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Forthcoming Events

REGION 1

Ashton-under-Lyne.—October 7, 3 p.m., New Jerusalem Schools.
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Bolton.—October 2, 8 p.m., Y.M.C.A.
Burnley.—October 2, 8 p.m., Mechanics' Institute.
Bury.—October 11, 7.30 p.m., Y.M.C.A.
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Blackburn & Darwen.—September 21, October 5, 7.30 p.m., Y.M.C.A., Limbrick, Blackburn.
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Manchester.—October 1, 7.30 p.m., School of Technology, Sackville Street.
Oldham.—Alternate Wednesdays, 7.30 p.m., Clegg Street, Civic Street.
Preston.—September 28, 7.30 p.m., Three Tuns Hotel, North Road.
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REGION 3

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REGION 4

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REGION 5

Chelmsford.—October 2, 7.30 p.m., Smith's Radio Shop, 184 Moulsham Street.

REGION 6

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REGION 7

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Holloway (Grafton R.S.).—Mondays, Wednesdays & Fridays, 7.30 p.m., Grafton School, Eburne Road, N.7.
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St. Albans.—October 10, 24, 7.30 p.m., "Ottershaw," Upton Avenue.
Sutton & Cheam.—October 2, 16, 7.30 p.m., Sutton Adult School, Benhill Avenue.
Slough.—October 18, 7.45 p.m., "The Golden Eagle," High Street.
Watford (W. & D.R.T.S.).—September 18, October 2, 16, 7.30 p.m., Cookery Nook, Monmouth House, The Parade.
Welwyn.—October 2, 8 p.m., Council Chambers.

REGION 8

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Chatham (M.A.T.R.S.).—Mondays, 7.30 p.m., Co-operative Hall, Luton Road.
Eastbourne.—October 5, 7.30 p.m., Christchurch Club Rooms, Hanover Road.
Gillingham (G.T.S.).—Alternate Tuesdays, 7.30 p.m., Medway Technical Institute.
Petersfield—September 20, 7.30 p.m., "Woodville," Drill Hall Road, Horndean.
Portsmouth (P.D.R.C.).—Tuesdays, 7.30 p.m., Royal Marines Signals Club, Eastney Barracks.
Reading (R.R.S.).—September 29, main meeting, Abbey Gateway. October 13, Instructional, Abbey Gateway.
Southampton.—7.30 p.m., 22 Anglesea Road, Shirley.

REGION 9

Bath.—September 24, 7 p.m., 12 Pierrepont Street.
Bristol.—September 21, Carwardine's Restaurant, Baldwin Street, Bristol 1.
Exeter.—October 5, 7 p.m., Y.M.C.A., 41 St. David's Hill.
Gloucester.—Alternate Thursdays, 7.30 p.m., Spread Eagle Hotel, Market Parade.
North Devon.—October 4, 7.30 p.m., Rose of Torridge Cafe, The Quay, Bideford.
Penzance.—October 4, Railway Hotel.
Plymouth.—October 7, South-West Hamfest, Continental Hotel, tickets 9s. (from Devon C.R. and T.Rs.).
Stroud.—Wednesdays, 7.30 p.m., Subscription Rooms, Railway Hotel.
Weston-super-Mare.—October 2, 7.30 p.m., Y.M.C.A.
Yeovil.—Wednesdays, 7.30 p.m., Grove House, Preston Rd.
West Cornwall (W.C.R.C.).—October 4, "Fifteen Balls," Penryn, Nr. Falmouth.

REGION 10

Cardiff.—October 8, 7.30 p.m., "The British Volunteer," The Hayes.

REGION 13

Edinburgh (L.R.S.).—September 20, thence fortnightly, 7.30 p.m., Edinburgh Chambers of Commerce, 25 Charlotte Square.

REGION 14

Falkirk.—September 28, October 12, 7.30 p.m., The Temperance Cafe, High Street.
Glasgow.—September 26, 7.30 p.m., 39 Elmbank Crescent.

FORTHCOMING EVENTS

Items for inclusion in this feature should be sent to the appropriate Regional Representative by not later than the 25th of the month preceding publication.

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FREQUENCY STABILITY

THE crowded conditions in our bands have been the necessity which has mothered a not insignificant number of inventions. It is doubtful whether the communications receiver as we know it today would have reached the present stage in its evolution had it not been for the demands which Amateur Radio communication have made upon it.

In the field of transmitting technique the widespread use of crystal control was first introduced by the amateur. It has now been almost superseded by variable frequency oscillator control, illustrating how changing conditions produce changing techniques.

But receiver and transmitter must evolve together. High selectivity in receivers becomes pointless if transmissions occupy more than their essential share of the spectrum, while all the modern methods of narrow-band, high-stability transmission become superfluous if the receiver is inadequate.

There is one aspect, however, which must not be overlooked. A receiver with poor performance can only irritate its owner, whereas a badly designed or adjusted transmitter may exasperate countless others who may be endeavouring to make the best of our over-populated bands. Particularly, now that variable frequency oscillators are the vogue, is it imperative that we ensure they are free from drift; drift which progresses at a slow but uniform rate in the same direction throughout a transmission, only to creep back home again between "overs"! This evil must be at the root of many a lost contact, when the highly selective receiver at "the other end" requires frantic retuning after the send-receive switch is operated. There is really no excuse, with modern circuitry and components at our disposal, for anything other than the L/C circuit in the V.F.O. to cause an appreciable change in frequency. The type of variation which occurs as a result of valve heating betrays poor design, and can be avoided. The same applies to keying chirp, ripple or mains frequency-modulation, unintentional F.M. in telephony or a combination of any of these common ills.

A good deal of the trouble may be avoided by resisting the temptation to generate large outputs in the oscillator and early stages of the transmitter. Experience with T.V.I. has also demonstrated the wisdom of restricting power levels to low values until the final frequency is reached. It is also worth remembering that a stabilised power supply is not a panacea; it is always a good plan to strive in early design work for stability with an unstabilised power supply, reserving the voltage regulation device as a final protection after a fair degree of satisfaction has been attained without it.

"These things take a long time to warm up," is a phrase which can all too-often be applied to oscillators used in amateur communication. Good design aims at separating the frequency-determining components from any source of heat, such as valves, decoupling resistors and the like; for example it is not yet widely realised that the "series-tuned Colpitts" circuit may be separated from the valve by several *yards* of cable. If this practice is adopted it makes quite certain that warming-up drift, if any, may be overcome in the circuit design. The isolated L/C circuit should be at the mercy of nothing but variations in room temperature, and even this may be compensated by the judicious use of negative temperature-coefficient capacitors.

The choice of fundamental frequency for oscillator operation is another important factor. Nature seems to have set fairly fine limits to the frequency range which, in the present state of the art, offers the best stability in terms of percentage. Optimum results, it would seem, are achieved somewhere in the region of 1 Mc/s., so that, despite the need for numerous frequency multiplying stages, it may be desirable to run the oscillator at 1.7 Mc/s. or lower. If the power level is kept to a minimum, receiving type valves and components make it possible to construct the exciter cheaply and within reasonable dimensions.

Finally, a word about exchanging reports. It seems to be customary these days to give only two types of report on C.W. notes. These are T9 (meaning anything which could possibly emanate from a crystal no matter how roughly treated) and T8 (meaning anything else in any other category). It would not be out of place to utter a plea for honest reporting so that the *bona fide* seeker after truth is not led astray. R.H.H.

A SURVEY OF 70 cm. EQUIPMENT

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

The text of this article was the subject of a paper read by the author to members of the Society at the Institution of Electrical Engineers. It describes equipment for use on 420 Mc/s., and completes the series commenced in the March "Bulletin" ("Crystal Controlled Exciter for the 70 cm. Band"), and continued in the July issue ("Compact 70 cm. Receiver"). G5CD once again demonstrates that the construction of effective 420 Mc/s. equipment does not necessarily involve complicated plumbing and specialised techniques, but is within the scope of the average amateur possessing a working knowledge of V.H.F. circuitry and construction.

IT is a well known fact that the higher we go in the V.H.F. spectrum, the smaller and lower-loss must be the components that are used in radio transmitters and receivers. Because of skin effect and the poor power factor of dielectrics, losses at 420 Mc/s. are approximately nine times as great as those at 144 Mc/s. Lead inductance of wiring is also a serious matter.

Dielectric losses can be reduced by using the minimum of material, and by ensuring that such material has a low power factor, *e.g.*—polythene, polystyrene and P.T.F.E. (polytetro-fluorine). Ceramic is generally not so good, but may be preferable where mechanical stability is essential. P.T.F.E. is unfortunately now controlled and only available for V.H.F. applications by *Ministry of Supply* permit, but small stocks of components incorporating this material are still obtainable, and this should be borne in mind.

Examples of modern components (used in the apparatus described in this or earlier articles) are: 4.5 and 10 $\mu\mu$F. air trimmers, multiple unit by-pass capacitors, small coupling and lead-through capacitors, and miniature valveholders. The use of these components enables wiring to be carried out with extremely short leads, thereby reducing lead inductance. Skin effect can be overcome by silver-plating tuned circuits and essential wiring.

Valves

Several new types of valve have appeared since the war. For the receiver there is the planar triode CV408 (*MOV* A1714), the disc-seal type CV354 (*MOV* DET23), and the double-triode type CV455 (*Brimar* 12AT7, *Mullard* ECC81). For the transmitter there is the disc-seal type CV273 (*Mullard* ME1001, or the larger ME1002), and the double-tetrode type *Mullard* QQV06-40 (*U.S.A.* type AX9903/5894).

Other small single and double-triodes with slopes of the order of 24 mA/V. are being developed, and will be available before long. These should prove to be useful for both receivers and transmitters.

The cheapest and most readily available of the above types is the 12AT7, and this is capable of operating as an oscillator up to a maximum of about 700 Mc/s., or as a grounded-grid amplifier or mixer up to 500 Mc/s. At 420 Mc/s. the gain as a grounded-grid amplifier is in the region of 10 db. When operated as a mixer, a noise factor of about 10 and a conversion gain of 5 may be obtained. The output as a push-pull oscillator is approximately 2 watts.

Transmitters

A 70 cm. exciter, using crystal control from a 12 or 18 Mc/s. crystal, was described in the March, 1951, BULLETIN. Employing a *Mullard* QQV06-40 as the final tripler, it gives an output of about 5 watts. This valve may be substituted by an 832A without modification (other than the size of the hole in the chassis and the depth of the valveholder mounting), but the output will be reduced to 2 watts.

This exciter can be used quite successfully as a complete transmitter, or, with the final valve tuned to 144 Mc/s., as an extremely good 2-metre transmitter. Readers are warned, however, that if the final trebler is operated as a Class "C" P.A. on 144 Mc/s., the grid tuning circuit will require modification in order to achieve stability, because both grids are at high impedance to chassis. Referring to Fig. 1 in the March BULLETIN, the grids should be series-tuned to earth by using C17 to tune L4 and C21 to series-tune L3, the H.T. being supplied *via* a R.F. choke (*Eddystone* 1010). C16 is no longer required.

The 70 cm. P.A.

Subsequent to the production of the exciter, a P.A. stage incorporating a further QQV06-40 has been added, and has been found very successful. Fig. 1 shows the circuit, which is quite conventional. The P.A. will handle inputs up to about 50 watts, with outputs of up to 20 watts, neutralisation being unnecessary. The input circuit is naturally quite small and must be closely coupled to the exciter output.

The input circuit comprises two stiff wires (L2)

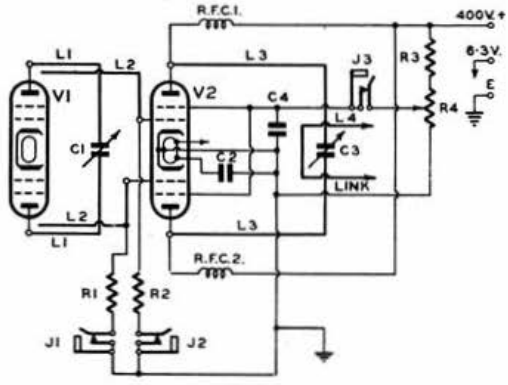

Fig. 1.

Circuit diagram of the 420 Mc/s. Power Amplifier. V1 is the final trebler of the exciter unit, L1 and C1 forming its tuned output circuit.

R1, 2	22,000 ohms *Erie* 1 W.
R3	22,000 ohms *Erie* 2 W.
R4	25,000 ohms potentiometer 2 W.
C2, 4	1,000 $\mu\mu$F. *T.C.C.* type CTH310.
C3	2 $\mu\mu$F. variable (see text).
J1, 2, 3	*Igranic* midget jacks.
R.F.C. 1, 2	24 S.W.G. enamelled on former $\frac{1}{8}$" diameter, $1\frac{1}{2}$" long.
L1	16 S.W.G. copper wire 3" long, covered with sleeving.
L3	Two strips of silver-plated copper 3" x $\frac{1}{4}$" x 0.048".
L4	Hairpin loop of 16 S.W.G. wire coupled to final $1\frac{1}{2}$" of L3.
V2	*Mullard* QQV06-40 valve in B7A valveholder, *Whitely Electric Radio Co.*

* 20 Hoop Lane, London, N.W.11.

3 in. in length, covered with sleeving, and bent so that they lie parallel, about $\frac{3}{16}$-in. away from the anode circuit (L1) of trebler stage V1. The output circuit, L3 C3, is of similar dimensions to that used for the exciter. The neutralising condensers used for tuning (as described in the original article) were found to be unreliable, and have been replaced by small screwed discs ($\frac{7}{16}$ in. diam.) rigidly mounted on the original ceramic bases. These can be seen in Fig. 2.

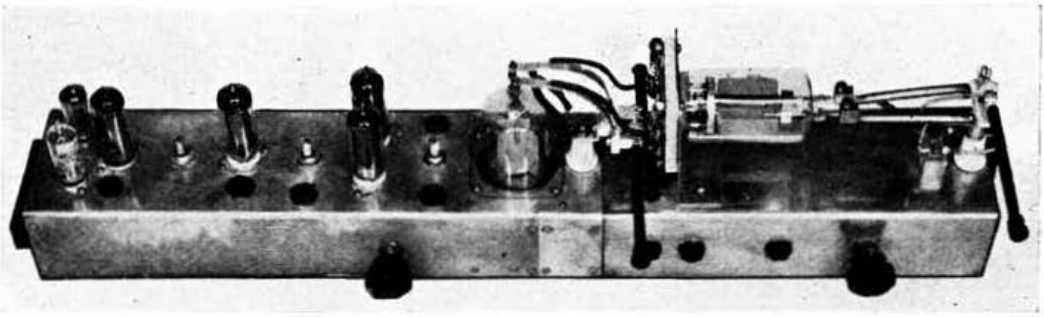

Fig. 2.
View of the complete transmitter showing the exciter and P.A. The trebler and P.A. tuning controls are operated by the extension spindles. The two knobs control the respective screen potentiometers.

The P.A. is built on a chassis 9 in. long by $3\frac{1}{2}$ in. wide by $2\frac{1}{4}$ in. deep, bolted on to the end of the exciter chassis, the valve being mounted horizontally on a bracket with the cathode pin at 12 o'clock. The bracket should be positioned so that the face of the valveholder is $1\frac{1}{4}$ in. from the exciter end of the chassis, in order to ensure that the grids are close to the trebler output circuit, but with sufficient clearance. A lead-through insulator at the other end supports the tuning condenser C3, and serves for the H.T. connections. The output link L4, coupled to the end of L3 associated with C3, is mounted on a small perspex block.

In operation a grid drive of from 1 to 1.5 mA. per grid is obtained, and the input current should not be allowed to exceed 100 mA. at a maximum of 500 V. This input will furnish about 0.3 A. into a 300-ohm feeder.

Disc-seal valves in concentric tuned circuits will, of course, operate at higher efficiencies, but the plumbing necessary is beyond the workshop facilities of most amateurs. A doubler having an efficiency of over 30 per cent. at 432 Mc/s., and employing a CV127 (3B/401J), was shown by the author at a recent London lecture meeting.

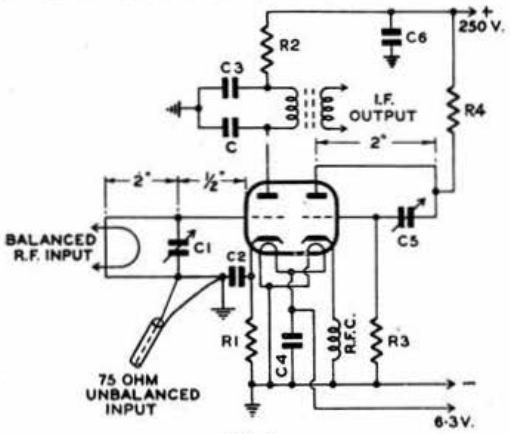

Fig. 3.
A simple combined, mixer-oscillator for 432 Mc/s. employing a 12AT7 valve.

C1	5–25 $\mu\mu$F.	R1	680 ohms.
C2, 4, 6	0.001 μF.	R2	1,000 ohms.
C3	0.01 μF.	R3	10,000 ohms.
C5	15 $\mu\mu$F.	R4	2,200 ohms.

Receivers

A compact superheterodyne receiver has already been described (July BULLETIN) and it is proposed here to show how a war-surplus BC 624 2-metre receiver can be modified to provide a similar performance. Before doing so, however, it is desirable to consider the simplest case—that of a single-valve mixer and oscillator combined. Fig. 3 shows the circuit for a type 12AT7 valve in which one section is used as an anode-bend mixer, and the other as an oscillator on 432 Mc/s. Sufficient internal coupling exists between the two sections for oscillator injection. The condenser C is that normally connected across the I.F. transformer primary, and should be wired direct from the anode pin (No. 6) to earth, so that no impedance to signal frequency is present in the I.F. circuit. An input coupling link for balanced feeder, and the position required to couple in a 75-ohm coaxial feeder, are shown. Sensitivity is in the order of 3 μV., but tuning is impracticable for the amateur band, and frequency stability is useless for C.W. reception.

Modified BC 624 Receiver

It may be helpful for those not familiar with this receiver (which is obtainable with or without valves very cheaply on the surplus market) to obtain a circuit diagram of the existing wiring from *Clydesdale Supply Co., Ltd.*, of Glasgow.

The R.F. unit, together with its condensers and selector drive mechanism, should be taken out entirely. The first I.F. valveholder is then removed, the valve being replaced by a CV138 (*Brimar* 8D3, *Mazda* 6F12, *Osram* Z77, *Mullard* EF91) mounted on a small brass plate soldered to the chassis. If the 12-volt supply is retained, a series heater resistor (21 ohms) will be needed. A small copper or brass plate about 1 in. high should be mounted across the valveholder, to screen the input from the output circuit. The anode and the screen-grid should each be decoupled by a 1000-ohm resistor and the existing condensers, the value of the cathode bias resistor being 150 ohms. The mica condenser tuning the primary of the first I.F. transformer should be removed for use in the R.F. unit to be described later.

The second and third I.F. valves require anode decoupling resistors of 1,000 ohms, screen series resistors of 33,000 ohms, and cathode resistors of 220 ohms, in place of the existing values. Small brass or copper screens should be fitted across

the valveholders to increase the screening between input and output. An I.F. gain control of 10,000 ohms is then wired between the lower end of the second I.F. valve cathode resistor and chassis, the junction being connected to the H.T. line *via* 100,000 ohms. The A.V.C. should be removed from the first and second I.F. valves, and the "earthy" end of the I.F. transformer secondaries connected to chassis. The writer also replaced the 12C8 by a 6Q7 or 12Q7 (dispensing with the complicated squelch circuit), feeding the output valve directly from the 6Q7 anode, and using the 6Q7 diodes for signal and A.V.C. rectification, but these modifications are not essential.

A B.F.O., which can employ a 6J5, may also be added, and this should be run with a very low H.T. voltage, otherwise its output will actuate the A.V.C., thereby reducing sensitivity on C.W. The result of these modifications should be a quiet I.F. amplifier of high gain and good stability.

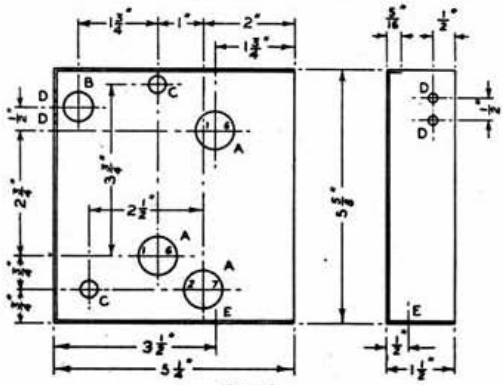

Fig. 4.

Chassis for 432 Mc/s. R.F. Unit, to fit into BC 624 receiver.

3 holes	"A" ¾" diam.	2 holes	"D" ¼" diam.
1 hole	"B" ⅝" diam.	1 hole	"E" ½" diam.
2 holes	"C" 1/16" diam.		

The R.F. Unit

The new R.F. unit chassis is constructed of No. 18 S.W.G. brass or copper sheet (preferably silver-plated) turned-up on three sides to the dimensions shown in Fig. 4. It is attached to the main chassis by screws at various points, making use of existing brackets which are no longer required for their original purpose. Fig. 5 is a photograph of the receiver taken from above, with the R.F. unit in position. The holes "A" (in Fig. 4) are for B9A valveholders, "B" for a B7G valveholder, "C" for *Eddystone* midget stand-off insulators mounted through the chassis from the top side, "D" for two lead-through capacitors, and "E" for the I.F. lead. The B9A valveholders should be mounted in the positions indicated by the important tag numbers.

The circuit (Fig. 6) comprises a neutralised grounded-grid push-pull R.F. stage (V1). This is basically similar to that used in the receiver already described. A small two-pin socket for the feeder is mounted on the main chassis, and the input is applied to the cathodes of V1 *via* C1 and C2. L1 and L2 are R.F. chokes of resistance wire wound to a value of 120 ohms each on the insulated body of an *Erie* ½-watt resistor. They provide D.C. bias and a return path to chassis.

The anode circuit of V1 consists of two parallel lines ⅜-in. apart, series-tuned by C3, the latter being mounted on a perspex pillar ¾-in. high by 3/16-in. in diameter. Neutralisation is effected by cross-connected wires, covered by sleeving, soldered to the cathodes and running parallel to L3 for about ¼ in.

The left-hand section of V2 is an anode-bend mixer, the grid circuit being L4 parallel-tuned by C4. The latter should be mounted on the wires ½-in. from the grid end. L4 is coupled to L3, being positioned ¼-in. away. The cathode bias of the mixer is provided by R3 decoupled to R.F. by C5, and to I.F. by C6. The mixer anode circuit has the existing I.F. transformer "T" decoupled on the main chassis by R4 and C8, condenser "C" being removed from the inside of the I.F. transformer and mounted on the valveholder of V2.

The right-hand section of V2 is a frequency doubler having an input of 200 Mc/s. applied *via* C9, the grid leak being R5. In the anode circuit is a hair-pin loop L5, series-tuned by C11, and decoupled by R6. Sufficient internal coupling exists within V2 for injection of the heterodyne voltage, no additional coupling being necessary.

V3 is a push-pull oscillator operating on 200 Mc/s., with a hair-pin loop in the anode, parallel-tuned by C17. R9 and 10, with C13 and 14, are the grid leaks and condensers, while the cathodes are choked by L6 and 7. Band-spread is provided by C16, which is an old 15 $\mu\mu$F. *Webbs Apex* type capacitor with all vanes removed except one fixed and one moving. The capacity swing is about 1 $\mu\mu$F., and this, in series with C15, provides

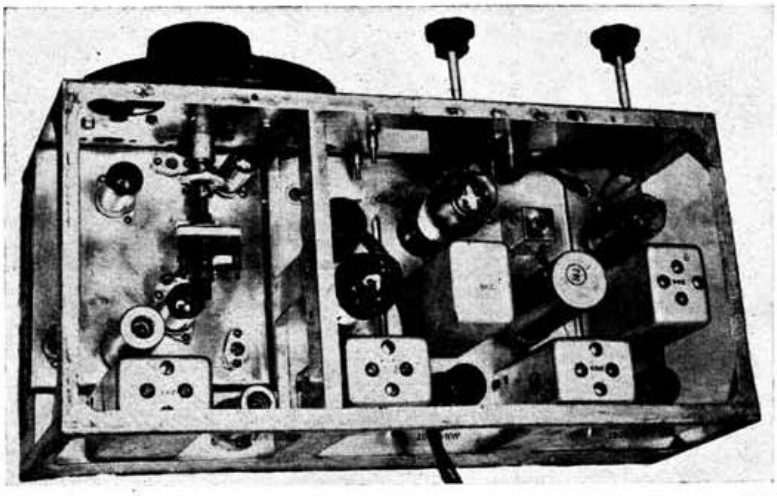

Fig. 5.

Top view of modified BC 624 receiver showing new R.F. unit in position, with tuning arrangements. The replaced 1st I.F. valve can be seen at bottom left. The B.F.O. valve and its coil are at top centre. The spare valveholder is used as a socket for the power supplies, which were originally brought out to the front of the receiver.

a frequency coverage of about 430-440 Mc/s. C16 is mounted on an "L" bracket above the chassis (at ¾ in. centre), and in the writer's case was controlled *via* a flexible coupling from a dial removed from a surplus R1132. The H.T. supply to the oscillator is stabilised at 150 V. by V4. A miniature stabiliser, type QS/150/45, was employed, but there is no reason why a larger type such as the VR150/30 should not be used. The heater wiring as shown is for 6.3 V., the heaters being decoupled by C7, C12 and C18. If, however, the main chassis uses the original 12.6 V. valves, then V1, V2 and V3 should be wired for series-heater operation. The incoming power supplies are decoupled by C19 and C20, which also serve as terminal connections.

Alignment

The alignment of the receiver is straightforward. First, the I.F. amplifier should be trimmed to 12 Mc/s. Next, the oscillator, V3, should be adjusted to about 210 Mc/s. with the aid of an absorption wavemeter, or Lecher wires. It is essential to make sure that this circuit is oscillating at approximately the correct frequency. Finally, with a signal provided by a simple small oscillator on 435 Mc/s., C3, C4 and C11 should be aligned for maximum output, C16 and 17 being adjusted for the centre of the dial. Harmonics from a low frequency oscillator or a 2-metre transmitter should not be used for initial adjustments, because it is so easy to line-up the R.F. unit on a wrong harmonic.

When the adjustments are complete, the unit should be quite stable, and the difference in noise output should be clearly audible when R.F. stage (V1) is detuned or removed. Sensitivity figures are of the same order as those for the receiver described in the July issue—a signal of 1 μV. being quite readable. Due to the use of a push-pull oscillator, with resonant lines instead of a coil, frequency drift is halved, the drift of the whole receiver from cold being as follows:

Minutes ...	5	10	20	30	60
kc/s.	+250	+300	+330	+350	+350

A much better receiver, having a lower noise level than those described, could be made by using variable-tuned R.F. stages. A satisfactory arrangement would incorporate two R.F. stages using disc-seal valves and ganged butterfly circuits, followed by a 12AT7 mixer. For example, CV354 valves will provide a gain of 16 db. per stage at 420 Mc/s., and there is no denying the usefulness of 32 db. of overall R.F. gain preceding a mixer of 3 μV. sensitivity and 10 db. noise. For the average amateur, however, disc-seal valves are very expensive, and butterfly circuits are difficult to make, so that the simpler, if less efficient, techniques are generally preferred.

Aerials and Feeders

There is much controversy concerning the right type of aerial and feeder to employ for 420 Mc/s. operation. Some advocate stacked arrays and low impedance feeders, with or without elaborate stub-matching devices; others *Yagi* beams, and others high impedance feeders. The writer prefers a high impedance feeder, provided it is not too long, particularly if there are standing waves present, because heavy losses are incurred in a low impedance feeder when not perfectly matched. The ordinary 300-ohm ribbon type for inside use, and the circular variety for external use, are quite good up to 20 ft. in length, losses being relatively small. A *Yagi* beam is preferable because a good forward gain ensures a satisfactory signal if orientation is correct (as opposed to a weak signal —or even no signal at all—with a wide-angle stacked array). Theoretically, a stacked array has a good forward gain if all the driven elements receive their fair share of the power, but this rarely seems to happen, except in commercial arrays which have been lined-up with the necessary V.H.F. impedance bridges, etc. Fig. 8 shows the dimensions of a 6-element beam for 435 Mc/s. operation (matching into 300-ohm feeder), as used at G5CD.

"G-string" Feeders

Those who live in a basement flat, but have a

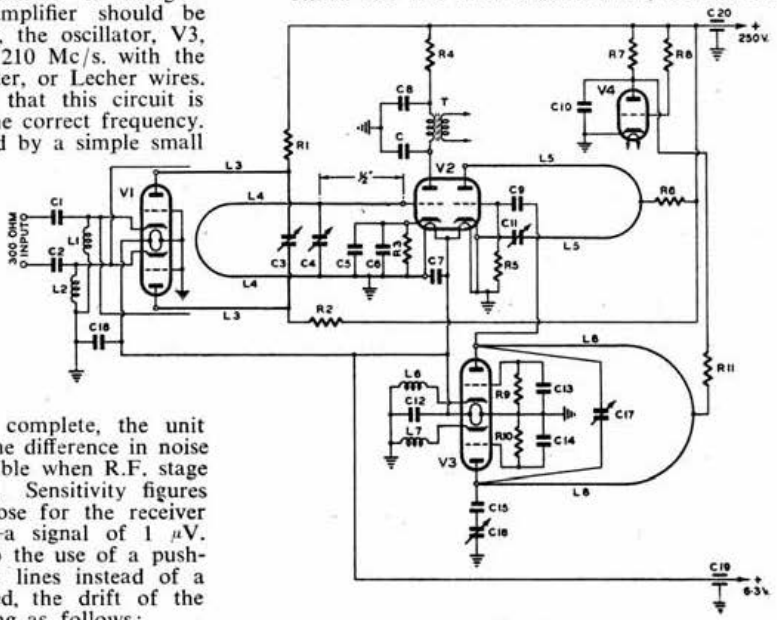

Fig. 6.

Circuit diagram of R.F. unit for the BC 624 receiver.

C	Existing mica condenser removed from 1st I.F. transformer.
C1, 2	47 $\mu\mu$F. *T.C.C.* type SCT1.
C3	10 $\mu\mu$F. *Wingrove and Rogers* type C3201.
C4, 17	3–30 $\mu\mu$F. *Philips* air-trimmer.
C5, 7, 13, 14	Two 1,000 $\mu\mu$F. *T.C.C.* type 20TH310W.
C6, 8	0.01 μF. paper *T.C.C.* type 543.
C9	2 $\mu\mu$F. *T.C.C.* type SCP5.
C10	10,000 $\mu\mu$F. *T.C.C.* type CTH422.
C11	4.5 $\mu\mu$F. *Wingrove and Rogers* type C3201.
C12, 18	1,000 $\mu\mu$F. *T.C.C.* type CTH310.
C15	10 $\mu\mu$F. silver-mica *T.C.C.* type SMB101.
C16	1 $\mu\mu$F. variable air (see text).
C19, 20	3,300 $\mu\mu$F. lead-through *T.C.C.* type CTH315/LT.
R1, 2	4,700 ohms *Erie* ½-W. insulated.
R3	680 ohms *Erie* ½-W. insulated.
R4	1,000 ohms *Erie* ½-W. insulated.
R5	47,000 ohms *Erie* ½-W. insulated.
R6	10,000 ohms *Erie* ½-W. insulated.
R7	5,000 ohms *Dubilier* 5-W. type A2/1.
R8	470,000 ohms *Erie* ½-W. insulated.
R9, 10	2,200 ohms *Erie* ½-W. insulated.
R11	3,300 ohms *Erie* ½-W. insulated.
L1, 2	R.F. chokes wound to 120 ohms (see text).
L3, 4	16 S.W.G. silver-plated 2½" long.
L5	16 S.W.G. silver-plated 2" long.
L6, 7	R.F. chokes of 24 S.W.G. wound on ⅛" former 1" long.
L8	18 S.W.G. silver-plated 3½" long.
T	Existing I.F. transformer.
V1, 2, 3	B9A valveholder *McMurdo* FM9U.
V4	B7G valveholder *McMurdo* BM7U.
V1, 2, 3	*Brimar* valves type 12AT7.
V4	*English Electric* stabiliser type QS150/45.

2 midget stand-off insulators *Eddystone* type 1019.

pole or chimney on the roof, need not despair: they can use a "G-string" feeder. This consists of a single-wire feeder (No. 14 S.W.G.) which acts as a wave-guide turned inside-out.

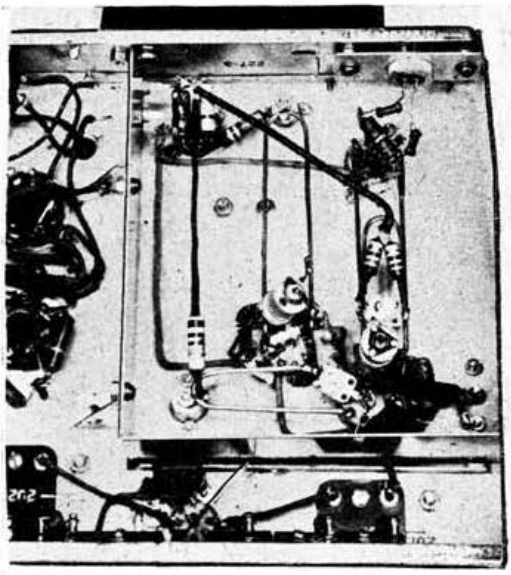

Fig. 7.

Underside view of modified BC 624 receiver. The B7G valveholder for the 1st I.F. valve, and also the shield across the 2nd I.F. valveholder, can be seen at the bottom. The feeder socket is at top right, with V1 just below it. V2, with L3 and 4, appear at bottom right. L5 and its tuning condenser C11 run horizontally to the left of V2. In the centre of the unit is V3 with its tuned circuit L8. The stabiliser and its associated components are in the top left-hand corner of the chassis.

A wave-guide normally comprises a hollow tube, and a wave launched down the tube will follow its contours—even around corners (provided they are not too sharp compared with the wavelength). The present method of launching waves along the surface of a wire is by means of a conical horn—the energy being received by a similar horn at the other end. Fig. 9 illustrates the arrangement. The dimensions of the horn are not very critical, but the angle should be correct. Ideally, the sides should be several wavelengths long. A suitable horn for the 70 cm. band would consist of wire netting or thin metal about 7 ft. in length, and 4 ft. in diameter. Those demonstrated at the London lecture meeting referred to earlier were

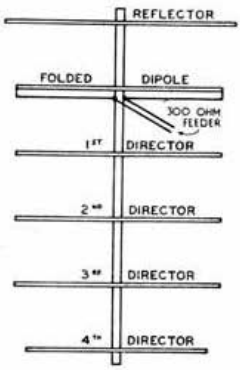

Fig. 8.

435 Mc/s. 6-element *Yagi* beam, matched for 300-ohm feeder. Directivity –6 db. at 20° off centre line. Front to back ratio 26 db.

3 ft. 6 in. long, and 2 ft. in diameter, and were constructed of copper gauze—purely for convenience of transportation. Single wire feeders

Dimensions of 6-element Yagi Array

(All dimensions in inches)

Element	Length	Spacing	Diameter
Reflector	13½	6½	
Radiator	12		
Director 1	12	6	
Director 2	12	6	
Director 3	12	6	
Director 4	10½	6	

should be enamelled, or allowed to become oxidised, before use, as this minimises losses by reducing the diameter of the field surrounding the wire. One set of horns and feeder will cover several high frequency bands. Using horns 21 in. long and 13 in. in diameter at a frequency of 3,300 Mc/s., a No. 14 S.W.G. single-wire feeder had a loss of 1.35 db. per 100 ft., plus 0.4 db. per horn. A 600 ft. feeder of No. 10 S.W.G. wire plus two horns (as above) had a measured loss at 1,600 Mc/s. of 5 db. At 420 Mc/s., the

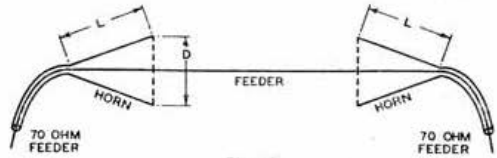

Fig. 9.

"G-string" feeder, of 10–16 S.W.G., preferably enamelled. L equals 3λ approximately, while D is $0.6L$.

attenuation in the field 8 in. away from the feeder is about 20 db., so that it can be run reasonably near to walls and other objects. It is preferable, however, to keep it several feet away over most of its length. The feeder demonstrated—using horns which were really too small and 45 ft. of No. 16 S.W.G. enamelled wire—had a measured loss of 4 db. at 420 Mc/s.

The feeder is unaffected by rain, snow, or ½-in. radial thickness of ice, but icicles on it can cause large standing waves. In practice, the horn could be accommodated in a loft, with a short length of coaxial feeder to the aerial.

Members who wish to study these feeders are referred to an excellent but somewhat involved article entitled "Surface Waves and their Application to Transmission Lines," by George Gouben, in the November, 1950, issue of the *Journal of Applied Physics*. This article gives all the necessary data for the calculation of the losses involved in feeders and horn launching devices.

Worth Trying

IN a series of tests on U.H.F. propagation carried out in the U.S.A., it was found that signal strength in the reception area could be doubled by slight tilting of the aerial, optimum results being obtained when the aerial was inclined 2.5 degrees above or below horizontal.

SELF-CONTAINED TRANSMITTER for the 1·8, 3·5 and 7 Mc/s. Bands

By G. G. GIBBS (G3AAZ)*

SPECIFICATION

- **Frequency coverage: 1715-2000 kc/s; 3500-3800 kc/s; 7000-7300 kc/s.**
- **Types of emission: Telegraphy and telephony.**
- **Power Input: 18 watts telegraphy; 15 watts telephony.**
- **Oscillator: Electron coupled.**

SPECIAL FEATURES

- **Complete metering of stages.**
- **Provision for "netting" with carrier off.**
- **Link coupled output, and universal aerial tuner.**
- **Push-pull modulator.**
- **Bias supply for Class "C" operation of P.A. stage.**
- **Screening, and low impedance link coupling, minimising T.V.I.**

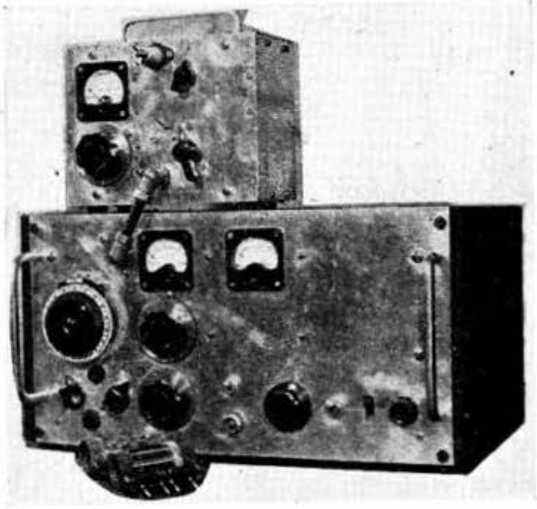

Fig. 2.
Front view of the transmitter and aerial tuner.

THIS self-contained semi-portable transmitter is a permanent piece of apparatus at the writer's station, designed chiefly to enable either a telephony or telegraphy signal to be radiated on any of the three lower frequency amateur bands at times when the main station is off the air for major alterations or rebuilds.

While a transmitter of this type is a little more difficult to construct than most, the amateur, with even modest workshop facilities, should be able to reproduce it with the minimum of trouble.

The Oscillator

This stage employs a 6AG7 connected as an E.C.O., the particular valve and circuit being chosen to ensure a fair degree of output consistent with stability. This is an important factor for 7 Mc/s. operation, as will be seen later. Keying is effected in the screen circuit of the 6AG7. Built into a copper cube, the oscillator works solely in the 1.8 Mc/s. band. The supply to the unit is stabilised by a VR105/30.

In order to remove the last trace of "chirp," the screen of the 6AG7 is fed *via* a potential divider, its decoupling condenser being restricted to a relatively small value.

The Buffer-Multiplier Stage

This stage, whilst isolating the P.A. from the oscillator, provides the requisite drive at the desired frequency. Another 6AG7 is employed here, as its high slope ensures excellent power output, coupled with good frequency multiplying characteristics.

The stage is used as a buffer on 1.8 Mc/s., a doubler on 3.5 Mc/s., and a quadrupler on 7 Mc/s., the desired frequency being selected by three switched coils tuned by a common capacity. The drive obtainable on the first two bands is more than adequate, and can be regulated by detuning the output circuit. On 7 Mc/s. it is possible to provide 4 mA. drive to the 807.

The Power Amplifier

A conventional, series-fed, Class C stage, comprising an 807, is used as power amplifier. Parasitic suppressors are fitted to both grid and screen pins.

The Modulator

The modulator consists of a 6SH7 speech amplifier, resistance-coupled to a 6J5. This in turn is transformer-coupled to a pair of 6V6s in push-pull, working in Class AB1. This arrangement gives more than adequate power to provide 100 per cent. modulation at full input, and is always operated well within its limits, thus ensuring a minimum of distortion. Because the power supply is common to all stages of the transmitter it is necessary to economise in current drain. For this reason the screens of the 6V6s are supplied with a reduced voltage obtained from a potential dividing network formed by R14 and R15, thus limiting the standing current.

The Power Supply

The power supply is quite conventional and employs a condenser input filter. Providing the specified value of capacity (4 μF.) for each of the input and reservoir condensers is not exceeded, no harm should befall the 83 rectifier. The bias supply for the P.A. is derived from one half of the mains transformer secondary winding, connected through a suitable resistance network and a selenium rectifier.

The Control Circuit

The send-receive switch S3 is a double-pole single-throw pattern, which passes H.T. to the buffer, modulator and P.A. through one side, and to the oscillator through the other. Thus, in the make position, the whole transmitter is energised. When broken, H.T. is supplied to the oscillator *via* the "netting" button, S4.

* *Chesilbank, Digswell, Welwyn, Herts.*

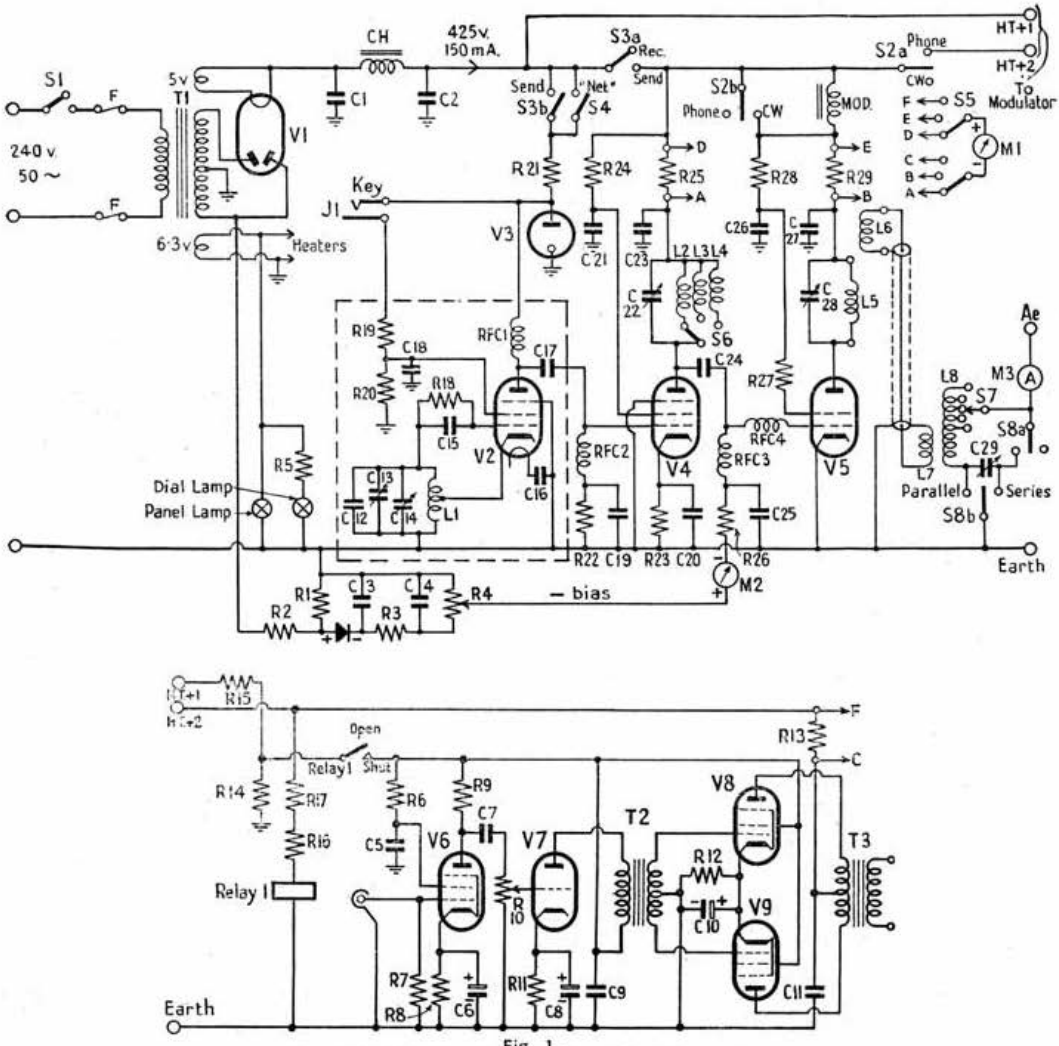

Fig. 1.
The circuit diagram of the self-contained transmitter.

COMPONENT LIST FOR SELF-CONTAINED TRANSMITTER

RESISTANCES

R1, 17, 21	15,000 ohms, 10-watt
R2	50,000 ohms, 10-watt
R3	10,000 ohms, 1-watt
R4	50,000 ohms wirewound pot'meter
R5	60 ohms, 1-watt
R6	270,000 ohms, ½-watt
R7	2 megohms, ½-watt
R8, 11	1,000 ohms ½-watt
R9	100,000 ohms, ½-watt
R10	1 megohm miniature pot'meter
R12	250 ohms, 10-watt
R13, 25, 29	30 ohms, ½-watt
R14	30,000 ohms, 25-watt
R15	10,000 ohms, 25-watt
R16	60,000 ohms, 10-watt
R18	50,000 ohms, ½-watt
R19, 20	25,000 ohms, 1-watt
R22	100,000 ohms, 1-watt
R23	700 ohms, 1-watt
R24	20,000 ohms, 1-watt
R26	5,000 ohms, 2-watt
R27	50 ohms, ½-watt
R28	27,000 ohms, 10-watt

CONDENSERS

C1, 2	4 μF. paper, 1,000 V. working
C3	2 μF., 350 V. working
C4	8 μF., 350 V. working
C5	.1 μF., 350 V. working
C6, 8, 10	25 μF., 25 V. working
C7	.002 μF.
C9, 11	8 μF., 500 V. working
C12	300 μμF., silver mica
C13	60 μμF. trimmer
C14	100 μμF., miniature variable
C15	100 μμF. silver mica
C16, 19	500 μμF.
C17	50 μμF. ceramic
C18, 26, 27	.001 μF. 500 V. working
C20, 21, 25	.005 μF., 500 V. working
C20	160 μμF., variable, *Eddystone*
C23	.01 μF., 500 V. working
C24	300 μμF.
C28	150 μμF. (from osc. section of TU5B)

Selenium rectifier, 100 V. 30 mA.

VALVES

V1	83
V2, 4	6AG7
V3	VR105/30
V5	807
V6	6SH7
V7	6J5
V8, 9	6V6

MISCELLANEOUS

T1	PTM14A *Woden*
T2	Push-pull driver transformer, 3:1 overall
T3	UM .1 *Woden*
CH	Choke 15 H., 150 mA.
R.F.C. 1, 2, 3	*Eddystone* Type 1010
R.F.C. 4	10 turns of No. 18 S.W.G. ½" diameter
M1	0–50 mA.
M2	0–5 mA.
M3	0–½ A. thermocouple
J1	Closed circuit jack
Relay	Operating coil, 1,000 ohms, single make-break, normally open

When S2 is in the right hand or 'phone position, H.T. is supplied to the P.A. (through the secondary winding of the modulator transformer), and to the anodes of the 6V6s. Relay 1 (normally open) is energised through R16 and R17, and closes, so that reduced voltage from the potential divider R14-R15 is applied to the speech amplifier and driver, and to the screens of the 6V6s. When S2 is in the C.W. position, the secondary winding of the modulation transformer is short-circuited, and power to the relay and 6V6 anodes is cut-off; the whole modulator then being isolated from the supply.

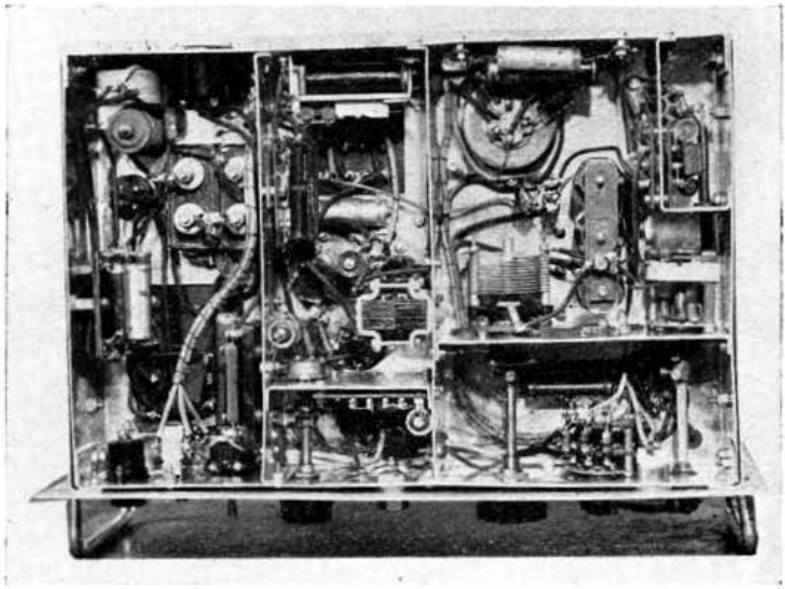

Fig. 3.
Under chassis view of the transmitter, showing screening.

Construction

The size of the chassis and panel will depend upon the dimensions of the cabinet in which the unit will eventually be housed. If the layout of components is adhered to, the size of the chassis—to within an inch or two—does not matter. At G3AAZ the dimensions are as follows: chassis length 15¼in., breadth 10in., height 3in., panel length 16½in. (overlapping chassis by ¼in. at each end), and height 9in. (extending beyond base of chassis by ¼in.).

Once the chassis, panel and brackets have been made and assembled the internal screening can be fitted, the position of this being clearly shown in Fig. 3 and 4. No. 16 gauge aluminium is used throughout. Owing to the weight of some of the larger components, a lighter gauge would be unsuitable, as "whip" and ultimate distortion would occur.

The oscillator box is constructed from No. 16 gauge copper sheet, with seams sweated together, and one side left open to accommodate a detachable copper cover (Fig. 5). The bottom of the box is fitted with an octal plug (removed from an old valve), which facilitates the easy removal of the oscillator unit for adjustments and modifications when required. Although this base is not visible in the photographs, its position can be judged by referring to the extreme lower right of the underside view (Fig. 3), where the holder accommodating it can clearly be seen. Of the eight pins available, five are used as follows: 1—earth; 2—6.3 V.; 3—H.T. (anode); 4—H.T. (screen) and key; 5—blank; 6—blank; 7—R.F. output; 8—blank. This arrangement, of course, need not be strictly adhered to, and is mentioned only as a guide.

The tuning condenser employed in the oscillator unit should be of the double-bearing type, examples of which are to be found on the surplus market. This component, and the bandset condenser and valveholders for the 6AG7 and VR105, are mounted in the positions shown in Fig. 4 and 5. The layout of the remaining components in this box is not critical, but whatever method is adopted, absolute rigidity must be observed if a steady note is to be achieved.

On the "Top Band" the buffer amplifier is working "straight through." For that reason care must be taken to avoid any form of feedback or instability, hence the screen across the valve base (Fig. 3, upper right). The grid resistor and associated components are mounted to the right of the screen; the coaxial-line feed from the oscillator base can also be seen on this side. The components on the output side of this stage are mounted to the left, and the position of the three coils, switch, and condenser are apparent from the illustrations. The switch is a ceramic wafer type, salvaged from a Type 25 converter.

A copper screening can 3½in. deep is used to recess the 807, approximately 1½in. being below

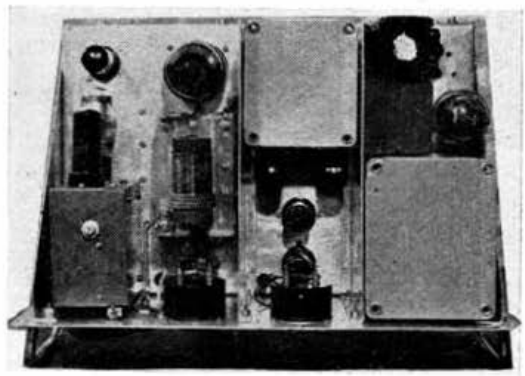

Fig. 4. Plan view, showing layout above chassis.

chassis level. These cans may be purchased ready made, although the particular one used at G3AAZ was built from copper sheet and the seams sweated together.

The P.A. tank condenser was taken from the oscillator section of a TU5B, and the coils are of the type used in the B2 transmitter, having low loss formers and size in keeping with that of the transmitter. The coils should be dismantled and

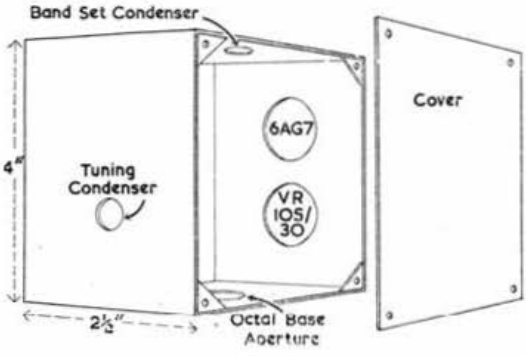

Fig. 5.
The oscillator box and cover, constructed from 16 gauge copper sheet, with the seams sweated together, and tapped 4 B.A. lugs sweated in each corner.

stripped, and their bases modified by the removal of pins 2 and 5. After cleaning, they should be rewound in accordance with the coil data table, the main winding being connected to pins 1 and 6 (outer), and the link winding to the centre pins 3 and 4. A liberal coating of polystyrene cement completes the process.

A piece of ¼in. polystyrene sheet is then cut to fit exactly over the tank condenser, and is provided with four sockets, spaced to receive any one of the three coils. At the same time, tags for H.T. feed, P.A. anode, and link output are bolted in three of the four corners (Fig. 4), with connections made from them to the coil base sockets. The condenser frame is fitted with three small brackets, on which the polystyrene sub-assembly can be firmly mounted. The coil and condenser unit is then securely bolted to the chassis.

The construction of the modulator and power supply should present no difficulties, as both circuit and layout are straight-forward. The positions of the U.M.I. and P.T.M.14a transformers should, however, be carefully worked out, because space is limited, and mistakes are not easily rectified.

Wherever possible, leads travelling in the same direction should be formed with waxed cord, and laid into the corners of the chassis and screening. The provision of grometted holes for these leads, and others which pass from one component to another, must not be forgotten. These should be made when the metalwork is complete, and before any components are mounted.

Controls

Referring to Fig. 2, the controls along the lower line of the front panel from left to right are as follows: 1—band-switch (buffer-multiplier); 2—netting button; 3—key jack; 4—meter switch (in conjunction with 0-50 mA-meter); 5—buffer-multiplier tuning control; 6—(upper) send-receive switch; 7—microphone input; 8—modulator gain; 9—supply on-off; 10—'phone-C.W. switch; 11—warning light.

The position of the oscillator and P.A. tuning controls is obvious. The 0-5 milliammeter permanently records the 807 grid current, whilst

COIL DATA

L1	57 turns with cathode tap 6 turns from base, No. 30 S.W.G.
L2	160 m., 63 turns No. 24 S.W.G.
L3	80 m., 35 turns No. 20 S.W.G.
L4	40 m., 20 turns No. 18 S.W.G.
	All the above coils are wound with enamelled wire on 1" diameter ribbed polystyrene formers.
L5, 6	160 m., 60 turns No. 24 S.W.G. enamelled, 6-turn link. 80 m., 41 turns No. 18 S.W.G. enamelled, 4-turn link. 40 m., 20 turns No. 16 S.W.G. enamelled, 3-turn link. *The above coils are wound on 1¼" diameter ceramic formers with 4-pin bases (from B2 transmitter).*
L7, 8	58 turns overall, tapped at 16, 27, 37 and 48, 6-turn link. *This coil is wound on a 1½" diameter ribbed ceramic former, with length of winding 3½" overall.*

the 0-50 milliammeter records either buffer, P.A., or modulator current, according to the selector switch setting.

The aerial tuner is very simple to construct, provided the metal box housing is rigidly made and the components are firmly mounted. The upper switch (Fig. 2) is S8 (for series-parallel connections), and the lower one S7 (coil tapping).

Tuning

It is recommended that all initial adjustments and tuning be carried out on a dummy load. This is best done by connecting a resistance of 70 to 80 ohms and of at least 20 watt rating between the aerial terminal and earth. First select the "Top Band" switch position. Set the 'phone-C.W. switch to the C.W. position, and switch-on the supply. The oscillator can now be tuned, and if properly adjusted will just cover the entire band between scale extremities. Adjustment is effected by depressing the netting control and listening for the beat notes in a frequency meter.

Next, the send-receive switch should be set to "send." Rotate the buffer-multiplier control until about 0.3 mA. P.A. grid current is flowing, and quickly bring the P.A. tank to resonance. The transmitter can then be loaded up in the usual way.

If a wrong harmonic is selected in the buffer stage, it is possible to obtain output on frequencies outside the amateur bands. However, once the "feel" of the transmitter has been experienced, there is little likelihood of this happening. Tuning up on the 3.5 and 7 Mc/s. bands is carried out in the same manner as described for "Top Band."

Results

The transmitter has been in operation for two years, and has given very good results. The aerial system used throughout this period has been an end-fed 132ft. wire. No spectacular claims are made as regards "getting out"; suffice it to say that the writer can "row along" with the other amateurs in his district, and occasionally, when conditions are good, work GDX and DX according to the band in use.

Telephony operation has been particularly encouraging, and when the transmiter is used with a good quality microphone, the speech quality can give little ground for criticism.

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

THE HELPING HAND TO AMATEUR RADIO

The majority of amateur stations started off as receiving cabins: refinements and other equipment followed later. This month G5MP considers the simplest form of receiver—the T.R.F.—listing the various factors that affect design and performance, and explaining the manner in which bandspread is achieved.

Part III.—The Straight Receiver.

FUNDAMENTALLY, receivers may be divided into two distinct groups: (a) "straight" types, which handle an incoming signal without change of frequency before detection; and (b) "superheterodyne" types, which change all incoming signals to a fixed frequency specially chosen to provide high gain and selectivity.

The straight receiver is the simplest in design, and will be considered first. Basically it comprises a detector stage followed by one stage of low frequency amplification. With present-day high-efficiency valves, the use of two stages of L.F. amplification in simple circuits is not usual. R.F. amplification can be used, not so much to provide extra gain as to isolate the detector stage from variations of aerial loading, which would adversely affect the calibration and reaction control of the set.

Pros and Cons

The advantages of a two or three-valve straight receiver are:

1. Low cost.
2. Ease of construction and maintenance.
3. Low current consumption—a useful factor in remote localities.
4. Low valve and circuit noise.
5. Freedom from spurious signals characteristic of superhets, such as image response, beat frequencies, oscillator harmonics, etc.

And, of course, there is the satisfaction obtained by the operator, who can achieve good results with the simplest of equipment.

In contrast the disadvantages are:

1. Poor selectivity, resulting in interference from signals on adjacent frequencies, sometimes overloading the detector.
2. In order to receive telegraphy, the receiver has to be mistuned from resonance to provide an audible beat note, resulting in some loss of gain (though, owing to the poor selectivity, the loss is not great).
3. Unless an R.F. stage is used, calibration and reaction control are greatly affected by aerial changes.
4. The reaction control needs frequent and careful adjustment.
5. Signals are harder to hold than with a superheterodyne circuit.

The disadvantages may appear serious, and it will be realised that for more advanced operation the superheterodyne circuit is almost essential. The beginner, however, will gain far more experience by starting with simple equipment constructed by himself. He can make alterations and adjustments without fear of running into difficulties or expense.

Frequency Coverage

A receiver is required to cover a wide frequency range, including bands occupied by shipping, aircraft and fixed services, thus enabling overall conditions to be checked, Morse reception to be practised, and, should the occasion arise, co-operation to be effected with emergency services. To cover a range of 1.5 to 30 Mc/s., about five wavebands will be necessary. Consequently, in order to facilitate tuning, arrangements must be made so that each amateur band can, when required, be spread over some four to six inches of the scale.

The reason for this is fairly obvious. Consider a typical tuning condenser of maximum capacitance 200 micromicrofarads ($\mu\mu$F.) with the vanes in mesh. Note that this capacitance can be alternatively expressed as 0.0002 microfarads (μF.), or 200 picofarads (pF.). With the vanes fully out, the minimum capacitance may be in the order of 15 $\mu\mu$F., to which must be added stray capacitances due to valve electrodes, circuit wiring, self-capacity of the coil winding, etc., amounting to perhaps 18 $\mu\mu$F. This total capacitance of 33 $\mu\mu$F. represents the absolute minimum capacity shunting the coil, and determines the highest frequency to which the tuned circuit can resonate. Thus, between the limits of the tuning condenser (15 to 200 $\mu\mu$F., plus stray capacitances) a given coil might tune from 16 to 6 Mc/s. As the 14 Mc/s. band is only 0.4 Mc/s. (400 kc/s.) wide, it is clear that it will occupy only a minute fraction of the tuning scale, and for this reason, it is necessary to employ "bandspread," resulting in a restriction of the tuning range of the condenser, so that the desired band is "spread" over the greater part of the scale. There are three systems in common use.

Mechanical Bandspread—in which the tuning condenser is fitted with a high-ratio reduction gear and an auxiliary bandspread pointer, which travels over a considerable distance while the condenser vanes move through the few degrees covering the band. Precision gearing and freedom from backlash in the condenser bearings are essential, so that the arrangement is better suited to factory construction than to home-built receivers.

Electrical Bandspread (1).—If two condensers *C1* and *C2* are connected in series, the resultant

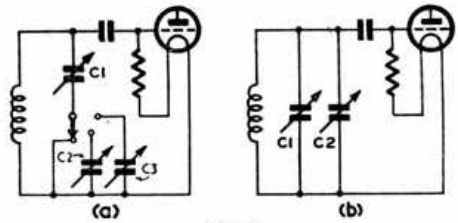

Fig. 1

Two methods of obtaining electrical bandspread: (a) pre-set condensers C2 and C3 may be switched into circuit to reduce the tuning range of C1, a different value being required for each amateur band; and (b) C1 is the bandset condenser, while C2—the bandspread condenser—is used to search the band.

capacitance is always less than either of the original values, and may be calculated from the following relationship:

$$1/C = 1/C1 + 1/C2$$

If, therefore, a small capacitance be placed in series with the main tuning condenser, the maximum (and to a lesser extent the minimum) capacitance will be reduced, thus restricting the tuning range, and enabling the desired band to occupy the major portion of the tuning scale. This series condenser should be of the air-spaced trimmer type (preferably on a ceramic base) to permit of adjustment. A different value of capacitance will be required for each band. This arrangement is illustrated in Fig. 1a.

Electrical Bandspread (2).—In this system, the main tuning condenser is used to set the receiver to the H.F. edge of the required band. Searching across the band is then effected by means of a separate small condenser of relatively low capacity (*C2* in Fig. 1b), fitted with a suitable reduction drive and a long travel pointer. The amount of bandspread will depend greatly upon the setting of the bandset condenser. It is generally difficult to obtain uniform spread for each band without undue overlapping of the ranges covered. This arrangement is, however, the most widely used in amateur-built receivers.

Reaction Control

A straight receiver operates at maximum sensitivity when reaction (or regeneration) is adjusted to the threshold of oscillation. Performance will accordingly depend on the ease with which the reaction control functions.

Reaction (or R.F. positive feedback from anode to grid circuits in the detector stage) is often controlled by means of a variable condenser having a maximum capacitance of about 75 $\mu\mu$F. Typical circuits are shown in Fig. 2a and 2b. The reaction coil should always be wound at the earthed end of the grid coil, and may consist of a compact winding of No. 30 S.W.G. wire in close proximity to the grid coil, thus permitting the number of turns required, and the capacitance of the reaction condenser, to be kept to a minimum for optimum results. The reaction coil should have about one-quarter or one-third as many turns as the grid coil. The "sense" or polarity of the windings should be uniform throughout—*i.e.*, no change of direction should occur in passing from the grid end through the low potential ends to the anode end. Should the valve fail to oscillate, a reversal of connections to the reaction coil may in some cases be indicated.

One disadvantage of using a condenser to control reaction is that the grid circuit may be detuned as the reaction is varied, and for this reason resistance control is often preferred, consisting of a potentiometer which varies the voltage applied to the anode or screen of the detector valve. The potentiometer should have a 1 μF. condenser connected between slider and H.T. to remove any slight contact noises as the slider arm moves over the resistance track.

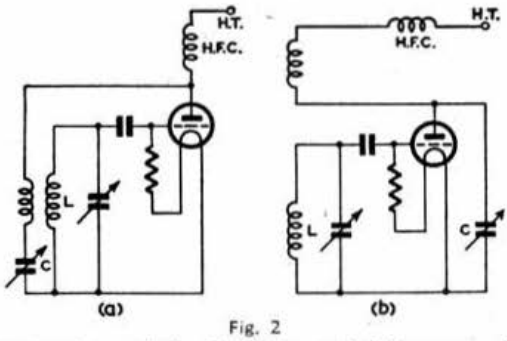

Fig. 2

Alternative methods of reaction control by means of a variable condenser C connected (a) in series with the reaction coil, and (b) as a by-pass to the reaction circuit.

The detector stage should pass into oscillation with a barely perceptible increase in background hiss. Defects such as a slight "plop" or audible howl occurring at the point of oscillation should not be tolerated, and the circuit should be adjusted until the desired smoothness is obtained. Possible cures for these troubles are suggested in the accompanying faultfinding table.

"Threshold howl" is a condition caused by the detector stage going in and out of oscillation at an audible frequency, and is entirely distinct from any howl that may arise through insufficient decoupling. It is commonly caused by the use of a transformer or L.F. choke in the anode circuit of the detector valve. In extreme cases, substitution of such iron-cored inductive components by ordinary resistance-capacitance coupling (with some inevitable loss in stage-gain) may be necessary, but in most receivers a little care and perseverance will eliminate this howl.

Where a screen-grid valve is used to provide higher sensitivity in a detector stage, control of reaction may be difficult if the anode voltage is reduced below that supplied to the screen, in which case control of the screen rather than the anode voltage is preferable. The ratio of the two voltages may require careful adjustment in order to obtain smoothness of control.

Faultfinding Table

The following analysis of the various common faults which are encountered in straight receivers should be of assistance in arriving at a rapid diagnosis of the trouble, and should indicate time-saving methods of effecting a cure.

Failure to Oscillate

1. Insufficient H.T. voltage. (A well-designed detector should oscillate with between 50 and 70 volts applied to the anode.)
2. Filament voltage below rated value, due to resistance of leads.
3. Reversed connections to reaction coil.
4. Alternative R.F. path existing in anode circuit. Check R.F. choke.
5. Incorrect number of turns on reaction coil, or excessive spacing from grid coil.
6. Excessive aerial coupling.
7. Short-circuit across grid or reaction coils.
8. Incorrect value of grid leak or grid condenser.

Poor Reaction Control ("Ploppy" Reaction or Threshold Howl)

1. Excessive H.T. voltage.
2. Incorrect size or spacing of reaction coil.
3. Grid leak returned to incorrect side of filament, or cathode resistor. Return to positive side desirable with most valves.
4. Valve type unsuitable.
5. By-pass condenser of about 0.0001 μF. needed across L.F. transformer primary.
6. Resistance of about 10,000 ohms needed across transformer primary, or 100,000 ohms across secondary.
7. Transformer should be parallel-fed, or replaced by resistance-capacitance coupling.
8. Decoupling of detector stage required (*e.g.*, a 4 μF. condenser and a 10,000-ohm resistor).

9. Reaction control needs changing from anode to screen circuit, or *vice versa.*
10. Unsuitable values of grid leak or grid condenser.

Reaction Failure at Certain Frequencies (Dead Spots)

1. Aerial length or coupling excessive.
2. Anode circuit R.F. choke unsuitable.
3. Turns or spacing of reaction coil incorrect.

Hand Capacitance

1. Frame of tuning condenser at R.F. instead of at earth potential. Reversal of connections required.
2. R.F. wiring or axial field from coil too close to panel.
3. Metal panel required.
4. Unsuitable length of earth lead. (Insertion of a coil or parallel tuned circuit may help. A condenser alone is undesirable for this purpose, as the D.C. continuity would be broken.)
5. R.F. chokes required in 'phone leads, by-passed at each end by 0.0001 μF. condensers.

* * *

Next month—in Part IV of this series—superheterodyne receivers will be discussed.

Amateur Radio at Gilwell Park

THE Chief Scout of the British Commonwealth and Empire (The Lord Rowallan, K.B.E., M.C., T.D., D.L.) was an interested visitor to the Amateur Radio station operated from the London International Patrol Camp at Gilwell Park, Chingford, London, during the period from August 23 to September 1, 1951. The General Secretary of the R.S.G.B. accompanied the Chief Scout on this visit and was privileged to give Lord Rowallan details of the Amateur Radio Movement.

The station was operated by members of the Chingford R.S.G.B. group led by Messrs. W. G. Halls, G8JM, F. Hooson, G3YF, and J. Hollington, G4GA. In thanking the Group for their help, the Chief Scout expressed the hope that the R.S.G.B. would be able to assist the Scout Movement again at future International Scout functions.

Mr. Hall and his colleagues rightly deserve the warm congratulations of all members for bringing the Amateur Radio Movement into such prominence.

During the period of the Camp G8JM/P contacted thirty-five countries and more than 170 stations. By a coincidence the first contact was with G6CL.

The London International Patrol Camp was attended by Scouts from more than 30 different parts of the British Commonwealth and Empire.

U.K. Amateurs to Use Pulse Modulation

AS the result of representations made by the Society, the G.P.O. has agreed to permit U.K. amateurs to use Pulse Amplitude and Pulse Width Modulation on any fundamental frequency within the bands 2350-2400 Mc/s., 5700-5800 Mc/s. and 10050-10450 Mc/s. It will be seen that a guard band 50 Mc/s. wide at either end of the currently available 2300 Mc/s., 5650 and 10000 Mc/s. bands has been introduced to avoid the possibility of amateur pulse transmissions interfering with services operating on frequencies close to the amateur bands.

The new facility will become available as from a date shortly to be announced.

The G.P.O. is at present unable to permit the use of pulse in the 1215-1300 Mc/s. band in view of the risk of interference with other important services.

The power limits which will apply to the use of pulse will be 25 watts mean D.C. input power and 2.5 kW. peak R.F. power. The question of amateurs being allowed to use other forms of Pulse Modulation is still under discussion.

FLASH

FOLLOWING prolonged negotiations between the Society and the G.P.O.; amateurs in the United Kingdom are to be permitted to use Frequency Modulation on frequencies within the band 144.5-145.5 Mc/s. provided that no interference is caused to Government services and on the understanding that the facility will be reviewed after one year.

The new facility will become available as soon as authority has been formally given by means of a "London Gazette" notice.

Amateur Television Authorised on 70 cm.

FURTHER to the discussions which took place some months ago between the Postmaster-General (the Rt. Hon. Ness Edwards, M.P.) and representatives of the Society, and to the recent Amateur Television tests carried out by Society members on frequencies in the 70 cm. band, in collaboration with the Air Ministry and Ministry of Civil Aviation, the G.P.O. have now advised the Society that holders of Amateur (Vision) Wireless Station licences may transmit television signals on frequencies within the band 425-455 Mc/s. subject to non-interference with other Services. A maximum D.C. input power of 25 watts is to be permitted.

G4GA, G3YF and G8TM operating the Amateur Radio station at the International Patrol Camp in Gilwell Park. An input of 150 W. to an 813 was used on 20 metres, and 10 W. on "Top Band." H.R.O. and AR88 receivers were employed. Both a full-wave aerial and a fixed beam were used on 20 m., and a quarter-wave Marconi on "Top Band." Schedules were maintained with VK5RN and ZB1AIS, an ex-Rover Scout-leader. In addition to those depicted here, G3FDS gave valuable assistance.

[Photo by Douglas C. Pike, London, N.21

Amateur Radio and the Festival of Britain

Bristol, Camberwell and Newbury Exhibitions Well Supported

The Story of G6YA/A—Bristol

AN Amateur Radio station—call G6YA/A—was featured among the exhibits at the "Our Way of Life" Exhibition which formed a principal part of Bristol's Festival of Britain celebrations. The station, organised by the Bristol Group of the R.S.G.B., proved one of the most popular features of the Exhibition, being almost constantly besieged by a large crowd.

The Exhibition was opened on July 7 by their Royal Highnesses the Duke and Duchess of Gloucester. During the ensuing fortnight the station was continually in operation from 2 p.m. until 10 p.m. daily. One of the first contacts was with GB3FB, then at Leeds, and a schedule was arranged for 3.30 p.m., when the Royal visitors were expected at the stand. Unfortunately, they did not reach the station until an hour later, and great disappointment was felt as their time-table was so much over-run that the Duke was unable to speak to the audience listening at the Land Travelling Exhibition at Leeds. (Many thanks to the operators at GB3FB who waited so patiently.)

The transmitter was designed by G6YA, and consisted of a V.F.O. utilising a built-in BC221 with two 6AG7 buffer stages. The switched exciter unit covered 80, 40 and 20 metres, with 807 output driving a pair of HK257B's in push-pull (150 watts input). These were modulated by a pair of 838's in Class "B," fed by an R.C.A. speech amplifier. A separate transmitter was used for "Top Band." By means of a two-way monitoring system, the public were able to follow the QSO's through loudspeakers. A complicated relay system enabled all stages to be controlled from the operating position with the aid of a battery of pilot lights which were an integral part of the V.F.O. unit. Tuned dipoles were used for 80, 40 and 20 M., the 80 M. and 40 M. aerials being connected together for 160 M. operation.

Receivers in use were a BRT400 and a *Marconi* "Electra." Among the equipment displayed on the stand were ancient and modern valves (some 40 years old!); a 17-valve communications receiver built by B.R.S. W. Lewis; an 18-valve communications receiver constructed by B.R.S. T. Bartlett; a high-stability audio oscillator by B.R.S. Prewitt; and a U.H.F. transceiver by B.R.S. C. Blizzard.

Some 450 stations were contacted in all, the best DX being VQ4RF. Thanks to the co-operation of many of the stations who worked G6YA/A, approximately 200 QSL-cards confirming contacts made during the period of the Exhibition were on display at the stand, some arriving by express post—others by air mail. In addition, a large number of selected DX QSL's were on show, together with large photographs of past Region 9 activities.

The station received considerable publicity in the local Press, and was also the only item from the Bristol Exhibition to be given "air-space" by the B.B.C. This was a recording made—after some difficulty due to QRM—of a contact with EI5B on 80 M. Heavy electrical noise from other stands made reception extremely difficult during the first few days of the Exhibition, but G.P.O. engineers effectively suppressed about 90 per cent. of the interference, which ranged from cine projectors to aquarium pumps.

The special log-book used at G6YA/A is to be presented to the Bristol Corporation, who provided the Festival QSL cards. Region 9's Festival Station Committee would like to thank all Bristol members who gave so much of their time in planning, assembling and operating this highly successful exhibit.

Camberwell's Grand Effort

AS part of the Festival of Britain activities of the Metropolitan Borough of Camberwell (South-East London) an Exhibition of Amateur Radio Equipment was held at the South London Art Gallery, Peckham Road, from August 26 to September 15, 1951.

The Exhibition, together with two associated Exhibitions (one of paintings and the other of engineering models), was declared open by the

General view of the Newbury and District Amateur Radio Society stand at the Newbury Arts and Handicrafts Exhibition, showing G3CPV seated at the "enquiry desk-cum-book-stall." The transmitters on view were loaned by (left) G3IG, (right) G3CJU, and (rear) G3CUA.

[*Photo by Metcalf and Hewitt, Newbury*

Mayor of Camberwell (Councillor C. A. G. Manning, D.L., J.P.), who was accompanied by the Mayoress and supported by the Mayor of Southwark (Councillor A. E. Barnes, J.P.) and the Mayoress and other civic dignitaries.

An important feature of the Exhibition was an amateur station which operated under the call sign G3ACC/A. The station itself was formally brought into action by the Mayor of Camberwell when he exchanged greetings with G4DC operated by Council Member P. W. Winsford, who is also Chairman of the New Cross and Dulwich Group of the R.S.G.B.

The Exhibition covered an area of about 500 square feet, two-thirds of which was set aside for stands and the remainder for the station, an artificial wall, giving the appearance of a house front, separating the two sections.

The transmitting equipment was housed on a 6-ft. rack, one transmitter covering the "Top Band" and the other 80, 40 and 20 metres. The transmitters were of the TVI-proof variety, that for 80, 40 and 20 metres being a copy of one recently described in the BULLETIN by G5RV. The receivers in use were an AR88 and a BC342. Except for "Top Band," where the aerial was end-fed, half-wave dipoles were in use.

An interesting feature, and one which attracted a great deal of attention, was a collection of old valves and components. Also on show were copies of early books and periodicals available to amateurs, including copies of the first Call Book and Diary issued by the R.S.G.B. in 1927.

The remainder of the Exhibition was devoted to a display of home-constructed equipment set out so that the visitor, upon entering the hall, saw first the audio section. This comprised a modulated light-beam, an audio amplifier, a tape recorder and a voice waveform oscilloscope. Next came the communications section embodying some of the more recent developments in amateur communication. The items displayed included a single side-band exciter and amplifier, together with more conventional types of receivers, transmitters and measuring equipment. The final section included a 2 metre transmitter and convertor, and a 70 cm. crystal-controlled transmitter and receiver, employing the latest techniques. Other items of V.H.F. and U.H.F. equipment displayed were co-axial crystal mixers, and—what is claimed by its designer and constructor to be the first crystal controller tripler for 70 cm.

R.S.G.B. publications were displayed most effectively on the special unit recently produced for Exhibition purposes by the Cardiff R.S.G.B. group.

An excellent selection of photographs of local activities, together with examples of proficiency certificates won by members, were exhibited on the walls. Illustrated drawings of Amateur Radio activities drawn by a local member of the Society also attracted much attention.

During his visit, shortly after the Exhibition opened, the General Secretary recorded a message to the members of the local group, in the course of which he congratulated all concerned with the arrangements. He expressed the opinion that the Exhibition was one of the very finest ever organised by a local R.S.G.B. group.

Thanks are due to G2LW, 3FZL, 2FKZ, 3HFK and BRS.18370 who, together with the T.R. (G3CU), formed the Technical Committee; to G3ACC, 4DC and BRS.17824 for the loan of equipment; to G3FRF, who was responsible for sign writing, and to all others who helped to make the event such a success. H.F.K.

The Worshipful the Mayor of Camberwell (Councillor C. A. G. Manning, D.L., J.P.), at the opening of the Amateur Radio station which operated from the South London Art Gallery.

The Newbury Exhibition

THE Newbury and District Amateur Radio Society, in common with many similar organisations throughout the British Isles, recently participated in a local Arts and Handicrafts Exhibition as part of their contribution towards the Borough of Newbury Festival of Britain Programme. The Amateur Radio stand proved to be a focus of interest for a great number of visitors, and a recruiting drive for new members was most successful. The main feature of the exhibit was an amateur station—call G3CJU/A—which was operated throughout the period of the Exhibition (June 12-16), but unfortunately due to exceptionally poor reception conditions at the site, few contacts were made.

A touch of novelty was provided by a microphone connected to an oscilloscope, visitors being invited to "see what their speech looked like." Other items on show included home-built equipment such as a signal generator, impedance matching unit, capacity bridge, transmitters, and general purpose test-gear. The walls of the stand were utilised to illustrate the QSL system.

Mr. Jack Olive, the Organiser of the Newbury and District Festival of Britain activities (and, incidentally, a committee member and one of the founder-members of the Newbury and District Amateur Radio Society) has recently passed the City and Guilds Radio Amateurs' Examination and G.P.O. Morse test, and will soon be on the air as an active amateur.

Land Travelling Exhibition

MR. V. M. DESMOND, G5VM, who was in charge of the Amateur Radio Station when the Land Travelling Exhibition visited Birmingham, records his thanks to all who assisted in operating GB3FB and in particular to G2LB, 3DO, 5IW, 8JI and 2BJY who, with him, formed the Organising Committee.

The station aroused great interest, but reception, as at Manchester and Leeds, was marred by local electrical interference.

DX TOPICS

THE MONTH ON THE AIR

by A. O. Milne G2MI

Band Plan

THERE is a lamentable tendency at the present time for 'phone stations to operate in the C.W. portion of the 14 Mc/s. band. It will be remembered that the R.S.G.B. Band Plan proposed that the 'phone band should terminate at 14150 kc/s. until the provisions of the Atlantic City Conference became operative, when it would finish at 14100 kc/s. The R.S.G.B. Plan was later modified at the I.A.R.U. Conference in Paris to 14125 kc/s. The C.W. occupancy of 14 Mc/s. is very large and even with selective receivers it is difficult to read an S3 signal beneath a splattering local 'phone. It is no use expecting the rest of the world to conform to *our* plan if we do not observe it ourselves. It has been a minor miracle that the Plan has been adopted with such little friction, so watch it chaps and keep within the agreed limits.

Hong Kong

VS6BJ, who is the Acting Hon. Secretary of H.A.R.T.S., reports that VS6AC, AL, BI, BJ, BO, BZ and HR are active in the colony, and that for the record the following calls are at present authorised: AC, AE, AF, AK, AL, AM, AR, AZ, BA, BE, BH, BI, BJ, BN, BO, BP, BU, BV, BW, BY, BZ, CA, CB, CD, CE, HR. European signals have been well received between 1900 and 2300 G.M.T. CR9AF is Jao Pires Antas, Oficinas Navais, Macau. QSL *via* the VS6 Bureau. We are sorry to hear that Pat O'Brien, VS6AE, President of H.A.R.T.S., is in hospital (speedy recovery O.M.). VS6BE is now in Australia and VS6AA in England.

Notes and News

G6XS, just back from a holiday in Switzerland, sends along the following useful frequencies for the DX fraternity: ZS4AK usually V.F.O. between 14060 and 14100, 1700 G.M.T.; CR7AG, 14103; MI3ZX, 14074 at 1650; XZ2EM, 14100 at 1600. Now for the prize packet, "KL7PI de DL . . . IMI M1B"—14063 at 1632 G.M.T. So that's why he does not QSL! A new station in Iraq, YI3HPG, was heard about 14055. AP2N is active again on 14110. UM8KAA was heard on August 18, 14103 at 1608 G.M.T.

Ken Sketheway, A1180 (Newcastle) reports that even during the very bad period in mid-August there was always some Eastern DX to be heard in the late afternoons. EL2R, 14328, was logged at 1702 G.M.T. AR8BC came in about 1500 G.M.T. followed by HZ1AB, VU2JU, KG6 and VS2BS with KH6 in at about 1800 G.M.T.

John Hall, BRS. 19107 (Croydon) turned his attention to the lower frequencies and heard VQ4HJP, 3510 at 2250 and ZL3GQ, 3512 at 0523. On 7 Mc/s. quite a few VKs have been copied, including 2AHA, 2PA, 2ZC, 3BD, 3PG, 3XU, 4AP, 7JB, 7KA and 7LJ on C.W. with VQ3KIF, ZD4BC, ZS5LZ/MM and SV0AN for good measure. ZL3JD, ZL4HE, HR1RE, HP3DA, HK5EJ and VP5BF were heard on 'phone.

G8DR collected a nice little lot between 2200 and 0100 G.M.T. on various dates including OQ5AA (an Exhibition station at Leopoldville), OQ5VN, FQ8AG, FF8AE, JA2KW, YN4CB, ZD1SS, HR1KS, VP4, 5, 7 and 9, KL and TI.

A1193 says some strong words about 'phone gabblers; those stupid people who talk for ten minutes and then either say "Break" or else gabble their call sign in an incomprehensible manner. Like A1180, he has logged EL2R. Yes, O.M.—PI1LC is quite genuine, in Holland.

G6QX, who hooked three new ones in F3AT/FF8, FF8AE and OQ5AA, confirms that 7 Mc/s. is livening up, producing many PY's, VP9AK and YV6AO with the usual W's, KP's and VE's. His score is now 142. G5JU reports ZD3AM as active in Bathurst, Gambia. VQ8CB has been heard on 14100 at about 1500 G.M.T. G5JL offers the following useful frequencies: VO6VB, 7030, 0400; ZC4TC, 7030, 0630; VP5BH, 7045, 0510; VP9AK, 7035, 2400 (all times G.M.T.).

G2HKU worked F8QK/MM on 14030 at 0850, who said he was off the Canary Islands. On 7 Mc/s. G2HKU's log includes 3A2AK, 7010, 0525; W1RWP in Vermont, and VP4CQ, 7015. He heard FY8AB on 14010 at 0635, 598, but wonders whether he is genuine. He still wants Nevada, Utah, Wyoming and North Dakota for W.A.S. CP5EK needs a card from the AP2F whose name was Geoff, worked in 1948. Can anyone help, please? Larry Eisler, W3JTC, reports that FB8ZZ operates daily from 1000 G.M.T. on 14040. Larry thinks the VK1's have put up a very poor show with QSL's; VK1VU in particular has caused widespread disappointment as he was so active. We have seen cards from VK1ADS but these were obtained by G8PO when he was in Australia; no other VK1, so far as we know, has QSL'd. Larry's bread and butter is earned in radio propagation prediction and, in his opinion, 14 Mc/s. is going to be next to useless this coming winter. Better start building 7 Mc/s. rotary beams because that is the only band which will be of any use for DX! After all, the elements will only be about 70 ft. long! Can anyone tell him the present QTH of VQ2AB? G3YF reports that VR5GA returns to VK next month.

W2GT offers the following QTH's: MP4BAF, J. Faithful, Box 14, Manama, Bahrein Islands; MP4BBD, R. J. Fleming, Box 613, Awali, Bahrein Islands; LZ1KAB and LZ1KSR, Box 830, Sofia, Bulgaria; FQ8AG, Box 138, Brazzaville; YN3AG is W3AG.

G3JW has worked ZA1A, who gives his address as Box 55, Tirana. 'JW wants some RK34's. Can anyone oblige? G2FRY has been busy with his indoor aerial and added PY4IE, PY1HF, VP9OO and W6DER to the score. G4CP, who has worked SV9RP at Suda Crete on 14010, also wants to know when to expect some VK1 cards!

Other good items from his log are ZS7D, Havelock, Swaziland, 14060, and VP5BF, Turks and Caicos, 7020 and 14040. G3EFY (Exeter) turns in the following: MI3SL, ZC4OR, VO1VI, MD5PM, KG6GU and W3IYE in Delaware all in the early evening on 14 Mc/s. He has recently qualified for the Worked All Europe and Worked All Sweden awards. G3BQ (Staines) lists FP8BX 'phone on 14100; VU2MD, 14083, T7; VU2US, 14127; VU2NB, 14050; PJ5HM, 14006, T7; XE1AC, 14009; VP1AA, 14008; VP1NW, 14060; HP2RO/HP1AW, 14006; XE1AB, 14093; YS1O, 14062; VK9GB, 14091; 9B3AA, 14017; CR9AF, 14066; ZP3AW, 14065; FY7YB, 14036; YN4CB, 14041, and HS1UN, C.W. on 14157. So just run along and work that lot and then come back and we'll give you some more! G8QX raised VP4LL, YV5AO, HE9LAA, YN4CB, JY1XY, VS7PW, VP3LF, CE3CZ, HK4FV and PG5FN (PJ ?) in one session just to prove that the two long wires he is using really work!

DL2LZ asks anyone who hears G3EAX to ignore the call. This is DL2LZ's G call and it is being pirated. G5JU corrects ZC5OR; this is ZC4OR who QSL's. SM5TF reports that SM4BR and SM8BR who work on 7 and 14 are unlicensed. G3DOG has added FI8, PJ, YN and VP2 to his score. He received a QRZ call from YS1O but he disappeared. Incidentally, YS1O always QSL's by air mail.

G6RH having removed from Slough to Bexley is now using a 33-ft. vertical and contemplates erecting a 66-footer. Even the bad conditions did not prevent him from logging YI3HPG, 14090; FI8RO, 14090; VU2CP, 14060; and a good collection of Africans.

Old-timer Jack Drudge-Coates (one-time Y-DCR —vintage 1925—and now DL2RO) seems to have got down to serious business quickly. Up to the time of writing he had notched up 73 countries. Incidentally, Jack comments on the poor operating and bad notes of many British stations and the long, long CQ calls. His best DX from DL2 is KG6GU, DU1DO, PK5AA, FQ8AG, UM8KAA, XZ2EM and VQ3CP (Box 144, Mwanza).

G3CED (Broadstairs) reports that ZB2L is being invalided home for hospital treatment. (Bad luck, O.M.; we hope you will soon be quite fit again.) He hopes to get a G licence so that he can use his station whilst in hospital.

Good news for those who worked PX1A recently—he has QSL'd. The cards came *via* the Spanish Bureau. G3BPP, who got YN4CB on 14035 at 0200 B.S.T., has a card from PJ5HM.

Who's Who

From ZS6BJ comes news that AC3SQ is operated by S. Saja and AC3PT by P. T. Namgyal, who signs his letters (awaiting delivery of cards) as Maharaj Kumar of Sikkim, and writes on the crested notepaper from the Palace of Gangtok, so it would seem that we may add another name to the list of Royal radio amateurs.

The calls 3A2AC and F7AR are held by Capt. A. H. Hix, O-446963, whose address for cards is H.Q., E.U.C.O.M., Com. Z, Signal Section, A.P.O. 58, c/o P.M., N.Y. He has also operated for a few days as PX1AR. QSL *via* R.S.G.B. G3EBP now VS1EC operates from Singapore between 1600 and 1800 B.S.T. on 14080 kc/s. DL4FS/3A2AB, now back in the States, is signing W9SRB/W6. Input 15 watts. G2CIW is EK1CW. He QSL's of course.

Warren Snyder, DL4FA/W0HZA, now F7AT, can be reached *via* F7AR. He has been issued with the call 3A2AG and hopes to go to Monaco in September for a week. He says there seems some hope that a genuine and permanent station may soon be working in Andorra.

Listener cards from rare DX is certainly something unusual, so look out for cards from John Kiesinger, ZD4SWL.

G2AO, just back from Port Harcourt, Nigeria, where he worked as ZD2AO, says he was amazed at the behaviour of some amateurs in their anxiety to work him. He found Port Harcourt a poor location for contacts with North-West Europe but G stations were good on both 7 and 3.5 Mc/s. Strange to say they seemed oblivious of everyone except their own locals. He heard a lot of DX calling in vain on both bands.

GM3DHD reports that VR5GA and ZM6AA will leave in about two months' time. A large wad of QSL's has just arrived from ZK1BC, who is on 'phone. He will be on Cook Island until December, 1952. YI2AM, active during 1946, is now W3ACE. QSL's may be sent *via* G2MI. EK1RR expects Tangier calls to become CN2's before long. New licence laws have been passed but are not yet in force.

Do You Hold a G3 Two-Letter Call?

MEMBERS holding G3 two letter calls are asked to note that, due to the illness of Dr. Vance (G8SA), Mr. Arthur Goode (G2ATQ), 128 New Victoria Street, Mansfield, Notts, has taken over temporarily the duties of G3 Sub-Manager.

Speedy recovery to Dr. Vance and best thanks to Arthur Goode for his prompt assistance. *G2MI*

Japan

G5JU reports that JA5AP is held by Capt. Gilbert of the U.S. Army, attached to B.C.O.F. He will shortly become JA4AP. By the way, the Japanese districts are JA2, Tokyo; JA3, Nagoza; JA4, Osaka; JA5, Hiroshima; JA6, Matsuyama; JA7, Kumomoto; JA8, Sendai; JA9, Hokkaido; JA0, Iwojima. JA1 is reserved.

Well Met

GM3GDX, on holiday in London, found himself in the B.B.C. Exhibition in Piccadilly. As visitors were invited to try their voices on the tape recorder, he joined the queue. A recording was being made and judge of his surprise when it was played back to hear a sonorous Scots voice extolling the virtues of Amateur Radio! Looking round the sea of faces, he discovered the perpetrator—Tommy Hughes, GM3EDZ. Neither knew the other was in London! Continuing his holiday in Paris, 'EDX tells of the wonderful hospitality extended to him by F3TT and his family, and of the adventures of a Scotsman riding a bike on the "wrong" side of the road to visit F9FZ. The hospitality of the French amateurs has to be experienced to be believed. We ourselves have many happy memories of the kindness and generosity of Tom Bonnechaux (F9HE), Rene Thomas (F9TR) and Marcel de Marcheville (F8NH)—all so powerfully imbued with the true Ham spirit. GM3EDX had never met F3TT, so wondered how he would recognise him at the Gare du Nord. He need not have worried—for there he was with a huge placard across his chest with F3TT in letters six inches high!

Tailpiece

We can use more reports. News, DX, anecdotes of general interest. It is all grist to the mill.

THE WORLD OF RADIO

News From Many Quarters

The 1951 Radio Show

THE first, second and third thing that caught the eye at the 1951 National Radio Show held at Earl's Court at the beginning of the month was television. Next in order of importance came radio. But looking around between the massed displays of commercial receivers intended for the visual and aural entertainment of the general public, it was possible to find certain items of intrinsic interest to radio amateurs, for whom a focal point was the *Eddystone* stand *(Stratton & Co., Ltd.)*. Among the selection of communication receivers on show was the new Model 770M, a six-band superhet (19 to 210 Mc/s.) for the reception of F.M., N.F.M., A.M. and C.W. signals. The Amateur Division of *E.M.I. Sales and Service, Ltd.*, featured a display of specialised test equipment for the radio amateur, including a C.R.T. Modulation Indicator, a Spot Frequency Marker, Grid Dip Oscillators (H.F. and V.H.F.), and Absorption Wavemeters.

An "Electronic Telescribe," comprising a system of closed-circuit flying-spot television (200-line definition) enabling drawings, photographs, etc., to be reproduced on a monitor screen was shown by *Mullard Electronic Products, Ltd.* Doubtless this ingenious device provided inspiration to many amateur T.V. enthusiasts who have been experimenting with flying-spot scanning. *Standard Telephones and Cables, Ltd.*, exhibited the new rectangular cathode-ray tubes for television, and also had on show an experimental broadcast receiver using crystal triodes in places of valves. A similar all-crystal receiver was exhibited at the *G.E.C.* stand, the layout comprising 2 R.F.'s (crystal triodes), detector (crystal diode), and push-pull audio output (a pair of crystal triodes providing about 50 milliwatts of audio). These germanium triodes are not yet available commercially.

An interesting display showing the polar diagram of a rotating rhombic aerial radiating on 10 cm. traced on a monitor cathode-ray tube was a feature of the large G.P.O. exhibit on the first floor. Nearby, the Army demonstrated A.A. gunsite predictor equipment and associated radar equipment with the aid of scale models. A "museum" of very early telegraph and wireless apparatus (dating back to 1854) proved a popular exhibit.

The Senior Service featured a special display to attract recruits to the Royal Naval Volunteer (Wireless) Reserve. In a small receiving cabin a selection of apparatus loaned to members of the Reserve was shown. Both the Royal Navy and Royal Air Force exhibited radar equipment.

In the main, the chief function of the Radio Show was to act as a giant shop window for the radio and television industry.

Amateur Aid

SHORTLY after the disastrous hurricane had swept across Jamaica, radio amateurs set up equipment at the office of United Motors, Ltd., Kingston, and made contact with stations abroad and at Montego Bay. Those who played a prominent part were Gordon Fuller, VP5FR; Ivan Hendricks, VP5AK; Harry Forbes, VP5DX; Thomas Myers, VP5AD; and Roy Gordon, VP5AR.

The Model Engineer Exhibition, 1951

RADIO-CONTROLLED models were very much in evidence at the 1951 Model Engineer Exhibition held in London last month. In fact, the Exhibition was officially opened by a radio-controlled model Churchill tank, four feet long and weighing two and a quarter cwt., which forced its way through a specially prepared display sheet and fired "shells" from the gun in its rotating turret.

On show in this "schoolboy's paradise" were 386 amateur-constructed models which had been entered in the various competitions, and these—together with loan exhibits—were insured for £48,000. Ranging from a Bristol Brabazon to a Cleopatra's Needle, from a Flying Saucer to a 16 mm. cine-camera and sound-recording head, or from a radio-controlled airship to a miniature grand piano, the exhibits adequately displayed the craftsmanship and ingenuity that went into their making, and the high degree of precision engineering involved.

From the radio amateur's point of view, the most interesting demonstrations were those of radio-controlled models. A large water tank enabled realistic marine manœuvres to be carried out, under the control of small portable transmitters. In some cases, the boats could be controlled by the public outside the tank.

A wide variety of tools and accessories were displayed on the manufacturers' stands, some of which will, in due course, because of their suitability, find their way into the shacks of radio amateurs for the manufacture of waveguides and micro-wave plumbing.

G6DH Wins Clerk-Maxwell Premium

THE senior award of the Brit.I.R.E., the Clerk-Maxwell Premium, will be awarded to Denis W. Heightman, G6DH (now with the *English Electric Co., Ltd.*), for his paper on "The Propagation of Metric Waves beyond Optical Range." This premium is for the most outstanding paper published in the Institution's Journal during the year 1950. The award will be made at the Annual General Meeting of the Institution on September 26th.

Talking Book Scheme

AS the result of the appeal published on Page 468 of the June, 1951, issue of the BULLETIN, a further twenty members have offered their services to the National Institute for the Blind. The whole of Somerset, Devon and Cornwall are now completely covered. The Institute is particularly grateful to Mr. Dingle, BRS.6918 of Portsmouth, who has organised that area in a most efficient manner.

Members willing to assist the Institute in connection with the talking book scheme are asked to write to the Talking Book Dept., 12 Oval Road, Camden Town, London, N.W.1.

REPRESENTATION *(Continued from Page 111)*

Present Representatives

In the past certain representatives have assumed, incorrectly, that they are entitled to remain in office without being re-elected.

All present Regional, Town and Area Representatives go out of office on December 31st, 1951.

REPRESENTATION 1952-1953

Election of Regional, Town and Area Representatives

Regional Representation

THE Council has decided to exercise its right to nominate Corporate Members for the office of Regional Representative in the undermentioned Regions. Accordingly the following are put forward for the consideration of the Corporate Membership in the respective Regions:—

Region 1.—G. Webster, G5GK.
Region 2.—C. A. Sharp, G6KU.
Region 4.—J. C. Curnow, G6CW.
Region 5.—R. F. G. Thurlow, G3WW.
Region 6.—F. A. Jefferies, G8PX.
Region 7.—W. H. Matthews, G2CD.
Region 8.—R. J. Donald, G3DRD.
Region 9.—H. A. Bartlett, G5QA.
Region 11.—F. G. Southworth, GW2CCU.
Region 12.—J. Douglas, GM2CAS.
Region 13.—W. Baker, G3AFL.
Region 14.—D. Macadie, GM6MD.

Mr. N. H. Lowden, GI2HLT (Region 15 Representative) was unable, due to pressure of private business, to accept nomination.

Not later than October 31st next, any five Corporate Members resident in a particular Region may nominate any other duly qualified Corporate Member resident in that Region for the office of Regional Representative, by delivering their nomination in writing to the General Secretary, together with the written consent of such person to accept office if elected. Each such nominator shall be debarred from nominating any other person for the current election of Regional Representatives.

Town and Area Representatives

Not later than October 31st next, any five Corporate Members resident in a particular Town or Area may nominate any duly qualified Corporate Member resident in the particular Town or Area for the office of Town or Area Representative, by delivering their nomination in writing to the General Secretary, together with the written consent of such person to accept office if elected.

In the case of the City and County of London, Area Representatives may be nominated for groups of Postal Districts.

In the case of certain other large towns, Area Representatives may be nominated on a geographical basis, viz. North Birmingham, South-East Manchester.

Period of Office

Regional, Town and Area Representatives will hold office for a period of two years as from January 1st, 1952, subject to any revision that might be necessary in the light of any alterations to the Society's Articles of Association.

Vacancies

In the event of no nomination being received prior to November 1st, 1951, from the Corporate Members resident in any Region, Town or Area, the Council reserves the right to make an appointment.

Confirmation of Appointment

Town or Area Representatives will only be confirmed in their appointment if the total membership in the Town or Area they propose to represent is in excess of 10.

Resignation

The Council reserves the right to call upon any Representative to resign his office if, in their opinion, he is considered to be unsuitable or unsatisfactory.

Regions

The following is a list of the Regions and Counties or Areas forming them:

Region 1 (North Western).—Cheshire, Cumberland, Lancashire (East), Lancashire (West) and the Isle of Man, Westmorland.

Region 2 (North Eastern).—Durham, Northumberland, Yorkshire (East), Yorkshire (North), Yorkshire (West).

Region 3 (West Midlands).—Herefordshire, Shropshire, Staffordshire, Warwickshire, Worcestershire.

Region 4 (East Midlands). — Derbyshire, Leicestershire and Rutland, Lincolnshire, Northamptonshire, Nottinghamshire.

Region 5 (Eastern).—Bedfordshire, Cambridgeshire, Essex (outside London Region), Hertfordshire (outside London Region), Huntingdonshire, Norfolk, Suffolk.

Region 6 (South Central).—Berkshire (outside London Region), Buckinghamshire (outside London Region), Gloucestershire (excluding the Bristol Area), Hampshire, Oxfordshire, Wiltshire.

Region 7 (London).—London North, London South, London East, London West.

Note: The London Region covers the whole of Surrey and all territory within 25 miles radius of Charing Cross.

Region 8 (South Eastern).—Kent (outside London Region), Sussex.

Region 9 (South Western).—Bristol, Cornwall, Devon, Dorset, Somerset.

Region 10 (South Wales).—Brecknockshire, Carmarthenshire, Pembrokeshire and Cardiganshire, Glamorganshire, Monmouthshire.

Region 11 (North Wales).—Anglesey, Caernarvonshire, Denbigh and Flintshire.

Region 12 (North Scotland).—Aberdeenshire, Banffshire and Kincardineshire, Angus and Perthshire, Morayshire, Nairnshire, Inverness-shire, Ross-shire, Sutherland, Caithness, Orkney and Shetland.

Region 13 (East Scotland).—Berwick, Peebles, Roxburgh and Selkirk, East, Mid- and West Lothian, Fifeshire and Kinross.

Region 14 (West Scotland).—Argyll and Dumbarton, Ayrshire, Bute, Kirkcudbright and Wigtown, Clackmannan and Stirlingshire, City of Glasgow Postal Districts, Lanarkshire, Renfrewshire.

Region 15 (Northern Ireland).—Antrim, Armagh, Down, Ferminagh, Londonderry, Tyrone.

Ballots

In the event of more than one person being nominated for a particular office a Ballot will be conducted, details of which will be published in the November, 1951, issue of the R.S.G.B. BULLETIN.

Resignations

If for any reason an elected Representative wishes to resign his office he should notify Headquarters who will advertise the vacancy. **Local Members cannot automatically appoint another member to undertake the duties of a Representative who has resigned.**

Local Societies

It is not permissible for local societies, whether affiliated to the R.S.G.B. or not, to nominate members to serve as R.S.G.B. Representatives.

(Continued on Page 110)

The Winners

At the Falkirk N.F.D. site (left to right standing): GM3GIV, GM3BXL, GM3AVA, GM3OM, GM2FVV, GM3GJB, GM3HHB, B.R.S. L. Turnbull, B.R.S. R. Columbine, and GM4JQ; (sitting) B.R.S. R. Bissett, GM4MF, B.R.S. D. Imrie, GM5IR.

ONCE again the weather was kind to the large number of members who sallied forth at noon on the first Saturday in June. N.F.D. was off . . . and what a race it was! All through the evening and the warm summer night—from dusk till dawn—the pace was maintained, until by noon on Sunday the leaders—Falkirk and Slough—were running neck and neck. Falkirk "A" tried hard to keep up their scoring rate, but in spite of all efforts, it gradually dropped as the more distant stations faded out. During the afternoon, Slough "A" gained on its northern rivals, but not sufficiently to hold off the final spurt of Falkirk "B," which made most of the favourable conditions and the queue of waiting G and GW portables to score fully 40 points more than Slough "B" in the same time. With this margin, Falkirk will carry the N.F.D. trophy to Scotland for the first time. Slough are worthy runners-up.

Leading Stations

The winners appear to have spent much time in planning their equipment. The transmitters at both "A" and "B" stations (GM4JQ/P and GM4MF/P) consisted of a 6SK7 V.F.O., a 6AG7 frequency multiplier, and an 807 P.A. Both employed a half-wave dipole for each band. The receiver in each case was an H.R.O., power for each station being derived from a petrol-driven alternator. The 428 points scored by the "A" station resulted from 134 contacts, while the "B" station amassed 503 points from 139 contacts.

The runners-up (Slough) at their "A" station, G3XH/P, used a 6AG7 V.F.O. driving an 807 P.A.

Mast tactics at GM4MF/P (Falkirk). In the group are (kneeling), GM3HHB, and (standing left to right), GM3BXL, B.R.S. R. Bissett, B.R.S. W. MacPherson, and GM3OM.

NATIONAL FI
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WINNERS: ... ... **FALKI**
RUNNERS-UP: ... ... **SLOU**
LEADING "A" STATION: ... ... **CHEL**
LEADING "B" STATION: ... ... **FALKI**

Psn.	Town or Area.	"A" Station. Call Sign.	Pts.	"B" Station. Call Sign.	Pts.	Combined Score
1	Falkirk ..	GM4JQ/P	428	GM4MF/P	503	931
2	Slough ..	G3XH/P	499	G6CJ/P	395	894
3	East Molesey	G6MB/P	535	G8IP/P	349	884
4	Eastbourne	G4FV/P	466	G5AQ/P	403	869
5	Northern Ireland ..	GI5SJ/P	382	GI5UR/P	484	866
6	Bristol ..	G3YT/P	545	G6GN/P	301	846
7	Cambridge	G5IG/P	514	G8PB/P	331	845
8	Chelmsford	G5RV/P	556	G3BKF/P	280	836
9	Derby ..	G3ERD/P	537	G3FNK/P	279	816
10	Edinburgh	GM8FM/P	431	GM3UM/P	384	815
11	Glasgow	GM8MJ/P	428	GM6MD/P	379	807
12	Dunfermline	GM3FGH/P	297	GM3GUS/P	502	799
13	Sutton and Cheam ..	G6KM/P	488	G8DF/P	293	781
14	Hendon and Edgware	G5FG/P	439	G2IM/P	332	771
15	Neath and Port Talbot	GW4NZ/P	507	GW2FRB/P	261	768
16	Cheltenham	G3CGD/P	446	G5BM/P	318	764
17	Brighton and Hove	G5AO/P	445	G3YY/P	315	760
18	Swindon	G2MM/P	456	G4AP/P	302	758
19	Dulwich and New Cross	G3CU/P	541	G3ACC/P	215	756
20	Barnes and Richmond	G6RC/P	459	G4GD/P	285	744
21	Boston ..	G6GH/P	451	G6LH/P	292	743
22	North Bucks	G2DTD/P	512	G3AZ/P	230	742
23	Guildford & Woking	G5WP/P	543	G6NA/P	193	736
24	Stourbridge	G3BMY/P	503	G8GF/P	229	732
25	Forfar ..	GM2HIK	242	GM2DRD	486	728
26	Tunbridge Wells and Tonbridge	G3FCQ/P	408	G4IB/P	314	722
{27	Burnley ..	G8TD/P	413	G3SJ/P	303	716
{27	Coventry	G6TD/P	410	G4NB/P	306	716
{28	Blackpool	G8GG/P	339	G6LD/P	368	707
{28	Scarborough	G8KU/P	449	G8SI/P	258	707
29	Croydon ..	G2FWA/P	380	G6LX/P	325	705
30	Hexham ..	G4LA/P	307	G5RI/P	396	703
31	Uxbridge	G2FMF/P	506	G3BWC/P	196	702
32	Ashford ..	G2JF/P	499	G2QT/P	182	681
33	West Cornwall	G3FVD/P	257	G2WW/P	422	679
34	Northumberland ..	G4QA/P	338	G2CO/P	336	674
35	Bromley and Beckenham	G6HD/P	385	G4AU/P	280	665
36	Medway Towns ..	G2CM/P	425	G6NU/P	235	660
37	Ealing ..	G3BRL/P	448	G3DOZ/P	206	654
38	Sheffield ..	G8NN/P	421	G5TO/P	231	652
39	Coulsdon & District ..	G2DN/P	417	G3CIF/P	233	650
40	High Wycombe	G3FGQ/P	441	G2FDF/P	206	647
41	Watford ..	G2QB/P	435	G2VD/P	211	646
42	Stroud ..	G5HC/P	425	G5WA/P	215	640
43	Aberdeen..	GM3ALZ/P	155	GM2FHH/P	478	633
44	Hull ..	G6UJ/P	338	G5PQ/P	293	631
{45	Cardiff ..	GW5BI/P	403	GW8UH/P	225	628
{45	Darlington	G8IA/P	411	G2CKN/P	217	628
46	Norwich	G2YU/P	359	G3VM/P	266	625
47	Worthing..	G3BF/P	318	G4NY/P	282	600
48	Ilford ..	G8TL/P	368	G2JG/P	219	587
49	Kirkcaldy	GM4GK/P	257	GM4AN/P	321	578
50	Reading ..	G3AED/P	336	G6WO/P	239	575
51	East Ham	G2ZZ/P	461	G3CJQ/P	112	573
52	Grimsby and Cleethorpes	G3DAE/P	437	G4XC/P	133	570
53	Chingford	G4GA/P	384	G8AL/P	182	566
54	North Devon ..	G8US/P	236	G6GM/P	324	560
55	Keighley & Bradford	G2VO/P	280	G6KU/P	278	558
56	Gravesend	G2TN/P	551	—	—	551
57	Sidcup ..	G2NK/P	341	G3MZ/P	205	546

ELD DAY 1951
ULTS

RK (GM4JQ/P and GM4MF/P) ... 931 pts.
GH (G3XH/P and G6CJ/P) ... ... 894 pts.
MSFORD (G5RV/P) ... ... 556 pts.
RK (GM4MF/P) ... ... 503 pts.

Psn.	Town or Area.	"A" Station.		"B" Station.		Combined Score
		Call Sign.	Pts.	Call Sign.	Pts.	
58	Luton ..	G3ASD/P	400	G3AST/P	144	544
59	Oxford ..	G2DU/P	540	—	—	540
60	Southend-on-Sea ..	G5QK/P	345	G5VQ/P	191	536
61	Lincoln ..	G4BU/P	444	G5XL/P	88	532
62	Loughborough..	G4BI/P	358	G3CKF/P	170	528
63	Slaithwaite	G8NF/P	523	—	—	523
64	Gloucester	G3MA/P	350	G2RT/P	172	522
65	Bath ..	G8DX/P	309	G2LR/P	212	521
66	Torbay ..	G3AVF/P	340	G2GK/P	177	517
67	Falmouth	G2AYQ/P	226	G6LV/P	289	515
67	Liverpool	G3BNO/P	312	G3DVB/P	203	515
68	Southport	G3EFA/P	355	G2ART/P	159	514
69	Leicester ..	G2RI/P	353	G4BB/P	160	513
70	Southampton ..	G5LR/P	511	—	—	511
71	Darwen and Blackburn	G2HW/P	505	—	—	505
72	Barnet ..	G3FFA/P	279	G6CY/P	212	491
73	Weston-super-Mare ..	G8GB/P	278	G3AIR/P	211	489
74	Christchurch ..	G3HJO/P	284	G3CVE/P	204	488
75	Exeter ..	G3JW/P	294	G5QA/P	193	487
76	Kingston-on-Thames ..	G2ACA/P	361	G3DHZ/P	122	483
76	Thanet ..	G8QB/P	452	G2IC/P	31	483
76	Harlow ..	G6UT/P	326	G3ERN/P	157	483
76	Monmouthshire ..	GW8CT/P	304	G4GR/P	179	483
76	Bolton ..	G3WG/P	255	G6QT/P	228	483
77	Redhill and Reigate ..	G5LK/P	284	G2AJS/P	195	479
78	Montrose	GM3KC/P	208	GM4MQ/P	269	477
79	Portsmouth	G6NZ/P	283	G8WC/P	184	467
79	Dundee ..	GM3BCX/P	158	GM4HR/P	309	467
80	Beaconsfield ..	G3BI/P	316	G3DAG/P	149	465
81	Rugby ..	G3GG/P	377	G4KK/P	86	463
82	Malvern ..	G2AO/P	355	G2XX/P	106	461
83	Birmingham South ..	G8JI/P	296	G8PN/P	161	457
84	Woolwich	G8VR/P	239	G8LN/P	206	445
85	Preston ..	G2NY/P	231	G3PJ/P	207	438
86	York ..	G3FYP/P	300	G3DTA/P	122	422
87	Peterborough..	G3EHQ/P	306	G2NJ/P	115	421
88	Ipswich ..	G4RW/P	274	G8MU/P	145	419
89	Barnsley ..	G5IV/P	330	G5KM/P	85	415
90	Romford	G4KF/P	411	—	—	411
91	Wirral ..	G2AMV/P	335	G8BM/P	74	409
92	Berwick-on-Tweed	GM5BA/P	408	—	—	408
93	Great Yarmouth	G3GIR/P	346	G3GVW/P	39	385
94	Southgate	G3GBN/P	377	—	—	377
95	Worksop	G8ON/P	173	G3BTU/P	195	368
96	Worcester	G3GLP/P	299	G3BDS/P	63	362
97	Manchester North-East ..	G3GB/P	198	G3RP/P	159	357
98	Petersfield	G6DT/P	356	—	—	356
98	Sunderland and South Shields ..	G5GI/P	240	G8JO/P	116	356
99	Calne ..	G3DXO/P	210	G3EKX/P	143	353
100	Plymouth	G5ZT/P	148	G3TX/P	191	339
101	Enfield ..	G8SK/P	307	—	—	307
101	Warrington	G3CKR/P	307	—	—	307
102	Finsbury Park ..	G2BAB/P	267	G3CWS/P	39	306
103	Bury ..	G2GA/P	300	—	—	300
104	Shefford and North Beds.	G4OL/P	299	—	—	299
104	Middlesbrough ..	G5YP/P	233	G3CBW/P	66	299

(Continued on Page 114)

Runners-up

Slough "A" station G3XH/P. Pictured among the group is Executive Vice-President F. Charman, G6CJ.

A 256-ft. Windom aerial was employed for both receiving and transmitting. The receiver was an H.R.O., whilst power supplies were derived from 12-volt accumulators and vibrator packs. Slough "B" station, G6CJ/P, ran an EF50 V.F.O., two stages of EF50 frequency doubling, and an 807 P.A. for the transmitter. The three aerials used for transmitting and receiving were a 134-ft. Windom, and a quarter-wave vertical on each band. The receiver was an AR88LF, power being derived from accumulator-driven vibrator packs. G3XH/P had 189 contacts for their 499 points, while the 395 at G6CJ/P came from 125 QSO's.

The leading "A" station is Chelmsford (G5RV/P), with a score of 556 points made from 228 contacts. Here, too, the 807 was favoured as a P.A., being driven by a 6V6 E.C.O. Half-wave dipoles were employed on each band, the receiver being an H.R.O. Power was supplied by lead-acid accumulators—200 volts in all.

The leading "B" station is Falkirk's GM4MF/P, who are thus dual winners. They were but one point above their nearest Scottish neighbours—Dunfermline, GM3GUS/P—who scored 502 points.

The overseas station contributing most points to British portable stations is ZB1AJX/P.

Comments

Few comments and suggestions were received, which appears to indicate that the rules are generally acceptable. VE3KE and G2FUU plead for slower sending speeds, and less use of "Bugs." BRS.12474, who logged 89 of the 137 "A" stations listed, noted many signals on 1.7 Mc/s. from stations signing "3." He suggests the use of 1, 3, 7 and 14 during normal operating as well as during contests. VQ4CM congratulates the portables on the high standard of their notes—he heard many on 3.5, but could not contact them. There were four requests for the retention of the 5-watts limit, and three to abolish it (in one case entirely, in the other two, for the "B" station only). Concerning the scoring system, Cheltenham suggested that G and GW portables should score two points instead of one for working fixed GI and GM stations.

East Molesey group "B" station, G8IP/P. Right to left: G2KI, G3EEI, G8IP, G8KZ, G3AIU, G3JC, G6MB.

[*Photo : Angus Photos, Dundee*
GM3BCX, 3FRQ, 2HFU, 3NH and others at the Dundee "A" Station.

GW3FSP/P would like to see GW on the same scoring basis as GI and GM stations.

The Medway Towns A.R. reports hearing VS1JJ and a ZL on 3.5, but neither was worked. West Cornwall "B" heard no Asiatics or South Africans, but worked VK, ZL, LU and VP6. G6GN/P lost four hours through generator trouble, otherwise the final result might have been different. G3NT/P and GM2CAS/P operated private portables. The former suggests

Guildford and Woking "A" station working party, including G3ARM, G2AOP, G3AEU, G8VH, G5WP & BRS 10110.

a certificate for the leading private portable station—will the L.P.F.D. meet this need? The latter worked 120 stations on 1.7, 3.5 and 7 Mc/s. ZB1AJX/P worked a smaller percentage of the G3+3 portables than of any other category —why was this? G6RC/P (who suggests that an alphabetical list of entrants' call signs might be issued to T.R.'s prior to the event) applauds the new aerial rules, and wonders whether other European societies could not organise their field days to coincide with our own.

Barnsley "B" station, G5KM/P. Left to right: Rear, BRS S. Richards, H. Fennell, Heath, Wignall, G3FLQ; front, G3US (logging), G3CYS (operating), BRS J. Rose, K. Rodwell, G3ABS, G2AFV, BRS J. Martindale, G3DOI, G5IV.

Tailpiece

The majority of stations had nothing out of the ordinary to report, but a minor crisis occurred at GW3FSP/P. During the night, in

Medway Towns "A" station, G2CM/P, with G2FAQ and G2BJW at the operating positions.

the middle of a contact, a horse nosed into the feeders. Whether they were "hot," or whether the horse was alarmed by this unaccustomed obstruction is not known; but in any case he bolted, taking the aerial mast with him.

[*By courtesy of the Guernsey Evening Press.*
Representing the Channel Isles. Left to right: GC2AGP, GC3ZU, BRS T. Park, GC2FZC, and BRS C. Gardener of the Guernsey group at N.F.D. site.

(Continued from Page 113)

Psn.	Town or Area.	"A" Station.		"B" Station.		Combined Score
		Call Sign.	Pts.	Call Sign.	Pts.	
105	Isle of Wight	G2ARL/P	268	G3FAN/P	25	293
106	Manchester North West	G2ATU/P	288	—	—	288
107	Wrexham	GW3EFZ/P	169	GW3BKP/P	110	279
108	Kensington and Shepherd's Bush ..	G4AR/P	271	—	—	271
109	Guernsey	GC3HFN/P	236	GC2ASO/P	18	254
110	Brentwood	G8RC/P	132	G4AK/P	107	239
111	West Wilts.	G2PS/P	229	—	—	229
112	Chester ..	—	—	G2YS/P	214	214
113	Rotherham	G2LG/P	197	—	—	197
114	Cleckheaton	G2BMC/P	186	—	—	186
115	Nottingham	G6CW/P	150	—	—	150
116	Lewisham	G2DHV/P	128	—	—	128
117	Hereford ..	—	—	G4HJ/P	127	127

Coventry Amateur Radio Society operated G3FOH/P on 1.7, and G2ASF/P on 3.5, 7 and 14 Mc/s. during the event.

Hereford "A" station was unable to operate until a short time before the close of the contest, but submitted a log for check purposes.

The following stations were disqualified for failure to observe the rules: Welwyn "A," West Cumberland "A," Maidstone "A," Berwick-on-Tweed "B," Southampton "B," West Cumberland "B," and Manchester N.W. "B."

Check logs are gratefully acknowledged from the following: EA4CR, F9DW, G2BP, G2QY/P, G2FUU, G3NA/P, G3NT/P, G3DJD, G3DTB and G3DTB/P, G3EIO, G3EJF/P, G3FUE, G3GCZ, G3GXD, G5JU/P, GM2CAS/P, GM3GYD/P, MD5GO (via SU1GO and G2DPP), VE1VW (via G3BYX), VE3KE, VQ4CM, ZB1AJX/P, ZE3JO (ex-G2SO), ZL1MP (via G6CJ), and BRS. 12474.

Ashford "A" station, G2JF/P, with G2JN operating while G3BCP looks on.

Fixing the aerial at Ipswich "B" station. Foreground: G3AMR, G5NO ex-ZB1AB, G8MU. Background: R. Livermore, R. Lewis (BRS).

Plumstead, Woolwich and Abbey Wood groups. Standing at rear: G3CCG, BRS W. Halls, BRS A. E. Clark, G3CEV, G3DON, BRS E. K. Stroud. Sitting at front: G3EIW, BRS J. Parker, BRS R. Munden, G8LIV (with pipe).

The Watford group, pictured above, includes G2QY, G2VD, G5PS, G2QB, G8CK, G3GIY, G3EUB, G2ADW and G2HAR.

OMs and XYLs joined forces to make N.F.D. a happy occasion for the Bath group, G8DX/P, which includes G3EUK, G3EKS, G3BNF, G3FME, G3FIH, B.R.S. 19068 and B.R.S. 14398.

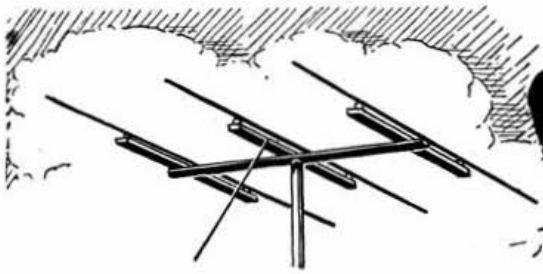
Table-top rig at Coulsdon "B" station, G3CIF/P. Left to right: G3GKF, G3DQY, G3CIF, G2FI, G3EFO and G3FTQ.

During their visit to the Hendon-Edgware stations the General Secretary and Miss Gadsden, in company with the North London D.R. (Clem Jardine, G5DJ), met old-timer Reg Radford, G2IM, whose call was used by the B station.

WAS IT MURDER ?

A Field Day Problem Picture

Solution Page 125.



AROUND THE V.H.F.'s

MORE DX ON SEVENTY CM.

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

NOT very long ago the V.H.F. fraternity in this country were surprised to hear that two-way contacts had taken place over distances in excess of 150 miles using frequencies in the 420-460 Mc/s. band. During the past summer many such contacts have in fact occurred, as reported in the August BULLETIN. G5BY succeeded in working G3APY at 227 miles on July 17, followed shortly afterwards by a contact with G2WJ at an almost similar distance.

Eight days later GW2ADZ worked G5BY—185 miles. Since then he has had several contacts with G3FZL (London, S.E.22), 170 miles distant. G2JT (Oldham) and G3APY (Kirby-in-Ashfield) have been raised fairly easily over distances of 67 and 79 miles respectively. 2ADZ's signals have, in addition, been reported by G2FKZ (London, S.E.22) and by G2DD (Stanmore, (Middlesex) at 153 miles. It should be remembered that the Welsh station is not particularly well situated, in a V.H.F. sense, and has a crystal mixer without an R.F. stage.

G3FZL, commenting upon the weak signals characteristic of long distance contacts on the 70 cm. band under other than exceptional conditions, is of the opinion that the only remedy is a considerable increase in the permitted power, because with the comparative inefficiency of the general run of P.A. valves available to the amateur there is not too much R.F. available for radiation when the input is limited to the present maximum of 25 watts. Despite this limitation, however, he succeeded, on July 28, in working G5BY at 195 miles. 5BY's signals were RST 559 and 3FZL's RST 339 with deep and erratic fading.

GW5MQ (Rhosesmor, Flint) made the first GW/GD 70 cm. contact with GD3DA/P at 1900 B.S.T. on July 29; 5MQ was RS 56 and 3DA/P RST 579.

70 cm. Skeds.

Those who are able to operate in the early morning may be interested to know that G4LU (Oswestry, Salop.) and GW2ADZ call CQ, with their arrays beamed on London, from 0700 to 0705 B.S.T. every Saturday and Sunday morning, and will continue to do so until the end of September. From 0705 until 0715 B.S.T. G2FKZ and G3FZL call with their beams towards the north-west. Listener reports would be welcome.

G3IS (Rugby) is active on 432 Mc/s. and would welcome reports.

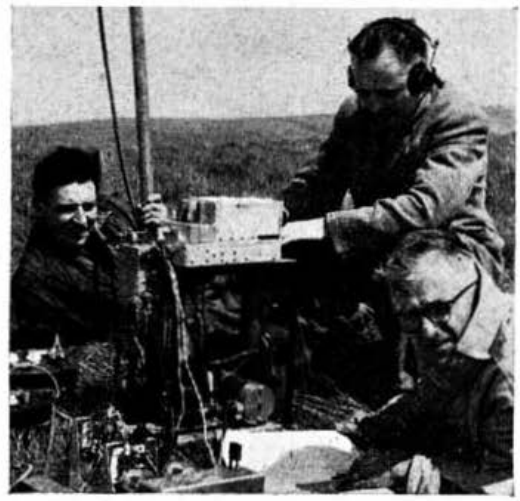
Two Metre Tests from the Isle of Man

Quite a stir was caused on the two metre band when the news got around that GD3DA/P was operating from the top of Snaefell mountain. G3DA's (Home QTH, Liverpool) original intention was to work on 2 M. for three days commencing July 29, and on 70 cm. for the remainder of the week. Various things conspired against this plan being fully carried out, and in fact very little time was spent on the higher frequency band, a state of affairs which it was hoped would be remedied during a return visit towards the end of August.

Operating entirely alone, 3DA had no assistance in getting his gear up the mountain, but managed to get installed and on the air by 9 a.m. on the Sunday morning. Some damage had been sustained by the B.F.O. coil in the receiver, and until this was rewound next day all C.W. signals had to be read by key-thump only, and in consequence only the louder stations could be worked.

From the Monday onwards operation was mainly on the 2 M. band in spite of gales (with wind speeds well in excess of 60 m.p.h.) which commenced on August 1, accompanied by torrential rain. In all 99 contacts were effected with stations in five countries and 31 counties, and since this was the first time that a V.H.F. station had operated with a GD call sign, a number of "firsts" naturally ensued. These were with G3GMX (Timperley, Ches.) on the 29th, GI2FHN (Bangor, Co. Down) 29th, GM3DAP (Glasgow) 29th, GW5MQ (Flint) 28th, and with EI2W (Dublin) on July 30. In all 56 G's, 2 GI's, 5 GM's, and 2 GW's were worked. In addition GD3DA/P was heard by GC2CNC. G2MV, 4JJ, 6LC, YO, GI3AXD and GW2ADZ were heard but could not be raised. Outstanding signals were provided by G3BA, 6XM and 6NB in that order. On 70 cm. several contacts were made with GW5MQ, and a report received from G2JT (Oldham).

The equipment in use included a 6J6 overtone oscillator driving an 832, with a further 832 tripler



Two Metre Field Day Winners.

A group of Cheltenham members in action somewhere in the Black Mountains during the R.S.G.B. 2-metre Field Day. G5BM operates the key, G3FRY is keeping the log, while B.R.S. N. Bozzard rotates the beam. During rain squalls the equipment was covered with canvas bags.

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

for the 70 cm. output. Inputs were approximately 8 watts on 2 M. and 6 watts on 70 cm. The aerial system comprised two *Yagis*, a 3-element on 2 M. and a 5-element on the higher frequency band, both fed with 72 ohm co-axial cable.

Other Two Metre News and Views

A call sign which should figure quite prominently in future reports is G2BTO/P, situated just east of Rivington Pike, near Bolton, Lancs., close on 1,100 ft. a.s.l. The station—a communal effort between G2BTO, 2HGR, 3BKS and B.R.S. Lomax—is intended to operate on the 2 M. band, and possibly also on 70 cm. during the next two months or so whenever conditions appear to be good. Using 25 watts input, feeding an array of stacked dipoles, the first signals were radiated on August 11, and within five hours, stations in 13 counties had been worked, including G3BLP, 6HI and 6XM. G2BTO will be pleased to arrange skeds. for any time after about 1900 B.S.T., and would continue operation until the early hours of the next morning if conditions proved unusually good.

G3WW (Wimblington, Cambs.) was able to take advantage of the exceptional conditions on July 21 with a new "lazy H" plus reflector beam erected at 37 ft. and fed with 300 ohm ribbon feeder. DL3FM was raised at 2144 B.S.T., followed soon afterwards by ON4VL, ON4HC, ON4HN and DL1LB—all between S6 and S8 and giving 3WW reports up to S9 on 'phone. Between midnight and 1.15 a.m. on the 22nd conditions for inland stations improved still further, and QSO's were had with G2FTS (Hailsham, Sussex), 3AUS (Torquay), 3BHS (nr. Southampton), 3BNC (Southsea), 3ECA (Ilford), 3ENI (Kew, Surrey), 3FAN (Ryde, I.O.W.), 3GAV (Winchester) and the first French contact—F9MX (Paris).

G3BKS (Bolton), who was worked with difficulty, owing to fading, said that 3WW had been called earlier in the evening by EI2W.

Following complete disruption of all radio activities due to re-roofing of the house and shack, activity at 3WW was resumed later in the month with a 5 over 5 *Yagi* combination 35 ft. above ground. With GW2ADZ this produced a signal at both ends one S point better than the "lazy H" at 41 ft., and with G3ABA (Coventry) the mutual improvement was 4 db. Just what can be done, however, with aerials at "zero feet" was shown during a QSO with G2XV/P 28 miles away and with 4 watts input. His signals, S9 on the double *Yagi*, were still readable at RS 53 on the "lazy H" which, standing on the ground against a hedge, was under the varied additional disadvantages of firing through two nearby brick buildings and a substantial church and moreover turned almost end on to 2XV/P!

Following the example of G2HCG (Northampton), who has greatly improved his range by means of a bigger and higher stacked array, G3WW is aiming to get his 5 over 5 some 60 ft. up by some crafty work involving a 30-ft. tower and various extensions. He recently visited G3BLP (Selsdon) and was much impressed by his superb V.H.F. site which undoubtedly contributes in no small measure to his excellent results.

G2XV continues his portable activities at Linton, Cambs. G3BK (March) and 2AIQ (Cambridge) are again active, the latter under the difficulty of having to employ dipoles hung from the ceiling of his first-floor flat.

A period of very good average conditions, with quite a number of outstanding evenings, has characterised the 2 M. band during the past four weeks at G3EHY (Banwell, Som.). The best paths were generally towards the west, with EI2W always workable, and up to S9 on 'phone on many occasions, and stations as far as the Scottish border providing many excellent contacts in a northerly direction. Among the latter were G3BW (Whitehaven, Cumb.) 232 miles, G5YV (Leeds) and G2ADR (York).

On July 29 every direction seemed to be good throughout the whole day, and GD3DA/P was worked for the first time. His signals remained good throughout the whole period of his operation from the Isle of Man. G3EHY has erected a fixed beam specially for the Irish stations and offers to arrange skeds. with any EI who may wish to test his 2 M. equipment. As a number of other British stations would no doubt be pleased to do likewise, any EI contemplating operation would be assured of ample co-operation.

Both G2AHP and 3EHY urge that stations should operate even when weather conditions suggest that V.H.F. propagation might not be outstanding. Many excellent openings have undoubtedly been missed through too much reliance being placed upon weather signs which can be very misleading. It is hoped that the many new stations now making their first appearances on the 2 M. band will continue to operate throughout the coming winter.

GW2ADZ (Llanymynech, Mont.) has worked EI2W several times on 'phone, and EI2G on CW, and has at last managed a contact with G3BW, whose signals had previously penetrated into 'ADZ's mountain fastness about once per year. The QSO took place during a very hot afternoon, and so owed nothing to refraction due to night cooling. The majority of the Continental openings have been useless to GW2ADZ as the ducts—or what have you—seldom extend so far west, and he had to be content with listening to others working the DX. On August 18, however, he raised ON4BZ (350 miles) with signal strengths of S6/7 both ways. Heavy rain was falling at the time, but the weather in Brussels was fine and warm, and it would appear that a frontal effect was responsible for the necessary refraction.

G6LI (Grimsby) reports a Continental opening which suddenly occurred at 2100 B.S.T. on June 30. DL6BU was heard trying to raise DL3JI without success, followed a few minutes later by PA0IK coming through loudly on 'phone. DL6WU and DL4XS were also heard. Unfortunately G6LI was unable to work any of them, although DL4XS (Wiesbaden) and DL1LB were contacted on July 21 between 9 and 10 p.m. An hour later the band opened freely for the U.K. with G2NH, 3BW, GHI, 6CW, NB, 8SB, GM3EGW and GM3ENJ all coming in well. At 2345 B.S.T. DL3FM made an appearance and was duly worked, but DL3MH, heard just after midnight, could not be attracted. A contact was made with GM3EGW (Dunfermline, Fife) at 0045 B.S.T. on July 22 when G6LI's signals were reported RST 579.

Active again after a spell in hospital, G5BD (Mablethorpe, Lincs.) now has a new 8-element stack 62 ft. above ground and is finding that aerial height pays as nothing else will on the V.H.F.'s. Among the DX worked since the end of June are G3BW, GM3ENJ, GM3EGW, GW5MQ, DL1LB, 3FM and 4XS/3KE, while signals were heard from ON4BZ, HC and HN.

GC2CNC (La Rocque, Jersey) found conditions exceptionally good on July 27/8, and made his first 'phone contact with G8IL (Salisbury). Stations heard include G2MC (Brighton), 3BA (Daventry), GM3OL (Dumfries), EI2W and EI8G.

G3ETI (Wirral, Ches.) has improved his

equipment and now has a 4-element *Yagi* and a c.c. converter with *Brimar* 12AT7's in the R.F. and mixer stages and a 6J6 oscillator/multiplier. The I.F. is tuned between 8 and 10 Mc/s., and at the moment suffers from severe break-through on the Type 78 receiver. In addition to working GD3DA/P and a number of more local stations G3EHY, 4HT and 6XM have been heard.

EI2W (Dublin) continues to provide a 2 M. signal which is DX to most stations, and will be found on 145.104 Mc/s. in future. It is hoped that the change of crystal will do away with the excessive drift which has been noticeable previously. In just over two months 104 QSO's have taken place with 39 stations in five countries, the average distance per contact being no less than 183 miles. SM7BE (Lund) confirmed that it was his 'phone which was heard by EI2W on July 2. GM6WL (Glasgow), using an indoor aerial, was worked on August 9. Both GC2CNC and EI2W have now heard one another's signals. GI3GQB (Newtonards) has been putting a first-class signal into Dublin and has heard G3EHY on both CW and on 'phone.

During portable operation near Aldershot G6XM had no difficulty in working F, ON and PA. . He certainly picked a good day for his tests—July 21.

In May last, mention was made of the results obtained by BRS 13336 (London, W.1) using a super-regen receiver. Since then he has been testing a converted RF 26 Unit working into a Type 18 receiver and added a further 23 stations to his previous score of 153. The new converter far outstrips the super-regen for weak signal reception, and is even better when preceded by a CV 66 E.G.T. stage.

Report from Germany

G6LX recently spent some days with DL4XS, joint owner with DL3KE of the V.H.F. station on "Radio Hill." Unable to get out well from Wiesbaden, where DL4XS was originally stationed, huts were built on a hill six miles to the west and the station installed there complete with a Diesel-engined power plant. So remote is this outpost that it is a virtual necessity that two people are on the site when the station is in operation to see that the power supply is kept running and to ensure the safety of the operator. The station has already been robbed a number of times, and the possibility of the operator being attacked is far from remote. Now that DL4XS has been posted to Frankfurt, an enormous amount of travelling is necessary, which can easily amount to over 350 miles per week for five nights' operation.

During G6LX's visit, together with G2KU and 3BFP, six G stations were worked including G5UD, 6LI and 8AX. G3VM and 3WW were heard, the latter at S9 plus on 'phone for long periods. On July 20 GM3ENJ was logged at RST 349, and on the 27th G3BW was heard calling GM3EGW, but he could not be raised. A station, thought to be EI2W, was received on 'phone, but positive identification was lacking.

Two metre activity in Germany approaches that in the London area when conditions are good, with French, Belgian, Dutch and German stations all S9 plus on both CW and 'phone. Many of the 120 or so DL's believed to be active are, of course, not in the best situations for getting out well on the V.H.F.'s, but several are now putting up stacked arrays and arranging to go portable, so by next summer it should be possible to work a number of them from this country. Most DL stations use SCR 522 transmitters, converters with cascode R.F. stages and c.c. oscillators are very popular whilst *Yagi* aerials seem to be in general use. It is understood that LX1JW in Luxembourg is interested in two metres, and has an SCR 522 transmitter and a 4-element *Yagi*, but is not very happy about his receiver.

The V.H.F.'s in Sweden

SM5VL (Enskede, nr. Stockholm) will endeavour to be on the two metre band, beaming towards Great Britain, whenever the weather map shows that a high-pressure area is in existence between SM and G. Transmissions will be on CW for 15 minutes starting at 2100 G.M.T., and will consist of automatically sent long dashes with the call sign at 10 w.p.m. every fifth minute. The 70 cm. equipment has been completely redesigned, and now comprises a modified "glide path" receiver with c.c. oscillator, a 60 deg. corner reflector aerial and a *Philips* QQE06/40 P.A. in the transmitter. Portable operation is planned.

Pirates at Work

It is understood that the call signs G3CKO and G3FIV are being pirated on 2 M.

Radio Amateurs show how to beat T.V.I.

G8IH and G3CBN, joint holders of the 13 cm. record since October, 1948, have been concerned in a demonstration of interference-free T/V reception in Brighton recently. The T/V signal was picked up at a point some five miles outside the town and relayed by means of a 2204 Mc/s. link over a line-of-sight path to Embassy Court, where the demonstration took place.

The transmitter employed disc-seal triodes and a.f.c. was incorporated in the receiver. All the equipment in use was built by G8IH assisted by G3CBN.

The closing date for reports to appear in the October BULLETIN will be September 20, but it would be appreciated if details concerning the 70 cm. Fourth Activity Period could arrive earlier.

* * *

LATE NEWS

F8MX heard by G2DD on 70 cm.

G2DD heard F8MX, who was on holiday at St. Valery-en-Caux, near Dieppe, on 435.08 Mc/s. at 2250 G.M.T. on August 21 and again from 2234 to 2239 G.M.T. on August 23. Contact was maintained on two metres *via* G2FTS (Hailsham, Sussex) as G2DD and F8MX could not hear one another on that band. So far as is known this is the first time that 70 cm. signals from the Continent have been heard in this country, and it is noteworthy that it was accomplished when the 2 M. path between the two stations was unusable. Congratulations to all concerned, and it is hoped that two-way working will have been accomplished by the time that this appears in print.

South West Hamfest

MEMBERS resident in Cornwall, Devon, Dorset, Gloucestershire and Somerset are cordially invited to attend a South West Hamfest at the Continental Hotel, Plymouth on Sunday, October 7, 1951.

Competitions—including one with a tape recorder—are being arranged. In addition there will be a display of amateur television gear.

Tickets for this event may be obtained from the Devon C.R. (E. G. Wheatcroft, G3HMY, 27 Lower Wear Road, Countess Wear, Exeter) or the Plymouth T.R. (J. Eddy, G3TX, 55 Greenbank Avenue, Plymouth), price 9/- each. This includes the cost of luncheon and tea.

THOSE who use the R.S.G.B. QSL Bureau may be interested to learn that this service is now 25 years old. In the February, 1926, issue of the *T and R Bulletin*, a letter from Cecil Jamblin (G6BT), of Bury St. Edmunds, drew attention to the mounting postage costs involved in claiming QSL cards from France and Belgium, and suggested that a QSL service be set up in this country to act as a clearing-house for incoming and outgoing cards, which could be thus economically handled in bulk. The following month the *QRA and QSL Section of the R.S.G.B.* (as it was called) came into being—the Daddy of the QSL Bureau as we know it today. Another 25th anniversary occurs this year, for it was in September, 1926, that the R.S.G.B. decided to adopt a well-known diamond design. That year, too, the R.S.G.B. ran a stand at Radiolympia for the first time.

The BULLETIN for October, 1926, featured an announcement concerning the "*Chicago Daily News* Field Museum Expedition to Abyssinia." Amateurs were asked to listen for WCDN (the expedition's call sign) and to assist in passing messages and news despatches to the outside world. The co-operation of I.A.R.U. members in Africa and Europe was specifically requested. It was in 1926, thanks to the persistency of the late Jack Wylie (5YG), of Glasgow, that the prefix *GC* was authorised for Scottish transmitting stations (it was changed to GM years later). Several Scottish stations promptly reported a marked increase in the number of QSO's they were making! In the *Proceedings of the T and R Section* it was reported that the R.S.G.B. "standard wavemeter" was practically ready to go to the National Physical Laboratory for calibration.

When We Were Young Dept.—"May the Sky be Rent with Lightnings, and the Earth be Rent with Quakes; and Ur Aerial Mast be Stricken, so that every Guy Wire breaks: May Ur Radiation wither, and Ur Amps refuse to amp; may Ur Bottles all Disintegrate, and Ur Lo-Loss Coils git cramp: May Ur Generator sizzle, and Ur Meters all go fut; Ur Condensers stop condensing, and Ur Tuning ne'er Stay put. . . ." Extract from a letter published in the September, 1926 BULLETIN pouring wrath upon one who did not QSL. The writer—G6CJ!

A trade note described "the Marconiphone new hanging model loudspeaker, which is handsomely disguised as an electric light fitting, complete with silk shade. It is a delightful piece of work, and one which will grace any drawing-room." In another issue appeared the query: "Who is the Liverpool amateur who *will* read fairy stories and grind out records—and does he know that he is as loud as the B.B.C. on the South Coast?"

The Editor of the BULLETIN offered a prize of an "all-British low-loss variable condenser suitable for transmitting purposes (2,000 V.) to the member who sends in what is considered by the committee to be the most useful technical article used in the next BULLETIN."

I.A.R.U. News

THE June, 1951, issue of the I.A.R.U. Calendar records that A.A.E.M. and R.C.D. have been elected as the Member Societies for French Morocco and Dominican Republic respectively.

The W.I.A. proposes that a standard numbering system for world-wide Contest use shall be adopted and that such system shall incorporate the method used in the VK-ZL International DX Contest. These proposals are being studied by the R.S.G.B. Contests Committee who will make a recommendation to the Council.

It is reported that C.A.R.L. (China) and C.A.V. (Czechoslovakia) have been deleted from the list of Member Societies. As no communications have been received from C.A.R.L. for some years, I.A.R.U. Headquarters assume that the League is no longer functioning.

The Calendar reviews the Amateur Radio position in Japan, gives details of the new W.A.C. certificate 3.5 Mc/s. endorsement, and outlines new U.S. Amateur Radio regulations.

The R.S.G.B. proposal (referred to in a previous Calendar) that the 21 Mc/s. band shall be planned on a world-wide basis was carried by 19 votes to 2. Argentine and Uruguay voted against the proposal and A.R.R.L. did not vote. The R.S.G.B. is to inquire whether the fact that the A.R.R.L. did not vote can be taken as an indication that the League is unwilling to co-operate with the rest of the world in planning the 21 Mc/s. band.

I.A.R.U. Headquarters report that of the 15 Societies in the European area only 3 voted on the proposal (referred to in an earlier Calendar) to set up a Region I (European) Bureau. These were I.R.T.S. (Eire), S.R.A.L. (Finland) and E.D.R. (Denmark), all of whom recorded an Aye vote. It seems clear that the other European Societies assumed that no further action was necessary as their representative had voted, at the Paris I.A.R.U. Congress, in favour of the original proposal. It is known that R.E.F. (France) assumed the Region I Bureau came into being as soon as the R.S.G.B. Council gave its approval, in principle, to the proposal.

London Members' Luncheon Club

THE "YL of Oporto" (CT1YA) and her husband (CT1JM) plan to be present at the next gathering of the London Members' Luncheon Club. London members who have contacted CT1YA or CT1JM are asked to make a special effort to attend the luncheon which will be held at the Kingsley Hotel, Bloomsbury Way, London, W.C.1., on September 21st (12.30 p.m. for 1 p.m.) not September 20th as stated last month.

Mr. W. Palmer, B.E.R.S.766 (second operator at SV0AN), and Herr Otfried Luhrs, DL1KV, were welcomed at the August meeting.

The Luncheon Club is to hold a Ladies Night at the Kingsley Hotel on Saturday, December 15th. Full details from the Hon. Secretary, Frank Fletcher, G2FUX, 11a Ickenham Road, Ruislip, Middlesex.

British Sound Recording Association

MR. CECIL E. WATTS will read his Presidential Address to the British Sound Recording Association at a meeting to be held on Friday, September 21, 1951, at the Institution of Electrical Engineers. Non-members of the Association are invited.

IT'S TOPICAL

WHAT is the opposite of DX? G3HKX provides a possible answer to this unusual question with a report on what might be the **shortest-distance-ever QSO**—with his next-door neighbour G3HOC! The aerials of these two active "Top Band" amateurs are only 30 ft. apart. Everyone who has heard of this situation immediately thinks of terrific mutual QRM, but this apparently serious problem solves itself in a typical amateur fashion. When '3HOC isn't visiting '3HKX's shack, then the latter is visiting the former, and they never go on the air together! Can any member beat this anti-DX record?

Certificate hunters may be interested in this new one—issued by the **Brisbane DX Club** to any DX station which contacts five of the twelve member stations of the Club. The procedure is as follows: The DX station wishing to gain the award, must ask, when working a Brisbane station: "Are you a member of the Brisbane DX Club?" If the answer is in the affirmative, then the DX station should obtain the Christian name of the operator and note it in the log. When he has contacted the fifth club member, he should pass on to him the Christian names (but not call signs) of the four previous members, and dates of contact. Incidentally, the QSL card of the DX station must have been received by all five club members before a certificate can be issued.

Smoke signals—or new light on the technique of radio fault-finding (from an American Technical Service Manual): "The simplest method yet devised is that known as *smoking out* the trouble. With the instrument switched on, the smoke will probably indicate the location of the fault." But it seems that this system of short-cut servicing has its drawbacks too, for the manual goes on to say: "One serious objection to this method is that it often results in the unnecessary destruction of a part—consequently, although useful in certain cases, it is not to be generally recommended." As a second line of defence, however, there is always the "drop test!"

Hobbies Corner: Field Ornithology—otherwise known as **bird-watching**—takes its place with Amateur Radio as the spare time activity of **GM2BLA** of Glasgow, who was the operator of G8XY/VO2 in the British Schools' Exploring Society's first post-war expedition to Newfoundland. He finds that bird-watching and Amateur Radio form a good combination, being an outdoor and indoor pursuit respectively. They are both acquisitive hobbies—for instance, seeing a new species (a Pied Flycatcher) in Kent last year was rather like working a new country on an unusual band (e.g.: A KH6 on 3.5 Mc/s.)! His best "DX" was an Osprey in Hertfordshire—rarer than an AC4! GM2BLA has logged about 155 species, but only 31 countries, and spends most of his time on the air rag-chewing with G's. He quotes **G3AWA** as another amateur interested in bird-watching. Any more for the unusual hobbies corner . . . ?

Another for the **S.J.A.B.** collection—GM3HLQ who, at the age of 47, can claim 30 years service with the St. John Ambulance Brigade. His bronze medallion, issued in 1921, bears the membership number 240540. . . . **Spain** has ordered more than £139,000 worth of transmitting, studio, and outside broadcast equipment from the *Marconi Company* for a television system to be installed at **Madrid** and **Barcelona.** . . . The Postmaster-General has agreed to open the new high-power television station at **Holme Moss** on Friday, October 12. . . .

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

MR. CHARLES IAN ORR EWING, O.B.E., M.P. (Hendon North), and one-time G5OG, will open the Fifth R.S.G.B. Amateur Radio Exhibition at the Royal Hotel, Woburn Place, London, W.C.1, at 12 noon on Wednesday, November 27th.

Members willing to assist on the R.S.G.B. stand are asked to communicate with the Assistant Secretary (Miss Gadsden) indicating the times and dates they will be available.

Holme Moss High-Power Tests

TEST transmissions on full power are now being radiated on weekdays from the new B.B.C. television transmitter at Holme Moss, comprising film and test card from 10 a.m. to midday, and the B.B.C. television programme as advertised during the afternoons. The vision transmitter operates on a carrier frequency of 51.75 Mc/s. (5.8 m.), and the sound transmitter on 48.25 Mc/s. (6.2 m.).

Association of North Western Radio Societies

ON Saturday, July 14, 1951, an Association of North Western Radio Societies was formed by the Chester and District Amateur Radio Society, the Liverpool and District Short Wave Club, the Merseyside Radio Society, the Wirral Amateur Radio Society and the Wrexham and District Amateur Radio Society.

The Association plans to hold quarterly meetings for the exchange of ideas and to carry out group activities. Support from other North Western Societies is invited.

Further particulars can be obtained from the Hon. Secretary, W. G. Lloyd, 124 Tarvin Road, Chester.

Amateur Radio at the Ilford Arts and Crafts Exhibition

AT the Ilford Festival of Britain Arts and Crafts Exhibition to be held at the Town Hall, Ilford, Essex, from September 22 to 29, two Amateur Radio stations will be operated. Other equipment on show will include a N.F.D. station complete with tent, 28 Mc/s. "walkie-talkie" apparatus, and amateur-built recording and public address amplifiers. The exhibit, which is being organised by the Ilford R.S.G.B. Group and the Ilford Radio Society, will be found on the stage of the Town Hall, and is expected to attract many visitors, who will be able to see and hear the amateur stations in operation, and listen to their own voices played back by the tape recorder.

On Sunday, September 23, Captain P. P. Eckersley, A.M.I.E.E. (one time Chief Engineer of the B.B.C.) will lecture on the early days of Broadcasting. All London amateurs are invited to attend this function which promises to be a highlight of the week's events.

More Ancient Than Modern

REFERRING to the sub-heading of the article "Setting Up a Bug Key" (August issue), J. E. Catt, G5PS, comments that the Bug Key was a commercial article in the U.S.A. many years before World War I, and that he used one in this country prior to 1912. This particular "Bug" bore the now familiar label engraved "*Vibroplex*," and differed but little from the latest models bearing the same proprietary name.

Two Metre Field Day, 1951

CONDITIONS for the R.S.G.B. Two Metre Field Day held on July 8 were generally good, particularly during the first few hours. Many DX contacts were made, including one between G2FTS/P and DL4XS/3KE, over a distance of 365 miles. This is believed to be a record distance for a portable G station. G6CW/P and ON4BZ made contact over a distance of 309 miles, whilst QSO's in excess of 200 miles were made by G3ABA/P, G3AVF/P, G2XV/P and GW3ENY/P. Those over 100 miles are too numerous to mention individually.

Thirty-nine portable stations were active of which 29 sent in contest logs. One portable station submitted a check log.

The event was won by G5BM, who operated as GW5BM/P from the Black Mountains, Brecknockshire. From this location he amassed a score of 215 points from 46 contacts including 26 over distances exceeding 100 miles. Nineteen field day stations were worked. G5BM used a transmitter comprising 807 tritet, 807 doubler, 832 tripler and 829-B P.A. An interesting home-built 10-valve triple superhet constructed on a BC 453 chassis was used for reception. The aerial was a 6-element wide-spaced Yagi.

Second place was taken by G3ABA/P (operating from a site near Meriden, Warwickshire), whose 59 contacts brought him 212 points. The transmitter line-up comprised ECC32, TT11, EL91 and 832, whilst the receiver employed a 6J6 convertor working into an *Eddystone* S640. The aerial was a 24-element stack with the top at 55 feet.

From the comments which accompanied the logs it seemed that the weather generally was poor with high winds and rain. Suggestions from competitors include a request for a county multiplier and increased points for contacts over 200 miles. Opinions on the "no 'phone" rule were equally divided.

All competitors are to be congratulated on the accuracy of their logs which made this Contest a pleasure to judge. It is a long time since the "blue pencil" was used so sparingly.

Check Logs

The following are thanked for sending check logs which were very useful to the Contests Committee: G2UJ, G2XC, G3FKD/P, G4MR, G6UH and EI2W.

Results of Two Metre Field Day, 1951

Posn.	Call Sign	Location	Points
1.	GW5BM/P	Grwyne Fawr Reservoir, Brecknockshire.	215
2.	G3ABA/P	2 M. N.E. Meriden, Warwick.	212
3.	G2FTS/P	Sussex Downs, above Eastbourne	192
4.	G3AVF/P	4 M. West of Bovey Tracey	180
5.	G6CW/P	4 M. N.E. Leek, Staffs.	159
6.	G3ENS/P	Broom Briggs Hill 4 M. S. Loughborough	133
7.	G2XV/P	Linton, Cambs.	131
8.	G3ERD/P	Glebe Farm, Littleover, Derby	130
9.	G2HCG/P	Honey Hill, Cold Ashby	126
10.	G3MA/P	Yartleton, Hereford	122
11.	GW5MA/P	4 M. N.W. Bryn-Mawr, Brecknock	107
12.	G2FKZ/P	Woldingham, Surrey	102
13.	G6LX/P	Hill, 2 M. N. Oxted, Surrey	99
14.	G3BEX/P	Devils Dyke, 4 M. N.W. Brighton	97
15.	G8SM/P	2 M. S.E. Guildford, Surrey	94
16.	G3EUQ/P	Cheesefoot Head, Nr. Winchester	86
17.	G3CJY/P	Gog & Magog Hills, 3 M. E. Cambridge	75
18.	G3ABH/P	4 M. S. Wareham, Dorset	74
19.	GW3ATZ/P	1 M. S.W. Hope, Flintshire	72
20.	G3CGQ/P	Harts Hill, Luton	61
21.	G4JJ/P	Broadway, 1 M. W. Barnsley	59
22.	G3FD/P	2 M. S.W. Dunstable	58
23.	GW3ENY/P	1 M. W. Llandudno	46
24.	G8SI/P	2 M. S. Scarborough	45
25.	G8QY/P	Frankley, 5 M. S. Birmingham	42
26.	G4CI/P	Westerdale Moor, N. Riding, Yorkshire	38
27.	GI2FHN/P	Knockagh, Co. Antrim, 8 M. N. Belfast	35
28.	G3CFR/P	Southbourne, Bournemouth	27
29.	GW5JU/P	2 M. S. Llandovery, Carm.	22

Contests Diary

September 22-23 } September 29-30 }	European and North African V.H.F.
September 30 -	D/F Field Day—National Final.
October 6-7 -	Low Power (3.5 Mc/s.)
November 10-11	"Top Band" (1.8 Mc/s.)
December 1-2 } December 8-9 }	All European DX

DIRECTION FINDING FIELD DAYS

Birmingham Qualifying Event

THIRTEEN teams took part in the Qualifying Field Day held on Sunday, June 10, and organised by the Slade Radio Society. The arrival times of the successful competitors at the hidden transmitter site were as follows: Mr. S. Phillips (Slade), 15.29; Mr. C. Smart (Slade), 15.34; Mr. G. Peck (High Wycombe), 16.04; Mr. W. Holdaway (Chadwell Heath), 16.26; and Mr. N. Simmonds (Slade), 16.27 B.S.T.

Southend-on-Sea Qualifying Event

IN sunshine and showers, fifteen teams set off to locate the hidden transmitter in the final Qualifying Field Day of the R.S.G.B. Direction Finding Contests, 1951. The transmitter (operated by G6MH and G3AXN) was concealed in the middle of a clump of bushes close to the north bank of the Crouch River, just within the ten mile limit. Full advantage was taken of the natural course of the river to enable the bearing to hug the south bank for eight miles before crossing to the other side. This deceptive manœuvre "foxed" some of the younger members, who had to retrace their steps to the starting point in order to cross the river, there being no available ferry!

The more experienced members were not caught out, however, and first place was taken by Mr. Holdaway of Ilford, who reached the target in little over an hour. The first eight arrivals were: Mr. W. F. Holdaway, 15.11; Mr. J. M. S. Watson, 15.21; Mr. G. T. Peck, 15.22; Mr. J. K. Finch, 15.25; Mr. J. Salter, 15.33; Mr. C. H. Young, 15.58; Mr. A. E. Glozier, 16.22; Mr. R. D. Charlton, 16.23 B.S.T.

After the event, 50 sat down to tea. Six prizes were awarded (and two boxes of chocolates for the XYL's)—donated by the T.C.C., Mr. T. Hudson, and Bobin's Bookshop, Victoria Arcade. Special thanks are due to G3FFH and G2DQ for testing and monitoring the signal, and for tactfully warning-off innocent intruders on the frequency, and to the "Men of Kent" who scrupulously avoided it.

Glasgow Amateur Radio Exhibition

AN Exhibition entitled "The Story of Amateur Radio" will be held in the Engineering Centre, Sauchiehall Street, Glasgow, from Monday, October 29, to Saturday, November 3. The Exhibition will be open from 2 p.m. to 9 p.m. daily (10 a.m. to 9 p.m. on Saturdays). Admission 1s. (children 6d.).

LOW POWER CONTEST — October 6-7, 1951

FOR the 1951 Low Power Contest the rules will be identical with those of last year. Up to five watts input to the P.A. can be used, but with the maximum permissible power the points per contact will be low. Any well-smoothed power supply which will keep the input within the stated limits can be used: this feature will be welcomed by those who consider the cost of an H.T. battery to be prohibitive. Last year's results again showed that the use of an input of less than 0.5 watt proved most successful.

M.C.W. and telephony are not permissible in this contest. Logs may be submitted on lined foolscap or may be typewritten (double-spaced).

Rules

1. The contest is open to all fully paid-up Corporate members of the Society resident within the British Isles and the British Zone of Germany.

2. The British Isles for the purpose of the contest include England (G), Scotland (GM), Northern Ireland (GI), Wales (GW), Channel Islands (GC), and the Isle of Man (GD).

3. The contest will commence at 2300 G.M.T. on Saturday, October 6, 1951, and continue until 2259 G.M.T. on Sunday, October 7, 1951. Competitors must record the closing time of their last contact *to establish this rule.*

4. Entries will be accepted only if submitted in the form set out below :—

Low Power Contest, 1951

Name ..... *Call Sign* .....

Address ..... *County No.* .....

.....

Transmitter ..... *Aerials* ..... *Receiver* .....

Date and Power	*G.M.T.*	*Call Sign of Station Worked*	*My Report on His Signals*	*His Report on My Signals*	*Points Claimed*	*County Code No. of Stn. Worked*

Points

Total .. .. .. _____

..... *Counties Worked X 10* _____

Grand Total .. .. _____

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

Date ..... *Signature* .....

5. No entry form postmarked later than Monday, October 15, 1951, will be accepted.

6. Full circuit details of the transmitter and power supply must be given on a separate sheet, signed by the competitor.

7. All contacts must be made between 3,500 and 3,600 kc/s. with stations located in the British Isles or British personnel in Germany.

8. Only one transmitter may be used by the competitor throughout the contest.

9. The contest is confined to two-way telegraphy contacts and any competitor receiving consistent tone reports lower than T8 will automatically be disqualified.

10. Only one contact will be allowed with any given station unless that station also operates /A or /P, or both, and in such cases only one contact may be made with that station while it is located in any one particular county.

11. Power input, in watts, to the P.A. stage must be recorded in the first column, at the time of contact.

12. No preceding stage may have a power input in excess of that to the P.A.

13. Scoring will be as follows :—

Watts input to the P.A.	*Up To 0.5*	*To 1*	*To 2*	*To 3*	*To 4*	*To 5*
Points per Contact	*20*	*10*	*5*	*3*	*2*	*1*

14. If different power is used at various times during the contest, the scoring must be altered accordingly.

15. Ten points should be added to the score for each new County worked (there is no multiplier).

16. Competitors must use the code number of their County whilst calling, e.g. CQ CQ CQ de G ..... 17 AR. An exchange of RST and Code Number—both of which must be acknowledged by the signal R—will be required before points can be claimed, e.g. RST 579 NR 17. Where non-competitors do not give a county number, this may be inserted provided that this fact is indicated on the log sheet.

17. Proof of contact may be required.

18. Contacts with unlicensed stations will not be permitted to count for points.

19. Only the competitor may operate a specific station during the contest period.

20. Entries must be addressed to the Hon. Secretary, R.S.G.B. Contests Committee, New Ruskin House, Little Russell Street, London, W.C.1.

A list of County Code Numbers is set out below :—

ENGLAND (G).

1. Bedford
2. Berkshire
3. Bucks
4. Cambridge
5. Cheshire
6. Cornwall
7. Cumberland
8. Derby
9. Devon
10. Dorset
11. Durham
12. Essex
13. Gloucester
14. Hampshire
15. Hereford
16. Hertford
17. Huntingdon
18. Kent
19. Lancashire
20. Leicester
21. Lincoln
22. London (Postal Districts)
23. Middlesex
24. Monmouth
25. Norfolk
26. Northampton
27. Northumberland
28. Nottingham
29. Oxford
30. Rutland
31. Shropshire
32. Somerset
33. Stafford
34. Suffolk
35. Surrey
36. Sussex
37. Warwick
38. Westmorland
39. Wiltshire
40. Worcester
41. Yorkshire

SCOTLAND (GM).

42. Aberdeen
43. Angus
44. Argyll
45. Ayr
46. Banff
47. Berwick
48. Bute
49. Caithness
50. Clackmannan
51. Dumbarton
52. Dumfries
53. East Lothian
54. Fife
55. Inverness
56. Kincardine
57. Kinross
58. Kirkcudbright
59. Lanark
60. Mid-Lothian
61. Moray
62. Nairn
63. Orkney
64. Peebles
65. Perth
66. Renfrew
67. Ross & Cromarty
68. Roxburgh
69. Selkirk
70. Shetland
71. Stirling
72. Suther and
73. West Lothian
74. Wigtown

WALES (GW).

75. Anglesey
76. Brecknock
77. Cardigan
78. Carmarthen
79. Carnarvon
80. Denbigh
81. Flint
82. Glamorgan
83. Merioneth
84. Montgomery
85. Pembroke
86. Radnor

NORTHERN IRELAND (GI).

87. Antrim
88. Armagh
89. Down
90. Fermanagh
91. Londonderry
92. Tyrone

CHANNEL ISLANDS (GC).

93. Alderney
94. Guernsey
95. Jersey
96. Sark

97. ISLE OF MAN (GD). 98. BRITISH ZONE OF GERMANY (DL2)

Third place in the 1951 Two Metre Field Day was taken by G2FTS, who is in the foreground of the above group taken on the Sussex Downs, with G3DIV at the key. B.R.S. A. Stevens completes the trio.

FIFTH ALL-EUROPEAN DX CONTEST

THIS year—Festival Year in Great Britain—the I.A.R.U. Societies in Europe have agreed that the R.S.G.B. shall be responsible for the organisation of the annual All-European DX Contest. Now five years old, this contest was initiated in 1947 by V.E.R.O.N., and has been run each year since then by alternatively R.E.F. (France), C.A.V. (Czechoslovakia), and S.S.A. (Sweden). It has thus become one of the regular annual events of Amateur Radio.

The R.S.G.B. Contests Committee intend to make the 1951 contest a success, and they invite amateurs throughout the world to participate. It will be a friendly competition in which the deciding factors are likely to be the design and readiness of equipment, operating skill and ingenuity. It is hoped that all will benefit in technical skill and knowledge in preparing for, and taking part in, an event in which amateurs of Europe will strive to make contact with stations in the remainder of the world.

Rules

1. **Eligibility :** *Amateurs operating fixed amateur stations in any and all parts of the world are invited to participate.*
2. **Object :** *Amateurs of all European countries will try to work as many amateur stations as possible in the remaining five continents under the rules and during the contest periods.*
3. **Conditions of Entry :** *Each entrant agrees to be bound by the provisions of this announcement, the regulations of his licensing authority, and the decisions of the R.S.G.B. Contests Committee.*
4. **Entry Classifications :** *The C.W. and Phone sections are separate contests and amateurs may enter for either or both. Entry may only be made if one person performs all the operating functions at the station. Multiple-operator stations, or stations where assistance in the contest is given by other persons will not be eligible for awards. The following amateur bands may be used in both C.W. and Phone sections : 3.5 ; 7 ; 14 ; 28 Mc/s. It is hoped that the European Band Plan will be observed, as follows :—*

   C.W. only: 3,500-3,600 ; 7,000-7,050 ; 14,000-14,150 ; 28,000-28,200 kc/s.

   C.W. and Phone: 7,050-7,300 ; 14,150-14,400 ; 28,200-30,000 kc/s.

   Phone only: 3,600-3,635 ; 3,685-3,800 kc/s.
5. **Contest Periods :** *There are two weekends, each 48 hours long : one for C.W. work and one for Phone. The C.W. section starts at 00.01 G.M.T., Saturday, December 1, 1951, and ends at 24.00 G.M.T., Sunday, December 2, 1951. The Phone section starts at 00.01 G.M.T., Saturday, December 8, 1951, and ends at 24.00 G.M.T., Sunday, December 9, 1951.*
6. **Valid contacts :** *In the telegraphy section, all claimed credits must be made both ways only on C.W. In the Phone section only voice-to-voice contacts count. Cross-band working is not permitted.*
7. **Exchanges :** *Each participating operator will choose three figures as a self-assigned number. C.W. contestants will exchange six-figure numbers, each consisting of an RST report plus the three self-assigned numbers. (Examples are given in the sample log.) Phone contestants will exchange five-figure numbers, each consisting of a Readability-Strength report plus the three self-assigned numbers.*

   The self-assigned number remains the same during the whole contest period in either or both the C.W. and Phone sections.
8. **Scoring : (a) Points :** *Every European station earns 1 point upon receiving acknowledgment of a number sent, and 2 points upon acknowledging a number received. Stations outside of Europe earn 2 points upon receiving acknowledgment of a number sent, and 1 point upon acknowledging a number received. Each contestant in any part of the world can therefore earn at best 3 points for each contact.* **(b) Final score :** *European stations multiply the total points earned under Rule 8a by a multiplier which is the sum of all non-European countries worked on each band. Countries will be those on the A.R.R.L. Countries List, valid at the time of the contest, with the exception that each of the W and VE licensing areas count as a separate country. There are 19 licensing areas : 10 in the United States and 9 in Canada and Newfoundland. Stations outside Europe multiply total points earned under Rule 8a by a multiplier which is the sum of all European countries worked on each band. Here, likewise, only those European countries will count which are on the A.R.R.L. Countries List, valid at the time of the contest. All W and VE licensing areas compete separately.*
9. **Repeat Contacts :** *The same station may be worked again for additional points if the contact is made on a different frequency band. The same station may be worked again on the same band only if the complete exchange for a total of three points was not made during the original contact on that band.*
10. **Quotas :** *Any European contestant may, in the C.W.*

Specimen Log

(from Europe)

Call ..... Name .....
Address .....
Aerial(s) .....
Transmitter valves ..... Watts (input to final) .....
No. hours Station Operational .....

Band (Mc/s.)	3.5	7	14	28	Total	
Number of DX stations worked	2	4	6	1	13	Different countries worked
Number of countries worked	2	4	5	1	12	11

Logs from outside Europe should indicate, for each band, in the above part of the log " Number of European stations QSO'd," and " Number of European countries QSO'd."

CONTEST CALLS

European amateurs will call stations in the remaining five continents by **" CQ AW " (CQ All World).** Stations outside Europe will call **" CQ EU " (CQ Europe).**

Date and Time G.M.T.	Station Worked	Country	Worked Record of New Countries for each Band (Mc/s.)				Numbers Exchanged		Points
			3.5	7	14	28	Sent	Received	
Dec. 1									
00.05	W2MV	U.S.A.2		1			579555	569777	3
01.47	VE3BG	Canada 3		2			469555	559123	3
06.29	VK3MC	Australia			1		569555	569444	3
10.54	UI8AE	S.S.S.R.				1	599555	594111	3
Dec. 2									
03.32	W1DHD	U.S.A.1	1				459555	?	1
04.01	CM2AZ	Cuba		3			568555	458999	3
17.45	ZS6UK	S. Africa			2		559555	559666	3
23.55	W4ML	U.S.A.4	2				359555	?	1

Total Points : 20

Multiplier : 2+3+2+1=8

Final Score : 20 (points) × 8 (multiplier) = 160

I certify, on my honour, that I have observed all competition rules as well as all regulations established for Amateur Radio in my country, and that my report is correct and true to the best of my belief. I agree to be bound by the decisions of the R.S.G.B. Contests Committee.

.....

Operator's signature.

Entries from outside Europe can contain in this part of the log only European stations.

section, work the maximum of three different stations of any country (W/VE) licensing area outside of Europe on each band. Thus the maximum possible number of points which can be earned per country per band is 9. There is no such restriction for stations outside of Europe, so that they may work as many European stations as possible.

In the Phone section of the competition the number of contacts with any country respecting Rule 2, is restricted for neither European nor non-European stations.

11. **Reporting :** *Contest work must be reported as shown in the sample form. Each entry must include the signed statement as shown in that example. Contest reports must be mailed no later than December 31, 1951, the date of postmark being decisive. Reports received after April 30, 1952, will not be considered. All reports are to be sent to the address: R.S.G.B. Contests Committee, 28-30 Little Russell Street, London, W.C.1.*
12. **Awards : (a)** *Suitable certificates will be awarded to the first three amateurs attaining the highest score in each country and each W and VE licensing areas. Provided sufficient entries are received.* **(b)** *Certificates will be awarded separately for work in the C.W. and Phone sections.* **(c)** *Contest results will be sent to the International Amateur Radio Union for publishing in* QST *as well as to amateur societies in each country.*
13. **Judges :** *All entries will be examined by the R.S.G.B. Contests Committee whose decisions will be final.*
14. **Disqualifications :** *Off-frequency operation will disqualify. Low tone reports in logs will also be considered as grounds for disqualification.*

Morse Improvement Transmissions

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

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

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

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

Malaya QSL Bureau

Pending the return of Mr. C. E. Salton (VS1DV) from vacation, the duties of QSL Bureau Manager and R.S.G.B. Representative for Malaya have been taken over by Mr. E. G. Sugars (VS2BA), Department of Telecommunications, Kluang, Johore, until December, 1951. Relinquishing these posts, and saying good-bye to Malaya after 25 years' service abroad, is Jim MacIntosh (VS2AA, ex-VS1AA/2AF), who intends to come on the air with a G or GM call in due course.

Side Slip

THE price of the Second (1951) Edition of the **R.E.F. Call Book**—comprising 132 pages in an attractive format—is 7s. (by post 7s. 6d.), and not 3s. 6d. as stated last month. R.S.G.B. Headquarters is prepared to stock this publication provided there is sufficient demand, but at present orders should be sent direct to R.E.F., 72 Rue Marceau, Montreuil-sous-Bois (Seine).

HAVE YOU CHECKED TO SEE THAT YOUR CALL IS IN THE R.S.G.B. AMATEUR RADIO CALL BOOK?

Slow Morse Transmissions

THE following slow Morse transmissions, sponsored by the Society, are intended to assist those who aspire to obtain an amateur transmitting licence. More volunteers are still required for parts of the British Isles not already covered and to allow a temporary respite to those who have given their services for several years.

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

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

HEADQUARTERS CALLING

COUNCIL, 1951

President :
WILLIAM A. SCARR, M.A., G2WS.
Executive Vice-President : F. Charman, B.E.M., G6CJ.
Hon. Treasurer : A. J. H. Watson, F.S.A.A., G2YD.
Hon. Secretary : L. Cooper, G5LC.
Hon. Editor : Arthur O. Milne, G2MI.
Immediate Past President : V. M. Desmond, G5VM.

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

General Secretary : John Clarricoats, G6CL.

July Council Meetings

Résumé of the Minutes of the Proceedings at the Meeting of the Council of the Incorporated Radio Society of Great Britain held at New Ruskin House, Little Russell Street, London, W.C.1, on Tuesday, July 10, 1951, at 6 p.m.

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

Apologies were submitted for the absence of Messrs. V. M. Desmond and P. A. Thorogood.

* * *

Cash Account.
Resolved to accept and adopt the Cash Account for the month of June, 1951, as prepared by the Honorary Treasurer.

Membership.
Resolved :—
(a) to elect 46 Corporate Members and 14 Associates ;
(b) to grant Corporate Membership to 2 Associates who had applied for transfer.

Affiliation.
Resolved to grant affiliation to the R.A.F. Colerne Amateur Radio Transmitting Club.

Representation.
Resolved that the new Regional boundaries shall operate as from January 1, 1952.

Regional Representatives.
Resolved to confirm the appointment of Messrs. F. A. Jefferies, G8PX, and R. J. Donald, G3DJD, as Regional Representatives for Regions 6 and 8 respectively.

Southampton Meeting.
Resolved to hold a meeting in Southampton on September 23 and to appoint the President, the General Secretary, together with Messrs. Allen, Charman, Cooper and Winsford to attend.

Call Book.
Mr. Tyndall (who was in attendance during the discussion of this item) reported upon the progress made to date with the preparation of the R.S.G.B Amateur Radio Call Book.

The Council expressed their warm appreciation to Mr. Tyndall for the work which he and Mrs. Tyndall had already carried out in connection with the Call Book.

London Lecture Programme.
It was reported that the hire charges for accommodation at the Institution of Electrical Engineers had again been raised by a substantial amount.
Resolved :—
(a) to accept the increased charges for accommodation ;
(b) to hold six, instead of eight, meetings at the Institution of Electrical Engineers during the session 1951/2 ;
(c) to hold Lecture Meetings on the following dates : October 26 and November 23, 1951, January 25, February 29 and March 28, 1952 ;
(d) to hold the Annual General Meeting on December 20, 1951.

Pocket Badges for Blazers.
Resolved to take no action on an offer to design and supply pocket badges for blazers embodying the R.S.G.B. emblem.

R.S.G.B. Amateur Radio Exhibition.
Resolved to open the 5th Annual R.S.G.B. Amateur Radio Exhibition at 12 noon on November 28, 1951.

Geneva I.T.U. Conference.
Resolved that the General Secretary be authorised to attend the Extraordinary Radio Conference in Geneva, if, in the view of the G.P.O. Liaison Committee, such attendance is considered to be desirable.

Amateur Television Tests.
The President, the Secretary and Mr. Herdman reported upon field tests carried out on July 1 when a Hastings aircraft of Coastal Command flew over the Upminster and Stotfold areas. The purpose of the tests was to ascertain whether altimeters are likely to be affected by television signals radiated by amateurs operating on frequencies within the 420-460 Mc/s. band.

It was reported that Messrs. J. W. Mathews and D. N. Corfield had been present at the Stotfold station (operated by Mr. I. Howard, G2DUS), Messrs. Clark, Clarricoats, Edwards and Erskine at the Upminster station (operated by Mr. R. Grubb, G3FNL), and Messrs. Scarr and Herdman at West Malling aerodrome.

It was further reported that the Society had not yet been advised of the results of the tests.

Regional Representatives.
It was moved and seconded that as from January 1, 1952, Regional Representatives shall be appointed by the Council and not elected by the membership.

During the discussion it was explained that, for the forthcoming elections, the Council would, under existing arrangements be entitled to exercise their right to nominate Regional Representatives, whilst the membership would be entitled to submit nominations in opposition to those put forward by the Council.

The motion was lost.

Regional Representatives' Conference.
The Report of the Regional Representatives' Conference as prepared for publication in the July issue of the BULLETIN was submitted for consideration.
Resolved :—
(a) to consider Recommendations A and D at the Special Meetings of the Council which are to be held to consider revisions to the Articles of Association ;
(b) to consider the remaining Recommendations at the August meeting of the Council.

The Meeting terminated at 9.50 p.m.

* * *

Résumé of the Minutes of the Proceedings at a Special Meeting of the Council of the Incorporated Radio Society of Great Britain held at New Ruskin House, Little Russell Street, London, W.C.1, on Thursday, July 12, 1951, at 6 p.m.

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

Apologies were submitted for the absence of Messrs. F. Charman, V. M. Desmond, A. O. Milne and P. A. Thorogood.

* * *

The President explained that the meeting had been called to discuss the revision of the Memorandum and Articles of Association. He further explained that a Committee of the Council had examined the present Memorandum and Articles of Association and had prepared a draft revision of both documents.

The Council then proceeded to examine the draft revision of the Articles. Articles 1 to 20 were dealt with.

It was agreed to hold a further Special Meeting of the Council as soon as practicable to continue the examination of the revision of the Articles.

The Meeting terminated at 9.15 p.m.

Television Society

Mr. H. Page, M.Sc., of the B.B.C. Research Dept., will lecture on Slot Aerials at a meeting of the Television Society to be held on Friday, September 21, at 7 p.m., at C.E.A.: 164 Shaftesbury Avenue, London, W.C.2. Tickets may be obtained from the Lecture Secretary, G. T. Clack, 10 Tantallon Road, London, S.W.12.

OFF WITH A BANG !

Solution to Problem Picture on page 115.

Fred Ruth, G2BRH, familiarly known as "Junko," enjoying a siesta at the East London station during N.F.D.

REGIONAL AND CLUB NEWS

Brentford and Chiswick

Meetings are held every Tuesday at 7.30 p.m. at the A.E.U. Rooms, 66-68 High Road, Chiswick, W.4. Part of each evening is given over to Morse practice.

Brighton and District Radio Club

Programme features for September and early October are : a talk and demonstration by *Belling and Lee Ltd.*; the first of several *Mullard* television film strips with lecture; and a demonstration of recording and reproducing by the *Decca Record Co.* On October 17 a dance will be held in aid of club funds. The Hon. Secretary is R. T. Parsons, 14 Carlyle Avenue, Brighton 7.

East Surrey Radio Club

The Club's Silver Trophy (presented by Wilf. Butler G5LJ) will be awarded to the member who submits, before November, the best item of home-constructed radio equipment. "Alignment of Receivers" was the subject of a recent talk by D. Lloyd, with a demonstration using a home-built signal generator constructed by the lecturer, and communications receiver loaned by P. Smith. The Club would be glad to hear from anyone who has knowledge of a room to let at a reasonable rent in the Redhill-Reigate area, suitable for permanent premises.

Eccles and District Radio Society

At the Urmston Horticultural Show on August Bank Holiday members exhibited amateur equipment, and operated an Amateur Radio station (call G3FMA/P). The exhibition attracted many visitors, a focus of interest being an oscilloscope coupled to the modulator. The members of the Society would like to place on record their appreciation of the co-operation given by the G.P.O. in furnishing a portable permit at very short notice. Meetings continue to be held each Monday evening at Eccles Club House. Incidentally eight members entered for the R.A.E. and all passed.

Exeter

At one of the largest meetings held in Exeter the Regional Representative, H. A. Bartlett (G5QA), gave a talk on aerial design, feeders, and converters for V.H.F. operation. This was followed by a cross-town demonstration QSO with another station on 2 m. G. E. Martin (G3GWH) concluded with a talk on simple test-gear for 2 m. operation. Equipment on view included a 5-element Yagi, a 4-element beam with folded dipole radiator, two well-known converters, a converted SCR522 transmitter, a stabilised power pack, and simple test-gear. The meeting, which was attended by J. G. Rooke (G4AP), T.R. for Swindon, closed with votes of thanks to G5QA and G3GWH.

Kingston and District Amateur Radio Society

More than 70 members and friends attended a lecture on "Sound Recording and High-Fidelity Reproduction," arranged by the *Decca Record Co. Ltd.* Forthcoming features will include a demonstration of Amateur Television by G3CVO, "T.V.I and How to Eliminate It" by G.P.O. Engineers, and "Radio Control of Models."

Meetings are held fortnightly on Wednesdays (commencing 7.45 p.m.) at 5 Penrhyn Road, Kingston. Classes for Morse instruction and radio theory are held at the Hon. Secretary's address, 28 Grove Lane, Kingston.

Leicester Radio Society

The name of the Society was changed to the above form at a special meeting held recently. Future activities include a film show ("Power Lines" and "The Cathode Ray Oscilloscope") at 7.30 p.m. on October 1, and a talk entitled "Frequency Modulation" on November 5. Meetings are held in the Club Room at the Holly Bush Hotel, Belgrave Gate, Leicester.

Lothians Radio Society

Meetings commenced on September 13 at the Edinburgh Chamber of Commerce, 25 Charlotte Square, and are held on the second and last Thursday of each month at 7.30 p.m. The Secretary and T.R. is I. Harris, 24 Braid Hills Road, Edinburgh, 10.

Queen Mary College (University of London) Electronics and Amateur Radio Society

The rebuilt Society's station G4RG will soon be on the air (80 W. phone on 20 and 40). Lecture meetings are held in the College at 5 p.m. each Tuesday, to which students of London University are welcomed. The Secretary is M. S. Thayer, Queen Mary College, Mile End Road, London, E.1.

South Shields Amateur Radio Club

Premises comprise a large club room, a special instrument room for use of members, and a large concert or dance hall for socials and other entertainment. The club will be open each evening for transmissions under its own call sign G3DDI. Prospective members should write to the Secretary, W. Dennell, G3ATA, 12 South Frederick Street, South Shields, who will be pleased to provide detailed information about club activities.

Surrey Radio Contact Club

A selection of travel films (DX with a difference!) was presented by G. Harris at a recent meeting. G3BLP, as last year, came second in the R.S.G.B. 2-m. Contest, making the best contact of the event by working G3BW over a distance of 270 miles. The Secretary is S. A. Morley, G3FWR, 22 Old Farleigh Road, Selsdon, Surrey.

Sutton and Cheam Radio Society

At the August meeting K. Perry, G3GKP, lectured on "Oscilloscopes." On September 18, G. A. Bird, G4ZU, will discuss "Aerials and Feeders." Future lectures will commence promptly at 8 p.m. and will not be delayed for late arrivals. In October the Society will again participate in a Hobbies Exhibition to be organised by the Rotary Club of Sutton.

Warrington and District Radio Society

Plans are well in hand for the annual "George Richards" Trophy Contest on "Top Band," which will take place on September 30. An exhibition of home-built radio and electronic equipment is to be on show in the window of a shop at Market Gate, Warrington.

From September 18 the Society will meet at the King's Head Hotel, Winwick Street, Warrington, on the third Tuesday in each month. Inquiries should be addressed to J. Speakman, Davyhulme Cottage, Dark Lane, Whitley, Lancs.

Watford & District Radio & Television Society

An Exhibition of home-constructed gear and a talk, "Radio Fundamentals," by H. Gregory (G3GIY) will take place on September 18. On October 2, E. L. Gardiner (G6GR) will speak on the subject of "Test Gear." The Hon. Secretary is R. W. Bailey (G2QB), 32 Cassiobury Avenue., Watford.

Wirral Amateur Radio Society

A recent D/F. Contest sponsored by the Society was won by N. Evans (G3FRT) and party. A further D/F. Contest is planned, as well as a "junk sale," and a talk on "The Cathode-ray Oscilloscope" by G2FNI. The A.G.M. will be held on October 10.

Worcester and District Amateur Radio Club

The new Secretary is P. Senley, 1 Sandeys Road, Worcester. Meetings will continue to be held at the Rainbow Club, Rainbow Hill, where all interested in Amateur Radio are cordially invited. The T.R. appeals to all R.S.G.B. members of the club to attend an important meeting on October 4.

Representation

The following are additions or amendments to the list published in the February, 1950, issue of the R.S.G.B. BULLETIN.

County Representative

Region 3 : Warwickshire :

R. Palmer, G5PP, 22 Sherlock Road, Coventry.

Town Representatives

Region 8 : Berkshire :

Newbury.—A. W. Grimsdale, G3CJU, 164 London Road.

Sussex :

North-West Area.—W. L. Rimmington, G2DVD, Batwells, Hayes Lane, Slinfold.

Vacancy

Mr. F. Rose, G2DRT, has resigned as Representative for the town of Spalding, Lincs., and Mr. R. Halls, G3EIW, as D.R. for South-East London.

Nominations for their successors should be made in the manner prescribed in the September, 1949, issue of the BULLETIN, and sent to reach the General Secretary by September 30, 1951.

AMATEUR RADIO FESTIVAL PROGRAMME

The Land Travel Exhibition **Call Sign GB3FB**

Sept. 15–Oct. 6: Nottingham (Broad Marsh).

LONDON MEETINGS, 1951/52

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

Friday, October 26, 1951: **J. R. Erskine, B.R.S.12381 and R. Grubb, G3FNL.**
"PROBLEMS IN AMATEUR TELEVISION TRANSMITTER MODULATOR DESIGN."

Friday, November 23, 1951:
Subject to be anncunced.

Thursday, December 20, 1951: **Annual General Meeting.**

Friday, January 25, 1952: **Standard Telephones and Cables, Ltd.**
"OVERTONE MODE CRYSTALS."

Friday, February 29, 1952: **Mullard, Ltd.**
"MODERN VALVES FOR V.H.F. WORK."

Friday, March 28, 1952:
Subject to be announced.

DORSETSHIRE COUNTY HAMFEST

SUNDAY, SEPTEMBER 23, 1951

ANTELOPE HOTEL, DORCHESTER

Programme:

Assemble and welcome from R.R. and C.R., followed by demonstration of 2-metre Equipment and Film-Show	11 a.m.
Luncheon, followed by Group Photograph	1 p.m.
Visits to Dorchester and Rampisham Stations	2.15 p.m.
Tea, followed by Film-Show and General Discussion	5 p.m.

Inclusive charge 9/6

SOUTH-EASTERN OFFICIAL REGIONAL MEETING

SUNDAY, SEPTEMBER 30, 1951

ROYAL MOUNT EPHRAIM HOTEL, TUNBRIDGE WELLS

Programme:

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

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

DIRECTION FINDING FIELD DAYS

NATIONAL FINAL

The series of Direction Finding Field Days will culminate in a National Final to be held on **Sunday, September 30, 1951.** Full details have been sent to all who qualified in the earlier events.

SOUTH WESTERN HAMFEST

(Cornwall, Devon, Dorset, Gloucester and Somerset)

SUNDAY, OCTOBER 7, 1951

CONTINENTAL HOTEL, PLYMOUTH

A full and interesting programme is being arranged. Tickets 9/- each include cost of luncheon and tea. Full details from the T.R., J. Eddy, 55 Greenbank Avenue, Plymouth, or Devon C.R., E. G. Wheatcroft, G3HMY, 27 Lower Wear Road, Countess Wear, Exeter.

EAST MIDLANDS OFFICIAL REGIONAL MEETING

SUNDAY, OCTOBER 14, 1951

THE GRAND STAND HOTEL, DERBY

(adjoining County Cricket Ground, ¾ mile from Town Centre)

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

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

Tickets (12/6 each) from Derby T.R. (Mr. C. Drinkwater, G3FNK, 79 Hillsway, Littleover, Derby), by not later than October 5. A stamped addressed envelope should be included with all postal applications.

TOPS C.W. Club

On August 25 the TOPS C.W. Club met at the headquarters of the Chester and District Amateur Radio Society. Home members from as far afield as London attended while SM5AQW represented overseas members. The programme included a business meeting and talks by G2DHV on B.T.C.C. and SM5AQW on Amateur Radio in Sweden. The Club now has more than 200 members in 13 countries, and membership inquiries will be welcomed by the Secretary, P. Evans, GW8WJ, Westcroft, Meliden Road, Prestatyn.

Around the Trade

A new addition to the range of *Avo* test instruments is the Model 8 Universal AvoMeter, which has a sensitivity of 20,000 ohms per volt on D.C. ranges. Two extra high-voltage terminals are provided for the 2,500 V. A.C. and D.C. ranges, and the meter is fitted with a movement-reverse button, which reverses the direction of current through the moving coil when required. A technical pamphlet describing the instrument may be obtained on application to the *Automatic Coil Winder and Electrical Equipment Co. Ltd.*, Winder House, Douglas Street, S.W.1.

NEW MEMBERS

The following have been elected to membership:—

Corporate Members (Licensed)

G2FL †A. W. Young, 64 Bath Road, Keynsham, Som.
GW2CPU *D. I. Morgan, 2 Pendre Cottages, Llanbadarn, Aberystwyth, Cardiganshire.
G3ALC †P. C. Spence, 130 Braunston Road, Oakham, Rutland.
G3ASQ P. C. Ives, 10 Welsford Road, Eaton Road, Norwich.
GW3BQY †R. Edwards, 44 Wesley Street, Caerau, Bridgend.
G3DGG W. Henson, 12 Filton Way, Chippenham, Wilts.
G3DQG G. T. Mortimer, 9 Bosnia Street, Armley, Leeds 12.
G3FPL J. E. Cripps, 11 Leg Street, Oswestry, Salop.
G3FV D. Malcolm, L.D.S., Inversnaid, Windmill Hill, Allesley, Coventry.
G3GTE A. E. Snellock, 6 Brooklands Road, Heathend, Farnham, Surrey.
G3GZF *A. E. Brown, 154 Shakespeare Crescent, Manor Park, London, E.12.
G3HDY J. H. Young, 160 Balden Road, Harborne, Birmingham 32
G3HEY *D. F. Collings, 233 Forest Road, Fishponds, Bristol.
G3HFR G. R. Howe, 4 Croft View, Maiden Law, Lanchester, Durham.
G3HGK J. Burlingham, 26 York Road, Haxby, Yorks.
GI3HHN R. J. Armstroing, Ballee, Strabane, Co. Tyrone, N. Ireland.
G3HIN J. G. Richards, 87 Volta Street, Selby, Yorks.
G3HIX C. Knight, 53 Belmont Road, Ilford, Essex.
G3HJG D. Whiteling, 23 Link Avenue, Urmston, Manchester.
G3HJO Major J. D. Olle, c/o Aust. Army Staff, Canberra House, 85/87 Jermyn Street, London, S.W.1.
G3HJY *R. A. Houtby, 37 Clifton Avenue, Peterborough, Northants.
GM3HLH J. Bishop, c/o 2 Strawberry Bank, Dundee, Scotland.
G3HLM *W. E. Harris, 29 Moorside Road, Heaton Moor, Stockport, Cheshire.
G3HLN F. M. Matthews, 4 Barnfield Road, Welwyn Garden City, Herts.
G3HMB I. E. Elliot, Police Station, Kirklinton, Carlisle, Cumberland.
G3HMH J. Shilling, 9 Melbury Road, Bilborough Estate, Nottingham.
G3HMZ *B. G. Powell, 105 Bourne Way, Hayes, Bromley, Kent.
G3HNJ J. Clennell, 56 Airmen's Married Quarters, R.A.F., Locking, Weston super Mare, Som.
G3HNP A. G. Edwards, 270 The Gravel, Holto, Nr. Trowbridge, Wilts.
G3HRT R. G. Tillett, Yew Tree Cottage, Horning, Norwich, Norfolk.
GW3QB †E. Powell, Manchester House, Bridgend Road, Llanharan, Glam.
G8MD J. Drinkall, 61 Glenluce Drive, Farringdon Park, Preston, Lancs.

* * *

G2ASW S. W. Woolford, 26 Hereford Court, Headstone Drive, Harrow, Middlesex.
G2CZO †V. Spence, 5 Bamford Road, Thornaby on Tees, Yorks.
G3EEH J. G. Watkinson, Denehurst, Church Lane, Hedon, Yorks.
G3GZB S. N. Radcliffe, 56 Crescent Road, Wood Green, London, N.22.
G3HBJ *P. Dixon, 20 Ashurst Drive, Ilford, Essex.
G3HDK G. W. C. Smith, 105a Alcester Road, Moseley, Birmingham 13.
G3HLY H. J. Lawn, 29 Kimberley Road, Lowestoft, Suffolk.
GI3HND G. S. Beamish, 4 Edenvale Park, Belmont, Belfast, N. Ireland.
GI3HNM C. E. Davies, 19 Woodvale Gardens, Belfast, N. Ireland.
G5NZ †R. Stokes, c/o A.I.D. Test House, Harefield, Middlesex.

Corporate Members (Overseas)

DL4QD C. E. Simmons, H.Q. Co. 759, M.P. Bn. A.P.O. 742, U.S. Army.
EK1CW †J. F. Moseley, c/o R.C.A. Communications, B.P.O. Box 57, Tangier, Morocco.
EK1FB F. J. Brooks, c/o R.C.A. Communications, B.P.O. Box 57, Tangier, Morocco.
EL9A A. Le Monze, c/o Pan American Airways, Roberts Field, Liberia.
MD2GS G. D. Seymour, 3 Francis Avenue, Southsea, Hants.
MD2PJ E. G. Jones, Box 66, Tripoli, Libya.
MP4KAF F. M. Kay, Emirie Hospital, Kuwait, Arabia.
VE1BZ †F. W. Hyndman, 4 North River Road, Charlottetown, Prince Edward Island, Canada.
VE1TN Dr. J. Bower, Provincial Hospital, St. John, New Brunswick, Canada.
VE2AO G. Gosselin, 1108 St. Viateur W., Outremont, Montreal 8, Canada.
VE2KG G. R. Montgomery, 396 Labonte Avenue, Longeuil 23, P.Q., Canada.
VE2XR F. Gribben, 5022 Randall Avenue, Montreal 29, Canada.
VE3NK Major D. T. Kennedy, Y-Bwthyn, Pendre, Towyn, Merionethshire, Wales.
VK2PV J. P. Vesper, 779 Military Road, Mosman, New South Wales, Australia.
VP9AN H. Gilbert, Hunt Holme, Mangrove Bay, Somerset, Bermuda.
VS2DB S. Faulkner, Kantara, Ramore Avenue, Portrush, N. Ireland (on leave).
VS2DF A. A. Parish, Malaya Signals Regt., Kuala Lumpur, Malaya.
W3RIO R. R. Bateman, U.S. Navy Comm. Unit, No. 32-B., c/o U.S. Navy Fleet P.O., 20 Grosvenor Square, London.
ZC4XP †S. Parks, P.O. Box 451, Nicosia, Cyprus.
ZS6AEB F. R. Gale, 509 Africa House, Rissik Street, Johannesburg, South Africa.
ZS6DW W. F. Meyer, 170 Corlett Drive, Bramley, Johannesburg, South Africa.
ZS6QI J. J. Brown, 35 St. John's Road, Chelmsford, Essex.

* * *

EA4CV S. A. Carvajal, U.R.E., P.O. Box 220, Madrid, Spain.
F9TR R. G. Thomas, Pigy par Vosnon, Aube, France.
HB9MQ F. Suter, Koelliken AG, Switzerland.
MD2DW D. H. Willoughby, 1st Infantry Div. Sig. Regt., Tripoli, M.E.L.F. 1.
VK4HD H. M. Lindsay, Buderim Mt., Queensland, Australia.
W2KBJ M. M. Goetz, 141 Ralph Court, Queensway, London, W.2.
ZE4JC A. P. Dale, P.O. Box 88, Causeway, Salisbury, Rhodesia.
ZL1QW A. G. Binnie, Kelso, Moresby Avenue, Waihi, New Zealand.

Corporate Members (British Receiving Stations)

5566 †T. W. Emery, Allendale, Crawfordsburn, Co. Down.
10240 †L. Readman, 22 Hillside Crescent, Mount Eden, Auckland, New Zealand
11236 †D. Stewart, Gavin and Stewart, 95 High Street, Biggar, Lanarkshire, Scotland.
19222 P. Beeham, 8 Broadcroft Road, Petts Wood, Orpington, Kent.
19223 A. W. Thompson, Almadie, Cantley, Norfolk.
19224 F. D. J. Bartlett, 52b North Allington, Bridport, Dorset.
19225 A. L. Taylor, 12 Endsleigh Drive, Acklam, Middlesbrough.
19226 M. Lang, 24 Dixon Road, Crosshill, Glasgow, S.2.
19227 R. D. Baldwin, 27 Norfolk Street, Leamington Spa, Warwicks.
19228 H. S. Martin, 6 Teedale Road, Catterick Camp, Yorks.
19229 P. W. Leath, 149 Farndon Road, Newark, Notts.
19230 R. G. Abrey, Lavernock Fort, Lavernock, Nr. Penarth, Glam.
19231 M. Currall, 30 King's Dyke, Whittlesey, Peterborough, Northants.
19232 A. Kirk, 66 Caryl Road, St. Annes-on-Sea, Lancs.
19233 G. E. Gorringe, Orchard Cottage, Hale Street, East Peckham, Nr. Tonbridge, Kent.
19234 T. D. White, 159 Rosebery Avenue, Yeovil, Som.
19235 F. C. G. Butt, 6 Springfield Road, Kings Heath, Birmingham 14.
19236 B. A. Hobb, 107 Edwin Road, Rainham, Kent.
19237 S. Fox, 85 Lincoln Street, Balne Lane, Wakefield, Yorks.
19238 J. Robinson, 2 Carlton Row, Wortley, Leeds 12.
19239 R. C. Cartwright, 17 Barrowby Lane, Austhorpe, Leeds.
19240 M. W. E. Hampton, 34 Stevens Crescent, Totterdown, Bristol, 3.
19241 S. F. Berridge, 20 Ethel Street, Northampton.
19242 R. Robinson, Station House, Acle, Nr. Norwich.
19243 J. C. Bennett, 7 Rothesay Road, Morecambe, Lancs.
19244 J. B. Owen, Oaken End Farm, Allesley, Coventry
19245 R. W. Sadler, 14 Haimton Road, Lincoln.
19246 J. A. R. Sutherland, 26 Scarborough Road, London, N.4.
19247 R. Wightman, 113 Ogilvie Street, Belfast, N. Ireland
19248 W. G. Hatch, 2 Beadon Road, Bromley, Kent.
19249 A. Davies, 39 Pullan Avenue, Eccleshill, Bradford.
19250 S. W. Fisher, 46 Oldpark Avenue, Oldpark Road, Belfast, N. Ireland.
19251 S. G. C. Howson, 30 Charles Avenue, Thorpe Standen, Norwich.
19252 W. G. Semmens, 26 Trescoe Road, Long Rock, Penzance.

† Denotes re-elected.
* Denotes transfer from Associate Grade.

EXCHANGE AND MART SECTION

(Continued from Page 136)

SALE.—Surplus gear. New R.C.A. 813 with holder, 32s. 6d. 50 watt speech amplifier and modulator. P.P. 807's, A.B.1 with multi-ratio mod. transformer, £3 15s. Bargain. Mains transformer. 600 V., 250 mA., 6.3 V. and 5 V. Specially wound. Cost £3 10s., accept £1 15s. As new. Ferranti modulation transformer, suitable P.P. 807's, 10s. First 20s. secures bargain parcel, all my transmitter oddments, too numerous to mention; mA. meters, transmitter variable condensers, relays, 50/100 watt resistors, etc.: everything in new condition, must clear.—G8DC, 21 Red Lees Road, Burnley. (908

SALE.—4 band 25 watt transmitter, Franklin V.F.O./3 stage buffer-multiplier 807 PA fully metered. Easily modified to 150 watts push pull. Best offer over £10. Fully smoothed 600/250 V. power pack if required, £11. Also all coils, condensers and switches for 3-stage tuning pack, 5-2,000 metres, 30s. Prestacon-Press and accessories, 30s.—Box 918, NATIONAL PUBLICITY CO. LTD., 358 Strand, London, W.C.2. (918

TOWER, alloy angle, 27' sectional; 3-element 10-metre beam, "City Slicker," rotating mechanism, indicator, power supplies, £25. Also 640, £17; 639A, £5; Class DAC, £4; 2-metre transmitter (522) with valves, £5; 1-30-A signal generator, 100-150 Mc/s., £3. Wanted.—AVO 7, 12V. car radio, 60-100 Mc/s. receiver.—Phone WAXlow 3791 evenings. BRS. 18607, 47 Islip Gardens, Northolt, Middlesex. (931

TRANSFORMER, 1200-0-1200 V. 250 mA., 4 V. 5 A. impregnated, £2 10s. Co-axial aerial switching unit, type 78, 10s. Electrical engineer's slide rule, 12", with case and manual, 12s. 6d. Two new 807's, 7s. 6d. each. Postage extra.—G4RS, 17 Tudor Avenue, Bebington, Cheshire.

TWO band-pass crystals, 3 kc/s. separation, also one 300 c/s., all 465 kc/s. I.F. perfect, 17s. 6d. each.—G3CZA, 86 Station Road, Manea, March, Cambs. (913

TWO Handy Talkies, BC611. Sell or exchange receiver, testgear or offers. — BROWN, Waterworks, Penryn, Cornwall. (919

VISITING Empire Ham requires first-class receiver, 100 watt 'phone C.W. transmitter, 28, 14, 7 Mc/s. bands, both 200/250V. A.C. input, transmitter preferably V.F.O., tropicalised table model.—Offers, WOODWARD, Dower House, Slindon, Arundel. (902

WANTED.—Bandspread H.R.O. coils for 7, 14 and 28 Mc/s.—G4RS, 17 Tudor Avenue, Bebington, Cheshire. (926

WANTED.—BC610 Hallicrafters, ET4336 transmitters, SX28's, AR88's. Receivers and spare parts for above. Best prices.—Write Box 864, c/o SPIERS SERVICE, 82 Centurion Road, Brighton, Sussex.

WANTED.—Boxed, brand-new, unused AR88D or CR91, not earlier August, 1944, for cash. Late model Webster-Chicago wire recorder, as brand new, with extras, microphone, manual. Exchange for Hallicrafters SX42, SX71 or similar, or sell.—Write Box 903, NATIONAL PUBLICITY CO. LTD., 358 Strand, London, W.C.2. (903

WANTED for H.T.9 transmitter.—Exciter plug-in tuning units and final amplifier coils for all bands. Good prices offered for sound units. — Offers to G5HK, Manor Farm, Brimington Common, Nr. Chesterfield. (929

WANTED — H.R.O coils, receivers, power packs, AR88D's, AR88LF's, SX28's, BC348's, AR77's, etc.—Details please to R.T. & I. SERVICE, 254 Grove Green Road, Leytonstone, E.11. (LEY 4986.) (939

WANTED.—H.R.O. coils, 7-14 and 14-30, both bandspread, also manual.—Price to JOHN STEVENSON, 653 Maryhill Road, Glasgow. (915

WANTED.—H.R.O. Senior with/without coils and power pack. State condition and price.—G5WA, BARBER, Windmill Road, Michinhampton, Stroud, Glos.

WANTED.—One National one-ten receiver in perfect condition with power supply, coils and valves.—Write 2LX, G. G. LIVESEY, Inglenook, Washingborough, Lincoln. (940

WANTED.—One or two rotary converters, D.C. 11½/12V. input, 500 V., 200 mA. output (approx.), intermittent rating. Good condition essential.—Write, stating price, condition, dimensions, BM/ZCRF, London, W.C.1. (932

WANTED.—R.C.A. speech amplifiers, type MI-11220 J or K.—Offers stating quantity and price to P.C.A. RADIO, The Arches, Cambridge Grove, W.6.

WANTED.—(2) HK 257B transmitting valves.—Price and particulars to G6KI, 160 Franklin Road, Birmingham 30. (895

APPOINTMENTS SECTION

ROLLS-ROYCE Ltd., Derby, have vacancies for graduates to work on the study of vibration characteristics of Rolls-Royce gas turbine and piston type aero engines, under laboratory conditions, on the test bed and in flight. Some knowledge of electrical measurements is an advantage, but extensive electronic knowledge is not essential. Salary according to age, qualifications and experience.

EXCHANGE AND MART SECTION

ADVERTISEMENT RATES. Members' Private Advertisements 2d. per word, minimum charge 3/-. **Trade Advertisements** 6d. per word, minimum charge 9/-. (Write clearly. No responsibility accepted for errors.) Use of Box number 1/6 extra. Send copy and payment to **National Publicity Co., Ltd., 358 Strand, London, W.C.2.**

ABSORPTION wavemeters (Labgear), 7, 14, 28 Mc/s., 5s. each. V.F.O./C.O. type 145 (2-7.5 Mc/s.) and 392 power pack, £5. Modulator, power supply and UMI transformer on standard panel/chassis, 35 watts from p/p 6L6's, £10. Oscilloscope (VCR139) in window cabinet, FB for mod. checking, £3. FL8 Audio filter, 6s. Complete 456 kc/s. crystal filter using 6SK7, 30s. Unused metal rack for H.R.O., speaker and switches, 30s. All good condition. Circuits available. Carriage extra. Callers (by appointment) preferred.—G2BVN, 51 Pettits Lane, Romford, Essex. (917

AERIAL mast, sectional, 30'. Ideal portable or field day. Guys, etc. 50s.—193 Beverley Road, Ruislip Manor, Middlesex. (933

AMATEUR moving.—New valves (receiving), other components. Bargain prices. S.A.E. list. Wearite all-wave coil pack, new, 20s. AVO Universal, leather carrying case, offers.—Box 924, NATIONAL PUBLICITY CO. LTD., 358 Strand, London, W.C.2. (924

AMATEUR urgently requires BC453 and TN16 tuning units and VRL250 in good condition.—Full details to Box 909, NATIONAL PUBLICITY CO. LTD., 358 Strand, London, W.C.2. (909

IMPORTANT NOTICE

All Exchange & Mart advertisements must be sent with remittance to:

THE NATIONAL PUBLICITY CO., LTD.,
358 Strand, London, W.C.2.

to whom all cheques and P.O.s should be made payable. See Advertisement Rates above.

AMERICAN equipment wanted, with prefixes TS, AN/APR, AN/APA, AN/APS, 14/AP,, 15/AP, BC221's, 342's, 348's, ARC/1, ATC, ART-13, APS-13.—Box 930, NATIONAL PUBLICITY CO. LTD., 358 Strand, London, W.C.2. (930

A professionally built 150 watt transmitter, 35T in final (push pull). Rack mounted covering 10, 20, 40 and 80 metres. Also two 40 ft. masts in tabanacles and one 10-metre rotary beam. Will sell outright (buyer collects) or exchange with cash for a miniature camera or portable transceiver or portable mains and battery receiver.—Seen 82 Framingham Road, Sale, Cheshire. (916

AR88 LF, £45. BC342, 110V., £20. B2 transmitter and P.P., £10 or offer. All in very good condition.—HOOPER, 24 Blacker Road, Huddersfield. (907

A. S.B.8, new, £7 10s. 832's, 832A's, 50s. each. Furzehill oscilloscope, £10. Exchange any or all for typewriter/duplicator. Cash either way.—30A Fore Street (Saltash 2395), Cornwall. (910

BOUND to satisfy.—BULLETINS bound, 6s. 6d. per volume, post free. Attractive low-priced QSL cards supplied. Sample.—H. W. ROBINSON, G2BBT, 35 Forty Acre Road Canterbury. (934

BOXES valves, transformers, chokes, resistances, meters, condensers, etc. BULLETINS, 1929 to 1935, 1940 to date. Buyer collects. £12.—PECK, 31 Reginald Road, London, E.7. (900

B2 receiver, £3 10s. Two carbon desk-stand microphones, complete with screened lead and G.P.O.-type plug, 7s. 6d. each.—G. HARRIS, "Flora," Trenance Camping Site, Newquay, Cornwall. (898

CANADIAN VRL 250, 230V. A.C., 19-valve, 1.4-28 Mc/s. Crystal filter. Crystal calibrator, 1000-100-10 kc/s. Manual. £30. 150W. 144 Mc/s. Modified 1131 units, complete crystal 6L6, 2 807, 3 834, £12. 1.7 Mc/s. V.F.O. 6557-6C5-807, 6 band switched 10-75W. doubler, 4 807, internal A.C. pack each, rack mounting, £15. Command transmitter, modified 1.75, 7, 14 Mc/s., all valves, 50s. each; units ready for rewiring, 8s. each. 1131 power packs, 230 A.C., 1000 V. 300 mA. plus 350 V. 300 mA., £5. "D" wavemeter, £4. 100TH's, £2; 8012's, PT15's, 10s.; 1625's, 5s.; EF50's, EF54's, EC52's, 6SH7's, 12SG7's, 12SH7's, 12SJ7's, SP61's, 4s. 6d. 6 ft. G.P.O. racks, 30s. Loads of other gear. S.A.E. list. Carriage extra large items.—Box 899, NATIONAL PUBLICITY CO. LTD., 358 Strand, London, W.C.2. (899

COMMUNICATION receiver wanted, chassis or complete; would exchange Vidor battery/mains portable, about two years old; cash adjustment either way.—BRS. 17689, 70 Abel Street, Burnley. (904

DENCO CT3 turret, 6 bands, 150 kc/s-42 Mc/s. R.F. stage, mechanical bandspread. New, £3 3s. New valves, unboxed, 12A6 (2), 6N7 (2), 6SS7, 6B8 (2), 5s.; 12SG7 (3), 6SC7, 12C8, S130, 12AH7, 4s.; 12J5 (2), SP61 (6), 2s. 6d.—BRS. 17492, 23 Compton Avenue, East Ham, E.6. (923

FOR SALE.—Ex-R.A.F. oscillator type 145 and power pack type 392, £7, carriage paid.—Box 925, NATIONAL PUBLICITY CO. LTD., 358 Strand, London, W.C.2. (925

FOR SALE.—Hallicrafters S40A receiver, cost £35. Will exchange for radiogram or broadcast set with record player.—G3DWA, Westaway, Newton with Scales, Nr. Kirkham, Lancashire. (920

FOR SALE.—R1224 battery superhet in excellent condition, £4. Also M.C.R.I. plus P/P, in good condition, but only 2 coils, 150-1600 kc/s. and 8-15 Mc/s., £3 10s. Several 100 mA. m/c. meters, brand new, 10s. 6d. each. Send S.A.E. for list.—G3HEJ, 58 Exeter Road, Northampton. (897

FOR SALE.—(2) W/S 18 Mk. III* transmitter/receivers, new, with all accessories and power units. Ready to operate. 6-9 Mc/s. powerful superhet receiver, modulated transmitter. £8 10s. each, or exchange for 1155 receiver (new) with O/P stage, power pack, L3.—DUNCAN, 13 Caledonian Circuit, Cambuslang, Glasgow. (894

HRO. for sale, complete with ten coils, also B.2 complete, 1154 transmitter, Mark 5S trans-receiver, Pathe-Vox 9.5 m.m.p. sound projector, 400 watt. Wanted.—80-100 ohm twin screened feeder, 150 watt, also good test meter, AVO or Taylor, Wilcox-Gay V.F.O. microphone desk stand STC. 4021, A.), also "S" meter for AR88. — Box 935, NATIONAL PUBLICITY CO. LTD., 358 Strand, London, W.C.2.

HRO. model M, 8 coils G.O., 50 kc/s. to 14.4 Mc/s., 4 coils B.S., 3.5, 7, 14, 28 Mc/s., 6 V. Power pack, instruction book. £30. SCR211 frequency meter, perfect, instruction and calibration books, £18. Templetone 5-valve battery portable, broadcast and 5.8 to 18 Mc/s. circuit, £8. R.A.F. neon wavemeter W66, 3-15 Mc/s., £2 10s. Wheatstone bridge, .05 to 100 ohms, Manganin wound, £5.—Box 912, NATIONAL PUBLICITY CO. LTD., 358 Strand, London, W.C.2. (912

HRO. Senior for sale, with 10/20/40/80 M. bandspread coils. No power unit or cabinet. Nearest £25 secures. —Box 914, NATIONAL PUBLICITY CO. LTD., 358 Strand, London, W.C.2. (914

HRO. Senior table model. Crystal. "S" meter. Noise limiter. New valves throughout. Realigned. Seen London area. Buyer collects or pays charges and supplies crate. Coils—1 14-30 Mc/s., 2 7-14 Mc/s., 3 1.7-4 Mc/s. First £22 10s. No offers—G3GFN, 52 West End Road, Ruislip, Middx. (RUIslip 3599 after 6 p.m.) (927

IF. transformer (type ZA11916 or ZA14457) required for R107.—P. NAISH, G3EIX, 103 The Mall, Swindon, Wilts. (905

LARGE stock of transmitters, communication receivers, condensers, valves, crystals, insulators and other components. Alignment and repair of all amateur equipment. Receivers and amplifiers built to specification. Prompt service.—P.C.A. RADIO, 170 Goldhawk Road, W.12. (Tel. RIV 3279 & SHE 4946.)

MARCONI transmitter/receiver, modified to eliminate control unit, A.C. mains supply, 4 switched spot frequencies but no crystals supplied, 6 ranges V.F.O., C.W., M-c/w., 'phone, switched ranges 1 to 9 Mc/s. High performance superhet receiver, 400 kc/s. to 10 Mc/s. in 3 switched bands, with microphone, key, phones, £10. Buyer collects.—G3OD, Low Hills, Carrsfield, Corbridge, Northumberland. (911

MCRI wanted, less power pack and preferably valves and coils, but in working order otherwise. — J. M. K. ROWNTREE, Rawcliffe, Goole, Yorks. (928

METALWORK.—All types cabinets, chassis, racks, etc., to your own specifications.—PHILPOTT'S METAL WORKS LTD. (G4BI), Chapman Street, Loughborough. (936

MUST sell.—BC348 receiver, fitted "S" meter, crystal calibrator, A.C. pack. Revalved, aligned. £12 10s. Modulator, 50 watts Audio, perfect quality, £8 10s. V.F.O. Clapp, four valves, 160 and 80 output. Factory built. £5. All plus carriage. Also quantity components, books, etc.—S.A.E. list and details to HOWES, 14 Sinhurst Road, Camberley, Surrey. (845

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