O. 5 (11); multi-stage V.F.O. 4 (3); single-stage C.O. 2 (3); two-stage C.C. 1 (-). Despite the simplification of equipment there are few reports of poor notes, although rapid QSYs were occasionally followed by some deterioration in quality, showing the need for careful adjustment. Another danger in single stage rigs—attempting to obtain too much R.F. power—brought some critical reports to one competitor who reduced the value of his bias resistor.

GW3EFZ compiled a sizable score in six hours' operating time with the aid of an O-v-1 receiver—one of the few attempts to extend QRP principles to this side of the equipment. GC2CNC did well to gain eighth place with a single crystal channel, particularly as his location subjected him to telephony interference from continental stations—most other competitors were more fortunate and the co-operation of high power stations was much appreciated.

R.S.G.B. Contests, 1951

January 20-21: "Top Band" (1.8 Mc/s.)
February 3-4: B.E.R.U. Telephony
February 24-25: B.E.R.U. Telegraphy (First Section)
March 3-4: B.E.R.U. Telegraphy (Second Section)
March 31-April 1: Affiliated Societies
May 19-20: 144 Mc/s.
June 2-3: National Field Day
June 17: 420 Mc/s. Tests
July 8: 144 Mc/s. Field Day
September 9: Low Power Field Day
October 6-7: Low Power (3.5 Mc/s.)
November 10-11: "Top Band" (1.8 Mc/s.)
December 1-2: All European DX
December 8-9: All European DX

Summing Up

Main suggestions relate to (1) a possible reduction in the duration of the contest; (2) a "real QRP" contest—½-watt is said to be too easy!; (3) slight modifications to the scoring system. Two questions of operating ethics also require comment: several entrants believe that certain non-competing stations deliberately ignored QRP calls other than from a "closed shop" of friends; while a study of the logs suggest that one non-competing operator was using two different calls (both of which he is entitled to use) in what must surely be considered a misplaced attempt to give a few extra points to entrants.

Check Logs: G2WS, 3ATU, 3BDQ, 3FXA, 6BQ, 6PR, 6ZA, GC5OU.

Final Positions

Place	Call Sign	Power (watts)	Contacts	Points
1	G6ZN	0·45	96	2,290
2	G6GM	0·5–1	81	1,850
3	G5MP	0·5	76	1,840
4	G8NF	0·47	75	1,830
5	G5KT	0·47–0·98	82	1,660
6	G3EDW	0·5–2	69	1,505
7	G2CWY	0·3–0·4	53	1,340
8	GC2CNC	0·4	37	970
9	G2AVC	0·5	36	920
10	G3BGH	0·48–1·9	47	885
11	G3COJ	0·48–3·2	51	840
12	G3XT	0·5–2	35	810
13	G2DHV	1	43	650
14	G5LQ	0·47	24	630
15	G6WR	2	51	570
16	GW3EFZ	0·45	20	550
17	G2YK	2	53	535
18	G3EIW	0·45	20	510
19	G3BAK	0·5–2	28	485
20	G3GDW	0·4–1·8	36	465
21	G3FAN	2·34	52	416
22	G2FGD	1·5	35	395
23	G3HWM	0·5	14	370
24	G3CUI	2·8–2·9	41	330

"CQ" 1949 Contest Results

High United Kingdom scores in the 1949 *CQ* World-Wide DX Contest included:

Call-sign	Band	"Countries"	"Zones"	Points
All Band, Single Operator, C.W.				
G4CP	—	97	59	147,888
GC2CNC	—	48	13	15,311
GM3AXR	—	77	47	50,344
GW3ZV	—	122	50	231,846
All Band, Single Operator, 'phone.				
G2DPZ	—	120	54	153,642
GW2UH	—	24	12	3,780
Single Band, Single Operator, C.W.				
G4CP	7	24	10	9,458
G2LB	14	69	34	92,906
G3DCU	28	44	26	52,570
Single Band, Single Operator, 'phone.				
G2DPZ	14	55	25	30,660
G2PU	28	40	23	44,541

Highest C.W. score (343,728 points) was made by PA0UN. G2DPZ's telephony score of 153,642 points was the second highest in the world: PY2CK being first with 224,349 points.

Edinburgh and Preston O.R.M's Well Supported

Ninety Happy Hams

THE Official Regional Meeting held at the Scotia Hotel, Edinburgh, on Sunday, October 22, 1950, was not only a very happy affair but it was also the best supported function of its kind ever held in the East of Scotland.

The Council was represented by the President (Mr. W. A. Scarr, M.A., G2WS), the Chairman of the Contests Committee (Mr. W. N. Craig, B.Sc., G6JJ) and the General Secretary (Mr. John Clarricoats, G6CL).

The proceedings were opened by the Regional Representative (Mr. Walter Baker, G3AFL), who had the support of his two C.R.s, Messrs. W. Blyth, GM5YX (East, Mid. and West Lothian) and C. A. M. Clackson, GM8KR (Fifeshire and Kincross) and most of his T.R.s.

The R.R. extended a warm welcome to visitors from other Regions mentioning in particular the Region 12 Representative (Mr. John Douglas, GM2CAS), who with several colleagues had travelled from Aberdeen that day, and Mr. Ron Eadie, GM4JO, the Glasgow T.R., who led a party from Region 14.

The President then addressed the meeting and extended greetings from his colleagues on the Council. He spoke of his pleasure in again being present at a Scottish O.R.M. and at meeting a number of old friends.

The next 90 minutes were occupied by the General Secretary who spoke on a wide variety of topics. He referred to the valuable contribution of "The Border Net" (a Region 13 publication), the importance of T.R.s, the reasons why the Atlantic City Frequency Table below 30 Mc/s. had not yet come into force, the I.A.R.U. Congress in Paris, future I.T.U. Conferences and the cost of representation at such conferences. Mr. Clarricoats also gave information on the printing dispute and explained why the Council recently decided to change printers.

Mr. W. N. Craig then spoke briefly on Contests and other matters of general interest after which the meeting was thrown open for questions. As a matter of interest, practically the whole of question time was given over to N.F.D. topics—a clear indication of the interest shown by Region 13 members in this great annual event. It is interesting to record that a show of hands resulted in a substantial majority of those present being in favour of the retention of the present 5 watt input rule.

The formal proceedings were terminated by a draw for eleven prizes kindly donated by a number of good friends.

An excellent supper followed, during which the R.R. thanked all those who had helped to make the event a success, mentioning in particular the chief organiser, Mr. W. Blyth. He also thanked Mr. Len Philpotts, G4BI, for arranging an exhibition of metalwork manufactured by *Philpott's Metalworks* of Loughborough, Leics.

After supper an interesting film of the Glasgow, 1950, N.F.D. stations in action was shown by Mr. Eadie, who was warmly thanked by Mr. Baker for his co-operation.

The Region 1 O.R.M.
More than 150 members attended the Region 1 O.R.M. held at the Victoria and Station Hotel, Preston, on Sunday, October 29, 1950. This photograph, taken outside the School of Art building, is reminiscent of pre-war Convention group photographs taken on the steps of the I.E.E., London.

Lancashire Hot-Pot

THE 1950 O.R.M. for Region 1 has come and gone, leaving the 143 members who gathered on October 29 at the Victoria Station Hotel, Preston, with pleasant memories of a well organised and highly successful meeting.

The Chair was taken by Mr. G. Webster, G5GK, the Regional Representative, who welcomed the Headquarters' Party comprising the President (Mr. W. A. Scarr, M.A., G2WS), Council Member Mr. C. H. L. Edwards, A.M.I.E.E., G8TL, and the General Secretary (Mr. John Clarricoats, G6CL). Nearly every C.R. and T.R. of this large Region was present.

The excellent lunch was followed by a unique ceremony—the presentation by the President of a silver trophy to the Bolton Group, winners of the first Regional Field Day to be held in this

country. Friendly rivalry between close neighbours was now forgotten in applauding the winners and rendering thanks to the two anonymous Bolton amateurs who made and donated the miniature field day station trophy (illustrated in the October issue of the BULLETIN). Burnley Group, the runners-up, were also not forgotten although their consolation prize is less suitable for reproduction in the BULLETIN!

The newly-donated Region 1 Trophy was presented to the Bolton Group—as winners of the 1950 Region 1 Field Day—at the O.R.M. held in Preston, on October 29, 1950. In this group the President (Mr. W. A. Scarr, G2WS) is handing the trophy to the Bolton T.R. (Mr. A. Garry, BRS.14,764). Others in the photograph are: Mr. C. Webster, G5CK (Region 1 representative) and Mr. John Clarricoats, G6CL (General Secretary).

After a brief interlude in the autumn sunshine, enabling photographs to be taken, the meeting listened with interest to a comprehensive review by the General Secretary of the local, national and international aspects of the Society's activities. For ninety minutes a corner was lifted on the constant efforts being made to maintain the privileges and further the interests of Amateur Radio.

When tea was over, those present turned to another important item in the agenda of an O.R.M.—the distribution of the prizes generously donated by local traders. "Clarry" initiated Region 1 into the excitements of a Dutch auction, while G6OM also proved adept in the guise of auctioneer. As the meeting finally broke up, many appreciative comments were heard on the hard work put in by the Preston members to ensure its success.

G2WQ

F9HE—Versailles

"Tom" Bonnechaux—one of the best-known French DX operators—employs a Temco transmitter, Super Pro receiver and DB20 pre-selector.

HEADQUARTERS CALLING

COUNCIL, 1950

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: J. W. Mathews, G6LL.
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, L. Cooper, G5LC, D. N. Corfield, D.L.C. (Hons.), A.M.I.E.E., G5CD, W. N. Craig, B.Sc., G6JJ, C. H. L. Edwards, A.M.I.E.E., G8TL, P. A. Thorogood, G4KD.

General Secretary: John Clarricoats, G6CL.

September Council Meeting

Résumé of the Minutes of a Meeting of the Council held at Headquarters on Tuesday, September 19, 1950, at 6 p.m.

Present.—The President (Mr. W. A. Scarr), in the Chair, Messrs. W. H. Allen, A. P. G. Amos, L. Cooper, D. N. Corfield, W. N. Craig, V. M. Desmond, C. H. L. Edwards, J. W. Mathews, A. O. Milne, P. A. Thorogood, A. J. H. Watson and John Clarricoats (General Secretary).

Cash Accounts.

The Hon. Treasurer submitted Cash Accounts for the months ending July 31 and August 31, 1950, and in doing so drew attention to the marked falling-off in revenue from subscriptions.

Resolved to accept and adopt the Cash Accounts as submitted by the Hon. Treasurer.

Annual Accounts.

The Hon. Treasurer presented, and explained at length, the Audited Accounts for the year ended June 30, 1950.

Mr. Cooper proposed, Mr. Amos seconded and it was resolved to accept and adopt the Audited Accounts as submitted and to authorise same to be printed for presentation to the Membership.

The Balance Sheets were signed by the President, Immediate Past President, Hon. Treasurer and General Secretary.

Resolved to record the best thanks of the Council to Mr. A. J. H. Watson for the highly efficient manner in which he has again handled the Society's accounts.

Bevan Swift Memorial Fund.

The Hon. Treasurer explained that if the proceeds of the Bevan Swift Memorial Fund were invested, the interest, after deducting tax, would be too small to provide a worthwhile annual Prize.

Resolved that the proceeds of the Bevan Swift Memorial Fund shall remain in the Society's current account and that a portion shall be disbursed annually to the person selected to deliver the Bevan Swift Memorial Lecture.

Membership.

Resolved—

(*a*) To confirm the action of the President in approving 61 applications for membership (48 Corporate and 13 Associates) and one application for transfer received from the date of the July Council meeting up to August 15, 1950.

(*b*) To approve:—
63 applications for Corporate Membership
20 applications for Associate Membership
6 applications for Junior Associate Membership
8 applications for transfer to Corporate Membership
1 application (Mr. T. Knight, G2FUU) for Life Membership.

Applications for Affiliation.

Resolved, subject to the receipt of satisfactory reports from the appropriate Regional or other Representative, to grant affiliation to the Baldock District Radio Society, the Harlow & District Radio Society, and the Lewes & District Model Engineering Club.

Ministry of Transport

It was reported that a letter had been sent to the Ministry of Transport asking for an early reply to the Society's further request that a meeting be convened to discuss emergency Maritime communication measures.

London Lecture Meetings.

It was reported that the Institution of Electrical Engineers had increased their charges for accommodation.

Resolved to accept the increased charges for the hire of the Lecture Theatre for the four meetings up to December, 1950, and then to review the matter if attendances appear to warrant the transfer of meetings to the Long Room.

Amateur Radio Exhibition.

The Council received a detailed report from the Secretary on various matters relating to the Amateur Radio Exhibition. It was reported that the revenue from stands was likely to be less than in previous years due to the fact that one or two prominent concerns engaged on the National Defence programme had not booked space. On the other hand several new concerns would be showing for the first time.

Arrangements for the complimentary luncheon to representatives of the radio trade and distinguished guests were approved.

W/T Act, 1949—Advisory Committee.

The Secretary reported upon the constitution of the Advisory Committee.

C.A.V.

The Secretary reported the receipt of a circular letter from the Czecho-Slovakian Society (C.A.V.) requesting all Member Societies in the International Amateur Radio Union to approve a declaration demanding, *inter alia*, "the unconditional banning of atomic weapons as instruments of terror and mass murder".

Resolved to advise I.A.R.U. Headquarters that the Council of the R.S.G.B. is of the opinion that the Amateur Radio Movement should not concern itself with international politics.

Mr. Milne submitted a batch of QSL cards from Czecho-Slovakian amateurs all of which carried Russian, English and French versions of the declaration referred to in the letter from C.A.V. Mr. Milne was requested to return the cards to C.A.V. and to advise them that the R.S.G.B. cannot accept cards containing political propaganda.

Southend Radio Society.

The Council resolved to take no action on a proposal put forward by the Southend Radio Society that the Morse Code test for amateurs should be abolished altogether or abolished for men over 30 years of age. The Council also resolved to take no action on a proposal by the same Society that the numeral following the letter G should indicate the geographical position or region of the amateur station.

National Institute for the Blind.

The Secretary reported at length upon discussions which he had had with representatives of the N.I.B. in regard to the preparation of further Braille copies of the Amateur Radio Handbook. (A statement relating to this matter appeared in the October issue.)

Council Nominations.

The Council received and considered a letter from the Society's legal advisers on matters relating to Council nominations.

Radio Club Argentina.

The Council received and considered a letter from the above-named Club regarding the operation of Argentina Amateur Radio stations in territory known throughout the British Commonwealth and Empire as the Falkland Islands Dependencies.

Resolved to record that the Council regards the Argentina Amateur Radio stations operating in the Falkland Islands Dependencies as "pirates" and is treating them as such.

Radio Leopoldville

Mr. Cooper reported that the authorities responsible for the operation of the above-named broadcasting station had offered the Society 15 minutes broadcasting time per month.

Foreign Telephony Stations in the 3.5 Mc/s. Band.

The Secretary submitted a letter from Mr. J. Hum wherein he complained that certain European amateur stations were operating on telephony in that part of the 3.5 Mc/s. band which has been accepted for telegraphy operation only. The Secretary's action in asking Mr. Hum for the call-signs of the offending stations was approved.

Adjournment.

Due to the lateness of the hour the President moved and it was resolved that the meeting stand adjourned until Friday, October 6, 1950, at 6 p.m.

The Council rose at 9.35 p.m.

Resumption.

The Council resumed business at 6 p.m. on Friday, October 6, 1950, when the following were present:—

Present.—The President (Mr. W. A. Scarr) in the Chair, Messrs. A. P. G. Amos, W. H. Allen, F. Charman, D. N. Corfield, L. Cooper, W. N. Craig, V. M. Desmond, C. H. L. Edwards, J. W. Mathews, A. O. Milne, P. A. Thorogood and John Clarricoats (General Secretary).

Apology.—An apology for absence was received from Mr. A. J. H. Watson.

Reports and Minutes of Committees.

The Council accepted the Minutes of a meeting of the Membership and Representation Committee and the recommendations contained therein. The recommendations referred to a new design of membership certificate, an agenda of business for the Regional Representatives' Conference, and the duties of R.R.s appertaining to Official Regional Meetings.

The Council accepted a Report covering seven meetings of the Contests Committee and a recommendation contained therein. The recommendation referred to the provision of a trophy for D/F Contests.

The Council accepted the Minutes of a meeting of the Technical Committee and a recommendation contained therein. The recommendation referred to the award of the Norman Keith Adams Prize to Mr. H. A. M. Clark for 1950.

It was reported that the Technical Committee were still pursuing their inquiries in regard to the preparation of a 3rd Edition of the Amateur Radio Handbook.

The Council accepted the Minutes of a meeting of the General Purposes Committee. The Minutes contained no recommendations.

It was reported that Mr. A. J. H. Watson had been appointed Chairman of the General Purposes Committee, and that Messrs. W. H. Matthews, R. L. Glaisher and B. G. Wardman had been invited to serve thereon as co-opted members.

London O.R.M.

The Council gave very careful consideration to three resolutions adopted at the London O.R.M. held on May 14, 1950, and which had been submitted to them by Mr. W. H. Matthews.

First Resolution.

"That the Council call a Special General Meeting as soon as possible in order to standardise the subscription at 21/- for the Corporate membership and that such extra funds so obtained be used to consolidate the Representation scheme by supporting financially, qualifying District and Regional Meetings, etc."

Mr. Charman proposed, Mr. Milne seconded, and it was resolved unanimously to inform Mr. Matthews

(*a*) That in the opinion of the Council it would not be in the best interests of the membership to call a Special General Meeting at the present time for reconsideration of the annual subscription for this purpose.

(*b*) That in the event of the subscription being altered at some future date the Council consider that there would be many other important calls on the additional revenue.

(*c*) That the present Council will recommend the 1951 Council to pay for the cost of the hire of accommodation of the business meetings at Official Regional Meetings only.

Second Resolution.

"That if the Council elections have been contrary to the Articles of Association that all future elections should conform to the said Articles."

Mr. Mathews proposed, Mr. Desmond seconded, and it was resolved unanimously to inform Mr. Matthews that the procedure of the annual elections would be referred to the Society's legal adviser, whose recommendations would be followed in the conduct of the forthcoming election.

Third Resolution.

"That an expert Committee of Investigation be set up to examine the internal workings and Administration of Headquarters, and if necessary to advise upon measures which should be taken to improve the efficiency of the organisation."

The Council found themselves unable to support the view implied in the third resolution that the organisation of Headquarters needed investigation and on the Motion of Mr. Cooper, seconded by Mr. Allen, it was resolved unanimously to inform Mr. Matthews that the General Purposes Committee of the Council—already in being—was empowered to review the organisation if necessary.

Account of London O.R.M.

The Council considered a letter submitted by Mr. W. H. Matthews on publishing further information on the London O.R.M.

Resolved to advise Mr. Matthews that the three resolutions adopted at the London O.R.M. as well as the decisions of the Council will appear in the Résumé of the Minutes of the current meeting.

June, 1950, I.A.R.U. Calendar (No. 39)

Resolved by 6 votes to 5 to record an "Aye" vote in favour of the election to membership in the International Amateur Radio Union of the Israel Amateur Radio Club.

Mr. A. P. G. Amos and Mr. J. W. Mathews asked to be recorded as voting against the resolution.

Resolved to record "Aye" votes in favour of the election to membership in the International Amateur Radio Union of the Amateur Radio Club, India and the Technical Institute of Radio, Syria.

[A précis of other matters referred to in the June Calendar appeared in the October issue of the BULLETIN.—ED.]

The meeting terminated at 8.45 p.m.

October Council Meeting

Résumé of the Minutes of a Meeting of the Council held at Headquarters on Tuesday, October 17, 1950, at 6 p.m.

Present.—The President (Mr. W. A. Scarr) in the Chair, Messrs. W. H. Allen, A. P. G. Amos, F. Charman, L. Cooper, D. N. Corfield, W. N. Craig, V. M. Desmond, C. H. L. Edwards, J. W. Mathews, A. O. Milne, P. A. Thorogood, and John Clarricoats (General Secretary).

Apology.—An apology for absence was submitted on behalf of Mr. A. J. H. Watson.

Finance.

Resolved to accept and adopt the Cash Account for the month ended September 30, 1950, as prepared by the Hon. Treasurer.

Membership.

Resolved to approve:

60 applications for Corporate Membership.
17 applications for Associate Membership.
5 applications for Junior Associate Membership.
4 applications for transfer to Corporate Membership.

Amateur Radio Exhibition.

The Secretary submitted a complete list of the concerns and organisations that had reserved space to date. He estimated that the revenue from stands would be somewhat less than last year.

Printing Dispute.

The Secretary submitted a letter from the South London Press wherein an assurance was given to the Society that every effort would be made to produce the Exhibition Catalogue and Accounts to time. It was regretted that due to a continuation of the dispute the October issue of the BULLETIN would appear late.

The Secretary pointed out that if the dispute persisted some advantage would be gained by holding the Annual General Meeting after Christmas.

Resolved to change the date of the Annual General Meeting from December 15 to December 29, 1950

"Airmet."

Resolved to give publicity to a petition being organised by the Royal Meteorological Society for the restoration of "Airmet." (This matter was referred to in the last issue of the BULLETIN.—Ed.)

R.E.F. Technical Lectures.

It was reported that R.E.F. had been authorised by the French Ministry of Posts and Telegraphs to broadcast technical lectures on frequencies within the 3.5, 7 and 14 Mc/s. amateur bands.

Several members considered that a letter should be sent to R.E.F. expressing regret that lectures are to be broadcast on amateur frequencies, but after further discussion it was agreed to await the receipt of additional details from R.E.F.

Propaganda QSL Cards.

Mr. Milne reported that QSL cards bearing political propaganda had been received from Hungarian amateurs. All such cards had been returned.

Pennant from U.R.E.

The Secretary reported that the Spanish Society U.R.E. had presented to the Society a silk pennant in token of friendship.

Resolved to thank U.R.E. for their kindness.

Annual Report

A draft of the Annual Report of the Council was submitted. Mr. Cooper moved, Mr. Allen seconded, and it was

Resolved to accept and adopt the Report and to authorise its publication in the Society's Journal.

Contests Committee.

The Council accepted and adopted the Report of the Contests Committee. In connection with the Report it was Resolved—

(*a*) To approve the list of Contests for 1951 as put forward by the Committee.

(*b*) To place an order with Bradbury Wilkinson & Co., Ltd., for 500 Certificates of Merit to the design submitted, in the sum of £18 including £2 5s. Purchase Tax.

(*c*) To authorise an expenditure of up to £50 for trophies and engraving.

(*d*) To place an order with Messrs. T. A. Butler & Co., Ltd., for the supply of a special D/F Contest Trophy in the sum of £3 3s.

General Purposes Committee.

The Council accepted and adopted the Minutes of a Meeting of the Committee in lieu of a Report.

Headquarters Station.

Mr. Mathews suggested and it was agreed that the Technical Committee should be asked to look into the question of the Headquarters station with a view to operating the equipment to better advantage.

The meeting terminated at 9.40 p.m.

Dulwich and New Cross

The T.R.—Mr. H. F. Knott, G3CU—recently gave an interesting lecture-demonstration of single sideband suppressed carrier operation to 43 members, showing the various transmission filters which can be used. Particular emphasis was given to the phase shift system used in his own equipment. How effectively the carrier can be suppressed was demonstrated by coupling a pea-lamp directly to the tank coil: it remained unlit until the transmitter was modulated. Other activities of the Group have included a visit to the Battersea Power Station, and a film programme presented by the Central Office of Information. Another film programme is planned for early in the New Year.

AROUND THE REGIONS

Brentwood and District Radio Society

On October 27 last Mr. Louis Varney, A.M.I.E.E., G5RV, lectured to the Brentwood and District Radio Society on "The design of a T.V.I. proof transmitter." Using a transmitting aerial only 7 ft. from a television receiver (*i.e.*, an indoor transmitting aerial) and only 15 ft. away from the T.V. simple dipole receiving aerial, which was itself only 12 ft. high and screened by buildings from Alexandra Palace, a completely successful demonstration was given on 3.5, 7, 14 and 28 Mc/s.

Tests were equally successful on two different standard television receivers—an "Alba" 9-in. Table Model and a Pye LV20. Neither receiver was modified in any way.

Brighton and District Radio Club

Local activities are recorded each month in *The Brighton Link*, now running to as many as 16 pages of social and technical notes, crosswords and puzzles. With weekly meetings and a membership of just under 100, the Club has rapidly become one of the leading centres of local activity in the country. A contributory factor, perhaps, is the low subscription rate (2/6 per year for full membership). The Club transmitter, G3EVE/A, was operated at the recent "Home Hobbies Exhibition" in Brighton.

Bristol

Mr. C. Collins G8SC, just back from Kenya where he operated as VQ4SC, was a welcome visitor at the October R.S.G.B. Group meeting, when two outstanding home-built communication receivers were demonstrated by B.R.S. members Lewis and Bartlett, winners of the G5FS trophy. Meetings are held on the third Friday (7 p.m.) of each month at Keen's Cafe, Park Row. The T.R.—Mr. D. Newport, G3CHW—extends a special welcome to newcomers and visitors. On January 19 Messrs. J. N. Walker, G5JU, and C. Smith of *Stratton's* will describe some of the latest *Eddystone* products.

Chester and District Amateur Radio Society

Membership is increasing rapidly, thanks to an attractive programme for the weekly (Tuesday evening) meetings in the Y.M.C.A. grounds. Speakers have included G2AMV, who spoke on V.F.O.s, and G2YS who described his cure of T.V.I. W5FTK was present at the latter meeting. Weekly Morse classes (6.30 p.m.) are held prior to the main meeting.

City of Belfast Y.M.C.A. Radio Club

Satisfactory progress—both in membership and financially—was reported at the recent A.G.M. Morse classes are held on Wednesday and Thursday evenings, with a weekly Club Night on Wednesdays. Two club transmitters are now complete and will be operating under the call GI6YM. The Hon. Secretary is Mr. S. H. Foster, GI3GAL, 31 Belmont Park, Belfast.

Gateshead & District Amateur Radio Club

More than 300 persons visited an exhibition of Amateur Radio equipment arranged recently by the Gateshead and District Amateur Radio Club. The Secretary-Treasurer is Mr L. Blackie, G3DIJ, 109 Brighton Road, Gateshead 8, Co. Durham. The Club meets on Wednesday evenings at the Y.M.C.A., Sutherland Hall, Durham Road. New members will be cordially welcomed.

Kingston Amateur Radio Society

The President, Mr. V. Mayfield, G2ACA (T.R. for Kingston), spoke on the value of Amateur Radio to the community at the opening of the first exhibition of members' equipment at the Society Headquarters on November 9. A high standard of constructional ability was shown in the entries for the "6BI Cup," won this year by Mr. G. T. Jordan, whose miniature oscilloscope gained most votes for ingenuity and craftsmanship. Historical amateur radio equipment, dating back to 1912, was shown by old-timers G2LP and G2HS, both of whom have been licensed for almost 40 years. A comprehensive collection of valves was also shown by G3GVU. R.S.G.B. representatives who visited the exhibition included Council Member L. Cooper, G5LC, and J. P. Hawker, G3VA.

The Society has just completed a most successful year, with the establishment of a permanent H.Q. at Penrhyn House, 5 Penrhyn Road, Kingston, and the commencement of work on a club station. Classes in Morse, radio theory and construction practice are held on Wednesdays and Fridays. A programme of lectures has also been arranged. Details of the Society can be obtained from the Kingston T.R., Mr. V. L. Mayhead, G2ACA, 2, Springfield Road, Kingston, or from the Hon. Secretary, Mr. R. S. Babbs, G3GVU, 28 Grove Lane.

Malvern and District Radio Society

A comprehensive programme of lectures for the winter session has now been arranged. Meetings are held at 7.45 p.m. on the first Wednesday of each month at the "Foley Arms Hotel." The November lecture—"Solar and Cosmic Radiations"—was given by Dr. F. E. Jones. In January, Mr. P. L. Stride, G2BUY, of Messrs. E. K. Cole, Ltd., will describe modern communication equipment as used in the Services. A recent visit to the Sutton Coldfield TV station was much enjoyed and it is hoped to arrange similar trips in the future.

Medway Area

A complete amateur "shack" with the call G2FJA/A was provided by M.A.R.T.S. at a local exhibition; as a result, several new members have been enrolled. The friendly spirit which exists in the area is reflected in the amount of work contributed on such occasions by all members. Good progress is also being made at the new H.Q., and the winter programme of meetings is now well under way.

Northampton

Mr. V. R. Hartopp, BRS.15,304, Town Representative for Northampton and Hon. Secretary of the Northampton Short Wave Radio Club, will be pleased to meet local members at 8 Duke Street any Friday evening.

Oxford and District Amateur Radio Society

With a current total of 80, of whom 18 are licensed amateurs, the Society records a 50 per cent. increase in membership during the past year. Twenty of the members have enrolled in a basic radio course. A growing interest in D/F work has led to the organisation of a local contest, with the added inducements of cash prizes and free teas. At the A.G.M. on October 25, the following officers were re-elected: *President*, A. M-M. Payne, B.A., M.D., M.R.C.P.; *Chairman*, F. A. Jefferies, G8PX; *Hon. Secretary and Treasurer*, J. Hickling, G3GCS, 47 Banbury Road, Oxford.

Richmond and District Radio Society

Winter programme of the Society includes monthly meetings at the Richmond (Surrey) Community Centre, Sheen Road, and regular Morse practice classes. The December lecture, on the 20th, will be "High Quality Reproduction." Mr. V. Copley-May, G3AAG, spoke on "Radio Valves" at the October meeting. The Secretary, Mr. W. Crossland, G5CI, 1 Spring Grove Road, Richmond, will be pleased to give full information to prospective members.

Scotland—Region 13

Thanks to the co-operation of G5BA, *The Border Net*, local newsletter of Region 13, now appears in printed form. Feature of this friendly and informal monthly journal, which has already reached 35 issues, is "The Border Ballad" in which the exploits of the locals are recorded in verse. Perhaps, when the N.F.D. trophy finally comes to the Region, the first amateur calypso will be sung!

S.E. London Technical College Radio Society

Club evenings are held fortnightly at the Society's station—G3CMQ—at the D.C.S. building. Past and present students of the college are most welcome to attend. A Radio Amateurs' Examination course is held every Friday at 6.45 p.m. in the main building.

Spen Valley Radio and Television Society

Thirty members spent a most enjoyable day when the Society had its annual autumn outing. The morning was spent at Liverpool, visiting Seaforth Radio and going round Speke Hall. After lunch, on the return journey, the party saw the Manchester City Police V.H.F. Station. On December 13 there will be a demonstration of the BRT 400 Receiver at the Clubroom, and on December 27 the annual dinner will be held at the Star Inn, Roberttown.

Stoke-on-Trent Amateur Radio Society

The weekly meetings at the club H.Q.—"The Cottage Inn," Oakhull—usually include a technical lecture. Despite the handicap of an indoor aerial, contacts with all parts of the country have been made with the H.Q. transmitter G3GUB which operates on 3,540 kc/s. New members are always welcome: details from the Secretary, Mr. J. R. Brindley, G3DML, "Elston," Albany-rd., Harpfields.

Stourbridge and District Amateur Radio Society

Some 5,000 visitors to the local Hobbies Exhibition, organised by the Rotary Club, at the Stourbridge Town Hall from October 25 to 28, saw two amateur stations—G6OJ/A and G2CLS/A—in operation. The Society also exhibited home-built radio and television equipment. Considerable public interest in Amateur Radio activities was aroused and several new members recruited. It is planned to hold further exhibitions in the district.

Sutton and Cheam Radio Society

Mr. Louis Varney, A.M.I.E.E., G5RV, will lecture to the Sutton and Cheam Radio Society on December 9. His subject will be "The design of T.V.I. proof transmitters." A large attendance is expected.

Torbay Amateur Radio Society

Activity continues at a high level in the district: recent 144 Mc/s. achievements of members being G3AVF's victory in the R.S.G.B. Field Day, and G2BMZ's new European record of 520 miles. Rules have been formulated for the annual award of two Society trophies: one for the best item of home-constructed apparatus, the other (open to all R.S.G.B. members in the area) for the most outstanding V.H.F. achievement.

Warrington and District Radio Society

Highlight of September was the local inter-club contest which it is hoped will become an annual event. A lecture on 3 cm. equipment by G3LZ and G3BAK, and a Radio Brains Trust have been other recent features. Mr. F. Musk lectured on "High Fidelity Recording" on November 6.

West Middlesex Amateur Radio Club

Recent meetings of the Club have included lectures on "Airborne Radar," "Aerial Problems" and "A Home-Constructed Cathode Ray Oscilloscope." A very successful "Junk Sale" has also been held. Future meetings feature a general discussion on "My Interest in Radio," and an exhibition of home-built equipment. Prospective members are cordially invited to attend the meetings on the second and fourth Wednesdays of each month at the Labour Hall, Uxbridge Road, Southall, at 7.30 p.m. Morse classes are held from 7 to 7.30 p.m.

West Somerset Radio Society

At the September meeting of the Taunton branch, held at the Castle Hotel, Mr. G. G. Rogers demonstrated a travelling-wave amplifier for use on wavelengths of the order of 6-8 cm. Minehead meetings have not yet been resumed.

Wirral Amateur Radio Society

Members of the Society are already making preparations for the annual constructional contest to be judged on January 24. Meetings are held twice monthly at the Y.M.C.A., Birkenhead, with dates published in "Forthcoming Events." A monthly newsletter, edited by G2AMV, is circulated to all members. R.S.G.B. members who would like to join the Society or to receive copies of the newsletter are invited to get in touch with the Secretary, Mr. A. H. Watts, G3FXC, 38 Sandymount Drive, Wallasey (telephone Wallasey 5712).

German Amateur Radio Convention

The Short Wave Amateur Convention at Bad Homburg (near Frankfurt), held in September, attracted many foreign visitors, including American, Austrian, British, Dutch, French and Yugoslav amateurs. The various short-wave clubs in Western Germany have now firmly united to form the Deutscher Amateur Radio Club and intend to apply for membership of the International Amateur Radio Union. Lectures and visits proved a popular feature of the convention.

SPOTLIGHT ON . . .

BULLETIN CONTRIBUTIONS

- Since July, 1925, the BULLETIN has aimed at providing up-to-the-minute news and information on every phase of Amateur Radio. This objective can only be achieved if members are prepared to furnish details of their experimental and constructional work.
- Articles on a wide variety of Amateur Radio topics—both transmitting and receiving—are always welcome and will receive the most careful Editorial consideration.
- New circuits, ingenious hints and tips, successful aerial systems and photographs of station layouts are invited. Editorial assistance will be given if the subject is of sufficient general interest.
- To avoid later disappointment, authors are urged to submit a synopsis of full-length articles at an early stage.
- The Society purchases the copyright of BULLETIN contributions at the rate of £2 2s. per 1,000 words (£3 3s. per 1,000 words for highly original articles).

As paper restrictions ease, there will be a growing need for sound technical articles. Can YOU help to make the BULLETIN the mirror to amateur progress in this country?

FOR THE ADVANCEMENT OF AMATEUR RADIO

HELP US . . .

- *When writing to Headquarters do not include* BULLETIN *items, queries, changes of address and publication orders, etc., on the same sheet of paper. Only one envelope is necessary, but a separate sheet for each subject please.*
- *Always print, or write clearly, your full name and address. Christian names, call-signs and illegible signatures cause much unnecessary checking.*
- *Notify Headquarters of impending changes of address several weeks before you move. Alterations to subscription reminders, etc., are not sufficient unless definite instructions are given. Include your B.R.S. number and/or call-sign, your present address and, if possible, the date your subscription falls due. Remember that* BULLETIN *wrappers are prepared up to a fortnight before the publication date.*
- *When forwarding your subscription renewal always return the reminder card sent to you from Headquarters, or, if this has been lost, indicate the date your subscription fell due.*
- *Please send all QSL cards to Mr. A. O. Milne, G2MI, 29 Kechill Gardens, Hayes, Bromley, Kent, and not to Headquarters.*
- *The Society is seldom able to supply information on ex-Government equipment except in the form of* BULLETIN *articles.*

. . . TO HELP YOU!

Wireless World Diary, 1951

The reference pages of this diary, now in its 33rd year of publication, contains information, mostly technical, of the kind that every wireless man needs, but can seldom memorise.

The data is that most widely useful in the design, maintenance and use of radio equipment. In addition there are general reference pages giving a summary of existing regulations affecting the wireless user (including a page on the new Wireless Telegraphy Act), addresses of radio organisations, etc.

The reference section includes a large selection of handy formulæ, abacs for easy graphical estimation of such things as coil windings and circuit constants, lists of unit abbreviations, definitions and classifications, with a number of useful circuit diagrams. The valve base tables give connections for over 500 valves in convenient form.

Morocco leather 5s. 6d. Rexine 3s. 8d., including Purchase Tax.

Representation

Vacancies

Messrs. R. T. Bowler, G3GKN, P. Cutler, G3DAO, J. W. Underwood, G3CIW, and H. J. Chater, G2LU, have resigned as Town Representatives for Uxbridge, Beaconsfield, Ruislip and Coventry respectively. Nominations for their successors should be made in the form prescribed in the September, 1949, issue of the BULLETIN and sent to reach the General Secretary by not later than December 31, 1950.

Volunteers Wanted

Corporate Members resident in the following areas within the West London District are invited to offer their services as Town or Area Representatives:—

Chiswick and Hammersmith.
Kensington and Shepherd's Bush.
Cricklewood, Hampstead and Golders Green.
Kentish Town.
St. John's Wood.

Offers should be addressed to the West London D.R., Mr. S. F. Sharpe, G3CKX, 64 Windsor Avenue, Hillingdon, Middlesex.

Should The "T" Code Be Revised?

DEAR SIR,—May I suggest the time is ripe to revise the "T" Code as used at present to express signal quality? Only in rare instances is a (true) report given below T8 and some of the present terms do not make sense—for example, "moderately musical," "slight trace of whistle" and "*smooth* ripple." In any case, amateurs with notes T7 or worse should be ostracised for the general good, despite all temptation.

It follows that T1 to T7 are being wasted, and the two commonly used codes T8 and T9 do not convey all the information desirable. A present-day tone report should cover the presence of (i) A.C. ripple (ii) frequency variation including drift and chirp, and (iii) key clicks. The second factor is of importance in view of the increasing use of receivers possessing extremely high selectivity.

There are a number of methods by which the code could be improved—for example, the use of a second indicating letter or figure. However, it is desirable to keep the code simple, and this is assisted by reason of the fact that a high percentage of signals are at least D.C. whatever else they may not be! It is therefore reasonable to take D.C. for granted unless specially negatived in the report. On this basis I suggest the following revised code for discussion:

- T 0 Conveys that the note is extremely poor and insinuates that steps should be taken immediately to improve it.
- T 1 A.C. ripple present.
- T 2 Noticeable key clicks.
- T 3 Slight steady drift.
- T 4 Serious steady drift.
- T 5 Random drift.
- T 6 Slight chirp.
- T 7 Serious chirp (the all too common "Twa-Twit" signal).
- T 8 Signal of reasonably good quality but lacking that almost indefinable T9 quality.
- T 9 Reserved for really superb quality signal, free from all vices.

Degrees of ripple and of key-click are hardly necessary since, when present to a degree which elicits comment, remedial measures should automatically follow.

The majority of practical C.W. operators will agree that a new code merits serious consideration, and that approval for one should be reached by member societies of the I.A.R.U., followed by international use.

Yours faithfully,

Birmingham, 31. J. N. WALKER (G5JU).

Frequency Measuring Contest

DEAR SIR,—The very large number of articles on the subject of frequency measuring apparatus which appear both in the BULLETIN and in other magazines devoted to Amateur Radio indicates that this subject has, since the war at any rate, become of major interest to amateurs.

This prompts me to suggest that there might well be a good deal of support for a frequency measuring contest. It is assumed that frequency measuring equipment is available to the Society which has a greater degree of accuracy than that possessed by the average amateur. On a predetermined date and time some half-dozen transmissions might be radiated (by GB1RS if possible), and members invited to measure the frequencies of these transmissions. Those submitting results nearest the "official" figures might receive honourable mention in the BULLETIN. The station with the best results over a number of tests might receive a small prize, say, a 100 kc/s. bar "sputtered" with his initials!

Opinions may differ as to the value of DX contests. I suggest there could be no two opinions about the value of such a contest as this. It seems likely, or at any rate possible, that the Post Office would be willing to encourage such a contest by taking check readings on the transmissions and making these available to the Society.

I hope you will be able to put out some on the DX bands so that overseas members may join in. Incidentally, this would perhaps be the only type of contest in which B.R.S. members could compete on even terms.

Yours faithfully,

J. A. FARRER (ZD2FAR).

Lagos, Nigeria. (Ex-BRS245, G5FA, VQ3FAR).

[*Members willing to support some form of Frequency Measuring Contest are invited to communicate with Headquarters.—Ed.*]

Amateur Television

DEAR SIR,—After attending the Plymouth O.R.M. I am wondering if amateurs generally are afraid of television.

As one of a scattered band of long-range T.V. enthusiasts in Cornwall, I expected to find more interest amongst those present at the meeting, especially in view of the recent agitation for an amateur T.V. band. Instead, I sensed a fear—during conversation—that when T.V. becomes more general, complaints of interference may eventually restrict amateur activities.

During his speech the General Secretary emphasised—and I fully agree with him—that keeping off the air is not the answer to the problem; recent articles in the BULLETIN have shown that a T.V.I.-proof transmitter is quite a practical proposition. The finest encouragement to the amateur to adopt modern methods of suppression would be the allocation of an amateur T.V. band as soon as possible, as such a band would most probably have to be harmonically related to the lower amateur frequencies.

Yours faithfully,

Tintagel, Cornwall. R. E. NEILSON (BRS6750).

Beam Construction—and a Bouquet for "Donex"

DEAR SIR,—A copy of "Donex's" article on Beam Construction published in the August issue should be in the hands of all manufacturers of beam aerials for sale to the long-suffering radio fraternity!

For the last six months I have had in use for T.V. reception a four-element folded dipole array. The 1-in. mild steel "mast" provided nearly bent double with the first gale it encountered, and was replaced by the manufacturers, who admitted it was not up to standard and suggested that in *very exposed* localities it was advisable to use stay wires.

For months past, excessive windage vibration has caused literally many sleepless nights for at least three households, and recently once again I had the array down for inspection. I should mention that it is located on the top of a mast about 45 ft. up, but very efficiently stayed. The work involved in getting this down in a very small back garden can be imagined, and unfortunately we were unable to prevent the base of the mast slipping very slightly when at an acute angle near the ground. This was quite sufficient to cause the reflector element to drop off! This could just as easily have fallen from a height of 45 ft. with disastrous consequences.

The time was opportune to check over the array in the light of "Donex's" recommendations. Steel bolts were corroded, nuts loose as might be expected, as they actually passed through the threaded sections of the boom, rendering a weak job even weaker. In addition every element was loose although these had been screwed-in as tightly as possible before installation.

A quick decision was made and an operation with a hacksaw reduced the four-element array to the more humble two elements—*and results are in no way inferior to the four element!* We live and learn! But we tremble to think of the results which may accrue if these methods of beam construction are applied to marine and commercial installations!

Yours faithfully,

Sheffield, 5. GEO. E. CROCKER, B.R.S. 14686.

[*Mr. Crocker submitted a section of the boom. At the line of fracture the thickness of metal can be measured in "thous."—Editor.*]

Utility QSL Cards

DEAR SIR,—Living in a comparatively congested area, I often regard with envy the fellow working from an adjacent or DX part of the globe with a distinctive call-sign. I realise that there are snags for him and one not the least is the cost of complying with an abundance of requests from persons like me. I am eager to receive his card, but I can well understand his indifference upon the reception of mine. Without a doubt he has forgotten me amongst a spate of other G contacts.

It seems to me that the "distinctive call fellow" wants a little encouragement and an effective way to please him would be to cut down his out-of-pocket expenses. Why not produce a standard "utility"-type QSL card? Omit all unnecessary printed details with a convenient space available for him to insert his call-sign by means of rubber stamp or even block character writing—a standard card approved internationally. In this country the R.S.G.B., by arrangement with well-known ham printing firms could have these cards run off in bulk at small cost and made available to members.

Armed with a quantity of these cards, all that remains is to despatch one to each remissing ham and await its return duly completed. Alternatively he could purchase some from his own Society when the calls upon the QSL cards of his choice become overwhelming.

As to the question of authenticity for contest purposes—a "utility" QSL sent direct by mail would bear the cancellation stamp of the Post Office of origin. "Utility" cards sent to I.A.R.U. QSL bureaux for distribution could be stamped on the back with the emblem of the Society receiving them. This latter arrangement would entail a little extra work for the volunteers to whom we are already very much indebted, but they would receive an eternal blessing from amateurs like myself at present awaiting those elusive much-sought-after cards.

Yours faithfully,

London, W.2. C. R. GREEN, G5LN.

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* Denotes transfer from Associate Grade.
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BOOK REVIEWS

AN INTRODUCTION TO THE THEORY AND DESIGN OF ELECTRIC WAVE FILTERS. By F. Scaven. Chapman & Hall. 18s.

The specialist subject of wave filters could justifiably have been said, until recently, to be outside the scope of Amateur Radio. With the exception of certain elementary types of band-pass couplings in receivers, and simple low-pass circuits used behind detectors and in smoothing units the amateur was not interested in the wide variety of networks which are included under this heading. Since the war, however, the amateur has become involved in such matters as single sideband transmission and T.V.I. These, among other recent developments, call for a knowledge of filter technique which must be applied with a certain amount of understanding to achieve success.

Unfortunately, for an adequate study of the subject some mathematics is essential. The book under review commences with an introduction which covers all the mathematics required which, to a first approximation, consists of matriculation standard together with an understanding of complex quantities. Let it be said, however, that in order to use the *results* of the theoretical work in the chapters which follow, and in order to design the most complicated filters from the design formulæ given, only the simplest algebra is necessary.

The book deals with the principles of low-pass, high-pass, band-pass and band-stop filters in their "constant-K" and "m-derived" forms, following the basic methods employed by Zobel and Campbell. It should be noted, however, that the values given for the series and shunt arm elements are those for half-sections, whereas those given in American texts are invariably for full sections.

Practical design features, such as the effect of losses in coils and condensers, and the methods of construction and adjustment of components, are also included.

The book concludes with the design of filter elements to meet given insertion loss requirements rather than image impedance attenuation characteristics, *i.e.*, the actual loss produced when operated between practical resistive terminations, rather than between hypothetical terminating impedances which are never encountered in practice but which simplify the basic design theory, developed earlier in the book.

The work is clearly illustrated and well laid out, and numerous fully worked-out design examples are included. It is perhaps a pity that a tabulated summary of the basic design formulæ is not included for ready reference.

H. A. M. C.

THE MAGNETIC AMPLIFIER. By J. H. Reyner. Stuart & Richards. 15s.

To most people an amplifier is essentially a device employing thermionic valves. Of recent years, however, the fact that the magnetic properties of iron and its alloys depend very much upon the degree of magnetisation involved has been turned to good account to produce devices capable of a useful degree of amplification without the use of any electronic valves. Such amplifiers have the great merits of simplicity and reliability, although their use is limited to circuits operating on relatively low frequencies.

This book consists of an account of the principles involved and the methods of construction employed in such amplifiers. Numerous applications are described, and it is of interest to note that techniques used in electronic amplifiers, such as negative feedback, are finding their application in the magnetic counterparts.

The book, which is almost entirely non-mathematical, includes a description of a number of magnetic amplifiers which are commercially available.

H. A. M. C.

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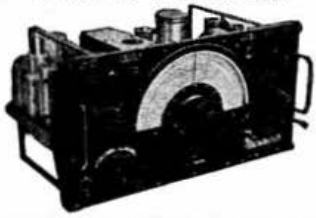

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